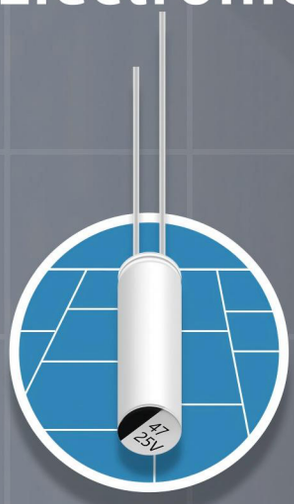
Shanghai Yongming Electronics Co., Ltd.









Conductive polymer solids
Conductive polymer blends
Aluminum electrolytic capacitors

Custom Capacitor Information Gathering Form

Company Name		
Brief Description of Current Challenges		
Preliminary Selected Capacitor Specifications		
Special Reasons & Background		
Application of Special-Request Capacitor	Equipment Name (where capacitor is used)	
	Capacitor is for Input-Side, Output-Side, or Other	
	Currently Used Capacitor Info (Type, Model, Size, Specs)	
Performance Requirements for Special-Request Capacitor	Capacitor Tolerable DC Voltage	
	Capacitor Tolerable Ripple Current & Frequency	
	Capacitor Operating Temperature	
	Capacitor Temperature Resistance	
	Capacitor Lifetime Requirement	
Specific Dimension Requirements	Allowable Capacitor Diameter	
	Allowable Capacitor Height	
	Capacitor Lead Spacing	
	Lead Forming Requirements	
	Other Shape (non-cylindrical shapes)	
Specific Parameter Requirements	Required Capacitance Range	
	Required Leakage Current Range	
	Required ESR or Impedance Range	
Other Requirements	Including but not limited to Color, Appearance, Printing, Packaging, etc.	
For SMD Capacitors, please provide Reflow Parameters	Reflow Profile or Max Temperature and Max Temp Duration	
Customer Month/Yearly Usage Estimate (KPCS)		

Note: Please mark the crucial items that must be met, and we will definitely deliver.

*If you have special requirements when applying for capacitors (this form needs to be filled), please contact us.

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Surface Mount Type 18-64

Leaded Type 65-117

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Surface Mount Type 118-137

Leaded Type 138-146

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Polymer solid aluminum electrolytic capacitor

◇ SMD type

VP1
Standard products
105℃ 2000H

P19

VP4
3.95mm高度
105℃ 2000H

P24

VPX
小型化品
105℃ 2000H

P26

VPH
125V~250V TYPE
105℃ 2000H

P38

VPT
High temperature resistance
125℃ 2000H

P41

VPL
Long-life products
105℃ 5000H

P51

VPG
Large-capacity miniaturized products Φ16~Φ18
105℃ 2000H

P62

VPW
Long-life products
105℃ 15000H

P64

◇ Lead type

NP1
Standard products
105℃ 2000H

P66

NPX
Miniaturized products
105℃ 2000H

P71

NPH
High voltage products
125V~250V

P86

NPT
High temperature resistance
125℃ 2000H

P90

NPL
Long-life products
105℃ 5000H

P102

NPG
Large-capacity miniaturized products
105℃ 2000H

P113

NPM
3.55/4mm小直径
105℃ 2000H

P116

Polymer hybrid aluminum electrolytic capacitor

◇ SMD type

VHX
Large capacity miniaturization
105℃ 2000H~5000H

P119

VGY
Long-life products
105℃ 10000H

P123

VHT
High temperature resistant products
125℃ 4000H

P126

VHM
Larger capacity and smaller size than VHT
125℃ 4000H

P131

VHU
High temperature resistance
135℃ 4000H

P134

VHR
Ultra-high temperature resistance
150℃ 2000H

P137

◇ Lead type

NGY
Long-life products
105℃ 10000H

P139

NHT
High temperature resistant products
125℃ 4000H

P142

NHX
Large capacity miniaturization
105℃ 2000~5000H

P145

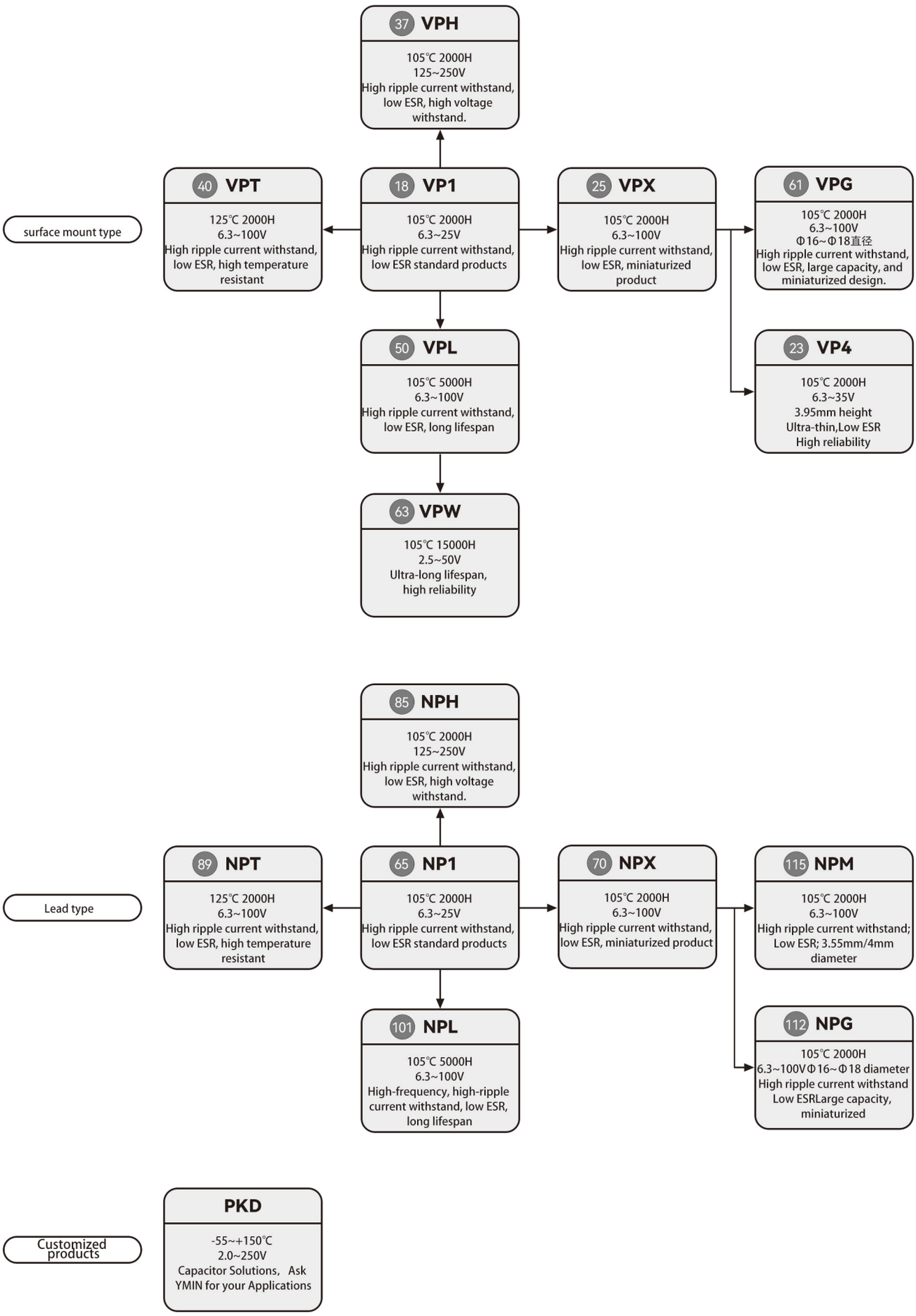
■ Polymer solid aluminum electrolytic capacitor

category	series	Features	Standard products	Miniaturized products	low ESR	High-capacity products	High voltage products	Long-life products	High temperature resistant products	AEC — Q200	Customized products	Rated Voltage Range (V)	Rated capacitance range (μF)	Operating temperature range (°C)	Lifespan (Hrs)	page number
Surface mount type	VP1	Standard Products	●									6.3~25	10~2500	-55~+105	2000	19
	VP4	3.95mm Height		●								6.3~35	10~220	-55~+105	2000	24
	VPX	Miniaturized, Low ESR		●								6.3~100	2.2~10000	-55~+105	2000	26
	VPH	High Voltage Resistant		●			●					125~250	1.0~82	-55~+105	2000	38
	VPT	High Temperature Resistant, Long Life						●	●			6.3~100	2.2~10000	-55~+125	2000	41
	VPL	Long Life						●				6.3~100	2.2~10000	-55~+105	5000	51
	VPG	Large Capacity, Miniaturized,		●	●	●						6.3~100	180~18000	-55~+105	2000	62
	VPW	Ultra-Long Life, High Reliability						●				2.5~50	33~3000	-55~+105	15000	64
Radial lead type	NP1	Standard Products	●									6.3~25	10~2500	-55~+105	2000	66
	NPX	Miniaturized, Low ESR		●								6.3~100	2.2~10000	-55~+105	2000	71
	NPH	High Voltage Resistant		●			●					125~250	1.0~82	-55~+105	2000	86
	NPT	High Temperature Resistant, Long Life						●	●			6.3~100	2.2~10000	-55~+125	2000	90
	NPL	Long Life						●				6.3~100	2.2~10000	-55~+105	5000	102
	NPG	Large Capacity, Miniaturized, Ultra-Low ESR		●	●	●						6.3~100	180~18000	-55~+105	2000	113
	NPM	3.55mm/4mm Diameter		●								6.3~100	1.2~270	-55~+105	2000	116
Customized products	PKD	Customized Products									●	Customization needs				/

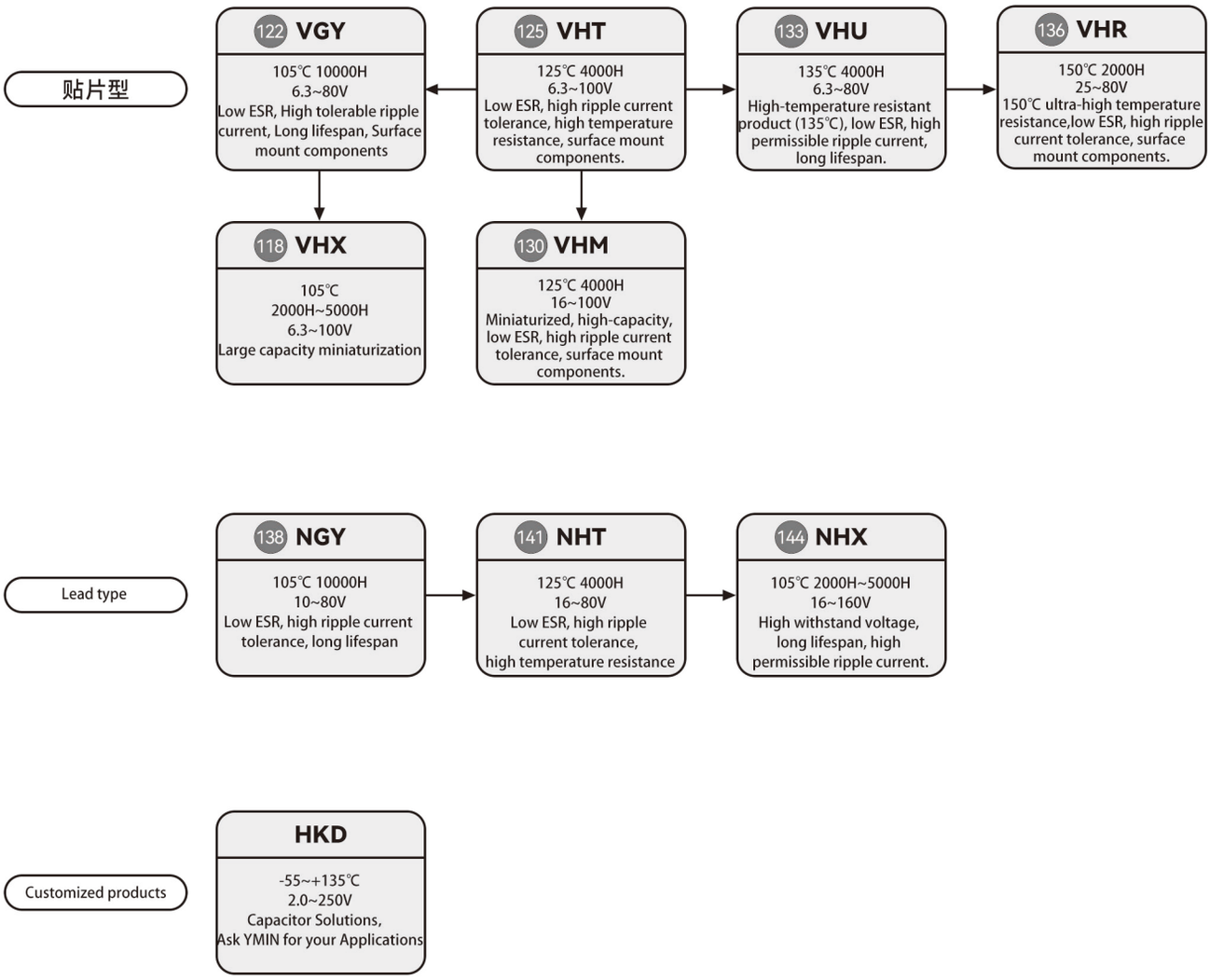
■ Polymer hybrid aluminum electrolytic capacitor

category	series	Features	Standard products	Miniaturized products	low ESR	High-capacity products	High voltage products	Long-life products	High temperature resistant products	AEC — Q200	Customized products	Rated Voltage Range (V)	Rated capacitance range (μF)	Operating temperature range (°C)	Lifespan (Hrs)	page number
Surface mount type	VHX	105°C High Capacity Miniaturization		●	●					●		16~100	6.8~1500	-55~+105	2000~5000	119
	VGY	105°C Long Lifespan			●			●		●		16~80	6.8~470	-55~+105	10000	123
	VHT	125°C High Reliability Long Lifespan			●			●		●		16~100	5.6~1800	-55~+125	4000	126
	VHM	125°C High Reliability Long Lifespan		●	●			●		●		16~100	3.3~1800	-55~+125	4000	131
	VHU	135°C High Temperature Resistance, Low ESR, High Tolerant Ripple Current			●				●	●		25~80	33~1800	-55~+135	4000	134
	VHR	150°C Ultra-High Temperature Resistance			●				●	●		25~80	33~1800	-55~+150	2000	137
Radial lead type	NGY	105°C Long Lifespan			●			●		●		16~80	6.8~470	-55~+105	10000	139
	NHT	125°C High Reliability Long Lifespan			●			●	●	●		16~80	6.8~470	-55~+125	4000	142
	NHX	105°C High Capacity Miniaturization		●						●		16~160	6.8~3300	-55~+105	2000~5000	145
Customized products	HKD	Customization Support Available.									●	Customization needs				/

■ Polymer solid aluminum electrolytic capacitor



■ Polymer hybrid aluminum electrolytic capacitor



Product coding rules

1	2	3

series	code
NGY	NGY
NHT	NHT
NHX	NHX
NP1	NP1
NPG	NPG
NPH	NPH
NPL	NPL
NPM	NPM
NPT	NPT
NPX	NPX
VGY	VGY
VHM	VHM
VHR	VHR
VHT	VHT
VHU	VHU
VHX	VHX
VP1	VP1
VP4	VP4
VPG	VPG
VPH	VPH
VPL	VPL
VPT	VPT
VPW	VPW
VPX	VPX

4	5	6	7

Product diameter	code	Product Height	code
3.55	W	3.95	039
4	A	4.2	042
4.5	G	4.5	045
5	B	5	050
5.5	H	5.4	054
6.3	C	5.7	057
8	D	5.8	058
10	E	6	060
12.5	L	6.1	061
13	S	7	070
16	I	7.5	075
18	J	7.7	077
20	N	8	080
22	K	8.5	085
25	M	9	090
30	P	9.5	095
35	Q	10	100
40	R	10.5	105
		11	110
		11.5	115
		12	120
		12.5	125
		13	130
		13.5	135
		14	140
		14.5	145
		15	150
		15.5	155
		16	160
		16.5	165
		17	170
		17.5	175
		18	180
		18.5	185
		19	190
		19.5	195
		20	200
		21	210
		21.5	215
		22	220
		23	230
		25	250
		26.5	265
		30	300
		31.5	315
		35.5	355

8	9

Rated voltage (V)	code
2	0D
2.5	0E
4	0G
6.3	0J
6.8	0A
7.5	0L
10	1A
12	1B
16	1C
20	1D
25	1E
35	1V
50	1H
63	1J
80	1K
100	2A
120	2K
125	2B
160	2C
200	2D
250	2E
350	2V
400	2G
450	2W
500	2H
600	2J
630	2Y
650	2X

10	11	12

Capacitance (μF)	code
1.0	1R0
1.2	1R2
1.5	1R5
1.8	1R8
2.2	2R2
2.7	2R7
3.3	3R3
3.9	3R9
4.7	4R7
5.6	5R6
6.8	6R8
8.2	8R2
10	100
12	120
15	150
18	180
22	220
27	270
33	330
39	390
47	470
56	560
68	680
82	820
100	101
120	121
150	151
180	181
200	201
220	221
250	251
270	271
330	331
390	391
470	471
560	561
680	681
820	821
1000	102
1200	122
1500	152
1800	182
2000	202
2200	222
2400	242
2500	252
2700	272
3300	332
3900	392
4700	472
5600	562
6800	682
8200	822
10000	103
12000	123
15000	153
18000	183

13

Capacity range	code
±20%	M
±10%	K

14

Subsidiary code (pin forming)	
A	Straight Lead Cutting (Figure A)
B	Lead Cutting (Figure B)
C	Lead Cutting (Figure C)
D	Lead Cutting (Figure D)
E	Lead Cutting (Figure E)
Q	Lead Cutting with 90° Bending (Figure F) Type A (Right)
P	Lead Cutting with 90° Bending (Figure F) Type B (Left)
X	Lead Cutting (Figure G)
G	Lead Cutting with Double 90° Bending (Figure H) Type A (Right)
R	Lead Cutting with Double 90° Bending (Figure H) Type B (Left)
K	Tape/Reel (Figure A)
L	~~Tape/Reel (Figure B)~~
V	
J	SMD Solid State Lead Type

15	16

Subsidiary code (appearance)	
JG	Rubber Hose
TM	Coating Screen Printing
CG	Automotive Grade
KZ	Shock-resistant Products
MR	Magenta Coating Screen Printing
JP	Military Grade
LG	Detonator

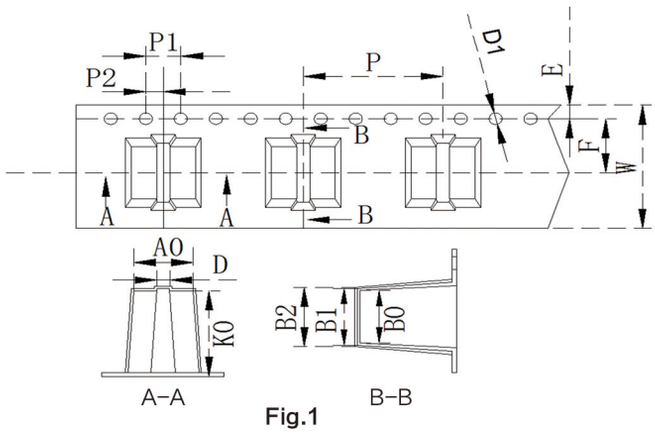


Fig.1

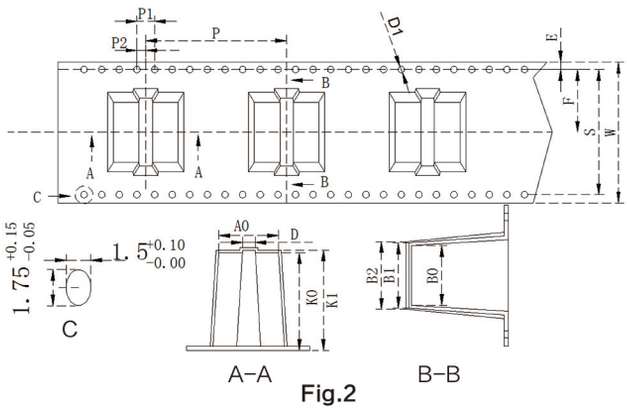


Fig.2

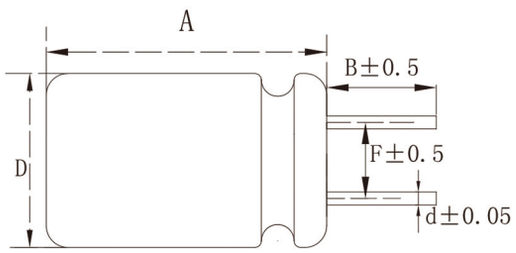
unit:

standard / Product Name	W	A0	B0	B1	B2	D	D1	E	F	K0	K1	P	t	
Φ4×5.4~5.8	12	4.6	4.6	5.2	5.9	1.6	1.5	1.75	5.5	6.3	/	8.0	0.4	
Φ5×5.4~5.8	12	5.7	5.7	6.3	7.1	1.6	1.5	1.75	5.5	5.8	/	12.0	0.4	
Φ5×7.7~7.9	16	5.7	5.7	6.3	7.1	1.6	1.5	1.75	7.5	8.3	8.6	12.0	0.4	
Φ5×10	16	5.7	5.7	6.3	7.1	1.6	1.5	1.75	7.5	9.6	9.9	12.0	0.5	
Φ5×12	16	5.7	5.7	6.3	7.1	1.6	1.5	1.75	7.5	11.7	12.0	12.0	0.5	
Φ6.3×3.95	16	7.0	7.0	8.0	8.7	1.6	1.5	1.75	7.5	4.6	/	12.0	0.4	
Φ6.3×5.4~5.8	16	7.0	7.0	8.0	8.7	1.6	1.5	1.75	7.5	5.9	/	12.0	0.4	
Φ6.3×7.7	16	7.0	7.0	8.0	8.7	1.6	1.5	1.75	7.5	8.3	8.6	12.0	0.4	
Φ6.3×10	16	6.8	6.8	8.1	8.7	1.6	1.5	1.75	7.5	10	10.3	12.0	0.5	
Φ6.3×12	16	6.8	6.8	8.1	8.7	1.6	1.5	1.75	7.5	11.7	12.0	12.0	0.5	
Φ8×5.7~6.2	24	8.7	8.7	9.9	11.3	2.0	1.5	1.75	7.5	7.2	/	16.0	0.4	
Φ8×7.7~7.9	24	8.7	8.7	9.9	11.3	2.0	1.5	1.75	11.5	8.3	8.6	16.0	0.4	FIG.1
Φ8×10~10.5	24	8.7	8.7	9.9	11.3	2.0	1.5	1.75	11.5	10.7	11.0	16.0	0.4	
Φ8×11~12.5	24	8.7	8.7	9.9	11.3	2.0	1.5	1.75	11.5	12.7	13.0	16.0	0.4	
Φ8×13.5~14.5	24	8.7	8.7	9.9	11.3	2.0	1.5	1.75	11.5	13.7	14.0	16.0	0.5	
Φ8×15.5~16.5	24	8.7	8.7	9.9	11.3	2.0	1.5	1.75	11.5	17.2	17.5	16.0	0.5	
Φ8×20.5	32	8.7	8.7	9.9	11.3	2.0	1.5	1.75	14.2	21.2	21.5	24.0	0.5	
Φ10×5.7~6.9	24	10.7	10.7	11.0	13.3	2.0	1.5	1.75	11.5	7.5	/	16.0	0.4	
Φ10×7.7~8.4	24	10.7	10.7	11.9	13.3	2.0	1.5	1.75	11.5	8.7	9.0	16.0	0.4	
Φ10×10~10.5	24	10.7	10.7	11.9	13.3	2.0	1.5	1.75	11.5	10.7	11.0	16.0	0.4	
Φ10×13~14.5	24	10.7	10.7	11.9	13.3	2.0	1.5	1.75	11.5	14.7	15.0	16.0	0.5	
Φ10×16~16.5	24	10.7	10.7	11.9	13.3	2.0	1.5	1.75	11.5	16.7	17.0	16.0	0.5	
Φ10×21	32	10.7	10.7	11.9	13.3	2.0	1.5	1.75	14.2	21.2	21.5	24.0	0.5	
Φ12.5×13.5~14.5	32	13.4	13.4	16.0	17.4	2.5	1.5	1.75	14.2	14.2	14.5	24.0	0.4	
Φ12.5×16.5~17	32	13.4	13.4	16.0	17.4	2.5	1.5	1.75	14.2	17.2	17.5	24.0	0.5	
Φ12.5×21	32	13.4	13.4	16.0	17.4	2.5	1.5	1.75	14.2	21.2	21.5	24.0	0.5	
Φ16×16.5~17	44	17.5	17.5	22.1	23.5	2.5	1.5	1.75	20.2	17.2	17.5	28.0	0.5	
Φ16×21~21.5	44	17.5	17.5	22.1	23.5	2.5	1.5	1.75	20.2	21.7	22.0	28.0	0.5	FIG.2
Φ18×16.5~17	44	19.2	19.2	23.0	24.4	3.3	1.5	1.75	20.2	17.2	17.5	32.0	0.5	
Φ18×21~21.5	44	19.2	19.2	23.0	24.4	3.3	1.5	1.75	20.2	21.7	22.0	32.0	0.5	

Cutting and braiding product specifications

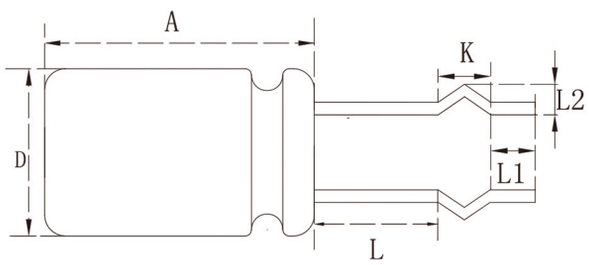
This specification applies to the lead-cutting and tape-forming aluminum electrolytic capacitor products manufactured by our company, including technical requirements, judgment criteria, and acceptance specifications.

Lead cutting diagram A



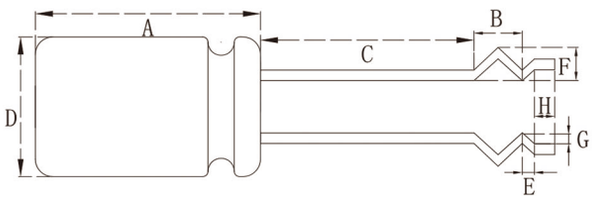
D	5	6.3	8	10	12.5	16	18	tolerance
B	2.5~10							±0.5
d	0.5		0.6			0.8		±0.05
F	2.0	2.5	3.5	5.0		7.5		±0.5

Lead cutting diagram B



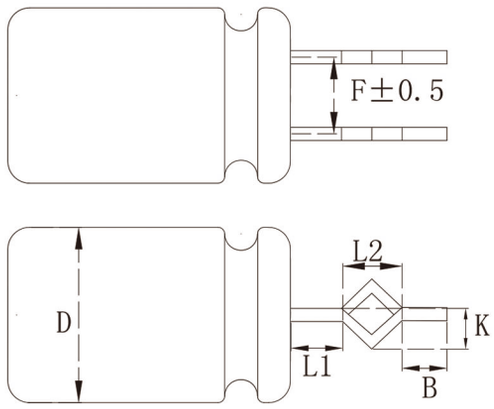
D	A	L±0.5	K±0.5	L2±0.3	L1±0.5	Note:
≤Φ12.5	≤25	2.5~22	2.5	1.5	2.5~5.0	Outer K molding

Lead cutting diagram C



D	A	C±0.5	B±0.5	E±0.3	F±0.3	G±0.3	H±0.5	Notes:I
≤Φ12.5	≤25	2.5~22	3.0	1.2	1.8	0.8	2.0~5.0	nner and outerK-forming

Lead cutting diagram A

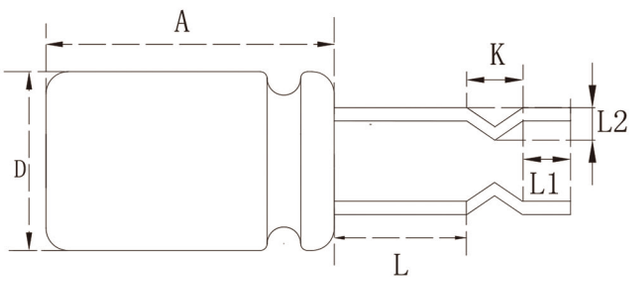


ΦD	8	error
F	3.5	±0.5
L1	2.5~21.0	±0.5
L2	3.5	±0.5
K	1.2	±0.2
B	1.2	±0.5

Cutting and braiding product specifications

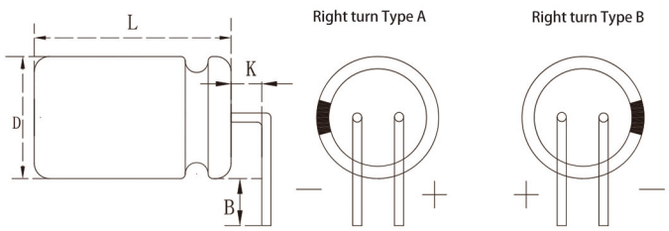
This specification applies to the lead-cutting and tape-forming aluminum electrolytic capacitor products manufactured by our company, including technical requirements, judgment criteria, and acceptance specifications.

Lead cutting diagram E



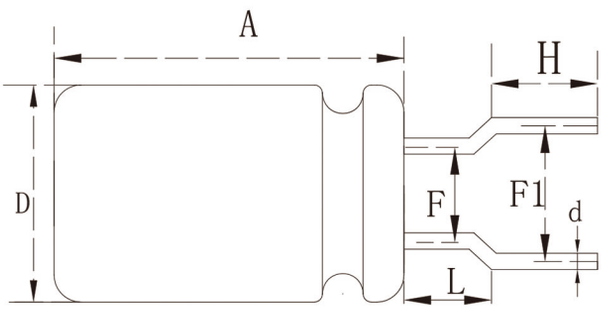
D	A	L±0.5	K±0.5	L2±0.3	L1±0.5	Note:I
≤Φ12.5	≤25	2.5~22	2.5	1.5	2.0~5.0	ntemal K-forming

Lead cutting diagram F
(Formed and bent at 90 degrees)



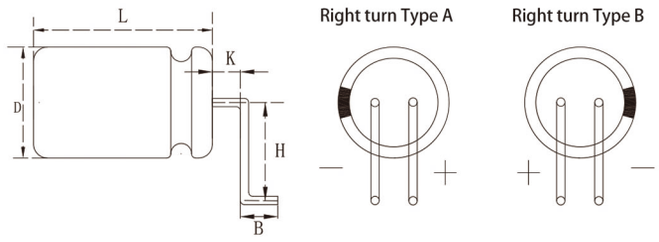
D	Φ5~Φ12.5	Φ16~Φ18	error
K	2.0	2.5	±0.5
B	2.0~10		±0.5
type	Right turn Type A / Left turn Type B		/

Lead cutting diagram G



D	Φ5			Φ6.3		Φ8	error
d	0.5			0.5		0.6	±0.05
F	2.0			2.5		3.5	±0.5
F1	2.5	3.5	5.0	3.5	5.0	5.0	±0.5
L	2.5			2.5		2.5	±0.5
H	2.0~10						±0.5

Lead cutting diagram H
(Formed by double bending at 90 degrees)

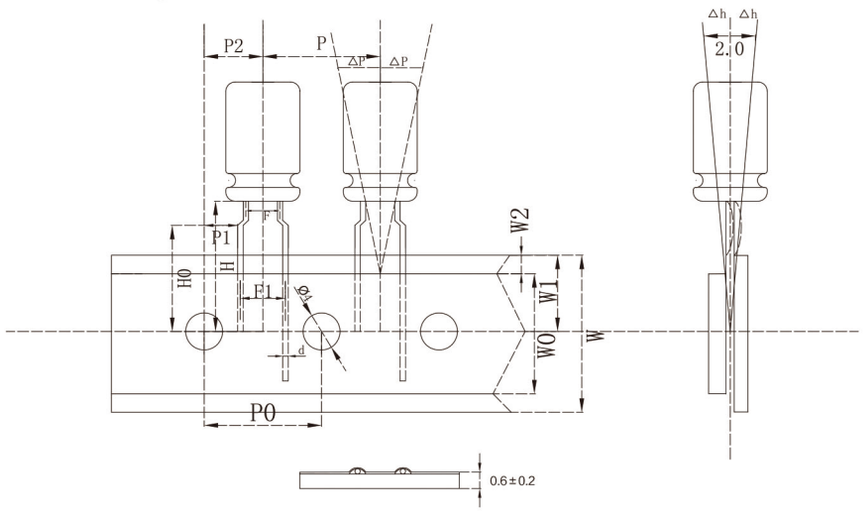


D	Φ5	Φ6.3	Φ8	Φ10	Φ12.5	error
K	2.0	2.0	2.0	2.0	2.0	±0.5
H	7.0	7.0	7.0	7.0	7.0	±0.5
B	2.0~10					±0.5
type	Right turn Type A / Left turn Type B					/

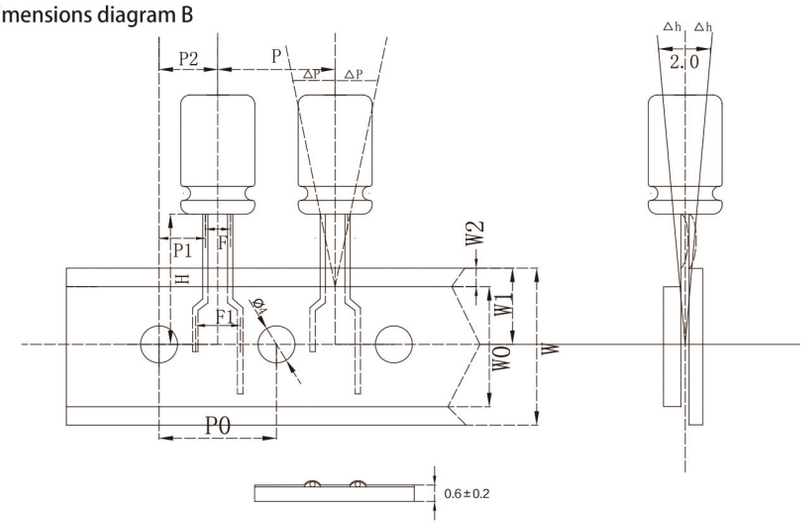
Cutting and braiding product specifications

This specification applies to the lead-cutting and tape-forming aluminum electrolytic capacitor products manufactured by our company, including technical requirements, judgment criteria, and acceptance specifications.

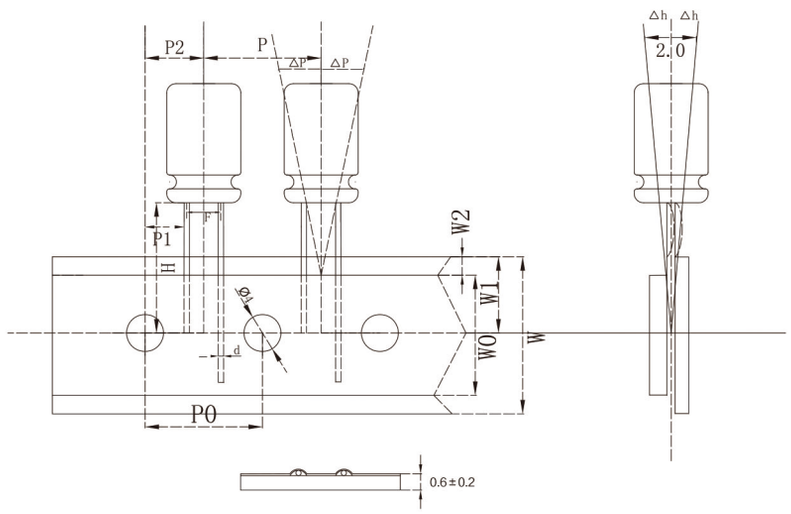
Braided tape external dimensions diagram A



Braided tape external dimensions diagram B



Φ4－Φ8

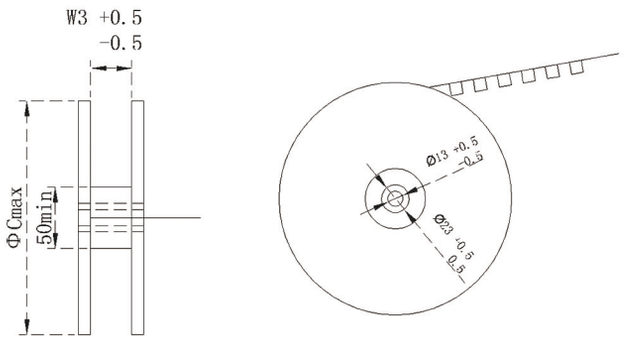


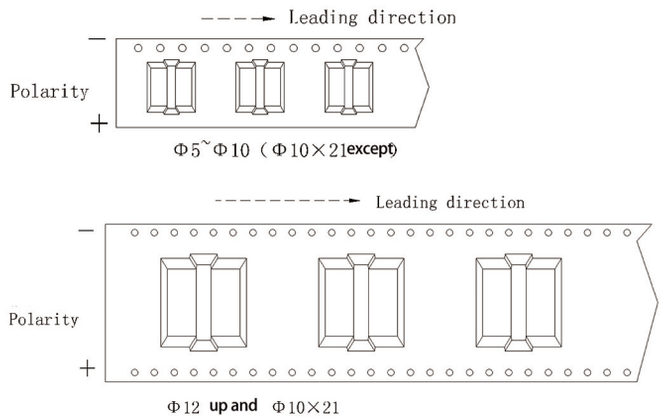
Φ10－Φ13

Tape and reel specifications

PROJECT	MARK	Φ3.55/Φ4		Φ5				Φ6.3/Φ7			Φ8		Φ10	Φ12.5	Φ13	ERROR
LEAD WIRE PROCESSING MARKINGS		U7	T8	U1	U4	U5	T1	U2	U6	T2	U3	T3	T4	T5		
SHAPE AND DIMENSION DIAGRAM		Figure A	Figure B	Figure A	Figure A	Figure A	Figure B	Figure A	Figure A	Figure B	Figure A	Figure B	Figure B	Figure B		
LEAD WIRE DIAMETER	Φd	0.45		0.5							0.5/0.6		0.6			±0.05
MAIN BODY SPACING	P	12.7												15		±1.0
PERFORATION SPACING	P0	12.7												15		±0.2
PERFORATION AND LEAD WIRE SPACING	P1	5.1	5.6	3.85	5.1	4.6	5.35	3.85	4.6	5.1	3.85	4.6	3.85	5.0		±0.7
PERFORATION AND MAIN BODY SPACING	P2	6.35												7.5		±1.0
LEAD WIRE SPACING	F1	2.5	5.0	5.0	2.5	3.5	5.0	5.0	3.5	5.0	5.0	5.0	5.0			+0.8~-0.2
LEAD WIRE SPACING	F	1.5		2.0				2.5			3.5		5.0			±0.5
BACKING PAPER WIDTH	W	18.0														±0.3
TAPE WIDTH	W0	12.5														MIN
PERFORATION AND BACKING PAPER SPACING	W1	9.0														±0.5
TAPE AND BACKING PAPER SPACING	W2	2.0~3.0									0.5~2.0					/
LOWER BODY POSITION	H	18.5														±0.75
LEAD WIRE BENDING HEIGHT	H0	16	--	16			--	16		--	16	--				±0.5
PERFORATION DIAMETER	ΦD0	4.0														±0.3
MAIN BODY TILT ANGLE	Δh	1.0														MAX
MAIN BODY TILT ANGLE	Δp	1.0														MAX
TOTAL BRAIDING THICKNESS	t	0.6														±0.2
PACKAGING QUANTITY		3000		2100				1700			984		672	440	420	

Table of tray dimensions and packaging quantity of surface mount electrolytic capacitors





size	W3 (mm)	ΦC (mm)	Material tray / (pcs)	Inner box		Outer box	
				Number of trays (pieces)	Maximum packaging quantity: pcs/box	Number of inner boxes(pieces)	Maximum packaging quantity: pcs/box
Φ4×5.4~5.8	14	382	2000	8	16000	3	48000
Φ5×5.4~5.8,Φ5×5.7	14	382	1200	8	9600	3	28800
Φ4×7.7,Φ5×7.7~7.9,Φ5×8.5	18	382	900	6	5400	3	16200
Φ5×9.5,Φ5×10,Φ5.5×9	18	382	700	6	4200	3	12600
Φ5×11,Φ5×12,Φ5×13	18	382	500	6	3000	3	9000
Φ5×15.5,Φ5.5×15.5	18	382	350	6	1750	3	5250
Φ6.3×3.95,Φ6.3×4.5	18	382	1500	6	9000	3	27000
Φ6.3×5.4~5.8,Φ6.3×6.1	18	382	1200	6	7200	3	21600
Φ6.3×7.7	18	382	900	6	5400	3	16200
Φ6.3×8,Φ6.3×8.5,Φ6.3×9	18	382	800	6	4800	3	14400
Φ6.3×9.5,Φ6.3×10	18	382	700	6	4200	3	12600
Φ6.3×11,Φ6.3×12,Φ6.3×13	18	382	500	6	3000	3	9000
Φ6.3×16.5	18	382	350	5	1750	3	5250
Φ8×5.7~6.2,Φ8×6.9	26	382	800	5	4000	3	12000
Φ8×7.7~7.9	26	382	600	5	3000	3	9000
Φ8×8.5,Φ8×9,Φ8×10.5	26	382	500	5	2500	3	7500
Φ8×11,Φ8×11.5,Φ8×12.5	26	382	400	5	2000	3	6000
Φ8×13.5	26	382	400	5	2000	3	6000
Φ8×14.5,Φ8×15	26	382	350	5	1750	3	5250
Φ8×16.5,Φ8×17,Φ8×18	26	382	350	5	1750	3	5250
Φ8×20.5	26	382	175	5	875	3	2625
Φ10×5.7~6.9,Φ10×6.7	26	382	800	5	4000	3	12000
Φ10×7.7~8.4,Φ10×7.5,Φ10×8.5	26	382	600	5	3000	3	9000
Φ10×9,Φ10×10,Φ10×10.5	26	382	500	5	2500	3	7500
Φ10×12,Φ10×13.5,Φ10×14	26	382	400	5	2000	3	6000
Φ10×14.5,Φ10×15	26	382	350	5	1750	3	5250
Φ10×16.5,Φ10×17,Φ10×18	26	382	300	5	1500	3	4500
Φ10×19,Φ10×21,Φ10×22	34	382	175	4	700	3	2100
Φ12.5×10,Φ12.5×12,Φ12.5×13, Φ12.5×13.5,Φ12.5×14,Φ12.5×15	34	382	250	4	1000	3	3000
Φ12.5×16,Φ12.5×16.5,Φ12.5×17	34	382	200	4	800	3	2400
Φ12.5×18.5,Φ12.5×19,Φ12.5×21	34	382	175	4	700	3	2100
Φ16×16.5,Φ16×17	46	382	150	3	450	3	1350
Φ16×21.5(21)	46	382	120	3	360	3	1080
Φ18×16.5	46	382	150	3	450	3	1350
Φ18×21.5(21)	46	382	120	3	360	3	1080

Quantity of leaded electrolytic capacitors per package

Product Dimensions		Long lead products			Lead wire processed products			Braided items	
diameter	high	Bagged	Boxed	boxed	Bagged	Boxed	boxed	Boxed	boxed
Φ3.5 Φ4	Below 7	1000	12000	72000	1000	20000	80000	3000	30000
	7~12	1000	10000	60000	1000	10000	60000	3000	30000
Φ5	Below 7	1000	10000	60000	1000	18000	72000	2100	21000
	7~12	1000	6000	36000	1000	6000	36000	2100	21000
Φ6.3	Below 7	1000	10000	60000	1000	12000	48000	1700	17000
	7~9	1000	8000	32000	1000	8000	32000	1700	17000
	10~14	1000	4000	24000	1000	7000	28000	1700	17000
	15	1000	5000	20000	1000	5000	20000	1700	17000
	20	750	4500	18000	750	3750	15000	1700	1360
Φ8	5~10	500	6000	24000	500	5000	20000	984	9840
	11~12	500	4000	16000	500	4000	16000	984	9840
	13~14	500	4000	16000	500	4000	16000	984	9840
	15~20	500	3000	12000	500	3000	12000	984	7872
	23~25	400	1600	6400	500	2000	8000	984	7872
	26~30	400	1600	6400	400	1600	6400	-	-
	31~35	350	1400	5600	350	1400	5600	-	-
	40~44	300	1200	4800	300	1200	4800	-	-
	50	250	1000	4000	250	1000	4000	-	-
Φ10	5~12.5	500	3000	12000	500	3000	12000	672	6720
	13~14	500	2500	10000	500	2500	10000	672	6720
	15~18	500	2000	8000	500	2000	8000	672	6720
	19~22	250	2000	8000	250	1750	7000	672	5376
	23~25	250	1000	6000	250	1500	6000	672	5376
	30	150	1200	4800	150	1200	4800	-	-
	35	150	900	3600	150	900	3600	-	-
	40~44	150	750	3000	150	750	3000	-	-
	50~55	150	600	2400	150	600	2400	-	-
Φ12.5	10~13	200	1200	7200	200	1600	6400	440	4400
	14~15	150	1200	7200	200	1600	6400	440	4400
	16~17	125	1000	6000	200	1600	6400	440	4400
	18~22	100	800	4800	175	1400	5600	440	3520
	23~25	100	1000	4000	150	1200	4800	440	3520
	30	100	600	3600	100	800	3200	-	-
	35~40	100	600	2400	100	800	3200	-	-
	45~50	100	400	1600	75	600	2400	-	-
Φ13	23~26	100	1000	4000	-	-	-	-	-
Φ16	16~18	75	150	1200	75	150	1200	-	-
	20~26	60	120	960	60	120	960	-	-
	30~31.5	55	110	880	55	110	880	-	-
	35.5~36	50	100	800	50	100	800	-	-
	40	45	90	720	45	90	720	-	-
	45~50	42	84	672	42	84	672	-	-
Φ18	16~19	75	150	1200	75	150	1200	-	-
	20~26	54	108	864	54	108	864	-	-
	30~36	51	102	612	51	102	612	-	-
	40	45	90	540	45	90	540	-	-
	45	42	84	504	42	84	504	-	-
	50	35	70	420	35	70	420	-	-

Quantity of leaded electrolytic capacitors per package

Product Dimensions		Long lead products			Lead wire processed products			Braided items	
diameter	high	Bagged	Boxed	boxed	Bagged	Boxed	boxed	Boxed	boxed
Φ20	16~21.5	51	102	612	51	102	612	-	-
	25~28	45	90	540	45	90	540	-	-
	29~32	42	84	504	42	84	504	-	-
	35~37	40	80	480	40	80	480	-	-
	40~45	35	70	420	35	70	420	-	-
	50	30	60	360	30	60	360	-	-
Φ22	16~21.5	51	102	612	51	102	612	-	-
	25~28	45	90	540	45	90	540	-	-
	29~32	40	80	480	40	80	480	-	-
	35~37	38	76	456	38	76	456	-	-
	40~41	32	64	384	32	64	384	-	-
	45	30	60	360	30	60	360	-	-
	50	25	50	300	25	50	300	-	-
Φ25	26	32	64	384	32	64	384	-	-
	30~32	30	60	360	30	60	360	-	-
	35~41	25	50	300	25	50	300	-	-
	45	20	40	240	20	40	240	-	-

*Note: The quantity of lead wire processed products packaged is a reference value, and the actual quantity packaged shall prevail.

Precautions:

1) Confirmation of Usage and Installation Environment

• Please confirm that the usage and installation environment conforms to the capacitor's product catalog and specifications.

2) Operating Temperature, Ripple Current, and Lifespan

• Please use the capacitor within the operating temperature and ripple current range specified in the product catalog and specifications.

① Do not use the capacitor in environments exceeding its rated operating temperature;

② Do not allow overcurrent (exceeding the rated ripple current) to pass through the capacitor.

• Based on the results of accelerated testing, the capacitor's lifespan can be calculated using a lifespan estimation formula. However, the estimated lifespan has errors and cannot be used as a guarantee. Please use the estimated result as a reference and select a capacitor with a sufficient lifespan. For information on lifespan estimation methods, please consult our company.

3) Circuit Design

• Capacitors must be used with polarity specified. Do not apply reverse voltage or AC voltage.

In circuits with reverse polarity, please select bipolar capacitors. However, bipolar capacitors cannot be used in AC circuits.

• Do not use capacitors in circuits with repeated rapid charge and discharge. For information on capacitors used in circuits with repeated charge and discharge, please consult us.

• Capacitor leakage current may change due to thermal stress during soldering. Avoid using this product in the following circuits:

① High-resistance voltage holding circuits;

② Coupling circuits;

③ Time-constant circuits sensitive to capacitance changes;

④ Other circuits significantly affected by leakage current;

⑤ The electrical characteristics of capacitors change with temperature and frequency. Please design your circuit after confirming these changes.

• When connecting two or more capacitors in parallel, consider the current balance between individual capacitors when designing the circuit.

• When connecting two or more capacitors in series, overvoltage or undervoltage may occur due to differences in applied voltage. Consider connecting a resistor in parallel with each capacitor.

• Do not install heat-generating components around capacitors or on the back of circuit boards.

• For applications involving personal safety, applications where equipment malfunction/maloperation/defect may cause damage to personal safety and property, or applications that may have a significant impact on society, please contact our service department before use and consult with us before proceeding.

Examples include: ① Aerospace equipment; ② Nuclear energy equipment; ③ Medical equipment; ④ Transportation equipment (automobiles, trains, ships, etc.); ⑤ Traffic control equipment; ⑥ Disaster prevention and anti-theft equipment; ⑦ Information processing equipment with high public relevance; ⑧ Submarine equipment; ⑨ Other equipment for specific purposes.

4) Applied Voltage

• Do not apply overvoltage (voltage exceeding the rated operating voltage) to the capacitor.

• The total voltage of the DC voltage plus the peak value of the ripple voltage should not exceed the rated operating voltage of the capacitor.

5) Insulation

• The outer sheath of the capacitor does not guarantee its insulation. Do not use the capacitor in circuits requiring complete insulation.

Please contact us if you have special insulation requirements.

6) Operating Environment

• Do not use capacitors in the following environments:
① Direct splashes of water, salt water, oil, or environments with condensation;
② Environments filled with harmful gases (hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, ammonia, bromine, etc.);
③ Environments with ozone, ultraviolet radiation, or radiation exposure;
④ Extremely harsh environments with vibration or shock conditions exceeding the range specified in the product catalog or specifications.

7) Installation

• When installing capacitors onto a printed circuit board, confirm the following before designing:

① Ensure the capacitor terminal spacing matches the printed circuit board hole spacing.

After soldering, do not apply external force to the capacitor body or leads, and do not bend or twist the capacitor body;

② Confirm the capacitor's polarity before installation. Before installation, confirm the capacitor's capacitance and rated operating voltage;

③ Do not drop the capacitor. Do not use capacitors that have been dropped;

④ Do not deform the capacitor during installation, and do not subject the capacitor leads to stress;

⑤ Do not extend wires or circuits above the capacitor's pressure valve during installation;

It is recommended to leave a certain gap above the pressure valve of the capacitor, as follows:

Product diameter:	Spacing
Φ3.0~Φ12.5mm	⩾2mm
Φ16~Φ35mm	⩾3mm
Φ40mm~	⩾5mm

If the pressure valve of the aluminum electrolytic capacitor comes into contact with the printed circuit board (PCB), please install a vent hole directly opposite the capacitor on the PCB.

⑥ Do not install heat-generating components around the capacitor or on the other side of the PCB (below the capacitor);

⑦ The capacitor may experience voltage re-emergence. Discharge it with a 1KΩ resistor before installation;

⑧ The leakage current of capacitors stored for a long time may increase. Perform voltage compensation before installation: Apply the rated operating voltage (DC voltage) for 1 hour after connecting the capacitor in series with a 1KΩ resistor;

⑨ Avoid bending the capacitor leads and avoid stress on the capacitor body during installation.

Confirm the impact forces exerted on the capacitor by the automatic insertion machine, assembly machine's suction cup, product inspector, and alignment operations during installation;

⑩ Considering vibration and impact during assembly and use, auxiliary tools and adhesives can be used to enhance the overall vibration and mechanical shock resistance when installing the capacitor onto the PCB.

8) Storage

• Store capacitors indoors at a temperature of 5° C to 35° C and a relative humidity below 75%. Do not store capacitors in environments with high temperature and high humidity.

• Do not store capacitors in environments where they may come into direct contact with water, salt water, or oil.

• Do not store capacitors in environments containing harmful gases (hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, ammonia, bromine, etc.).

• Do not store capacitors in environments with ozone, ultraviolet radiation, or other forms of radiation.

• The storage period is generally within two years of manufacturing.

9) Cleaning Printed Circuit Boards

• Do not use halogen-containing solvents to clean capacitors. Please select cleanable capacitors and use them within the range specified in the product catalog or specification sheet.

• When cleaning cleanable capacitors, please ensure proper contamination management of the cleaning agent.

• After cleaning cleanable capacitors, do not store them in an environment containing cleaning solution or in a sealed container.

• After cleaning, thoroughly dry the printed circuit board and capacitors with hot air. Keep the hot air temperature below the upper operating temperature limit.

10) Fixatives and Coating Agents

• Do not use fixatives or coating agents containing halogen-containing solvents.

• Before using fixatives and coating agents, thoroughly clean the area between the substrate and the capacitor's sealing surface, ensuring no flux residue or dirt remains.

• Before using fixatives and coating agents, dry any cleaning agents or other contaminants adhering to the capacitor.

• When using fixatives and coating agents, do not completely block the capacitor's sealing surface.

11) Soldering

• Soldering conditions (temperature, time) must not exceed the range specified in the product catalog or specifications.

• If the terminal gaps do not match the PCB hole gaps, and processing is performed before soldering, the capacitor body must not be subjected to stress.

• When manually trimming with a soldering iron, ensure the solder is fully melted before removing it to avoid putting pressure on the capacitor terminals.

• Do not allow the tip of the soldering iron to touch the capacitor body.

12) Wave Soldering

• Do not immerse the capacitor body in molten solder; solder the PCB surface on the back of the capacitor.

• Soldering conditions (260° C ± 5° C, 10 seconds ± 1 second).

• Do not allow flux to adhere to any part other than the terminals.

• During soldering, avoid other components tipping over and coming into contact with the capacitor.

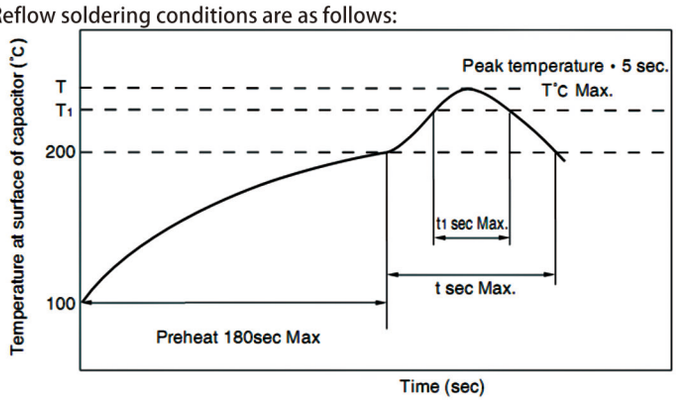
13) Reflow Soldering

• Reflow soldering conditions must not exceed the range specified in the product catalog or specifications.

• When using an infrared heater, the absorption rate of infrared radiation varies depending on the color and material of the capacitor; please pay attention to the heating temperature.

• If reflow soldering beyond the specified range is required, please contact us.

• Reflow soldering conditions are as follows:



Product Category	Product Dimensions	T(℃)①	t(sec)②	T1(℃)	t1(sec)③	Permissible number of reflow soldering cycles
Polymer solid/solid-liquid hybrid surface mount aluminum electrolytic capacitors	ΦD×3.95~4.5	240	≦90	230	≦30	1
	Φ12.5~18	240	≦90	230	≦30	1
	Other sizes of products	250	≦90	230	≦40	1

①T: Peak temperature

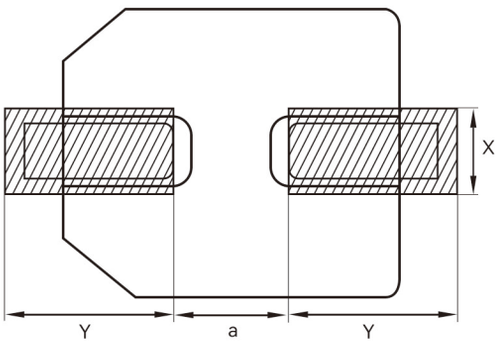
②t: Time exceeding 200° C (MAX)

③t1: Time exceeding T1 (MAX) Two reflow soldering operations are permitted, but sufficient cooling is required between the two reflow soldering operations.

Please contact us if the temperature exceeds the permissible range.

14) Recommended SMD Pad Sizes

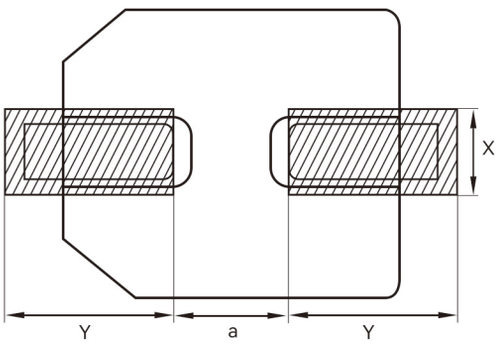
• 14.1 Standard Product:



unit:mm

earthquake-resistant products			
Product diameter	X±0.10	Y±0.10	a±0.10
Φ4	1.60	2.60	1.00
Φ5	1.60	3.00	1.40
Φ6.3	1.60	3.50	1.90
Φ8	2.20	4.20	3.10
Φ10	2.30	4.40	4.00
Φ12.5	2.50	5.70	4.00
Φ16	2.50	6.90	6.00
Φ18	2.50	7.90	6.00

• 14.2 Earthquake-resistant products:



unit:mm

earthquake-resistant products			
Product diameter	X±0.10	Y±0.10	a±0.10
Φ6.3	3.00	4.00	1.60
Φ8	5.00	4.00	2.50
Φ10	5.00	4.80	3.60
Φ12.5	7.00	6.60	3.20
Φ16	10.50	7.80	5.00
Φ18	10.50	8.80	5.00

15) Disposal

- When you need to dispose of aluminum electrolytic capacitors, please contact your local electronic waste disposal professional.
- When disposing of aluminum electrolytic capacitors, ensure that the capacitors have been fully discharged.

16) Vibration-resistant products with auxiliary terminals

Surface mount aluminum electrolytic capacitors with a case size of ΦD×10 and above are supported with vibration-resistant structures featuring auxiliary terminals. Please contact us for details.

17) AEC-Q200 compliant

AEC is short for Automotive Electronics Council.

AEC-Q200 is an automotive-grade quality certification for passive components, widely adopted as a standard for automotive electronic components; our company provides aluminum electrolytic capacitors that comply with the AEC-Q200 standard.

VP1

- ◆ High reliability, low ESR, high permissible ripple current
- ◆ 105℃, 2000-hour warranty
- ◆ RoHS compliant
- ◆ Standard product, surface mount type

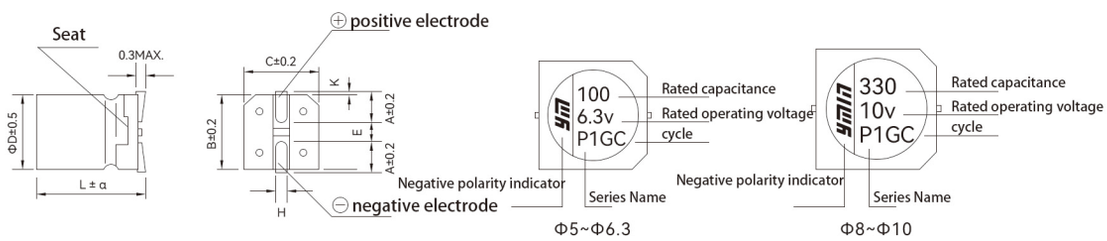


■ Main technical parameters

project	characteristic
Operating temperature range	－55 ~ +105℃
Rated operating voltage	6.3 ~ 25V
Capacity range	10 ~ 2500μF 120Hz 20℃
Capacity tolerance	±20% (120Hz 20℃)
Loss tangent	Values below the standard product list: 120Hz, 20℃
Leakage current	Values below the standard product list: Charged for 2 minutes at rated voltage, 20℃
Equivalent series resistance (ESR)	Values below the standard product list: 100kHz, 20℃
Durability	After being subjected to the rated operating voltage for 2000 hours at 105℃ and placed at 20℃ for 16 hours, the product should meet the following requirements.
	Rate of change of capacitance: ±20% of the initial value
	Equivalent series resistance (ESR): ≦ 150% of the initial specification value
	Loss tangent: ≦ 150% of the initial specification value
	Leakage current: ≦ Initial specification value
High temperature and humidity	After being placed at 60℃ and 90%~95% RH without voltage for 1000 hours, and then placed at 20℃ for 16 hours, the product should meet the following requirements.
	Rate of change of capacitance: ±20% of the initial value
	Equivalent series resistance (ESR): ≦ 150% of the initial specification value
	Loss tangent: ≦ 150% of the initial specification value
	Leakage current: ≦ Initial specification value

※If there is any doubt about the leakage current value, please place the product at 105° C and apply the rated operating voltage for 2 hours, then cool it down to 20° C before testing the leakage current.

■ Product dimension drawing (unit: mm)



ΦD	B	C	A	H	E	K	α
5	5.3	5.3	2.1	0.70±0.20	1.3	0.5MAX	±0.5
6.3	6.6	6.6	2.6	0.70±0.20	1.8	0.5MAX	
8	8.3	8.3	3.0	0.90±0.20	3.1	0.5MAX	
10	10.3	10.3	3.5	0.90±0.20	4.6	0.7±0.2	

■ Rated ripple current frequency correction factor

Frequency (Hz)	120Hz	1kHz	10kHz	100kHz	500kHz
Correction Factor	0.05	0.30	0.70	1.00	1.00

VP1

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
6.3(7.2)	100	6.3×8.5	500	0.08	8	4800
6.3(7.2)	150	6.3×8.5	500	0.08	8	4800
6.3(7.2)	180	6.3×8.5	500	0.08	8	4800
6.3(7.2)	180	8×9	500	0.08	8	5600
6.3(7.2)	180	8×12.5	500	0.08	8	6150
6.3(7.2)	220	5×11	500	0.08	10	4150
6.3(7.2)	220	6.3×8.5	500	0.08	8	4800
6.3(7.2)	220	8×9	500	0.08	8	5600
6.3(7.2)	220	8×12.5	500	0.08	8	6150
6.3(7.2)	270	5×11	500	0.08	10	4150
6.3(7.2)	270	6.3×8.5	500	0.08	8	4800
6.3(7.2)	270	8×9	500	0.08	8	5600
6.3(7.2)	270	8×12.5	500	0.08	8	6150
6.3(7.2)	330	5×11	500	0.08	10	4150
6.3(7.2)	330	6.3×8.5	500	0.08	8	4800
6.3(7.2)	330	8×9	500	0.08	8	5600
6.3(7.2)	330	8×12.5	500	0.08	8	6150
6.3(7.2)	390	6.3×8.5	500	0.08	8	4800
6.3(7.2)	390	6.3×9.5	500	0.08	8	5250
6.3(7.2)	390	8×9	500	0.08	8	5600
6.3(7.2)	390	8×12.5	500	0.08	8	6150
6.3(7.2)	470	6.3×9.5	592	0.08	8	5250
6.3(7.2)	470	6.3×11	592	0.08	8	5500
6.3(7.2)	470	8×9	592	0.08	8	5600
6.3(7.2)	470	8×12.5	592	0.08	8	6150
6.3(7.2)	560	6.3×9.5	706	0.08	8	5250
6.3(7.2)	560	8×9	706	0.08	8	5600
6.3(7.2)	560	8×12.5	706	0.08	8	6150
6.3(7.2)	680	6.3×11	857	0.08	8	5500
6.3(7.2)	680	8×9	857	0.08	8	5600
6.3(7.2)	680	8×12.5	857	0.08	8	6150
6.3(7.2)	680	10×13	857	0.08	8	6640
6.3(7.2)	820	8×12.5	1033	0.08	8	6150
6.3(7.2)	820	10×13	1033	0.08	8	6640
6.3(7.2)	1000	8×12.5	1260	0.08	8	6150
6.3(7.2)	1000	10×13	1260	0.08	8	6640
6.3(7.2)	1200	8×12.5	1512	0.08	8	6150
6.3(7.2)	1200	10×13	1512	0.08	8	6640
6.3(7.2)	1500	10×13	1890	0.09	8	6640
6.3(7.2)	2000	10×13	2520	0.10	8	6640
6.3(7.2)	2200	10×13	2772	0.10	8	6640
6.3(7.2)	2500	10×13	3150	0.11	8	6640
7.5(8.6)	270	5×8.5	500	0.08	12	3400

VP1

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
7.5(8.6)	330	5×11	500	0.08	12	3800
7.5(8.6)	390	5×11	585	0.08	12	3800
7.5(8.6)	680	6.3×9.5	1020	0.08	9	5000
7.5(8.6)	1000	8×12.5	1500	0.08	8	6150
10(11.5)	33	6.3×5.8	500	0.08	30	2200
10(11.5)	39	6.3×5.8	500	0.08	30	2200
10(11.5)	47	6.3×8.5	500	0.08	12	3900
10(11.5)	68	6.3×8.5	500	0.08	12	3900
10(11.5)	82	6.3×8.5	500	0.08	12	3900
10(11.5)	100	5×8.5	500	0.08	15	3050
10(11.5)	100	6.3×8.5	500	0.08	12	3900
10(11.5)	150	6.3×8.5	500	0.08	12	3900
10(11.5)	180	6.3×9.5	500	0.08	12	4300
10(11.5)	180	8×9	500	0.08	10	5100
10(11.5)	180	8×12.5	500	0.08	9	5800
10(11.5)	220	6.3×9.5	500	0.08	12	4300
10(11.5)	220	8×9	500	0.08	10	5100
10(11.5)	220	8×12.5	500	0.08	9	5800
10(11.5)	270	6.3×9.5	540	0.08	12	4300
10(11.5)	270	8×9	540	0.08	10	5100
10(11.5)	270	8×12.5	540	0.08	9	5800
10(11.5)	330	8×9	660	0.08	10	5100
10(11.5)	330	8×12.5	660	0.08	9	5800
10(11.5)	390	8×9	780	0.08	10	5100
10(11.5)	390	8×12.5	780	0.08	9	5800
10(11.5)	470	8×9	940	0.08	10	5100
10(11.5)	470	8×12.5	940	0.08	9	5800
10(11.5)	560	8×12.5	1120	0.08	9	5800
10(11.5)	560	10×12.5	1120	0.08	9	6300
10(11.5)	680	8×12.5	1360	0.08	9	5800
10(11.5)	680	10×10.5	1360	0.08	9	5750
10(11.5)	680	10×13	1360	0.08	9	6300
10(11.5)	820	10×13	1640	0.08	9	6300
10(11.5)	1000	10×13	2000	0.08	9	6300
10(11.5)	1200	10×13	2400	0.08	9	6300
10(11.5)	1500	10×13	3000	0.09	9	6300
16(18.4)	22	6.3×8.5	500	0.08	15	3500
16(18.4)	33	6.3×8.5	500	0.08	15	3500
16(18.4)	47	6.3×8.5	500	0.08	15	3500
16(18.4)	68	6.3×8.5	500	0.08	15	3500
16(18.4)	82	6.3×8.5	500	0.08	15	3500
16(18.4)	100	6.3×8.5	500	0.08	15	3500
16(18.4)	100	8×12.5	500	0.08	10	5500

VP1

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
16(18.4)	150	6.3×11	500	0.08	10	4900
16(18.4)	150	8×9	500	0.08	12	4500
16(18.4)	180	6.3×8.5	576	0.08	15	3500
16(18.4)	180	8×9	576	0.08	12	4500
16(18.4)	180	8×12.5	576	0.08	10	5500
16(18.4)	220	6.3×11	704	0.08	10	4900
16(18.4)	220	8×9	704	0.08	12	4500
16(18.4)	220	8×12.5	704	0.08	10	5500
16(18.4)	270	6.3×11	864	0.08	10	4900
16(18.4)	270	8×9	864	0.08	12	4500
16(18.4)	270	8×12.5	864	0.08	10	5500
16(18.4)	270	10×13	864	0.08	10	6000
16(18.4)	330	8×9	1056	0.08	12	4500
16(18.4)	330	8×12.5	1056	0.08	10	5500
16(18.4)	330	10×13	1056	0.08	10	6000
16(18.4)	390	8×9	1248	0.08	12	4500
16(18.4)	390	8×12.5	1248	0.08	10	5500
16(18.4)	390	10×13	1248	0.08	10	6000
16(18.4)	470	8×12.5	1504	0.08	10	5500
16(18.4)	470	10×13	1504	0.08	10	6000
16(18.4)	560	8×12.5	1792	0.08	10	5500
16(18.4)	560	10×13	1792	0.08	10	6000
16(18.4)	680	10×13	2176	0.08	10	6000
16(18.4)	820	10×13	2624	0.08	10	6000
16(18.4)	1000	10×13	3200	0.08	10	6000
25(28.8)	10	6.3×8.5	500	0.08	16	3400
25(28.8)	15	6.3×8.5	500	0.08	16	3400
25(28.8)	22	6.3×8.5	500	0.08	16	3400
25(28.8)	22	6.3×9.5	500	0.08	16	3750
25(28.8)	33	6.3×9.5	500	0.08	16	3750
25(28.8)	39	6.3×9.5	500	0.08	16	3750
25(28.8)	39	8×9	500	0.08	16	3900
25(28.8)	39	8×12.5	500	0.08	16	4400
25(28.8)	47	8×9	500	0.08	16	3900
25(28.8)	47	8×12.5	500	0.08	16	4400
25(28.8)	68	8×9	500	0.08	16	3900
25(28.8)	68	8×12.5	500	0.08	16	4400
25(28.8)	82	8×9	500	0.08	16	3900
25(28.8)	82	8×12.5	500	0.08	16	4400
25(28.8)	100	8×12.5	500	0.08	16	4400
25(28.8)	100	10×13	500	0.08	16	4700
25(28.8)	150	8×12.5	750	0.08	16	4400
25(28.8)	150	10×13	750	0.08	16	4700

VP1

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
25(28.8)	180	8×12.5	900	0.08	16	4400
25(28.8)	180	10×13	900	0.08	16	4700
25(28.8)	220	8×12.5	1100	0.08	16	4400
25(28.8)	220	10×13	1100	0.08	16	4700
25(28.8)	270	8×12.5	1350	0.08	16	4400
25(28.8)	270	10×13	1350	0.08	16	4700
25(28.8)	330	10×13	1650	0.08	16	4700
25(28.8)	390	10×13	1950	0.08	16	4700
25(28.8)	470	10×13	2350	0.08	16	4700
25(28.8)	560	10×13	2800	0.08	16	4700
25(28.8)	680	8×17	3400	0.08	16	5050
25(28.8)	820	10×13	4100	0.08	16	4700
25(28.8)	1000	10×17	5000	0.08	16	5300

VP4

- ◆ 3.95mm height ultra-thin solid capacitor
- ◆ Low ESR, high reliability
- ◆ 105℃ 2000-hour warranty
- ◆ Surface mount type, suitable for high-temperature lead-free reflow soldering
- ◆ RoHS compliant

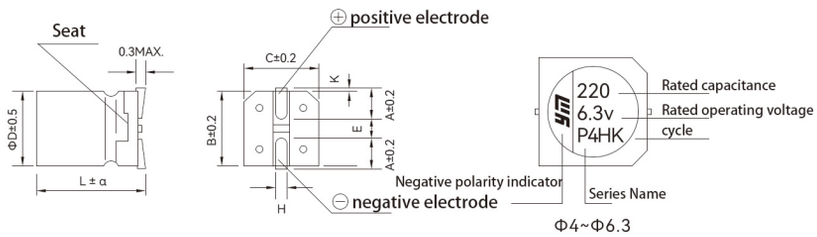


■ Main technical parameters

project	characteristic
Operating temperature range	－55 ~ +105℃
Rated operating voltage	6.3 ~ 35V
Capacity range	33~ 220μF 120Hz 20℃
Capacity tolerance	±20% (120Hz 20℃)
Loss tangent	The following values are from the standard product list: 120Hz, 20℃
Leakage current	Charge for 2 minutes at rated voltage using 0.2CV or 1000μA, at 20℃.
Equivalent series resistance (ESR)	The following values are from the standard product list: 100kHz, 20℃.
Durability	After being subjected to the rated operating voltage for 2000 hours at 105℃ and placed at 20℃ for 16 hours, the product should meet the following requirements.
	Rate of change of capacitance: ±20% of the initial value
	Equivalent series resistance (ESR): ≦ 200% of the initial specification value
	Loss tangent: ≦ 200% of the initial specification value
	Leakage current: ≦ Initial specification value
High temperature and humidity	After being placed at 60℃ and 90%~95% RH without voltage for 1000 hours, and then placed at 20℃ for 16 hours, the product should meet the following requirements.
	Rate of change of capacitance: ±20% of the initial value
	Equivalent series resistance (ESR): ≦ 200% of the initial specification value
	Loss tangent: ≦ 200% of the initial specification value
	Leakage current: ≦ Initial specification value

※If there is any doubt about the leakage current value, please place the product at 105° C and apply the rated operating voltage for 2 hours, then cool it down to 20° C before testing the leakage current.

■ Product dimension drawing (unit: mm)



ΦD	B	C	A	H	E	K	α
6.3×3.95	6.6	6.6	2.6	0.90±0.20	1.8	0.5MAX	±0.2

■ Frequency correction factor

Frequency (Hz)	120Hz	1kHz	10kHz	100kHz	500kHz
Correction Factor	0.05	0.30	0.70	1.00	1.00

VP4

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
6.3(7.2)	220	6.3×3.95	500	0.08	60	1500
10(11.5)	82	6.3×3.95	500	0.08	100	1500
10(11.5)	150	6.3×3.95	500	0.08	100	1500
16(18.4)	47	6.3×3.95	500	0.08	60	950
16(18.4)	82	6.3×3.95	500	0.08	60	1500
16(18.4)	100	6.3×3.95	500	0.08	60	1500
25(28.8)	47	6.3×3.95	500	0.08	60	750
25(28.8)	56	6.3×3.95	500	0.08	60	1150
25(28.8)	68	6.3×3.95	500	0.08	60	1150
35(41)	33	6.3×3.95	500	0.12	60	1150
35(41)	47	6.3×3.95	500	0.12	60	1150

VPX

◆ High reliability, low ESR, high permissible ripple current

◆ 105℃, 2000-hour warranty

◆ RoHS compliant

◆ Miniaturized, surface mountable

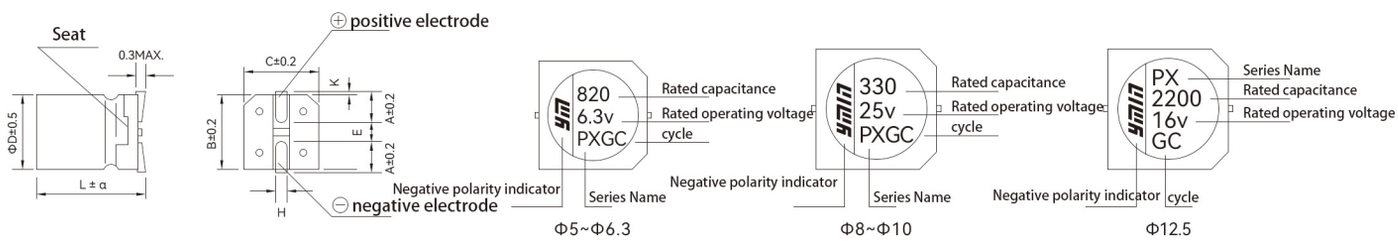


■ Main technical parameters

project	characteristic
Operating temperature range	－55 ~ +105℃
Rated operating voltage	6.3 ~ 100V
Capacity range	2.2 ~ 10000μF 120Hz 20℃
Capacity tolerance	±20% (120Hz 20℃)
Loss tangent	Values below the standard product list: 120Hz, 20℃
Leakage current	Values below the standard product list: Charged for 2 minutes at rated voltage, 20℃
Equivalent series resistance (ESR)	Values below the standard product list: 100kHz, 20℃
Durability	After being subjected to the rated operating voltage for 2000 hours at 105℃ and placed at 20℃ for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±20% of the initial value Equivalent series resistance (ESR): ≦ 150% of the initial specification value Loss tangent: ≦ 150% of the initial specification value Leakage current: ≦ Initial specification value
High temperature and humidity	After being placed at 60℃ and 90%~95% RH without voltage for 1000 hours, and then placed at 20℃ for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±20% of the initial value Equivalent series resistance (ESR): ≦ 150% of the initial specification value Loss tangent: ≦ 150% of the initial specification value Leakage current: ≦ Initial specification value

※If there is any doubt about the leakage current value, please place the product at 105° C and apply the rated operating voltage for 2 hours, then cool it down to 20° C before testing the leakage current.

■ Product dimension drawing (unit: mm)



ΦD	B	C	A	H	E	K	α
5	5.3	5.3	2.1	0.70±0.20	1.3	0.5MAX	±0.5
6.3	6.6	6.6	2.6	0.70±0.20	1.8	0.5MAX	
8	8.3	8.3	3.0	0.90±0.20	3.1	0.5MAX	
10	10.3	10.3	3.5	0.90±0.20	4.6	0.7±0.2	
12.5	12.8	12.8	4.7	0.90±0.30	4.4	0.7±0.3	±1.0

■ Rated ripple current frequency correction factor

Frequency (Hz)	120Hz	1kHz	10kHz	100kHz	500kHz
Correction Factor	0.05	0.30	0.70	1.00	1.00

VPX

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
6.3(7.2)	47	5×5.8	500	0.08	20	2400
6.3(7.2)	100	5×5.8	500	0.08	20	2400
6.3(7.2)	100	6.3×4.5	500	0.08	40	2500
6.3(7.2)	100	6.3×5.8	500	0.08	18	2800
6.3(7.2)	150	5×5.8	500	0.08	20	2400
6.3(7.2)	150	6.3×4.5	500	0.08	40	2500
6.3(7.2)	180	5×7.7	500	0.08	18	2600
6.3(7.2)	180	6.3×4.5	500	0.08	40	2500
6.3(7.2)	220	5×7.7	500	0.08	18	2600
6.3(7.2)	220	6.3×4.5	500	0.08	40	2500
6.3(7.2)	220	6.3×5.8	500	0.08	18	2800
6.3(7.2)	270	5×8.5	500	0.08	12	3400
6.3(7.2)	270	6.3×5.8	500	0.08	18	2800
6.3(7.2)	330	5×7.7	500	0.08	18	2600
6.3(7.2)	330	5×8.5	500	0.08	12	3400
6.3(7.2)	330	6.3×5.8	500	0.08	18	2800
6.3(7.2)	390	5×8.5	500	0.08	12	3400
6.3(7.2)	390	6.3×5.8	500	0.08	18	2800
6.3(7.2)	390	6.3×8.5	500	0.08	8	5000
6.3(7.2)	470	6.3×7.7	592	0.08	8	4800
6.3(7.2)	470	6.3×8.5	592	0.08	8	5000
6.3(7.2)	560	6.3×7.7	706	0.08	8	4800
6.3(7.2)	560	6.3×8.5	706	0.08	8	5000
6.3(7.2)	560	8×7.7	706	0.08	16	4200
6.3(7.2)	680	6.3×9.5	857	0.08	8	5250
6.3(7.2)	680	8×7.7	857	0.08	16	4200
6.3(7.2)	820	6.3×7.7	1033	0.08	8	4800
6.3(7.2)	820	6.3×9.5	1033	0.08	8	5250
6.3(7.2)	820	8×7.7	1033	0.08	16	4200
6.3(7.2)	1000	6.3×11	1260	0.08	8	5500
6.3(7.2)	1000	8×9	1260	0.08	10	5600
6.3(7.2)	1000	10×7.5	1260	0.08	12	4500
6.3(7.2)	1200	8×10	1512	0.08	8	5800
6.3(7.2)	1200	10×8.5	1512	0.08	8	5800
6.3(7.2)	1500	8×12.5	1890	0.09	8	6150
6.3(7.2)	1500	10×9.5	1890	0.09	8	6050
6.3(7.2)	1800	10×10.5	2268	0.09	8	6300
6.3(7.2)	2000	8×15	2520	0.10	7	7250
7.5(8.6)	2000	10×10.5	2520	0.10	8	6300
7.5(8.6)	2200	10×10.5	2772	0.10	8	6300
7.5(8.6)	2500	10×12.5	3150	0.10	8	6500
7.5(8.6)	2700	10×12.5	3402	0.10	8	6500
7.5(8.6)	3300	10×13.5	4158	0.11	8	6640

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■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
6.3(7.2)	3900	10×15.5	4914	0.12	7	7600
6.3(7.2)	4700	10×17	5922	0.14	7	8100
6.3(7.2)	4700	12.5×13.5	5922	0.14	8	7600
6.3(7.2)	5600	10×19.5	7056	0.16	7	8500
6.3(7.2)	5600	12.5×15	7056	0.16	8	7900
6.3(7.2)	6800	12.5×17	7500	0.18	7	8950
6.3(7.2)	8200	12.5×18.5	7500	0.19	7	9450
6.3(7.2)	10000	12.5×21	7500	0.21	7	9850
7.5(8.6)	220	6.3×5.8	500	0.08	18	2800
7.5(8.6)	270	5×8.5	500	0.08	12	3400
7.5(8.6)	270	6.3×5.8	500	0.08	18	2800
7.5(8.6)	330	5×9.5	500	0.08	12	3800
7.5(8.6)	330	6.3×7.7	500	0.08	12	3900
7.5(8.6)	390	5×11	585	0.08	10	4350
7.5(8.6)	390	6.3×8.5	585	0.08	12	4100
7.5(8.6)	390	8×7.7	585	0.08	18	4200
7.5(8.6)	470	6.3×9.5	705	0.08	12	5000
7.5(8.6)	560	6.3×9.5	840	0.08	12	5000
7.5(8.6)	560	8×7.7	840	0.08	18	4200
7.5(8.6)	680	6.3×11	1020	0.08	8	5500
7.5(8.6)	680	8×7.7	1020	0.08	18	4200
7.5(8.6)	820	8×9	1230	0.08	8	5600
7.5(8.6)	1000	8×10	1500	0.08	8	5800
10(11.5)	47	5×5.8	500	0.08	30	1900
10(11.5)	47	6.3×4.5	500	0.08	40	2100
10(11.5)	68	5×5.8	500	0.08	30	1900
10(11.5)	68	6.3×4.5	500	0.08	40	2100
10(11.5)	82	5×5.8	500	0.08	30	1900
10(11.5)	82	6.3×4.5	500	0.08	40	2100
10(11.5)	100	5×5.8	500	0.08	30	1900
10(11.5)	100	6.3×4.5	500	0.08	40	2100
10(11.5)	120	6.3×5.8	500	0.08	30	2200
10(11.5)	150	5×8.5	500	0.08	15	3050
10(11.5)	150	6.3×4.5	500	0.08	40	2100
10(11.5)	150	6.3×5.8	500	0.08	30	2200
10(11.5)	180	5×8.5	500	0.08	15	3050
10(11.5)	180	6.3×5.8	500	0.08	30	2200
10(11.5)	220	5×8.5	500	0.08	15	3050
10(11.5)	220	6.3×5.8	500	0.08	30	2200
10(11.5)	220	6.3×7.7	500	0.08	16	3500
10(11.5)	270	5×11	540	0.08	12	4000
10(11.5)	270	6.3×7.7	540	0.08	16	3500
10(11.5)	330	6.3×5.8	660	0.08	30	2200

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■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
10(11.5)	330	6.3×7.7	660	0.08	16	3500
10(11.5)	330	10×8.5	660	0.08	9	4500
10(11.5)	390	6.3×8.5	780	0.08	12	3900
10(11.5)	390	8×7.7	780	0.08	30	2550
10(11.5)	470	6.3×9.5	940	0.08	12	4300
10(11.5)	470	8×7.7	940	0.08	30	2550
10(11.5)	560	6.3×11	1120	0.08	10	4900
10(11.5)	560	8×7.7	1120	0.08	30	2550
10(11.5)	560	10×10.5	1120	0.08	9	5750
10(11.5)	680	8×9	1360	0.08	10	5100
10(11.5)	820	8×10	1640	0.08	9	5500
10(11.5)	820	10×8.5	1640	0.08	9	4500
10(11.5)	1000	8×12.5	2000	0.08	9	5800
10(11.5)	1000	10×8.5	2000	0.08	9	4500
10(11.5)	1000	10×12.5	2000	0.08	9	5810
10(11.5)	1500	8×15	3000	0.09	8	6800
10(11.5)	1500	10×13.5	3000	0.09	9	6300
10(11.5)	2200	10×15.5	4400	0.10	8	7000
10(11.5)	2500	10×15.5	5000	0.10	8	7000
10(11.5)	2700	10×17	5400	0.10	8	7500
10(11.5)	3300	10×19.5	6600	0.11	8	7900
10(11.5)	3300	12.5×15	6600	0.11	9	7500
10(11.5)	4700	12.5×17	7500	0.14	9	8400
10(11.5)	5600	12.5×18.5	7500	0.16	8	8800
10(11.5)	6800	12.5×21	7500	0.18	8	9200
12(13.8)	180	5×8.5	500	0.08	15	3050
12(13.8)	180	6.3×5.8	500	0.08	30	2200
12(13.8)	220	5×9.5	528	0.08	15	3400
12(13.8)	220	6.3×7.7	528	0.08	16	3500
12(13.8)	270	5×11	648	0.08	12	4000
12(13.8)	270	6.3×7.7	648	0.08	16	3500
12(13.8)	330	5×11	792	0.08	12	4000
12(13.8)	330	6.3×8.5	792	0.08	12	3900
12(13.8)	330	8×7.7	792	0.08	30	2550
12(13.8)	390	6.3×8.5	936	0.08	12	3900
12(13.8)	470	6.3×9.5	1128	0.08	12	4300
12(13.8)	470	8×7.7	1128	0.08	30	2550
12(13.8)	560	5×13	1344	0.08	12	4450
12(13.8)	560	6.3×11	1344	0.08	10	4900
12(13.8)	560	8×7.7	1344	0.08	30	2550
12(13.8)	680	8×9	1632	0.08	10	5100
12(13.8)	1000	8×10	2400	0.08	10	5200
16(18.4)	22	5×5.8	500	0.08	30	1900

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■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
16(18.4)	22	6.3×4.5	500	0.08	40	2100
16(18.4)	33	5×5.8	500	0.08	30	1900
16(18.4)	33	6.3×4.5	500	0.08	40	2100
16(18.4)	47	5×5.8	500	0.08	30	1900
16(18.4)	47	6.3×4.5	500	0.08	40	2100
16(18.4)	68	5×5.8	500	0.08	30	1900
16(18.4)	68	6.3×4.5	500	0.08	40	2100
16(18.4)	68	6.3×5.8	500	0.08	30	2200
16(18.4)	82	6.3×4.5	500	0.08	40	2100
16(18.4)	82	6.3×5.8	500	0.08	30	2200
16(18.4)	100	5×8.5	500	0.08	30	2200
16(18.4)	100	6.3×4.5	500	0.08	40	2100
16(18.4)	100	6.3×5.8	500	0.08	30	2200
16(18.4)	150	5×8.5	500	0.08	30	2200
16(18.4)	150	6.3×5.8	500	0.08	30	2200
16(18.4)	180	6.3×5.8	576	0.08	30	2200
16(18.4)	220	5×7.7	704	0.08	30	2050
16(18.4)	220	5×8.5	704	0.08	30	2200
16(18.4)	220	5×11	704	0.08	12	4000
16(18.4)	220	6.3×5.8	704	0.08	30	2200
16(18.4)	220	6.3×7.7	704	0.08	20	2850
16(18.4)	270	6.3×7.7	864	0.08	20	2850
16(18.4)	270	6.3×8.5	864	0.08	15	3900
16(18.4)	270	8×7.7	864	0.08	30	2550
16(18.4)	330	6.3×7.7	1056	0.08	20	2850
16(18.4)	330	6.3×9.5	1056	0.08	12	4300
16(18.4)	330	8×7.7	1056	0.08	30	2550
16(18.4)	470	5×12	1504	0.08	12	4300
16(18.4)	470	5×13	1504	0.08	12	4300
16(18.4)	470	6.3×9.5	1504	0.08	12	4300
16(18.4)	470	6.3×11	1504	0.08	10	5100
16(18.4)	470	6.3×16	1504	0.08	10	5680
16(18.4)	470	8×7.7	1504	0.08	30	2550
16(18.4)	470	10×9.5	1504	0.08	12	4950
16(18.4)	560	5×15.5	1792	0.08	12	4560
16(18.4)	560	8×10	1792	0.08	12	4700
16(18.4)	560	10×8.5	1792	0.08	12	4500
16(18.4)	680	5×15.5	2176	0.08	12	4560
16(18.4)	680	8×12.5	2176	0.08	10	5350
16(18.4)	680	10×8.5	2176	0.08	12	4500
16(18.4)	820	8×12.5	2624	0.08	10	5350
16(18.4)	820	10×9.5	2624	0.08	12	4950
16(18.4)	1000	8×15	3200	0.08	8	6800

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■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
16(18.4)	1000	10×9.5	3200	0.08	12	4950
16(18.4)	1000	10×10.5	3200	0.08	12	5200
16(18.4)	1200	8×12.5	3840	0.08	10	5350
16(18.4)	1200	10×13	3840	0.09	8	6300
16(18.4)	1500	10×13	4800	0.09	8	6300
16(18.4)	1500	10×13.5	4800	0.09	8	6300
16(18.4)	1800	10×15.5	5760	0.09	8	7000
16(18.4)	2200	10×17	7040	0.10	8	7500
16(18.4)	2200	12.5×15	7040	0.10	10	7100
16(18.4)	2700	10×19.5	7500	0.10	8	7900
16(18.4)	2700	12.5×15	7500	0.10	10	7100
16(18.4)	3300	12.5×17	7500	0.11	8	8400
16(18.4)	3900	12.5×18.5	7500	0.11	8	8800
16(18.4)	4700	12.5×21	7500	0.12	8	9200
25(28.8)	4.7	6.3×5.8	500	0.08	40	1900
25(28.8)	10	5×5.8	500	0.08	40	1650
25(28.8)	10	6.3×4.5	500	0.08	40	1800
25(28.8)	15	5×5.8	500	0.08	40	1650
25(28.8)	15	6.3×4.5	500	0.08	40	1800
25(28.8)	22	5×5.8	500	0.08	40	1650
25(28.8)	22	6.3×4.5	500	0.08	40	1800
25(28.8)	22	6.3×5.8	500	0.08	40	1900
25(28.8)	33	5×5.8	500	0.08	40	1650
25(28.8)	33	6.3×4.5	500	0.08	40	1800
25(28.8)	39	5×5.8	500	0.08	40	1650
25(28.8)	39	6.3×4.5	500	0.08	40	1800
25(28.8)	47	5×7.7	500	0.08	30	2050
25(28.8)	47	6.3×4.5	500	0.08	40	1800
25(28.8)	47	6.3×5.8	500	0.08	40	1900
25(28.8)	68	5×8.5	500	0.08	30	2200
25(28.8)	68	6.3×5.8	500	0.08	40	1900
25(28.8)	68	6.3×7.7	500	0.08	30	3400
25(28.8)	100	5×5.8	500	0.08	40	1650
25(28.8)	100	5×7.7	500	0.08	30	2050
25(28.8)	100	5×9.5	500	0.08	30	2400
25(28.8)	100	6.3×4.5	500	0.08	40	1800
25(28.8)	100	6.3×5.8	500	0.08	40	1900
25(28.8)	100	6.3×7.7	500	0.08	30	3400
25(28.8)	120	6.3×5.8	600	0.08	40	1900
25(28.8)	150	5×7.7	750	0.08	30	2050
25(28.8)	150	6.3×9.5	750	0.08	20	3500
25(28.8)	150	8×7.7	750	0.08	30	2550
25(28.8)	180	6.3×9.5	900	0.08	20	3500

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■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
25(28.8)	180	8×7.7	900	0.08	30	2550
25(28.8)	180	8×10	900	0.08	16	4000
25(28.8)	220	5×11	1100	0.08	20	2500
25(28.8)	220	5×13	1100	0.08	20	2700
25(28.8)	220	6.3×5.8	1100	0.08	40	1900
25(28.8)	220	6.3×7.7	1100	0.08	30	3400
25(28.8)	220	6.3×8.5	1100	0.08	20	3500
25(28.8)	220	6.3×9.5	1100	0.08	20	3650
25(28.8)	220	6.3×10	1100	0.08	20	3650
25(28.8)	220	8×7.7	1100	0.08	30	2550
25(28.8)	220	8×12.5	1100	0.08	16	4200
25(28.8)	220	10×8.5	1100	0.08	16	4100
25(28.8)	330	6.3×9.5	1650	0.08	20	3500
25(28.8)	330	6.3×12	1650	0.08	20	3800
25(28.8)	330	8×10	1650	0.08	16	4000
25(28.8)	330	10×8.5	1650	0.08	16	4100
25(28.8)	470	5×15.5	2350	0.08	20	3000
25(28.8)	470	6.3×12	2350	0.08	20	3800
25(28.8)	470	6.3×13	2350	0.08	20	4160
25(28.8)	470	8×7.7	2350	0.08	30	2550
25(28.8)	470	8×15	2350	0.08	16	4800
25(28.8)	470	10×9.5	2350	0.08	16	4300
25(28.8)	560	6.3×11	2800	0.08	20	3650
25(28.8)	560	8×15	2800	0.08	16	4800
25(28.8)	560	10×10.5	2800	0.08	16	4500
25(28.8)	680	6.3×16	3400	0.08	20	4470
25(28.8)	680	8×15	3400	0.08	16	4800
25(28.8)	680	10×13.5	3400	0.08	16	4700
25(28.8)	820	8×12.5	4100	0.08	16	4200
25(28.8)	820	8×16.5	4100	0.08	16	5050
25(28.8)	820	10×10.5	4100	0.08	16	4500
25(28.8)	820	10×14.5	4100	0.08	16	5000
25(28.8)	1000	10×17	5000	0.08	16	5300
25(28.8)	1000	12.5×13.5	5000	0.08	16	5300
25(28.8)	1500	10×19.5	7500	0.09	16	5600
25(28.8)	1500	12.5×15	7500	0.09	16	5600
25(28.8)	1800	12.5×17	7500	0.09	16	5900
25(28.8)	2200	12.5×18.5	7500	0.10	16	6200
25(28.8)	2700	12.5×21	7500	0.10	16	6500
35(41)	10	5×5.8	500	0.12	60	1350
35(41)	10	6.3×4.5	500	0.12	60	1400
35(41)	15	5×5.8	500	0.12	60	1350
35(41)	15	6.3×4.5	500	0.12	60	1400

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■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
35(41)	22	5×7.7	500	0.12	60	1700
35(41)	22	6.3×4.5	500	0.12	60	1400
35(41)	33	5×7.7	500	0.12	60	1700
35(41)	33	6.3×4.5	500	0.12	60	1400
35(41)	33	6.3×5.8	500	0.12	60	1550
35(41)	39	5×7.7	500	0.12	50	1700
35(41)	39	6.3×5.8	500	0.12	60	1550
35(41)	47	5×5.8	500	0.12	60	1350
35(41)	47	5×8.5	500	0.12	50	1800
35(41)	47	6.3×4.5	500	0.12	60	1400
35(41)	47	6.3×5.8	500	0.12	60	1550
35(41)	47	6.3×7.7	500	0.12	60	1650
35(41)	56	5×8.5	500	0.12	50	1800
35(41)	56	6.3×7.7	500	0.12	60	1650
35(41)	68	5×9.5	500	0.12	50	1900
35(41)	68	6.3×7.7	500	0.12	60	1650
35(41)	82	5×9.5	574	0.12	50	1900
35(41)	82	6.3×8.5	574	0.12	50	1900
35(41)	100	6.3×5.8	700	0.12	60	1550
35(41)	100	6.3×7.7	700	0.12	60	1650
35(41)	100	6.3×8.5	700	0.12	50	1900
35(41)	100	8×7.7	700	0.12	60	1800
35(41)	100	10×9.5	700	0.12	50	2350
35(41)	120	6.3×9.5	840	0.12	50	2150
35(41)	120	8×7.7	840	0.12	60	1800
35(41)	150	5×12	1050	0.12	40	2300
35(41)	150	6.3×9.5	1050	0.12	50	2150
35(41)	150	8×7.7	1050	0.12	60	1800
35(41)	180	6.3×8	1260	0.12	50	1900
35(41)	180	6.3×11	1260	0.12	40	2500
35(41)	180	8×7.7	1260	0.12	60	1800
35(41)	220	8×7.7	1540	0.12	60	1800
35(41)	220	8×9	1540	0.12	50	2200
35(41)	220	8×10.5	1540	0.12	50	2800
35(41)	220	8×12.5	1540	0.12	30	3100
35(41)	330	8×12.5	2310	0.12	30	3100
35(41)	330	10×8.5	2310	0.12	50	2350
35(41)	330	10×10.5	2310	0.12	50	2550
35(41)	390	8×12.5	2730	0.12	30	3100
35(41)	390	10×10.5	2730	0.12	50	2550
35(41)	470	8×15	3290	0.12	20	4250
35(41)	470	10×12.5	3290	0.12	30	3400
35(41)	560	8×16.5	3920	0.12	20	4550
35(41)	560	10×13.5	3920	0.12	30	3450
35(41)	680	10×15.5	4760	0.12	20	4450

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■ List of Standard Products

Rated voltage (浪涌电压) (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
35(41)	820	10×17	5740	0.12	20	4700
35(41)	820	12.5×13.5	5740	0.12	30	3900
35(41)	1000	10×17	7000	0.12	20	4700
35(41)	1000	10×19.5	7000	0.12	20	5000
35(41)	1000	12.5×15	7000	0.12	30	4100
35(41)	1200	10×22	7500	0.12	20	5300
35(41)	1200	12.5×17	7500	0.12	20	5300
35(41)	1500	12.5×18.5	7500	0.13	20	5600
35(41)	1800	12.5×21	7500	0.13	20	5850
50(58)	10	5×5.8	500	0.12	120	1350
50(58)	10	6.3×4.5	500	0.12	60	1400
50(58)	12	5×5.8	500	0.12	120	1350
50(58)	12	6.3×4.5	500	0.12	60	1400
50(58)	15	5×7.7	500	0.12	60	1450
50(58)	15	6.3×4.5	500	0.12	60	1400
50(58)	18	5×7.7	500	0.12	60	1450
50(58)	18	6.3×4.5	500	0.12	60	1400
50(58)	22	5×7.7	500	0.12	60	1450
50(58)	22	6.3×5.8	500	0.12	60	1550
50(58)	33	5×9.5	500	0.12	50	1900
50(58)	33	6.3×7.7	500	0.12	60	1650
50(58)	39	5×11	500	0.12	40	2200
50(58)	39	6.3×7.7	500	0.12	60	1650
50(58)	47	6.3×5.8	500	0.12	60	1550
50(58)	47	6.3×8.5	500	0.12	50	1900
50(58)	56	6.3×8.5	560	0.12	50	1900
50(58)	56	8×7.7	560	0.12	60	1800
50(58)	68	6.3×9.5	680	0.12	50	2150
50(58)	68	8×7.7	680	0.12	60	1800
50(58)	82	6.3×11	820	0.12	40	2500
50(58)	82	8×7.7	820	0.12	60	1800
50(58)	100	6.3×9.5	1000	0.12	50	2150
50(58)	100	8×9	1000	0.12	50	2200
50(58)	100	10×7.5	1000	0.12	60	2000
50(58)	100	10×10.5	1000	0.12	50	2450
50(58)	120	8×10	1200	0.12	50	2300
50(58)	120	8×10.5	1200	0.12	50	2300
50(58)	120	10×8.5	1200	0.12	60	2350
50(58)	150	8×10	1500	0.12	50	2300
50(58)	150	10×8.5	1500	0.12	60	2350
50(58)	150	10×9.5	1500	0.12	50	2450
50(58)	180	8×12.5	1800	0.12	40	2800
50(58)	180	10×10.5	1800	0.12	50	2450
50(58)	220	8×15	2200	0.12	30	3500
50(58)	220	10×10.5	2200	0.12	50	2450

VPX

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
50(58)	270	8×16.5	2700	0.12	30	3700
50(58)	270	10×13	2700	0.12	30	2900
50(58)	270	10×14.5	2700	0.12	40	3000
50(58)	330	10×17	3300	0.12	30	3800
50(58)	390	10×17	3900	0.12	30	3800
50(58)	390	12.5×13.5	3900	0.12	40	3350
50(58)	470	10×19.5	4700	0.12	30	4050
50(58)	470	12.5×15	4700	0.12	40	3500
50(58)	560	10×22	5600	0.12	30	4350
50(58)	560	12.5×17	5600	0.12	30	4300
50(58)	680	12.5×18.5	6800	0.12	30	4550
50(58)	820	12.5×21	7500	0.12	30	4750
63(73)	6.8	5×5.8	500	0.12	120	1350
63(73)	6.8	6.3×4.5	500	0.12	60	1400
63(73)	8.2	5×7.7	500	0.12	60	1450
63(73)	8.2	6.3×4.5	500	0.12	60	1400
63(73)	10	5×5.8	500	0.12	120	1350
63(73)	10	5×7.7	500	0.12	60	1450
63(73)	10	6.3×5.8	500	0.12	60	1400
63(73)	15	5×7.7	500	0.12	60	1450
63(73)	15	6.3×5.8	500	0.12	60	1400
63(73)	22	5×9.5	500	0.12	50	1900
63(73)	22	6.3×8.5	500	0.12	50	1900
63(73)	27	6.3×5.8	500	0.12	60	1400
63(73)	33	6.3×8.5	500	0.12	50	1900
63(73)	33	8×7.7	500	0.12	60	1800
63(73)	39	6.3×9.5	500	0.12	50	2150
63(73)	39	8×7.7	500	0.12	60	1800
63(73)	47	6.3×11	592	0.12	40	2500
63(73)	47	8×7.7	592	0.12	60	1800
63(73)	56	8×9	706	0.12	50	2200
63(73)	56	10×7.5	706	0.12	60	2000
63(73)	68	8×10	857	0.12	50	2300
63(73)	68	10×8.5	857	0.12	60	2350
63(73)	82	8×10	1033	0.12	50	2300
63(73)	82	10×8.5	1033	0.12	60	2350
63(73)	100	8×10.5	1260	0.12	50	2300
63(73)	100	8×12.5	1260	0.12	40	2700
63(73)	100	10×9.5	1260	0.12	50	2450
63(73)	100	10×13	1260	0.12	40	3300
63(73)	120	8×15	1512	0.12	40	3000
63(73)	120	10×10.5	1512	0.12	50	2450
63(73)	150	8×16.5	1890	0.12	30	3700
63(73)	150	10×14.5	1890	0.12	40	3000
63(73)	180	10×15.5	2268	0.12	30	3600

VPX

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
63(73)	220	10×17	2772	0.12	30	3800
63(73)	220	12.5×13.5	2772	0.12	40	3350
63(73)	270	10×19.5	3402	0.12	30	4050
63(73)	270	12.5×15	3402	0.12	40	3500
63(73)	330	10×22	4158	0.12	30	4350
63(73)	330	12.5×17	4158	0.12	30	4300
63(73)	390	12.5×18.5	4914	0.12	30	4550
63(73)	470	12.5×21	5922	0.12	30	4750
80(92)	4.7	5×5.8	500	0.12	120	1350
80(92)	4.7	6.3×4.5	500	0.12	60	1400
80(92)	6.8	5×7.7	500	0.12	60	1450
80(92)	6.8	6.3×4.5	500	0.12	60	1400
80(92)	8.2	5×7.7	500	0.12	60	1450
80(92)	8.2	6.3×5.8	500	0.12	60	1400
80(92)	10	5×7.7	500	0.12	60	1450
80(92)	10	6.3×5.8	500	0.12	60	1400
80(92)	12	8×7.7	500	0.12	60	1800
80(92)	15	5×9.5	500	0.12	50	1900
80(92)	15	6.3×8.5	500	0.12	50	1900
80(92)	22	6.3×7.7	500	0.12	50	1900
80(92)	22	6.3×8.5	500	0.12	50	1900
80(92)	22	8×7.7	500	0.12	60	1800
80(92)	33	6.3×11	528	0.12	40	2500
80(92)	33	8×7.7	528	0.12	60	1800
80(92)	39	6.3×12	624	0.12	40	2600
80(92)	39	8×9	624	0.12	50	2200
80(92)	47	8×9	752	0.12	50	2200
80(92)	47	10×8.5	752	0.12	60	2050
80(92)	56	8×10	896	0.12	50	2300
80(92)	56	10×9.5	896	0.12	50	2350
80(92)	68	8×12.5	1088	0.12	40	2700
80(92)	68	10×9.5	1088	0.12	50	2350
80(92)	82	8×13.5	1312	0.12	40	2900
80(92)	82	10×10.5	1312	0.12	50	2450
80(92)	100	8×16.5	1600	0.12	30	3500
80(92)	100	10×13.5	1600	0.12	40	2950
80(92)	120	8×16.5	1920	0.12	30	3500
80(92)	120	10×13	1920	0.12	40	2950
80(92)	120	10×14.5	1920	0.12	40	3000
80(92)	150	10×17	2400	0.12	30	3800
80(92)	150	12.5×13.5	2400	0.12	40	3350
80(92)	180	10×19.5	2880	0.12	30	4050
80(92)	180	12.5×15	2880	0.12	40	3500
80(92)	220	10×22	3520	0.12	30	4350
80(92)	220	12.5×17	3520	0.12	30	4300

VPX

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
80(92)	270	12.5×18.5	4320	0.12	30	4550
80(92)	330	12.5×21	5280	0.12	30	4750
100(115)	2.2	5×5.8	500	0.12	120	1200
100(115)	2.2	6.3×4.5	500	0.12	80	1250
100(115)	3.3	5×7.7	500	0.12	60	1450
100(115)	3.3	6.3×4.5	500	0.12	80	1250
100(115)	4.7	5×7.7	500	0.12	60	1450
100(115)	4.7	6.3×5.8	500	0.12	80	1350
100(115)	5.6	5×7.7	500	0.12	60	1450
100(115)	5.6	6.3×5.8	500	0.12	80	1350
100(115)	6.8	5×8.5	500	0.12	60	1550
100(115)	6.8	6.3×7.7	500	0.12	60	1650
100(115)	8.2	5×9.5	500	0.12	60	1700
100(115)	8.2	6.3×7.7	500	0.12	60	1650
100(115)	10	6.3×7.7	500	0.12	60	1650
100(115)	12	6.3×8.5	500	0.12	50	1900
100(115)	15	6.3×9.5	500	0.12	50	2150
100(115)	15	8×7.7	500	0.12	60	1800
100(115)	18	6.3×11	500	0.12	50	2250
100(115)	18	8×7.7	500	0.12	60	1800
100(115)	22	6.3×9.5	500	0.12	50	2150
100(115)	22	6.3×12	500	0.12	50	2300
100(115)	22	8×7.7	500	0.12	60	1800
100(115)	22	8×9	500	0.12	50	2200
100(115)	22	8×10.5	500	0.12	50	2350
100(115)	27	8×9	540	0.12	50	2200
100(115)	27	10×8.5	540	0.12	60	2050
100(115)	33	8×12.5	660	0.12	50	2300
100(115)	33	10×9.5	660	0.12	50	2350
100(115)	39	8×10.5	780	0.12	50	2350
100(115)	39	8×12.5	780	0.12	50	2400
100(115)	39	10×10.5	780	0.12	50	2450
100(115)	47	8×13.5	940	0.12	50	2600
100(115)	47	10×13.5	940	0.12	50	2550
100(115)	56	8×16.5	1120	0.12	40	3050
100(115)	56	10×13.5	1120	0.12	50	2550
100(115)	68	8×15	1360	0.12	40	3000
100(115)	68	10×13	1360	0.12	50	2550
100(115)	68	10×14.5	1360	0.12	50	2700
100(115)	82	10×17	1640	0.12	40	3100
100(115)	82	12.5×13.5	1640	0.12	50	3000
100(115)	100	10×19.5	2000	0.12	40	3500
100(115)	100	12.5×15	2000	0.12	50	3150
100(115)	120	10×22	2400	0.12	40	3750
100(115)	120	12.5×17	2400	0.12	40	3700
100(115)	150	12.5×18.5	3000	0.12	40	3900
100(115)	180	12.5×21	3600	0.12	40	4100
100(115)	220	12.5×21	4400	0.12	40	4100

VPH

- ◆ High reliability, low ESR, high permissible ripple current
- ◆ 105℃, 2000-hour warranty
- ◆ RoHS compliant
- ◆ High voltage, surface mountable

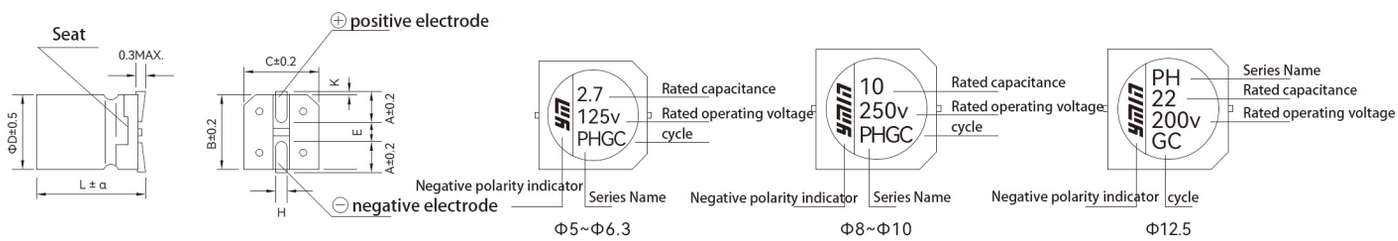


■ Main technical parameters

project	characteristic
Operating temperature range	－55 ~ +105℃
Rated operating voltage	125 ~ 250V
Capacity range	1 ~ 82 μF 120Hz 20℃
Capacity tolerance	±20% (120Hz 20℃)
Loss tangent	Values below the standard product list: 120Hz, 20℃
Leakage current	Values below the standard product list: Charged for 2 minutes at rated voltage, 20℃
Equivalent series resistance (ESR)	Values below the standard product list: 100kHz, 20℃
Durability	After being subjected to the rated operating voltage for 2000 hours at 105℃ and placed at 20℃ for 16 hours, the product should meet the following requirements.
	Rate of change of capacitance: ±20% of the initial value
	Equivalent series resistance (ESR): ≦ 150% of the initial specification value
	Loss tangent: ≦ 150% of the initial specification value
	Leakage current: ≦ Initial specification value
High temperature and humidity	After being placed at 60℃ and 90%~95% RH without voltage for 1000 hours, and then placed at 20℃ for 16 hours, the product should meet the following requirements.
	Rate of change of capacitance: ±20% of the initial value
	Equivalent series resistance (ESR): ≦ 150% of the initial specification value
	Loss tangent: ≦ 150% of the initial specification value
	Leakage current: ≦ Initial specification value

※If there is any doubt about the leakage current value, please place the product at 105° C and apply the rated operating voltage for 2 hours, then cool it down to 20° C before testing the leakage current.

■ Product dimension drawing (unit: mm)



ΦD	B	C	A	H	E	K	α
5	5.3	5.3	2.1	0.70±0.20	1.3	0.5MAX	±0.5
6.3	6.6	6.6	2.6	0.70±0.20	1.8	0.5MAX	
8	8.3	8.3	3.0	0.90±0.20	3.1	0.5MAX	
10	10.3	10.3	3.5	0.90±0.20	4.6	0.7±0.2	
12.5	12.8	12.8	4.7	0.90±0.30	4.4	0.7±0.3	±1.0

■ Frequency correction factor

Frequency (Hz)	120Hz	1kHz	10kHz	100kHz	500kHz
Correction Factor	0.05	0.30	0.70	1.00	1.00

VPH

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
125(144)	1.5	6.3×5.8	500	0.12	400	1200
125(144)	2.2	6.3×5.8	500	0.12	400	1200
125(144)	2.7	6.3×7.7	500	0.12	350	1550
125(144)	3.3	6.3×7.7	500	0.12	350	1550
125(144)	4.7	6.3×10	500	0.12	250	1700
125(144)	5.6	6.3×10	500	0.12	250	1700
125(144)	5.6	8×7.7	500	0.12	200	1450
125(144)	6.8	6.3×12	500	0.12	200	1850
125(144)	6.8	8×7.7	500	0.12	200	1450
125(144)	8.2	6.3×12	500	0.12	200	1850
125(144)	8.2	8×9.5	500	0.12	80	1800
125(144)	10	8×9.5	500	0.12	80	1800
125(144)	12	8×12.5	500	0.12	80	1980
125(144)	12	10×8.5	500	0.12	100	1500
125(144)	15	8×12.5	500	0.12	80	1980
125(144)	15	10×10	500	0.12	80	1950
125(144)	18	8×13.5	500	0.12	80	2100
125(144)	18	10×10.5	500	0.12	80	1950
125(144)	22	8×16	550	0.12	60	2550
125(144)	22	10×12	550	0.12	80	2100
125(144)	22	10×13	550	0.12	80	2100
125(144)	27	8×17	675	0.12	60	2600
125(144)	27	10×14	675	0.12	80	2200
125(144)	33	10×16.5	825	0.12	60	2700
125(144)	39	10×18	975	0.12	60	2700
125(144)	39	12.5×13	975	0.12	80	2350
125(144)	47	10×19	1175	0.12	60	2800
125(144)	47	12.5×14	1175	0.12	80	2450
125(144)	56	10×22	1400	0.12	60	3000
125(144)	56	12.5×17	1400	0.12	80	2600
125(144)	68	12.5×17	1700	0.12	80	2600
125(144)	68	12.5×21	1700	0.12	60	3350
125(144)	82	12.5×21	2050	0.12	60	3350
160(184)	1.0	5×5.8	500	0.12	500	1200
160(184)	1.2	5×5.8	500	0.12	500	1200
160(184)	1.5	6.3×5.8	500	0.12	400	1200
160(184)	2.2	6.3×7.7	500	0.12	350	1550
160(184)	3.3	6.3×10	500	0.12	250	1700
160(184)	3.3	8×7.7	500	0.12	200	1450
160(184)	4.7	6.3×12	500	0.12	200	1850
160(184)	4.7	8×8.5	500	0.12	150	1500
160(184)	5.6	6.3×12	500	0.12	200	1850
160(184)	5.6	8×7.7	500	0.12	200	1450
160(184)	6.8	6.3×12	500	0.12	200	1850

VPH

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
160(184)	6.8	8×9.5	500	0.12	80	1800
160(184)	8.2	8×9.5	500	0.12	80	1800
160(184)	8.2	10×8.5	500	0.12	100	1500
160(184)	10	8×12.5	500	0.12	80	1980
160(184)	10	10×10	500	0.12	80	1950
160(184)	12	8×12.5	500	0.12	80	1980
160(184)	12	10×10	500	0.12	80	1950
160(184)	15	8×13.5	500	0.12	80	2100
160(184)	15	10×12	500	0.12	80	2100
160(184)	18	8×16	576	0.12	60	2550
160(184)	18	10×12	576	0.12	80	2100
160(184)	22	8×18	704	0.12	60	2650
160(184)	22	10×14	704	0.12	80	2200
160(184)	27	8×18	864	0.12	60	2650
160(184)	27	10×15.5	864	0.12	60	2700
160(184)	33	10×18	1056	0.12	60	2700
160(184)	39	10×19	1248	0.12	60	2800
160(184)	39	12.5×14	1248	0.12	80	2450
160(184)	47	12.5×17	1504	0.12	80	2600
160(184)	56	12.5×17	1792	0.12	80	2600
160(184)	68	12.5×21	2176	0.12	60	3350
200(230)	1.0	6.3×5.8	500	0.12	400	1200
200(230)	1.5	6.3×7.7	500	0.12	350	1550
200(230)	2.2	6.3×10	500	0.12	250	1700
200(230)	3.3	8×7.7	500	0.12	200	1450
200(230)	3.9	8×9.5	500	0.12	80	1800
200(230)	4.7	8×9.5	500	0.12	80	1800
200(230)	4.7	10×8.5	500	0.12	100	1500
200(230)	5.6	8×12.5	500	0.12	80	1980
200(230)	6.8	8×12.5	500	0.12	80	1980
200(230)	6.8	10×10	500	0.12	80	1950
200(230)	8.2	8×14.5	500	0.12	80	2150
200(230)	8.2	10×10	500	0.12	80	1950
200(230)	10	8×17	500	0.12	60	2600
200(230)	10	10×13	500	0.12	80	2150
200(230)	15	10×13	600	0.12	80	2150
200(230)	15	10×14	600	0.12	80	2200
200(230)	18	10×16.5	720	0.12	60	2700
200(230)	18	12.5×13	720	0.12	80	2350
200(230)	22	10×19.5	880	0.12	60	2900
200(230)	22	12.5×14	880	0.12	80	2450
250(288)	4.7	8×12.5	500	0.12	80	1980
250(288)	6.8	8×14.5	500	0.12	80	2150
250(288)	6.8	10×13	500	0.12	80	2150
250(288)	8.2	8×17	500	0.12	60	2600
250(288)	8.2	10×13	500	0.12	80	2150
250(288)	10	10×13	500	0.12	80	2150

VPT

◆High reliability, low ESR, high permissible ripple current

◆125℃, 2000-hour warranty

◆RoHS compliant

◆High temperature resistant, surface mountable

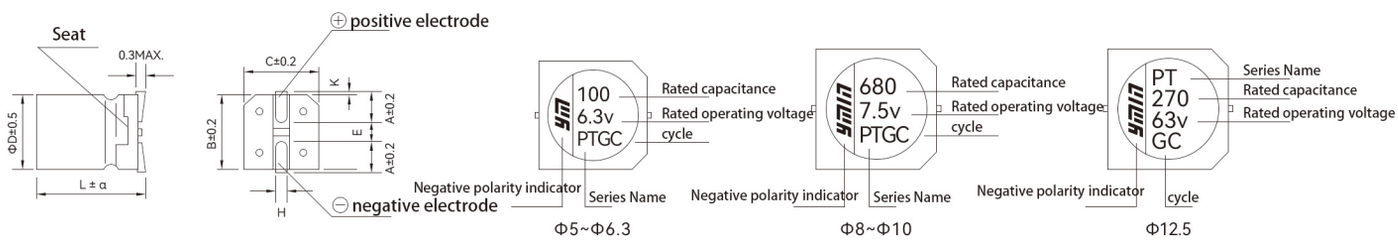


■ Main technical parameters

project	characteristic
Operating temperature range	－55 ~ +125℃
Rated operating voltage	6.3 ~ 100V
Capacity range	2.2 ~ 10000 μF 120Hz 20℃
Capacity tolerance	±20% (120Hz 20℃)
Loss tangent	Values below the standard product list: 120Hz, 20℃
Leakage current	Values below the standard product list: Charged for 2 minutes at rated voltage, 20℃
Equivalent series resistance (ESR)	Values below the standard product list: 100kHz, 20℃
Durability	After being subjected to the rated operating voltage for 2000 hours at 125℃ and placed at 20℃ for 16 hours, the product should meet the following requirements.
	Rate of change of capacitance: ±20% of the initial value
	Equivalent series resistance (ESR): ≦ 150% of the initial specification value
	Loss tangent: ≦ 150% of the initial specification value
	Leakage current: ≦ Initial specification value
High temperature and humidity	After being placed at 60℃ and 90%~95% RH without voltage for 1000 hours, and then placed at 20℃ for 16 hours, the product should meet the following requirements.
	Rate of change of capacitance: ±20% of the initial value
	Equivalent series resistance (ESR): ≦ 150% of the initial specification value
	Loss tangent: ≦ 150% of the initial specification value
	Leakage current: ≦ Initial specification value

※If there is any doubt about the leakage current value, please place the product at 105° C and apply the rated operating voltage for 2 hours, then cool it down to 20° C before testing the leakage current.

■ Product dimension drawing (unit: mm)



ΦD	B	C	A	H	E	K	α
5	5.3	5.3	2.1	0.70±0.20	1.3	0.5MAX	±0.5
6.3	6.6	6.6	2.6	0.70±0.20	1.8	0.5MAX	
8	8.3	8.3	3.0	0.90±0.20	3.1	0.5MAX	
10	10.3	10.3	3.5	0.90±0.20	4.6	0.7±0.2	
12.5	12.8	12.8	4.7	0.90±0.30	4.4	0.7±0.3	±1.0

■ Rated ripple current frequency correction factor

Frequency (Hz)	120Hz	1kHz	10kHz	100kHz	500kHz
Correction Factor	0.05	0.30	0.70	1.00	1.00

VPT

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
6.3(7.2)	100	5×5.8	500	0.08	20	1100
6.3(7.2)	150	5×5.8	500	0.08	20	1100
6.3(7.2)	180	5×5.8	500	0.08	20	1100
6.3(7.2)	220	5×5.8	500	0.08	20	1100
6.3(7.2)	220	6.3×5.8	500	0.08	18	1300
6.3(7.2)	270	5×7.7	500	0.08	12	1550
6.3(7.2)	270	6.3×5.8	500	0.08	18	1300
6.3(7.2)	330	5×7.7	500	0.08	12	1550
6.3(7.2)	330	6.3×5.8	500	0.08	18	1300
6.3(7.2)	390	5×8.5	500	0.08	12	2200
6.3(7.2)	390	6.3×5.8	500	0.08	18	1300
6.3(7.2)	470	5×8.5	592	0.08	12	2200
6.3(7.2)	470	6.3×7.7	592	0.08	8	2200
6.3(7.2)	560	6.3×7.7	706	0.08	8	2200
6.3(7.2)	560	6.3×8.5	706	0.08	8	2300
6.3(7.2)	680	6.3×8.5	857	0.08	8	2300
6.3(7.2)	680	8×7.7	857	0.08	12	2500
6.3(7.2)	820	6.3×7.7	1033	0.08	8	2200
6.3(7.2)	820	6.3×9.5	1033	0.08	8	2350
6.3(7.2)	820	8×7.7	1033	0.08	12	2500
6.3(7.2)	1000	6.3×11	1260	0.08	8	2500
6.3(7.2)	1000	8×9	1260	0.08	8	2600
6.3(7.2)	1000	10×8.5	1260	0.08	12	2050
6.3(7.2)	1200	6.3×12	1512	0.08	8	2600
6.3(7.2)	1200	8×10	1512	0.08	8	2650
6.3(7.2)	1200	10×9.5	1512	0.08	8	2650
6.3(7.2)	1500	8×12.5	1890	0.09	8	2800
6.3(7.2)	1500	10×10.5	1890	0.09	8	2900
6.3(7.2)	2000	8×15	2520	0.10	7	3500
6.3(7.2)	2000	10×10.5	2520	0.10	8	2900
6.3(7.2)	2200	8×15	2772	0.10	7	3500
6.3(7.2)	2200	10×10.5	2772	0.10	8	2900
6.3(7.2)	2700	10×13.5	3402	0.10	8	3000
6.3(7.2)	3300	10×13.5	4158	0.11	8	3000
6.3(7.2)	3900	10×15.5	4914	0.12	7	3500
6.3(7.2)	4700	10×17	5922	0.14	7	3700
6.3(7.2)	4700	12.5×13.5	5922	0.14	8	3500
6.3(7.2)	5600	10×19.5	7056	0.16	7	3850
6.3(7.2)	5600	12.5×15	7056	0.16	8	3500
6.3(7.2)	6800	10×22	7500	0.18	7	4150
6.3(7.2)	6800	12.5×17	7500	0.18	7	4050
6.3(7.2)	8200	12.5×18.5	7500	0.19	7	4300
6.3(7.2)	10000	12.5×21	7500	0.21	7	4500

VPT

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
7.5(8.6)	270	5×7.7	500	0.08	12	1550
7.5(8.6)	270	6.3×5.8	500	0.08	18	1300
7.5(8.6)	330	5×9.5	500	0.08	12	1750
7.5(8.6)	330	6.3×5.8	500	0.08	18	1300
7.5(8.6)	390	5×9.5	585	0.08	12	1750
7.5(8.6)	390	6.3×7.7	585	0.08	12	2000
7.5(8.6)	470	5×9.5	705	0.08	12	1750
7.5(8.6)	470	6.3×8.5	705	0.08	12	2100
7.5(8.6)	560	6.3×9.5	840	0.08	9	2150
7.5(8.6)	680	6.3×11	1020	0.08	8	2400
7.5(8.6)	680	8×7.7	1020	0.08	12	1900
7.5(8.6)	820	6.3×12	1230	0.08	8	2550
7.5(8.6)	820	8×9	1230	0.08	8	2600
7.5(8.6)	1000	6.3×12	1500	0.08	8	2550
7.5(8.6)	1000	8×10	1500	0.08	8	2650
10(11.5)	33	5×5.8	500	0.08	30	900
10(11.5)	47	5×5.8	500	0.08	30	900
10(11.5)	68	5×5.8	500	0.08	30	900
10(11.5)	82	5×5.8	500	0.08	30	900
10(11.5)	100	5×5.8	500	0.08	30	900
10(11.5)	150	5×7.7	500	0.08	15	1400
10(11.5)	150	6.3×5.8	500	0.08	30	1200
10(11.5)	180	5×7.7	500	0.08	15	1400
10(11.5)	180	6.3×5.8	500	0.08	30	1200
10(11.5)	220	5×7.7	500	0.08	15	1400
10(11.5)	220	6.3×5.8	500	0.08	30	1200
10(11.5)	270	5×9.5	540	0.08	12	1450
10(11.5)	270	6.3×5.8	540	0.08	30	1200
10(11.5)	330	6.3×7.7	660	0.08	16	1800
10(11.5)	390	6.3×7.7	780	0.08	16	1800
10(11.5)	470	6.3×8.5	940	0.08	12	1900
10(11.5)	470	8×7.7	940	0.08	14	2250
10(11.5)	560	6.3×11	1120	0.08	10	2250
10(11.5)	560	8×7.7	1120	0.08	14	2250
10(11.5)	680	6.3×12	1360	0.08	9	2450
10(11.5)	680	8×9	1360	0.08	10	2300
10(11.5)	820	8×10	1640	0.08	9	2500
10(11.5)	820	10×8.5	1640	0.08	14	2050
10(11.5)	1000	8×12.5	2000	0.08	9	2650
10(11.5)	1000	10×8.5	2000	0.08	14	2050
10(11.5)	1500	8×15	3000	0.09	8	3150
10(11.5)	1500	10×10.5	3000	0.09	9	2900
10(11.5)	2200	10×12.5	4400	0.10	8	3150

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■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
10(11.5)	2500	10×13.5	5000	0.10	8	3150
10(11.5)	2700	10×17	5400	0.10	8	3500
10(11.5)	3300	10×19.5	6600	0.11	8	3500
10(11.5)	3300	12.5×15	6600	0.11	9	3500
10(11.5)	3900	10×22	7500	0.12	8	3850
10(11.5)	3900	12.5×17	7500	0.12	8	3850
10(11.5)	4700	12.5×18.5	7500	0.14	8	4000
10(11.5)	5600	12.5×18.5	7500	0.16	8	4000
10(11.5)	6800	12.5×21	7500	0.18	8	4200
12(13.8)	180	5×7.7	500	0.08	15	1400
12(13.8)	180	6.3×5.8	500	0.08	30	1000
12(13.8)	220	5×9.5	528	0.08	15	1450
12(13.8)	220	6.3×5.8	528	0.08	30	1000
12(13.8)	270	5×9.5	648	0.08	12	1450
12(13.8)	270	6.3×7.7	648	0.08	16	1800
12(13.8)	330	5×9.5	792	0.08	12	1450
12(13.8)	330	6.3×7.7	792	0.08	16	1800
12(13.8)	390	6.3×8.5	936	0.08	12	1900
12(13.8)	390	6.3×9.5	936	0.08	12	1950
12(13.8)	470	6.3×9.5	1128	0.08	12	1950
12(13.8)	470	8×7.7	1128	0.08	14	1600
12(13.8)	560	6.3×11	1344	0.08	10	2200
12(13.8)	560	8×7.7	1344	0.08	14	1600
12(13.8)	680	6.3×12	1632	0.08	9	2450
12(13.8)	680	8×9	1632	0.08	10	2300
12(13.8)	1000	8×12.5	2400	0.08	10	2500
16(18.4)	22	5×5.8	500	0.08	30	900
16(18.4)	33	5×5.8	500	0.08	30	900
16(18.4)	47	5×5.8	500	0.08	30	900
16(18.4)	68	5×5.8	500	0.08	30	900
16(18.4)	82	5×5.8	500	0.08	30	900
16(18.4)	100	5×7.7	500	0.08	30	1000
16(18.4)	100	6.3×5.8	500	0.08	30	1000
16(18.4)	150	5×8.5	500	0.08	30	1000
16(18.4)	150	6.3×5.8	500	0.08	30	1000
16(18.4)	220	5×9.5	704	0.08	12	1300
16(18.4)	220	6.3×7.7	704	0.08	16	1800
16(18.4)	220	6.3×9.5	704	0.08	12	1950
16(18.4)	270	6.3×7.7	864	0.08	16	1800
16(18.4)	270	6.3×8.5	864	0.08	15	1900
16(18.4)	270	8×7.7	864	0.08	30	1600
16(18.4)	330	6.3×9.5	1056	0.08	12	1950
16(18.4)	330	8×7.7	1056	0.08	30	1600

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■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
16(18.4)	390	6.3×9.5	1248	0.08	12	1950
16(18.4)	470	6.3×11	1504	0.08	10	1900
16(18.4)	470	6.3×12	1504	0.08	10	2000
16(18.4)	470	8×9	1504	0.08	20	2250
16(18.4)	560	8×10	1792	0.08	12	2300
16(18.4)	560	10×8.5	1792	0.08	14	2050
16(18.4)	680	8×12.5	2176	0.08	10	2500
16(18.4)	680	10×8.5	2176	0.08	14	2050
16(18.4)	820	8×13.5	2624	0.08	10	2500
16(18.4)	820	10×9.5	2624	0.08	12	2400
16(18.4)	1000	8×15	3200	0.08	8	2650
16(18.4)	1000	8×16.5	3200	0.08	10	3150
16(18.4)	1000	10×9.5	3200	0.08	12	2400
16(18.4)	1500	10×15.5	4800	0.09	8	3100
16(18.4)	1800	10×17	5760	0.10	8	3500
16(18.4)	2200	10×19.5	7040	0.10	8	3500
16(18.4)	2200	12.5×15	7040	0.10	10	3250
16(18.4)	2700	10×22	7500	0.10	8	3850
16(18.4)	2700	12.5×17	7500	0.10	10	3250
16(18.4)	3300	12.5×18.5	7500	0.11	8	3850
16(18.4)	3900	12.5×21	7500	0.12	8	4000
25(28.8)	10	5×5.8	500	0.08	40	750
25(28.8)	10	6.3×5.8	500	0.08	40	900
25(28.8)	15	5×5.8	500	0.08	40	750
25(28.8)	22	5×5.8	500	0.08	40	750
25(28.8)	33	5×5.8	500	0.08	40	750
25(28.8)	39	5×5.8	500	0.08	40	750
25(28.8)	47	5×5.8	500	0.08	40	750
25(28.8)	47	8×7.7	500	0.08	30	1250
25(28.8)	68	5×7.7	500	0.08	30	1000
25(28.8)	68	6.3×5.8	500	0.08	40	900
25(28.8)	100	5×9.5	500	0.08	30	1100
25(28.8)	100	6.3×5.8	500	0.08	40	900
25(28.8)	100	6.3×7.7	500	0.08	20	1450
25(28.8)	150	6.3×8.5	750	0.08	16	1600
25(28.8)	180	6.3×8.5	900	0.08	16	1600
25(28.8)	180	8×7.7	900	0.08	30	1250
25(28.8)	220	5×13	1100	0.08	20	1250
25(28.8)	220	6.3×5.8	1100	0.08	40	900
25(28.8)	220	6.3×7.7	1100	0.08	20	1450
25(28.8)	220	6.3×9.5	1100	0.08	20	1600
25(28.8)	220	8×7.7	1100	0.08	30	1250
25(28.8)	270	8×12.5	1350	0.08	16	2000

VPT

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
25(28.8)	330	5×15.5	1650	0.08	20	1350
25(28.8)	330	6.3×9.5	1650	0.08	20	1600
25(28.8)	330	8×10	1650	0.08	16	1850
25(28.8)	330	10×8.5	1650	0.08	16	1900
25(28.8)	470	8×12.5	2350	0.08	16	2000
25(28.8)	470	8×15	2350	0.08	16	2200
25(28.8)	470	10×9.5	2350	0.08	16	1950
25(28.8)	560	8×12.5	2800	0.08	16	2000
25(28.8)	560	8×15	2800	0.08	16	2200
25(28.8)	560	10×10.5	2800	0.08	16	2050
25(28.8)	680	8×15	3400	0.08	16	2200
25(28.8)	680	10×12.5	3400	0.08	16	2150
25(28.8)	820	8×16.5	4100	0.08	16	2300
25(28.8)	820	10×15.5	4100	0.08	16	2250
25(28.8)	1000	10×17	5000	0.08	16	2400
25(28.8)	1000	12.5×13.5	5000	0.08	16	2400
25(28.8)	1500	10×19.5	7500	0.09	16	2550
25(28.8)	1500	12.5×15	7500	0.09	16	2550
25(28.8)	1800	10×22	7500	0.09	16	2750
25(28.8)	1800	12.5×17	7500	0.09	16	2700
25(28.8)	2200	12.5×18.5	7500	0.10	16	2800
25(28.8)	2700	12.5×21	7500	0.10	16	3000
35(41)	10	5×5.8	500	0.12	60	650
35(41)	15	5×5.8	500	0.12	60	650
35(41)	22	5×5.8	500	0.12	60	650
35(41)	33	5×5.8	500	0.12	60	650
35(41)	39	5×7.7	500	0.12	50	800
35(41)	39	6.3×5.8	500	0.12	60	700
35(41)	47	5×7.7	500	0.12	50	800
35(41)	47	6.3×5.8	500	0.12	60	700
35(41)	56	5×7.7	500	0.12	50	800
35(41)	56	6.3×5.8	500	0.12	60	700
35(41)	68	5×8.5	500	0.12	50	850
35(41)	68	6.3×5.8	500	0.12	60	700
35(41)	82	5×9.5	574	0.12	50	900
35(41)	82	6.3×7.7	574	0.12	50	900
35(41)	82	8×7.7	574	0.12	60	900
35(41)	100	6.3×5.8	700	0.12	60	700
35(41)	100	6.3×7.7	700	0.12	50	900
35(41)	120	6.3×7.7	840	0.12	50	900
35(41)	120	6.3×8.5	840	0.12	50	950
35(41)	120	8×7.7	840	0.12	60	900
35(41)	150	6.3×9.5	1050	0.12	50	1000

VPT

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
35(41)	150	8×7.7	1050	0.12	60	900
35(41)	180	6.3×11	1260	0.12	40	1150
35(41)	180	8×7.7	1260	0.12	60	900
35(41)	220	6.3×9.5	1540	0.12	50	1000
35(41)	220	6.3×12	1540	0.12	40	1200
35(41)	220	8×9	1540	0.12	50	1150
35(41)	220	10×8.5	1540	0.12	50	1400
35(41)	330	8×12.5	2310	0.12	30	1300
35(41)	330	10×8.5	2310	0.12	50	1400
35(41)	390	8×13.5	2730	0.12	30	1450
35(41)	390	10×10.5	2730	0.12	50	1800
35(41)	470	8×15	3290	0.12	20	1950
35(41)	470	10×13.5	3290	0.12	30	1850
35(41)	560	8×16.5	3920	0.12	20	2050
35(41)	560	10×13.5	3920	0.12	30	1850
35(41)	680	10×15.5	4760	0.12	20	2050
35(41)	820	10×17	5740	0.12	20	2200
35(41)	820	12.5×13.5	5740	0.12	30	2150
35(41)	1000	10×19.5	7000	0.08	20	2300
35(41)	1000	12.5×15	7000	0.12	30	2300
35(41)	1200	10×22	7500	0.08	20	2400
35(41)	1200	12.5×17	7500	0.12	20	2400
35(41)	1500	12.5×18.5	7500	0.13	20	2550
35(41)	1800	12.5×21	7500	0.13	20	2650
50(58)	10	5×5.8	500	0.12	60	650
50(58)	12	5×5.8	500	0.12	60	650
50(58)	15	5×5.8	500	0.12	60	650
50(58)	18	5×7.7	500	0.12	60	700
50(58)	18	6.3×5.8	500	0.12	60	750
50(58)	22	5×7.7	500	0.12	60	700
50(58)	22	6.3×5.8	500	0.12	60	750
50(58)	33	5×9.5	500	0.12	50	850
50(58)	33	6.3×7.7	500	0.12	60	750
50(58)	39	5×9.5	500	0.12	50	850
50(58)	39	6.3×7.7	500	0.12	60	750
50(58)	47	6.3×7.7	500	0.12	60	750
50(58)	47	6.3×8.5	500	0.12	50	950
50(58)	47	8×7.7	500	0.12	60	900
50(58)	56	6.3×9.5	560	0.12	50	1000
50(58)	56	8×7.7	560	0.12	60	900
50(58)	68	6.3×11	680	0.12	40	1000
50(58)	68	8×7.7	680	0.12	60	900
50(58)	82	6.3×12	820	0.12	40	1200

VPT

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
50(58)	82	8×9	820	0.12	50	1150
50(58)	100	8×10	1000	0.12	50	1200
50(58)	100	10×8.5	1000	0.12	60	1000
50(58)	120	8×12.5	1200	0.12	50	1250
50(58)	120	10×8.5	1200	0.12	60	1000
50(58)	150	8×13.5	1500	0.12	50	1300
50(58)	150	10×8.5	1500	0.12	60	1000
50(58)	180	8×15	1800	0.12	40	1400
50(58)	180	10×9.5	1800	0.12	50	1100
50(58)	220	8×16.5	2200	0.12	30	1750
50(58)	220	10×13.5	2200	0.12	40	1600
50(58)	270	10×14.5	2700	0.12	40	1650
50(58)	330	10×17	3300	0.12	30	1750
50(58)	390	10×19.5	3900	0.12	30	1750
50(58)	390	12.5×15	3900	0.12	40	1600
50(58)	470	10×22	4700	0.12	30	2000
50(58)	470	12.5×15	4700	0.12	40	1600
50(58)	560	12.5×17	5600	0.12	30	1950
50(58)	680	12.5×21	6800	0.12	30	2150
50(58)	820	12.5×21	7500	0.12	30	2150
63(73)	6.8	5×5.8	500	0.12	60	650
63(73)	8.2	5×5.8	500	0.12	60	650
63(73)	10	5×7.7	500	0.12	60	650
63(73)	10	6.3×8.5	500	0.12	50	900
63(73)	15	5×7.7	500	0.12	60	650
63(73)	15	6.3×5.8	500	0.12	60	750
63(73)	22	5×9.5	500	0.12	50	850
63(73)	22	6.3×7.7	500	0.12	60	900
63(73)	27	6.3×5.8	500	0.12	60	750
63(73)	33	6.3×8.5	500	0.12	50	900
63(73)	33	8×7.7	500	0.12	60	850
63(73)	33	8×10.5	500	0.12	50	1150
63(73)	39	6.3×9.5	500	0.12	50	1000
63(73)	39	8×7.7	500	0.12	60	850
63(73)	47	6.3×11	592	0.12	40	1000
63(73)	47	8×9	592	0.12	60	1150
63(73)	56	8×9	706	0.12	60	1150
63(73)	56	8×12.5	706	0.12	50	1200
63(73)	56	10×8.5	706	0.12	60	1050
63(73)	68	8×10	857	0.12	50	1150
63(73)	68	8×12.5	857	0.12	50	1200
63(73)	68	10×8.5	857	0.12	60	1050
63(73)	82	8×12.5	1033	0.12	50	1200

VPT

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
63(73)	82	10×9.5	1033	0.12	50	1100
63(73)	100	8×13.5	1260	0.12	50	1200
63(73)	100	10×10.5	1260	0.12	50	1100
63(73)	120	10×13.5	1512	0.12	50	1350
63(73)	150	10×14.5	1890	0.12	40	1400
63(73)	180	10×15.5	2268	0.12	30	1650
63(73)	220	10×17	2772	0.12	30	1700
63(73)	220	12.5×13.5	2772	0.12	40	1550
63(73)	270	10×22	3402	0.12	30	2000
63(73)	270	12.5×15	3402	0.12	40	1600
63(73)	330	10×19.5	4158	0.12	30	1750
63(73)	330	10×22	4158	0.12	30	2000
63(73)	330	12.5×17	4158	0.12	30	1950
63(73)	390	12.5×18.5	4914	0.12	30	2050
63(73)	470	12.5×21	5922	0.12	30	2150
80(92)	4.7	5×5.8	500	0.12	60	650
80(92)	6.8	5×5.8	500	0.12	60	650
80(92)	8.2	5×7.7	500	0.12	60	650
80(92)	10	5×7.7	500	0.12	60	650
80(92)	10	6.3×5.8	500	0.12	60	750
80(92)	15	5×9.5	500	0.12	50	850
80(92)	15	6.3×7.7	500	0.12	50	900
80(92)	22	6.3×8.5	500	0.12	50	900
80(92)	22	8×7.7	500	0.12	60	850
80(92)	33	6.3×11	528	0.12	40	1000
80(92)	33	8×7.7	528	0.12	60	850
80(92)	39	6.3×12	624	0.12	40	1200
80(92)	39	8×9	624	0.12	50	1000
80(92)	47	8×10	752	0.12	50	1000
80(92)	47	10×8.5	752	0.12	60	950
80(92)	56	8×12.5	896	0.12	50	1100
80(92)	56	10×9.5	896	0.12	50	1050
80(92)	68	8×12.5	1088	0.12	50	1100
80(92)	68	10×9.5	1088	0.12	50	1050
80(92)	82	8×15	1312	0.12	40	1300
80(92)	82	10×10.5	1312	0.12	50	1150
80(92)	100	8×16.5	1600	0.12	30	1600
80(92)	100	10×13.5	1600	0.12	40	1350
80(92)	120	10×15.5	1920	0.12	40	1400
80(92)	150	10×17	2400	0.12	30	1550
80(92)	150	12.5×13.5	2400	0.12	40	1500
80(92)	180	10×19.5	2880	0.12	30	1750
80(92)	180	12.5×15	2880	0.12	40	1600

VPT

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
80(92)	220	10×22	3520	0.12	30	2000
80(92)	220	12.5×17	3520	0.12	30	1950
80(92)	270	12.5×18.5	4320	0.12	30	2050
80(92)	330	12.5×21	5280	0.12	30	2150
100(115)	2.2	5×5.8	500	0.12	60	650
100(115)	3.3	5×5.8	500	0.12	60	650
100(115)	4.7	5×7.7	500	0.12	60	650
100(115)	4.7	6.3×5.8	500	0.12	80	650
100(115)	5.6	5×7.7	500	0.12	60	650
100(115)	5.6	6.3×5.8	500	0.12	80	650
100(115)	6.8	5×8.5	500	0.12	60	750
100(115)	6.8	6.3×5.8	500	0.12	80	650
100(115)	8.2	5×9.5	500	0.12	60	850
100(115)	8.2	6.3×7.7	500	0.12	60	750
100(115)	10	6.3×5.8	500	0.12	80	650
100(115)	10	6.3×7.7	500	0.12	60	750
100(115)	12	6.3×8.5	500	0.12	50	900
100(115)	15	6.3×9.5	500	0.12	50	950
100(115)	15	8×7.7	500	0.12	60	850
100(115)	18	6.3×11	500	0.12	50	950
100(115)	18	8×9	500	0.12	60	1000
100(115)	22	8×9	500	0.12	60	1000
100(115)	22	10×10.5	500	0.12	50	1150
100(115)	22	10×13	500	0.12	50	1200
100(115)	27	8×12.5	540	0.12	50	1000
100(115)	27	10×8.5	540	0.12	60	950
100(115)	33	8×12.5	660	0.12	50	1000
100(115)	33	10×9.5	660	0.12	50	1050
100(115)	39	8×15	780	0.12	50	1100
100(115)	39	10×9.5	780	0.12	50	1050
100(115)	47	10×10.5	940	0.12	50	1150
100(115)	56	10×13.5	1120	0.12	50	1200
100(115)	68	10×17	1360	0.12	50	1250
100(115)	82	10×19.5	1640	0.12	40	1400
100(115)	82	12.5×13.5	1640	0.12	50	1400
100(115)	100	10×22	2000	0.12	40	1600
100(115)	100	12.5×15	2000	0.12	50	1450
100(115)	120	10×22	2400	0.12	40	1650
100(115)	120	12.5×17	2400	0.12	40	1650
100(115)	150	12.5×18.5	3000	0.12	40	1800
100(115)	180	12.5×21	3600	0.12	40	1900

VPL

- ◆ High reliability, low ESR, high permissible ripple current
- ◆ 105℃, 5000-hour warranty
- ◆ RoHS compliant
- ◆ Long lifespan, surface mountable

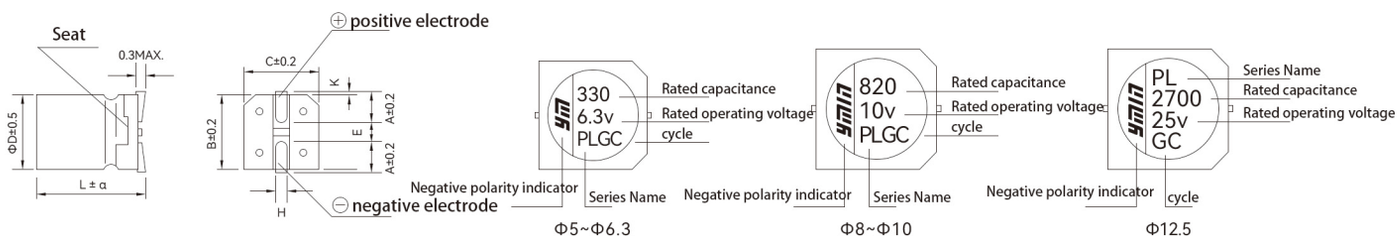


■ Product dimension drawing (unit: mm)

project	characteristic
Operating temperature range	－55 ~ +105℃
Rated operating voltage	6.3 ~ 100V
Capacity range	2.2 ~ 10000 μF 120Hz 20℃
Capacity tolerance	±20% (120Hz 20℃)
Loss tangent	The following are the values from the standard product list: 120Hz, 20℃
Leakage current	The values below are from the standard product list. Charge for 2 minutes at rated voltage, 20℃.
Equivalent series resistance (ESR)	The following are the values from the standard sample list: 100kHz, 20℃
Durability	After being subjected to the rated operating voltage for 5000 hours at 105℃ and placed at 20℃ for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±20% of the initial value Equivalent series resistance (ESR): ≦ 150% of the initial specification value Loss tangent: ≦ 150% of the initial specification value Leakage current: ≦ Initial specification value
High temperature and humidity	After being placed at 60℃ and 90%~95% RH without voltage for 1000 hours, and then placed at 20℃ for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±20% of the initial value Equivalent series resistance (ESR): ≦ 150% of the initial specification value Loss tangent: ≦ 150% of the initial specification value Leakage current: ≦ Initial specification value

※If there is any doubt about the leakage current value, please place the product at 105° C and apply the rated operating voltage for 2 hours, then cool it down to 20° C before testing the leakage current.

■ Product dimension drawing (unit: mm)



ΦD	B	C	A	H	E	K	α
5	5.3	5.3	2.1	0.70±0.20	1.3	0.5MAX	±0.5
6.3	6.6	6.6	2.6	0.70±0.20	1.8	0.5MAX	
8	8.3	8.3	3.0	0.90±0.20	3.1	0.5MAX	
10	10.3	10.3	3.5	0.90±0.20	4.6	0.7±0.2	
12.5	12.8	12.8	4.7	0.90±0.30	4.4	0.7±0.3	±1.0

■ Frequency correction factor

Frequency (Hz)	120Hz	1kHz	10kHz	100kHz	500kHz
Correction Factor	0.05	0.30	0.70	1.00	1.00

VPL

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
6.3(7.2)	100	5×5.8	500	0.08	20	2400
6.3(7.2)	150	5×5.8	500	0.08	20	2400
6.3(7.2)	180	5×5.8	500	0.08	20	2400
6.3(7.2)	220	5×5.8	500	0.08	20	2400
6.3(7.2)	270	5×7.7	500	0.08	12	3400
6.3(7.2)	270	6.3×5.8	500	0.08	18	2800
6.3(7.2)	330	5×7.7	500	0.08	12	3400
6.3(7.2)	330	6.3×5.8	500	0.08	18	2800
6.3(7.2)	390	5×8.5	500	0.08	12	3400
6.3(7.2)	390	6.3×5.8	500	0.08	18	2800
6.3(7.2)	470	5×8.5	592	0.08	12	3400
6.3(7.2)	470	6.3×7.7	592	0.08	8	4800
6.3(7.2)	560	6.3×7.7	706	0.08	8	4800
6.3(7.2)	560	6.3×8.5	706	0.08	8	5000
6.3(7.2)	680	6.3×8.5	857	0.08	8	5000
6.3(7.2)	680	8×7.7	857	0.08	12	4200
6.3(7.2)	820	6.3×7.7	1033	0.08	8	4800
6.3(7.2)	820	6.3×9.5	1033	0.08	8	5250
6.3(7.2)	820	8×7.7	1033	0.08	12	4200
6.3(7.2)	1000	6.3×11	1260	0.08	8	5500
6.3(7.2)	1000	8×9	1260	0.08	8	5600
6.3(7.2)	1000	10×8.5	1260	0.08	12	4500
6.3(7.2)	1200	6.3×12	1512	0.08	8	5700
6.3(7.2)	1200	8×10	1512	0.09	8	5800
6.3(7.2)	1200	10×9.5	1512	0.09	8	5800
6.3(7.2)	1500	8×12.5	1890	0.09	8	6150
6.3(7.2)	1500	10×10.5	1890	0.09	8	6300
6.3(7.2)	2000	8×15	2520	0.10	7	7250
6.3(7.2)	2000	10×10.5	2520	0.10	8	6300
6.3(7.2)	2200	8×15	2772	0.10	7	7250
6.3(7.2)	2200	10×10.5	2772	0.10	8	6300
6.3(7.2)	2700	10×13.5	3402	0.11	8	6500
6.3(7.2)	3300	10×13.5	4158	0.12	8	6500
6.3(7.2)	3900	10×15.5	4914	0.12	7	7600
6.3(7.2)	4700	10×17	5922	0.13	7	8100
6.3(7.2)	4700	12.5×13.5	5922	0.15	8	7600
6.3(7.2)	5600	10×19.5	7056	0.14	7	8500
6.3(7.2)	5600	12.5×15	7056	0.17	8	7900
6.3(7.2)	6800	10×22	7500	0.15	7	9100
6.3(7.2)	6800	12.5×17	7500	0.20	7	8950
6.3(7.2)	8200	12.5×18.5	7500	0.20	7	9450
6.3(7.2)	10000	12.5×21	7500	0.22	7	9850
7.5(8.6)	270	5×7.7	500	0.08	12	3400

VPL

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
7.5(8.6)	270	6.3×5.8	500	0.08	18	2800
7.5(8.6)	330	5×9.5	500	0.08	12	3800
7.5(8.6)	330	6.3×5.8	500	0.08	18	2800
7.5(8.6)	390	5×9.5	585	0.08	12	3800
7.5(8.6)	390	6.3×7.7	585	0.08	12	3900
7.5(8.6)	470	5×9.5	705	0.08	12	3800
7.5(8.6)	470	6.3×8.5	705	0.08	12	4800
7.5(8.6)	560	6.3×9.5	840	0.08	9	5000
7.5(8.6)	680	6.3×11	1020	0.08	8	5500
7.5(8.6)	680	8×7.7	1020	0.08	12	4200
7.5(8.6)	820	6.3×12	1230	0.08	8	5700
7.5(8.6)	820	8×9	1230	0.08	8	5600
7.5(8.6)	1000	6.3×12	1500	0.08	8	5700
7.5(8.6)	1000	8×10	1500	0.08	8	5800
10(11.5)	47	5×5.8	500	0.08	30	1900
10(11.5)	68	5×5.8	500	0.08	30	1900
10(11.5)	82	5×5.8	500	0.08	30	1900
10(11.5)	100	5×5.8	500	0.08	30	1900
10(11.5)	100	5×7.7	500	0.08	15	3050
10(11.5)	120	6.3×5.8	500	0.08	30	2200
10(11.5)	150	5×7.7	500	0.08	15	3050
10(11.5)	150	6.3×5.8	500	0.08	30	2200
10(11.5)	180	5×7.7	500	0.08	15	3050
10(11.5)	180	6.3×5.8	500	0.08	30	2200
10(11.5)	220	5×7.7	500	0.08	15	3050
10(11.5)	220	6.3×5.8	500	0.08	30	2200
10(11.5)	270	5×9.5	540	0.08	12	3800
10(11.5)	270	6.3×5.8	540	0.08	30	2200
10(11.5)	330	6.3×7.7	660	0.08	16	3200
10(11.5)	390	6.3×7.7	780	0.08	16	3200
10(11.5)	470	6.3×7.7	940	0.08	16	3200
10(11.5)	470	6.3×8.5	940	0.08	12	3800
10(11.5)	470	8×7.7	940	0.08	14	3500
10(11.5)	560	6.3×11	1120	0.08	10	4900
10(11.5)	560	8×7.7	1120	0.08	14	3500
10(11.5)	680	6.3×12	1360	0.08	9	5400
10(11.5)	680	8×9	1360	0.08	10	5100
10(11.5)	820	8×10	1640	0.08	9	5500
10(11.5)	820	10×8.5	1640	0.08	12	4500
10(11.5)	1000	8×12.5	2000	0.08	9	5800
10(11.5)	1000	10×8.5	2000	0.08	12	4500
10(11.5)	1500	8×15	3000	0.09	8	6800
10(11.5)	1500	10×10.5	3000	0.09	9	6300

VPL

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
10(11.5)	2200	10×12.5	4400	0.10	8	6400
10(11.5)	2500	10×13.5	5000	0.10	8	6500
10(11.5)	2700	10×17	5400	0.10	8	7500
10(11.5)	3300	10×19.5	6600	0.11	8	7900
10(11.5)	3300	12.5×15	6600	0.11	9	7500
10(11.5)	3900	10×22	7500	0.12	8	8400
10(11.5)	3900	12.5×17	7500	0.12	8	8400
10(11.5)	4700	12.5×18.5	7500	0.14	8	8800
10(11.5)	5600	12.5×18.5	7500	0.16	8	8800
10(11.5)	6800	12.5×21	7500	0.18	8	9200
12(13.8)	180	5×7.7	500	0.08	15	3050
12(13.8)	180	6.3×5.8	500	0.08	30	2200
12(13.8)	220	5×9.5	528	0.08	15	3400
12(13.8)	220	6.3×5.8	528	0.08	30	2200
12(13.8)	270	5×9.5	648	0.08	15	3400
12(13.8)	270	6.3×7.7	648	0.08	16	3200
12(13.8)	330	5×9.5	792	0.08	15	3400
12(13.8)	330	6.3×7.7	792	0.08	16	3200
12(13.8)	390	6.3×8.5	936	0.08	12	3800
12(13.8)	390	6.3×9.5	936	0.08	12	4300
12(13.8)	470	6.3×9.5	1128	0.08	12	4300
12(13.8)	470	8×7.7	1128	0.08	14	3000
12(13.8)	560	6.3×11	1344	0.08	10	4900
12(13.8)	560	8×7.7	1344	0.08	14	3000
12(13.8)	680	6.3×12	1632	0.08	9	5400
12(13.8)	680	8×9	1632	0.08	10	5100
12(13.8)	1000	8×12.5	2400	0.08	10	5200
16(18.4)	22	5×5.8	500	0.08	30	1900
16(18.4)	33	5×5.8	500	0.08	30	1900
16(18.4)	47	5×5.8	500	0.08	30	1900
16(18.4)	68	5×5.8	500	0.08	30	1900
16(18.4)	82	5×5.8	500	0.08	30	1900
16(18.4)	100	5×5.8	500	0.08	30	1900
16(18.4)	100	5×7.7	500	0.08	30	2200
16(18.4)	100	6.3×5.8	500	0.08	30	2100
16(18.4)	100	6.3×7.7	500	0.08	20	2850
16(18.4)	120	8×7.7	500	0.08	30	2550
16(18.4)	150	5×8.5	500	0.08	30	2200
16(18.4)	150	6.3×5.8	500	0.08	30	2100
16(18.4)	150	6.3×7.7	500	0.08	20	2850
16(18.4)	220	5×9.5	704	0.08	15	3400
16(18.4)	220	6.3×5.8	704	0.08	30	2100
16(18.4)	220	6.3×7.7	704	0.08	20	2850

VPL

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
16(18.4)	220	6.3×9.5	704	0.08	12	4300
16(18.4)	220	8×7.7	704	0.08	30	2550
16(18.4)	270	6.3×7.7	864	0.08	20	2850
16(18.4)	270	6.3×8.5	864	0.08	15	3550
16(18.4)	270	6.3×9.5	864	0.08	12	4300
16(18.4)	270	8×7.7	864	0.08	30	2550
16(18.4)	270	8×12.5	864	0.08	10	5200
16(18.4)	330	6.3×9.5	1056	0.08	12	4300
16(18.4)	330	8×7.7	1056	0.08	30	2550
16(18.4)	390	6.3×9.5	1248	0.08	12	4300
16(18.4)	470	6.3×12	1504	0.08	10	4900
16(18.4)	470	8×9	1504	0.08	20	3300
16(18.4)	470	8×10	1504	0.08	12	4700
16(18.4)	560	8×10	1792	0.08	12	4700
16(18.4)	560	10×8.5	1792	0.08	12	4500
16(18.4)	680	8×10	2176	0.08	12	4700
16(18.4)	680	8×12.5	2176	0.08	10	5200
16(18.4)	680	10×8.5	2176	0.08	12	4500
16(18.4)	820	8×13.5	2624	0.08	10	5500
16(18.4)	820	10×9.5	2624	0.08	12	5200
16(18.4)	1000	8×15	3200	0.08	8	6800
16(18.4)	1000	8×16.5	3200	0.08	10	7000
16(18.4)	1000	10×9.5	3200	0.08	12	5200
16(18.4)	1500	10×15.5	4800	0.09	8	6400
16(18.4)	1800	10×17	5760	0.09	8	7000
16(18.4)	2200	10×19.5	7040	0.10	8	7500
16(18.4)	2200	12.5×15	7040	0.10	10	7100
16(18.4)	2700	10×22	7500	0.10	8	8400
16(18.4)	2700	12.5×17	7500	0.10	10	7100
16(18.4)	3300	12.5×18.5	7500	0.11	8	8400
16(18.4)	3900	12.5×21	7500	0.12	8	8800
25(28.8)	6.8	6.3×5.8	500	0.08	40	1900
25(28.8)	10	5×5.8	500	0.08	40	1650
25(28.8)	15	5×5.8	500	0.08	40	1650
25(28.8)	22	5×5.8	500	0.08	40	1650
25(28.8)	33	5×5.8	500	0.08	40	1650
25(28.8)	39	5×5.8	500	0.08	40	1650
25(28.8)	47	5×5.8	500	0.08	40	1650
25(28.8)	47	6.3×5.8	500	0.08	40	1900
25(28.8)	68	5×7.7	500	0.08	30	2200
25(28.8)	68	6.3×5.8	500	0.08	40	1900
25(28.8)	100	5×9.5	500	0.08	30	2400
25(28.8)	100	6.3×5.8	500	0.08	40	1900

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■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
25(28.8)	150	6.3×8.5	750	0.08	16	3550
25(28.8)	180	6.3×8.5	900	0.08	16	3550
25(28.8)	180	8×7.7	900	0.08	30	2550
25(28.8)	180	8×10.5	900	0.08	16	4000
25(28.8)	220	6.3×8.5	1100	0.08	16	3550
25(28.8)	220	6.3×9.5	1100	0.08	20	3500
25(28.8)	220	8×7.7	1100	0.08	30	2550
25(28.8)	330	8×10	1650	0.08	16	4000
25(28.8)	330	10×8.5	1650	0.08	16	4100
25(28.8)	330	10×12.5	1650	0.08	16	4700
25(28.8)	470	8×12.5	2350	0.08	16	4200
25(28.8)	470	8×15	2350	0.08	16	4800
25(28.8)	470	10×9.5	2350	0.08	16	4300
25(28.8)	560	8×12.5	2800	0.08	16	4400
25(28.8)	560	8×15	2800	0.08	16	4800
25(28.8)	560	10×10.5	2800	0.08	16	4500
25(28.8)	680	8×15	3400	0.08	16	4800
25(28.8)	680	10×12.5	3400	0.08	16	4700
25(28.8)	820	8×16.5	4100	0.08	16	5050
25(28.8)	820	10×15.5	4100	0.08	16	4800
25(28.8)	1000	10×17	5000	0.08	16	5300
25(28.8)	1000	12.5×13.5	5000	0.08	16	5300
25(28.8)	1500	10×19.5	7500	0.09	16	5600
25(28.8)	1500	12.5×15	7500	0.09	16	5600
25(28.8)	1800	10×22	7500	0.09	16	6000
25(28.8)	1800	12.5×17	7500	0.09	16	5900
25(28.8)	2200	12.5×18.5	7500	0.10	16	6200
25(28.8)	2700	12.5×21	7500	0.10	16	6500
35(41)	10	5×5.8	500	0.12	60	1450
35(41)	15	5×5.8	500	0.12	60	1450
35(41)	22	5×5.8	500	0.12	60	1450
35(41)	33	5×5.8	500	0.12	60	1450
35(41)	39	5×7.7	500	0.12	50	1700
35(41)	39	6.3×5.8	500	0.12	60	1650
35(41)	47	5×7.7	500	0.12	50	1700
35(41)	47	6.3×5.8	500	0.12	60	1650
35(41)	56	5×7.7	500	0.12	50	1700
35(41)	56	6.3×5.8	500	0.12	60	1650
35(41)	68	5×8.5	500	0.12	50	1800
35(41)	68	6.3×5.8	500	0.12	60	1650
35(41)	82	5×9.5	574	0.12	50	1900
35(41)	82	6.3×7.7	574	0.12	50	1900
35(41)	82	8×12.5	574	0.12	30	3200

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■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
35(41)	100	6.3×7.7	700	0.12	50	1900
35(41)	120	6.3×8.5	840	0.12	50	2050
35(41)	120	8×7.7	840	0.12	60	1900
35(41)	120	10×13	840	0.12	30	3400
35(41)	150	6.3×7.7	1050	0.12	50	1900
35(41)	150	6.3×9.5	1050	0.12	50	2150
35(41)	150	8×7.7	1050	0.12	60	1900
35(41)	150	10×8.5	1050	0.12	50	2350
35(41)	180	6.3×11	1260	0.12	40	2500
35(41)	180	8×7.7	1260	0.12	60	1900
35(41)	220	6.3×12	1540	0.12	40	2600
35(41)	220	8×7.7	1540	0.12	60	1900
35(41)	220	8×9	1540	0.12	50	2200
35(41)	220	10×8.5	1540	0.12	50	2350
35(41)	270	10×10.5	1890	0.12	50	2550
35(41)	330	8×12.5	2310	0.12	30	3200
35(41)	330	10×8.5	2310	0.12	50	2350
35(41)	390	8×13.5	2730	0.12	30	3200
35(41)	390	10×10.5	2730	0.12	50	2550
35(41)	470	8×15	3290	0.12	20	4250
35(41)	470	10×13.5	3290	0.12	30	3400
35(41)	560	8×16.5	3920	0.12	20	4550
35(41)	560	10×13.5	3920	0.12	30	3400
35(41)	680	10×15.5	4760	0.12	20	4450
35(41)	820	10×17	5740	0.12	20	4700
35(41)	820	12.5×13.5	5740	0.12	30	3900
35(41)	1000	10×19.5	7000	0.12	20	5000
35(41)	1000	12.5×15	7000	0.12	30	4100
35(41)	1200	10×22	7500	0.13	20	5300
35(41)	1200	12.5×17	7500	0.13	20	5300
35(41)	1500	12.5×18.5	7500	0.09	20	5600
35(41)	1800	12.5×21	7500	0.10	20	5850
50(58)	10	5×5.8	500	0.12	60	1350
50(58)	10	6.3×5.8	500	0.12	60	1550
50(58)	12	5×5.8	500	0.12	60	1350
50(58)	15	5×5.8	500	0.12	60	1350
50(58)	18	5×7.7	500	0.12	60	1450
50(58)	18	6.3×5.8	500	0.12	60	1550
50(58)	18	8×7.7	500	0.12	60	1800
50(58)	22	5×7.7	500	0.12	60	1450
50(58)	22	6.3×5.8	500	0.12	60	1550
50(58)	33	5×9.5	500	0.12	50	1800
50(58)	33	6.3×7.7	500	0.12	60	1650

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■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
50(58)	39	5×9.5	500	0.12	50	1800
50(58)	39	6.3×7.7	500	0.12	60	1650
50(58)	47	6.3×8.5	500	0.12	50	1900
50(58)	47	8×7.7	500	0.12	60	1800
50(58)	56	6.3×9.5	560	0.12	50	2150
50(58)	56	8×7.7	560	0.12	60	1800
50(58)	68	6.3×11	680	0.12	40	2500
50(58)	68	8×7.7	680	0.12	60	1800
50(58)	68	10×13	680	0.12	40	2900
50(58)	82	6.3×12	820	0.12	40	2600
50(58)	82	8×9	820	0.12	60	1900
50(58)	100	6.3×7.7	1000	0.12	60	1650
50(58)	100	8×10	1000	0.12	50	2200
50(58)	100	10×8.5	1000	0.12	50	2350
50(58)	100	10×10.5	1000	0.12	40	2900
50(58)	120	8×12.5	1200	0.12	50	2300
50(58)	120	10×8.5	1200	0.12	50	2350
50(58)	120	10×10.5	1200	0.12	40	2900
50(58)	150	8×13.5	1500	0.12	50	2300
50(58)	150	10×8.5	1500	0.12	50	2350
50(58)	180	8×15	1800	0.12	40	2800
50(58)	180	10×9.5	1800	0.12	50	2450
50(58)	220	8×16.5	2200	0.12	30	3500
50(58)	220	10×13.5	2200	0.12	40	2900
50(58)	270	10×14.5	2700	0.12	30	3100
50(58)	330	10×17	3300	0.12	30	3800
50(58)	390	10×19.5	3900	0.12	30	3800
50(58)	390	12.5×15	3900	0.12	40	3500
50(58)	470	10×22	4700	0.12	30	4050
50(58)	470	12.5×15	4700	0.12	40	3500
50(58)	560	12.5×17	5600	0.12	30	4300
50(58)	680	12.5×21	6800	0.12	30	4550
50(58)	820	12.5×21	7500	0.12	30	4550
63(73)	6.8	5×5.8	500	0.12	60	1350
63(73)	8.2	5×5.8	500	0.12	60	1350
63(73)	10	5×7.7	500	0.12	60	1450
63(73)	15	5×7.7	500	0.12	60	1450
63(73)	15	6.3×5.8	500	0.12	60	1400
63(73)	22	5×9.5	500	0.12	50	1800
63(73)	22	6.3×7.7	500	0.12	60	1650
63(73)	33	6.3×8.5	500	0.12	50	1900
63(73)	33	8×7.7	500	0.12	60	1800
63(73)	39	6.3×9.5	500	0.12	50	2150

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■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
63(73)	39	8×7.7	500	0.12	60	1800
63(73)	39	8×12.5	500	0.12	50	2300
63(73)	47	6.3×11	592	0.12	40	2500
63(73)	47	8×7.7	592	0.12	60	1800
63(73)	47	8×9	592	0.12	60	1900
63(73)	56	8×9	706	0.12	60	1900
63(73)	56	8×10.5	706	0.12	50	2300
63(73)	56	10×8.5	706	0.12	50	2200
63(73)	68	8×10	857	0.12	50	2200
63(73)	68	10×8.5	857	0.12	50	2200
63(73)	82	8×12.5	1033	0.12	50	2300
63(73)	82	10×8.5	1033	0.12	50	2200
63(73)	82	10×9.5	1033	0.12	50	2450
63(73)	100	8×13.5	1260	0.12	50	2300
63(73)	100	10×10.5	1260	0.12	50	2550
63(73)	100	10×13.5	1260	0.12	50	2600
63(73)	120	10×10.5	1512	0.12	50	2550
63(73)	120	10×13.5	1512	0.12	50	2600
63(73)	150	10×14.5	1890	0.12	40	3000
63(73)	180	10×15.5	2268	0.12	30	3600
63(73)	220	10×17	2772	0.12	30	3800
63(73)	220	12.5×13.5	2772	0.12	40	3350
63(73)	270	10×22	3402	0.12	30	4050
63(73)	270	12.5×15	3402	0.12	40	3500
63(73)	330	10×22	4158	0.12	30	4050
63(73)	330	12.5×17	4158	0.12	30	4300
63(73)	390	12.5×18.5	4914	0.12	30	4550
63(73)	470	12.5×21	5922	0.12	30	4550
80(92)	4.7	5×5.8	500	0.12	60	1350
80(92)	4.7	6.3×5.8	500	0.12	60	1400
80(92)	6.8	5×5.8	500	0.12	60	1350
80(92)	8.2	5×7.7	500	0.12	60	1450
80(92)	10	5×7.7	500	0.12	60	1450
80(92)	10	6.3×5.8	500	0.12	60	1400
80(92)	15	5×9.5	500	0.12	50	1800
80(92)	15	6.3×7.7	500	0.12	60	1650
80(92)	18	6.3×7.7	500	0.12	60	1650
80(92)	22	6.3×8.5	500	0.12	50	1900
80(92)	22	8×7.7	500	0.12	60	1800
80(92)	33	6.3×11	528	0.12	40	2500
80(92)	33	8×7.7	528	0.12	60	1800
80(92)	39	6.3×12	624	0.12	40	2600
80(92)	39	8×9	624	0.12	60	1900

VPL

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
80(92)	47	8×10	752	0.12	50	2200
80(92)	47	10×8.5	752	0.12	60	2000
80(92)	47	10×10.5	752	0.12	50	2550
80(92)	47	10×13	752	0.12	50	2600
80(92)	56	8×12.5	896	0.12	50	2700
80(92)	56	10×9.5	896	0.12	50	2450
80(92)	68	8×12.5	1088	0.12	50	2700
80(92)	68	10×9.5	1088	0.12	50	2450
80(92)	82	8×15	1312	0.12	40	2800
80(92)	82	10×10.5	1312	0.12	50	2550
80(92)	100	8×16.5	1600	0.12	30	3500
80(92)	100	10×10.5	1600	0.12	50	2550
80(92)	100	10×13.5	1600	0.12	50	2600
80(92)	120	10×15.5	1920	0.12	40	3000
80(92)	150	10×17	2400	0.12	30	3800
80(92)	150	12.5×13.5	2400	0.12	40	3350
80(92)	180	10×19.5	2880	0.12	30	3800
80(92)	180	12.5×15	2880	0.12	40	3500
80(92)	220	10×22	3520	0.12	30	4050
80(92)	220	12.5×17	3520	0.12	30	4300
80(92)	270	12.5×18.5	4320	0.12	30	4550
80(92)	330	12.5×21	5280	0.12	30	4550
100(115)	2.2	5×5.8	500	0.12	80	1200
100(115)	3.3	5×5.8	500	0.12	80	1200
100(115)	4.7	5×7.7	500	0.12	60	1450
100(115)	4.7	6.3×5.8	500	0.12	80	1350
100(115)	5.6	5×7.7	500	0.12	60	1450
100(115)	5.6	6.3×5.8	500	0.12	80	1350
100(115)	6.8	5×8.5	500	0.12	60	1550
100(115)	6.8	6.3×5.8	500	0.12	80	1350
100(115)	8.2	5×9.5	500	0.12	60	1700
100(115)	8.2	6.3×7.7	500	0.12	60	1650
100(115)	10	6.3×7.7	500	0.12	60	1650
100(115)	12	6.3×8.5	500	0.12	50	1900
100(115)	15	6.3×9.5	500	0.12	50	2150
100(115)	15	8×7.7	500	0.12	60	1800
100(115)	18	6.3×11	500	0.12	50	2250
100(115)	18	8×9	500	0.12	60	1900
100(115)	22	8×9	500	0.12	60	1900
100(115)	27	8×12.5	540	0.12	50	2200
100(115)	27	10×8.5	540	0.12	60	2000
100(115)	33	8×12.5	660	0.12	50	2200
100(115)	33	10×9.5	660	0.12	50	2450

VPL

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
100(115)	39	8×15	780	0.12	50	2400
100(115)	39	10×9.5	780	0.12	50	2450
100(115)	47	10×10.5	940	0.12	50	2550
100(115)	56	10×13	1120	0.12	50	2600
100(115)	56	10×13.5	1120	0.12	50	2600
100(115)	68	10×17	1360	0.12	50	2700
100(115)	82	10×19.5	1640	0.12	40	3100
100(115)	82	12.5×13.5	1640	0.12	50	3000
100(115)	100	10×22	2000	0.12	30	3750
100(115)	100	12.5×15	2000	0.12	50	3150
100(115)	120	10×22	2400	0.12	30	3750
100(115)	120	12.5×17	2400	0.12	40	3700
100(115)	150	12.5×18.5	3000	0.12	40	3900
100(115)	180	12.5×21	3600	0.12	40	4100

VPG

◆Large capacity, high reliability, low ESR, high permissible ripple current
◆105℃, 2000-hour warranty
◆RoHS compliant
◆Large capacity, miniaturized, surface mount type

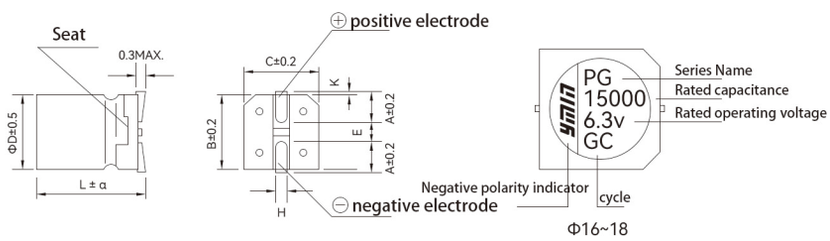


■ Main technical parameters

project	characteristic
Operating temperature range	－55 ~ +105℃
Rated operating voltage	6.3 ~ 100V
Capacity range	180 ~ 18000 μF 120Hz 20℃
Capacity tolerance	±20% (120Hz 20℃)
Loss tangent	The following values are from the standard product list: 120Hz, 20℃
Leakage current	Charge for 2 minutes at rated voltage using 0.2CV or 1000 μA, at 20℃.
Equivalent series resistance (ESR)	The following values are from the standard product list: 100kHz, 20℃.
Durability	After being subjected to the rated operating voltage for 2000 hours at 105℃ and placed at 20℃ for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±20% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value
High temperature and humidity	After being placed at 60℃ and 90%~95% RH without voltage for 1000 hours, and then placed at 20℃ for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±20% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value

※If there is any doubt about the leakage current value, please place the product at 105° C and apply the rated operating voltage for 2 hours, then cool it down to 20° C before testing the leakage current.

■ Product dimension drawing (unit: mm)



ΦD	B	C	A	H	E	K	α
16	17	17	5.5	1.20±0.30	6.7	0.70±0.30	±1.0
18	19	19	6.7	1.20±0.30	6.7	0.70±0.30	

■ Frequency correction factor

Frequency (Hz)	120Hz	1kHz	10kHz	100kHz	500kHz
Correction Factor	0.05	0.30	0.70	1.00	1.00

VPG

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
6.3(7.2)	10000	16×17.5	7500	0.30	7	9200
6.3(7.2)	12000	16×19.5	7500	0.34	7	9650
6.3(7.2)	15000	16×21.5	7500	0.40	7	9950
6.3(7.2)	15000	18×19.5	7500	0.40	7	9650
6.3(7.2)	18000	18×21.5	7500	0.46	7	9950
10(11.5)	6800	16×17.5	7500	0.24	8	8600
10(11.5)	8200	16×19.5	7500	0.26	8	9000
10(11.5)	10000	16×21.5	7500	0.30	8	9300
10(11.5)	10000	18×19.5	7500	0.30	8	9000
10(11.5)	12000	18×21.5	7500	0.34	8	9300
16(18.4)	3900	16×17.5	7500	0.18	8	8600
16(18.4)	4700	16×19.5	7500	0.19	8	9000
16(18.4)	5600	16×21.5	7500	0.21	8	9300
16(18.4)	6800	18×19.5	7500	0.24	8	9000
16(18.4)	8200	18×21.5	7500	0.26	8	9300
25(28.8)	2200	16×17.5	7500	0.14	16	6000
25(28.8)	2700	16×19.5	7500	0.15	16	6400
25(28.8)	3300	16×21.5	7500	0.17	16	6550
25(28.8)	3900	18×19.5	7500	0.18	16	6400
25(28.8)	4700	18×21.5	7500	0.19	16	6550
35(41)	1800	16×17.5	7500	0.14	20	5450
35(41)	2200	16×19.5	7500	0.14	20	5700
35(41)	2700	16×21.5	7500	0.15	20	5950
35(41)	2700	18×19.5	7500	0.15	20	5700
35(41)	3300	18×21.5	7500	0.17	20	5950
50(58)	680	16×17.5	6800	0.12	30	4400
50(58)	820	16×19.5	7500	0.12	30	4650
50(58)	1000	16×16.5	7500	0.12	30	4250
50(58)	1000	16×21.5	7500	0.12	30	4800
50(58)	1200	18×19.5	7500	0.12	30	4650
50(58)	1500	18×21.5	7500	0.13	30	4800
63(73)	560	16×17.5	7056	0.12	30	4400
63(73)	680	16×19.5	7500	0.12	30	4650
63(73)	820	16×21.5	7500	0.12	30	4800
63(73)	820	18×19.5	7500	0.12	30	4650
63(73)	1000	18×21.5	7500	0.12	30	4800
80(92)	330	16×17.5	5280	0.12	30	4400
80(92)	390	16×19.5	6240	0.12	30	4650
80(92)	470	16×21.5	7500	0.12	30	4800
80(92)	560	18×19.5	7500	0.12	30	4650
80(92)	680	18×21.5	7500	0.12	30	4800
100(115)	180	16×17.5	3600	0.12	40	3850
100(115)	220	16×19.5	4400	0.12	40	4000
100(115)	270	16×21.5	5400	0.12	40	4150
100(115)	270	18×19.5	5400	0.12	40	4000
100(115)	330	18×21.5	6600	0.12	40	4150
100(115)	470	18×26.5	7500	0.12	30	4600

VPW

- ◆Extra-long lifespan, high reliability
- ◆105℃, 15,000-hour warranty
- ◆RoHS compliant
- ◆Surface mount type

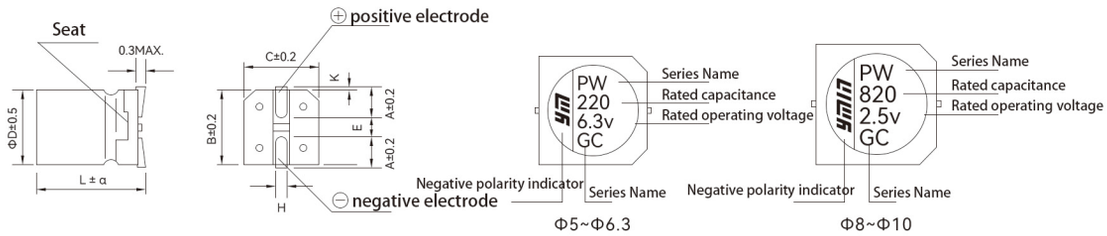


■ Main technical parameters

project	characteristic
Operating temperature range	－55 ~ +105℃
Rated operating voltage	2.5~ 50V
Capacity range	47 ~ 1000 μF 120Hz 20℃
Capacity tolerance	±20% (120Hz 20℃)
Loss tangent	Values below the standard product list: 120Hz, 20℃
Leakage current	Values below the standard product list: Charged for 2 minutes at rated voltage, 20℃
Equivalent series resistance (ESR)	Values below the standard product list: 100kHz, 20℃
Durability	After being subjected to the rated operating voltage for 2000 hours at 105℃ and placed at 20℃ for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±20% of the initial value Equivalent series resistance (ESR): ≦ 150% of the initial specification value Loss tangent: ≦ 150% of the initial specification value Leakage current: ≦ Initial specification value
High temperature and humidity	After being placed at 60℃ and 90%~95% RH without voltage for 1000 hours, and then placed at 20℃ for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±20% of the initial value Equivalent series resistance (ESR): ≦ 150% of the initial specification value Loss tangent: ≦ 150% of the initial specification value Leakage current: ≦ Initial specification value

※If there is any doubt about the leakage current value, please place the product at 105° C and apply the rated operating voltage for 2 hours, then cool it down to 20° C before testing the leakage current.

■ Product dimension drawing (unit: mm)



ΦD	B	C	A	H	E	K	α
5	5.3	5.3	2.1	0.70±0.20	1.3	0.5MAX	±0.5
6.3	6.6	6.6	2.6	0.70±0.20	1.8	0.5MAX	
8	8.3	8.3	3.0	0.90±0.20	3.1	0.5MAX	
10	10.3	10.3	3.5	0.90±0.20	4.6	0.7±0.2	

■ Frequency correction factor

Frequency (Hz)	120Hz	1kHz	10kHz	100kHz	500kHz
Correction Factor	0.05	0.30	0.70	1.00	1.00

VPW

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
2.5(2.9)	820	6.3×7.7	500	0.12	13	3600
2.5(2.9)	1000	8×9	500	0.12	7	6100
6.3(7.2)	47	6.3×5.8	500	0.12	22	2550
6.3(7.2)	220	5×5.8	500	0.12	24	2500
6.3(7.2)	220	6.3×5.8	500	0.12	22	2550
6.3(7.2)	330	6.3×5.8	500	0.12	22	2550
6.3(7.2)	560	6.3×7.7	706	0.12	14	3450
10(11.5)	33	6.3×5.8	500	0.12	25	2500
10(11.5)	47	5×5.8	500	0.12	28	2300
16(18.4)	120	8×7.7	500	0.12	22	3150
16(18.4)	180	6.3×6.1	576	0.12	30	2200
16(18.4)	220	6.3×5.8	704	0.12	30	2200
16(18.4)	220	6.3×7.7	704	0.12	24	2700
25(28.8)	47	6.3×6.1	500	0.12	28	3000
25(28.8)	220	6.3×9.5	1100	0.12	20	3700
35(41)	100	10×10.5	700	0.12	20	3600
50(58)	47	6.3×8.5	500	0.12	50	2850

NP1

◆High reliability, low ESR, high permissible ripple current
◆125℃, 2000-hour warranty
◆RoHS compliant
◆High temperature resistant, surface mountable

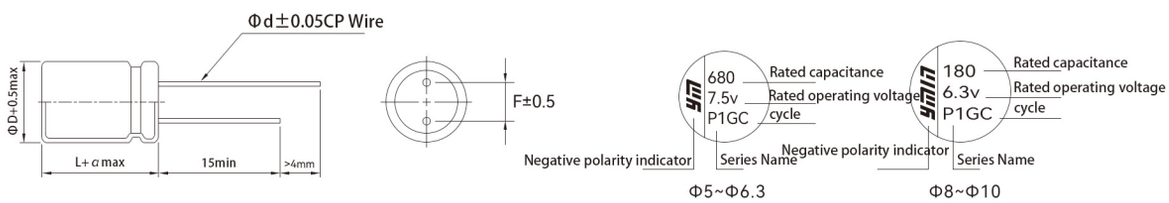


■ Main technical parameters

project	characteristic
Operating temperature range	－55 ~ +105℃
Rated operating voltage	6.3 ~ 25V
Capacity range	10 ~ 2500μF 120Hz 20℃
Capacity tolerance	±20% (120Hz 20℃)
Loss tangent	The following values are from the standard product list: 120Hz, 20℃
Leakage current	Charge for 2 minutes at rated voltage using 0.2CV or 1000μA, at 20℃.
Equivalent series resistance (ESR)	The following values are from the standard product list: 100kHz, 20℃.
Durability	After being subjected to the rated operating voltage for 2000 hours at 105℃ and placed at 20℃ for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±20% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value
High temperature and humidity	After being placed at 60℃ and 90%~95% RH without voltage for 1000 hours, and then placed at 20℃ for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±20% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value

※If there is any doubt about the leakage current value, please place the product at 105° C and apply the rated operating voltage for 2 hours, then cool it down to 20° C before testing the leakage current.

■ Product dimension drawing (unit: mm)



D (±0.5)	5	6.3	8	10
d (±0.05)	0.45/0.50	0.45/0.50	0.6	0.6
F (±0.5)	2	2.5	3.5	5
α	+1			

■ Frequency correction factor

Frequency (Hz)	120Hz	1kHz	10kHz	100kHz	500kHz
Correction Factor	0.05	0.30	0.70	1.00	1.00

NP1

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
6.3(7.2)	100	6.3×7	300	0.08	8	4800
6.3(7.2)	150	6.3×7	300	0.08	8	4800
6.3(7.2)	180	6.3×7	300	0.08	8	4800
6.3(7.2)	180	8×8	300	0.08	8	5600
6.3(7.2)	180	8×11	300	0.08	8	6150
6.3(7.2)	220	5×9	300	0.08	10	4150
6.3(7.2)	220	6.3×7	300	0.08	8	4800
6.3(7.2)	220	8×8	300	0.08	8	5600
6.3(7.2)	220	8×11	300	0.08	8	6150
6.3(7.2)	270	5×9	340	0.08	10	4150
6.3(7.2)	270	6.3×7	340	0.08	8	4800
6.3(7.2)	270	8×8	340	0.08	8	5600
6.3(7.2)	270	8×11	340	0.08	8	6150
6.3(7.2)	330	5×9	416	0.08	10	4150
6.3(7.2)	330	5×11	416	0.08	10	4500
6.3(7.2)	330	6.3×7	416	0.08	8	4800
6.3(7.2)	330	8×8	416	0.08	8	5600
6.3(7.2)	330	8×11	416	0.08	8	6150
6.3(7.2)	390	6.3×7	491	0.08	8	4800
6.3(7.2)	390	6.3×9	491	0.08	8	5250
6.3(7.2)	390	8×8	491	0.08	8	5600
6.3(7.2)	390	8×11	491	0.08	8	6150
6.3(7.2)	470	6.3×9	592	0.08	8	5250
6.3(7.2)	470	6.3×10	592	0.08	8	5500
6.3(7.2)	470	8×8	592	0.08	8	5600
6.3(7.2)	470	8×11	592	0.08	8	6150
6.3(7.2)	560	6.3×9	706	0.08	8	5250
6.3(7.2)	560	6.3×11	706	0.08	8	5750
6.3(7.2)	560	8×8	706	0.08	8	5600
6.3(7.2)	560	8×11	706	0.08	8	6150
6.3(7.2)	680	6.3×9	857	0.08	8	5250
6.3(7.2)	680	6.3×10	857	0.08	8	5500
6.3(7.2)	680	8×8	857	0.08	8	5600
6.3(7.2)	680	8×11	857	0.08	8	6150
6.3(7.2)	680	10×12	857	0.08	8	6640
6.3(7.2)	820	8×11	1033	0.08	8	6150
6.3(7.2)	820	10×12	1033	0.08	8	6640
6.3(7.2)	1000	6.3×10	1260	0.08	8	5500
6.3(7.2)	1000	8×11	1260	0.08	8	6150
6.3(7.2)	1000	10×12	1260	0.08	8	6640
6.3(7.2)	1200	8×11	1512	0.08	8	6150
6.3(7.2)	1200	10×12	1512	0.08	8	6640
6.3(7.2)	1500	10×12	1890	0.09	8	6640

NP1

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
6.3(7.2)	2000	10×12	2520	0.10	8	6640
6.3(7.2)	2200	10×12	2772	0.10	8	6640
6.3(7.2)	2500	10×12	3150	0.11	8	6640
7.5(8.6)	270	5×7	405	0.08	12	3400
7.5(8.6)	330	5×9	495	0.08	12	3800
7.5(8.6)	390	5×10	585	0.08	10	4350
7.5(8.6)	470	5×11	705	0.08	10	4500
7.5(8.6)	680	6.3×9	1020	0.08	9	5000
7.5(8.6)	680	6.3×11	1020	0.08	8	5700
7.5(8.6)	1000	8×11	1500	0.08	8	6150
10(11.5)	33	6.3×5	300	0.08	30	2200
10(11.5)	39	6.3×5	300	0.08	30	2200
10(11.5)	47	6.3×7	300	0.08	12	3900
10(11.5)	68	6.3×7	300	0.08	12	3900
10(11.5)	82	6.3×7	300	0.08	12	3900
10(11.5)	100	5×7	300	0.08	15	3050
10(11.5)	100	6.3×7	300	0.08	12	3900
10(11.5)	150	5×11	300	0.08	12	4100
10(11.5)	150	6.3×7	300	0.08	12	3900
10(11.5)	180	5×11	360	0.08	12	4100
10(11.5)	180	6.3×9	360	0.08	12	4300
10(11.5)	180	8×8	360	0.08	10	5100
10(11.5)	180	8×11	360	0.08	9	5800
10(11.5)	220	6.3×9	440	0.08	12	4300
10(11.5)	220	8×8	440	0.08	10	5100
10(11.5)	220	8×11	440	0.08	9	5800
10(11.5)	270	6.3×9	540	0.08	12	4300
10(11.5)	270	6.3×11	540	0.08	9	5400
10(11.5)	270	8×8	540	0.08	10	5100
10(11.5)	270	8×11	540	0.08	9	5800
10(11.5)	330	6.3×11	660	0.08	9	5400
10(11.5)	330	8×8	660	0.08	10	5100
10(11.5)	330	8×11	660	0.08	9	5800
10(11.5)	390	6.3×11	780	0.08	9	5400
10(11.5)	390	8×8	780	0.08	10	5100
10(11.5)	390	8×11	780	0.08	9	5800
10(11.5)	470	6.3×11	940	0.08	9	5400
10(11.5)	470	8×8	940	0.08	10	5100
10(11.5)	470	8×11	940	0.08	9	5800
10(11.5)	560	8×11	1120	0.08	9	5800
10(11.5)	680	8×11	1360	0.08	9	5800
10(11.5)	680	10×12	1360	0.08	9	6300
10(11.5)	820	10×12	1640	0.08	9	6300

NP1

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
10(11.5)	1000	10×12	2000	0.08	9	6300
10(11.5)	1200	10×12	2400	0.08	9	6300
10(11.5)	1500	10×12	3000	0.09	9	6300
16(18.4)	22	6.3×7	300	0.08	15	3500
16(18.4)	33	6.3×7	300	0.08	15	3500
16(18.4)	47	6.3×7	300	0.08	15	3500
16(18.4)	68	6.3×7	300	0.08	15	3500
16(18.4)	82	6.3×7	300	0.08	15	3500
16(18.4)	100	6.3×7	320	0.08	15	3500
16(18.4)	100	6.3×11	320	0.08	10	5100
16(18.4)	100	8×11	320	0.08	10	5500
16(18.4)	150	6.3×10	480	0.08	10	4900
16(18.4)	150	8×8	480	0.08	12	4500
16(18.4)	150	10×12	480	0.08	10	6000
16(18.4)	180	6.3×7	576	0.08	15	3500
16(18.4)	180	6.3×11	576	0.08	10	5100
16(18.4)	180	8×8	576	0.08	12	4500
16(18.4)	180	8×11	576	0.08	10	5500
16(18.4)	220	6.3×10	704	0.08	10	4900
16(18.4)	220	8×8	704	0.08	12	4500
16(18.4)	220	8×11	704	0.08	10	5500
16(18.4)	270	6.3×10	864	0.08	10	4900
16(18.4)	270	8×8	864	0.08	12	4500
16(18.4)	270	8×11	864	0.08	10	5500
16(18.4)	270	10×12	864	0.08	10	6000
16(18.4)	330	8×8	1056	0.08	12	4500
16(18.4)	330	8×11	1056	0.08	10	5500
16(18.4)	330	10×12	1056	0.08	10	6000
16(18.4)	390	8×8	1248	0.08	12	4500
16(18.4)	390	8×11	1248	0.08	10	5500
16(18.4)	390	10×12	1248	0.08	10	6000
16(18.4)	470	8×11	1504	0.08	10	5500
16(18.4)	470	10×12	1504	0.08	10	6000
16(18.4)	560	8×11	1792	0.08	10	5500
16(18.4)	560	10×12	1792	0.08	10	6000
16(18.4)	680	8×11	2176	0.08	10	5500
16(18.4)	680	10×12	2176	0.08	10	6000
16(18.4)	820	10×12	2624	0.08	10	6000
16(18.4)	1000	8×16	3200	0.08	8	7100
16(18.4)	1000	10×12	3200	0.08	10	6000
25(28.8)	10	6.3×7	300	0.08	16	3400
25(28.8)	15	6.3×7	300	0.08	16	3400
25(28.8)	22	6.3×7	300	0.08	16	3400

NP1

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
25(28.8)	22	6.3×9	300	0.08	16	3750
25(28.8)	33	6.3×9	300	0.08	16	3750
25(28.8)	39	6.3×9	300	0.08	16	3750
25(28.8)	39	8×8	300	0.08	16	3900
25(28.8)	39	8×11	300	0.08	16	4400
25(28.8)	47	6.3×11	300	0.08	20	4000
25(28.8)	47	8×8	300	0.08	16	3900
25(28.8)	47	8×11	300	0.08	16	4400
25(28.8)	68	8×8	340	0.08	16	3900
25(28.8)	68	8×11	340	0.08	16	4400
25(28.8)	82	8×8	410	0.08	16	3900
25(28.8)	82	8×11	410	0.08	16	4400
25(28.8)	100	8×11	500	0.08	16	4400
25(28.8)	100	10×12	500	0.08	16	4700
25(28.8)	150	8×11	750	0.08	16	4400
25(28.8)	150	10×12	750	0.08	16	4700
25(28.8)	180	8×11	900	0.08	16	4400
25(28.8)	180	10×12	900	0.08	16	4700
25(28.8)	220	8×11	1100	0.08	16	4400
25(28.8)	220	10×12	1100	0.08	16	4700
25(28.8)	270	8×11	1350	0.08	16	4400
25(28.8)	270	10×12	1350	0.08	16	4700
25(28.8)	330	10×12	1650	0.08	16	4700
25(28.8)	390	10×12	1950	0.08	16	4700
25(28.8)	470	10×12	2350	0.08	16	4700
25(28.8)	560	10×12	2800	0.08	16	4700
25(28.8)	680	8×16	3400	0.08	16	5050
25(28.8)	820	10×12	4100	0.08	16	4700
25(28.8)	1000	10×16	5000	0.08	16	5300

NPX

- ◆ High reliability, low ESR, high permissible ripple current
- ◆ 105℃, 2000-hour warranty
- ◆ RoHS compliant
- ◆ Miniaturized

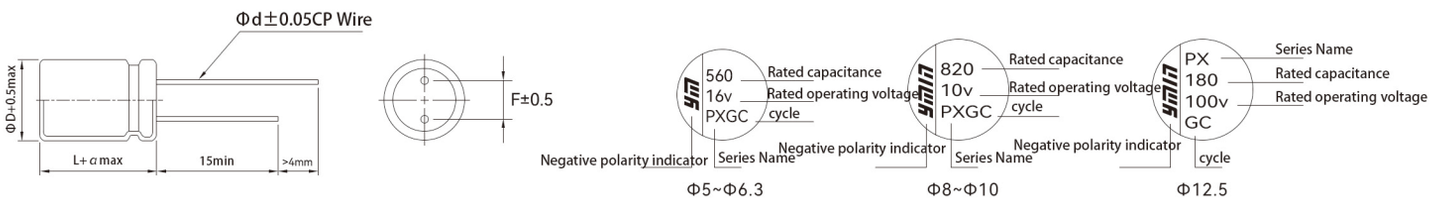


■ List of Standard Products

project	characteristic
Operating temperature range	－55 ~ +105℃
Rated operating voltage	6.3 ~ 100V
Capacity range	2.2 ~ 10000μF 120Hz 20℃
Capacity tolerance	±20% (120Hz 20℃)
Loss tangent	Values below the standard product list: 120Hz, 20℃
Leakage current	Values below the standard product list: Charged for 2 minutes at rated voltage, 20℃
Equivalent series resistance (ESR)	Values below the standard product list: 100kHz, 20℃
Durability	After being subjected to the rated operating voltage for 2000 hours at 105℃ and placed at 20℃ for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±20% of the initial value Equivalent series resistance (ESR): ≦ 150% of the initial specification value Loss tangent: ≦ 150% of the initial specification value Leakage current: ≦ Initial specification value
High temperature and humidity	After being placed at 60℃ and 90%~95% RH without voltage for 1000 hours, and then placed at 20℃ for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±20% of the initial value Equivalent series resistance (ESR): ≦ 150% of the initial specification value Loss tangent: ≦ 150% of the initial specification value Leakage current: ≦ Initial specification value

※If there is any doubt about the leakage current value, please place the product at 105° C and apply the rated operating voltage for 2 hours, then cool it down to 20° C before testing the leakage current.

■ Product dimension drawing (unit: mm)



D (±0.5)	5	5.5	6.3	8	10	12.5
d (±0.05)	0.45/0.50	0.45/0.50	0.45/0.50	0.6	0.6	0.6
F (±0.5)	2	2.5	2.5	3.5	5	5
α	+1					

■ Frequency correction factor

Frequency (Hz)	120Hz	1kHz	10kHz	100kHz	500kHz
Correction Factor	0.05	0.30	0.70	1.00	1.00

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■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
6.3(7.2)	100	5×5.7	300	0.08	20	2400
6.3(7.2)	100	6.3×4.2	300	0.08	40	2500
6.3(7.2)	100	6.3×7	300	0.08	8	4800
6.3(7.2)	150	5×5.7	300	0.08	20	2400
6.3(7.2)	150	6.3×4.2	300	0.08	40	2500
6.3(7.2)	180	5×5.7	300	0.08	20	2400
6.3(7.2)	180	6.3×4.2	300	0.08	40	2500
6.3(7.2)	220	5×5.7	300	0.08	20	2400
6.3(7.2)	220	5×7	300	0.08	12	3400
6.3(7.2)	220	6.3×4.2	300	0.08	40	2500
6.3(7.2)	270	5×7	340	0.08	12	3400
6.3(7.2)	270	6.3×5.7	340	0.08	18	2800
6.3(7.2)	330	5×7	416	0.08	12	3400
6.3(7.2)	330	6.3×5.7	416	0.08	18	2800
6.3(7.2)	390	5×7	491	0.08	12	3400
6.3(7.2)	390	6.3×5.7	491	0.08	18	2800
6.3(7.2)	470	5×8	592	0.08	12	3650
6.3(7.2)	470	6.3×7	592	0.08	8	4800
6.3(7.2)	560	6.3×7	706	0.08	8	4800
6.3(7.2)	560	6.3×9	706	0.08	8	5250
6.3(7.2)	560	8×7	706	0.08	12	4200
6.3(7.2)	680	5×9	857	0.08	10	3850
6.3(7.2)	680	6.3×8	857	0.08	8	5000
6.3(7.2)	680	8×7	857	0.08	12	4200
6.3(7.2)	820	6.3×7.5	1033	0.08	8	4900
6.3(7.2)	820	6.3×9	1033	0.08	8	5250
6.3(7.2)	820	8×7	1033	0.08	12	4200
6.3(7.2)	1000	6.3×10	1260	0.08	8	5500
6.3(7.2)	1000	8×8	1260	0.08	8	5600
6.3(7.2)	1000	8×11	1260	0.08	8	6150
6.3(7.2)	1000	10×7	1260	0.08	12	4500
6.3(7.2)	1200	6.3×11	1512	0.09	8	5700
6.3(7.2)	1200	8×9	1512	0.09	8	5800
6.3(7.2)	1200	10×8	1512	0.09	8	5800
6.3(7.2)	1500	8×11	1890	0.09	8	6150
6.3(7.2)	1500	8×16	1890	0.09	7	7750
6.3(7.2)	1500	10×9	1890	0.09	8	6050
6.3(7.2)	1500	10×10	1890	0.09	8	6300
6.3(7.2)	2000	8×14	2520	0.10	7	7250
6.3(7.2)	2000	10×10	2520	0.10	8	6300
6.3(7.2)	2200	8×14	2772	0.10	7	7250
6.3(7.2)	2200	10×10	2772	0.10	8	6300
6.3(7.2)	2500	10×12	3150	0.10	8	6500

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■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
6.3(7.2)	2700	10×12	3402	0.10	8	6500
6.3(7.2)	3300	10×12	4158	0.11	8	6500
6.3(7.2)	3300	10×16	4158	0.11	8	8100
6.3(7.2)	3900	10×14	4914	0.11	7	7600
6.3(7.2)	4700	10×16	5922	0.12	8	8100
6.3(7.2)	4700	12.5×12.5	5922	0.12	8	7600
6.3(7.2)	5600	10×18	7056	0.13	7	8500
6.3(7.2)	5600	12.5×14	7056	0.13	8	7900
6.3(7.2)	6800	10×21	7500	0.14	7	9100
6.3(7.2)	6800	12.5×16	7500	0.14	7	8950
6.3(7.2)	8200	12.5×18	7500	0.16	7	9450
6.3(7.2)	10000	12.5×20	7500	0.18	7	9850
7.5(8.6)	270	5×7	405	0.08	12	3400
7.5(8.6)	270	6.3×5.7	405	0.08	18	2800
7.5(8.6)	330	5×9	495	0.08	12	3800
7.5(8.6)	330	6.3×5.7	495	0.08	18	2800
7.5(8.6)	390	5×10	585	0.08	10	4350
7.5(8.6)	390	6.3×7	585	0.08	12	3900
7.5(8.6)	470	5×9	705	0.08	12	3800
7.5(8.6)	470	5×11	705	0.08	10	4500
7.5(8.6)	470	6.3×8	705	0.08	12	4100
7.5(8.6)	560	6.3×9	840	0.08	9	5000
7.5(8.6)	680	6.3×10	1020	0.08	8	5500
7.5(8.6)	680	8×7	1020	0.08	12	4200
7.5(8.6)	820	6.3×11	1230	0.08	8	5700
7.5(8.6)	820	8×8	1230	0.08	8	5600
7.5(8.6)	1000	6.3×11	1500	0.08	8	5700
7.5(8.6)	1000	8×9	1500	0.08	8	5800
7.5(8.6)	1500	6.3×15	2250	0.09	8	6650
10(11.5)	47	5×5.7	300	0.08	30	1900
10(11.5)	47	6.3×4.2	300	0.08	40	2100
10(11.5)	68	5×5.7	300	0.08	30	1900
10(11.5)	68	6.3×4.2	300	0.08	40	2100
10(11.5)	82	5×5.7	300	0.08	30	1900
10(11.5)	82	6.3×4.2	300	0.08	40	2100
10(11.5)	100	5×5	300	0.08	30	1900
10(11.5)	100	5×5.7	300	0.08	30	1900
10(11.5)	100	6.3×4.2	300	0.08	40	2100
10(11.5)	150	5×7	300	0.08	15	3050
10(11.5)	150	6.3×5.7	300	0.08	30	2200
10(11.5)	180	5×7	360	0.08	15	3050
10(11.5)	180	6.3×5.7	360	0.08	30	2200
10(11.5)	220	5×7	440	0.08	15	3050

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■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
10(11.5)	220	6.3×5.7	440	0.08	30	2200
10(11.5)	220	6.3×9	440	0.08	12	4300
10(11.5)	270	5×9	540	0.08	12	3950
10(11.5)	270	5×10	540	0.08	12	4000
10(11.5)	270	6.3×5.7	540	0.08	30	2200
10(11.5)	330	5×11	660	0.08	12	4100
10(11.5)	330	6.3×7	660	0.08	16	3500
10(11.5)	390	6.3×7	780	0.08	16	3500
10(11.5)	470	5×11	940	0.08	12	4100
10(11.5)	470	6.3×8	940	0.08	12	4100
10(11.5)	470	8×7	940	0.08	14	2550
10(11.5)	560	6.3×10	1120	0.08	10	4900
10(11.5)	560	8×7	1120	0.08	14	2550
10(11.5)	680	6.3×11	1360	0.08	9	5400
10(11.5)	680	8×8	1360	0.08	10	5100
10(11.5)	820	8×9	1640	0.08	9	5500
10(11.5)	820	10×7	1640	0.08	14	4500
10(11.5)	1000	6.3×12	2000	0.08	9	5600
10(11.5)	1000	8×11	2000	0.08	9	5800
10(11.5)	1000	10×8	2000	0.08	9	5500
10(11.5)	1000	10×10	2000	0.08	9	5750
10(11.5)	1500	8×12	3000	0.09	9	6050
10(11.5)	1500	8×14	3000	0.09	8	6800
10(11.5)	1500	10×12	3000	0.09	9	6300
10(11.5)	2200	8×16	4400	0.10	8	7250
10(11.5)	2200	10×14	4400	0.10	8	7000
10(11.5)	2500	10×14	5000	0.10	8	7000
10(11.5)	2700	10×16	5400	0.10	8	7500
10(11.5)	3300	10×18	6600	0.11	8	7900
10(11.5)	3300	12.5×14	6600	0.11	9	7500
10(11.5)	3900	10×21	7500	0.11	8	8400
10(11.5)	3900	12.5×16	7500	0.11	8	8400
10(11.5)	4700	12.5×18	7500	0.12	8	8400
10(11.5)	5600	12.5×18	7500	0.13	8	8400
10(11.5)	6800	12.5×20	7500	0.14	8	9200
12(13.8)	180	5×7	432	0.08	15	3050
12(13.8)	180	6.3×5.7	432	0.08	30	2200
12(13.8)	220	5×9	528	0.08	15	3400
12(13.8)	220	6.3×5.7	528	0.08	30	2200
12(13.8)	270	5×10	648	0.08	12	4000
12(13.8)	270	6.3×7	648	0.08	16	3500
12(13.8)	330	5×10	792	0.08	12	4000
12(13.8)	330	6.3×7	792	0.08	16	3500

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■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
12(13.8)	390	5×11	936	0.08	12	4100
12(13.8)	390	6.3×8	936	0.08	12	4100
12(13.8)	470	6.3×9	1128	0.08	12	4500
12(13.8)	470	8×7	1128	0.08	14	2550
12(13.8)	560	6.3×10	1344	0.08	10	4900
12(13.8)	560	8×7	1344	0.08	14	2550
12(13.8)	680	6.3×11	1632	0.08	9	5400
12(13.8)	680	8×8	1632	0.08	10	5100
12(13.8)	1000	8×9	2400	0.08	10	5200
16(18.4)	22	5×5.7	300	0.08	30	1900
16(18.4)	22	6.3×4.2	300	0.08	40	2100
16(18.4)	33	5×5.7	300	0.08	30	1900
16(18.4)	33	6.3×4.2	300	0.08	40	2100
16(18.4)	47	5×5	300	0.08	30	1900
16(18.4)	47	5×5.7	300	0.08	30	1900
16(18.4)	47	6.3×4.2	300	0.08	40	2100
16(18.4)	68	5×5.7	300	0.08	30	1900
16(18.4)	68	6.3×4.2	300	0.08	40	2100
16(18.4)	82	5×5.7	300	0.08	30	1900
16(18.4)	82	6.3×4.2	300	0.08	40	2100
16(18.4)	100	5×5.7	320	0.08	30	1900
16(18.4)	100	5×7	320	0.08	30	2200
16(18.4)	100	6.3×5	320	0.08	30	2100
16(18.4)	100	6.3×5.7	320	0.08	30	2100
16(18.4)	100	6.3×7	320	0.08	16	3500
16(18.4)	120	5×5.7	384	0.08	30	1900
16(18.4)	150	5×5.7	480	0.08	30	1900
16(18.4)	150	5×7	480	0.08	30	2200
16(18.4)	150	6.3×5.7	480	0.08	30	2100
16(18.4)	220	5×8	704	0.08	30	2300
16(18.4)	220	5×9	704	0.08	12	4000
16(18.4)	220	5×10	704	0.08	12	4000
16(18.4)	220	6.3×5	704	0.08	30	2100
16(18.4)	220	6.3×5.7	704	0.08	30	2100
16(18.4)	220	6.3×7	704	0.08	16	3500
16(18.4)	220	6.3×8	704	0.08	12	4100
16(18.4)	270	6.3×5.7	864	0.08	30	2100
16(18.4)	270	6.3×7	864	0.08	16	3500
16(18.4)	270	6.3×8	864	0.08	12	4100
16(18.4)	270	8×8	864	0.08	12	4500
16(18.4)	270	8×9	864	0.08	12	4700
16(18.4)	270	8×16	864	0.08	8	7100
16(18.4)	330	6.3×7	1056	0.08	16	3500

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■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
16(18.4)	330	6.3×8	1056	0.08	12	4100
16(18.4)	330	8×11	1056	0.08	10	5500
16(18.4)	330	10×9	1056	0.08	12	4950
16(18.4)	390	6.3×8	1248	0.08	12	4100
16(18.4)	470	5×11	1504	0.08	12	4100
16(18.4)	470	5×12	1504	0.08	12	4300
16(18.4)	470	6.3×8	1504	0.08	12	4100
16(18.4)	470	6.3×9	1504	0.08	12	4500
16(18.4)	470	6.3×10	1504	0.08	10	4900
16(18.4)	470	6.3×15	1504	0.08	10	5680
16(18.4)	470	8×7	1504	0.08	20	2550
16(18.4)	470	10×9	1504	0.08	12	4950
16(18.4)	560	5×15	1792	0.08	12	4560
16(18.4)	560	6.3×10	1792	0.08	10	4900
16(18.4)	560	6.3×11	1792	0.08	10	5100
16(18.4)	560	8×9	1792	0.08	12	4700
16(18.4)	560	10×8	1792	0.08	12	4700
16(18.4)	680	5×15	2176	0.08	12	4560
16(18.4)	680	6.3×9	2176	0.08	12	4500
16(18.4)	680	6.3×10	2176	0.08	10	4900
16(18.4)	680	6.3×11	2176	0.08	10	5100
16(18.4)	680	8×10	2176	0.08	10	5350
16(18.4)	680	10×8	2176	0.08	12	4700
16(18.4)	820	6.3×11	2624	0.08	10	5100
16(18.4)	820	6.3×15	2624	0.08	10	5680
16(18.4)	820	8×11	2624	0.08	10	5500
16(18.4)	820	10×9	2624	0.08	12	4950
16(18.4)	1000	6.3×14	3200	0.08	10	5450
16(18.4)	1000	8×11	3200	0.08	10	5500
16(18.4)	1000	8×14	3200	0.08	8	6800
16(18.4)	1000	8×16	3200	0.08	8	7100
16(18.4)	1000	10×10	3200	0.08	12	5200
16(18.4)	1200	6.3×18	3840	0.08	10	6200
16(18.4)	1500	8×14	4800	0.09	8	6800
16(18.4)	1500	10×12	4800	0.09	9	6300
16(18.4)	1500	10×16	4800	0.09	8	7500
16(18.4)	1800	10×13	5760	0.09	8	7000
16(18.4)	2200	10×15	7040	0.10	8	7500
16(18.4)	2200	10×16	7040	0.10	8	7500
16(18.4)	2200	10×18	7040	0.10	8	7900
16(18.4)	2200	12.5×14	7040	0.10	10	7100
16(18.4)	2700	10×16	7500	0.10	8	7500
16(18.4)	2700	10×21	7500	0.10	8	8400

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■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
16(18.4)	2700	12.5×14	7500	0.10	10	7100
16(18.4)	3300	10×18	7500	0.11	8	7900
16(18.4)	3300	12.5×16	7500	0.11	8	8400
16(18.4)	3900	12.5×18	7500	0.12	8	8400
16(18.4)	4700	12.5×20	7500	0.14	8	9200
25(28.8)	10	5×5.7	300	0.08	40	1650
25(28.8)	10	6.3×4.2	300	0.08	40	1800
25(28.8)	15	5×5.7	300	0.08	40	1650
25(28.8)	15	6.3×4.2	300	0.08	40	1800
25(28.8)	22	5×5.7	300	0.08	40	1650
25(28.8)	22	6.3×4.2	300	0.08	40	1800
25(28.8)	33	5×5.7	300	0.08	40	1650
25(28.8)	33	6.3×4.2	300	0.08	40	1800
25(28.8)	39	5×5.7	300	0.08	40	1650
25(28.8)	39	6.3×4.2	300	0.08	40	1800
25(28.8)	47	5×5.7	300	0.08	40	1650
25(28.8)	47	6.3×4.2	300	0.08	40	1800
25(28.8)	56	5×8	300	0.08	30	2200
25(28.8)	68	5×7	340	0.08	30	2200
25(28.8)	68	6.3×5.7	340	0.08	30	1900
25(28.8)	100	5×5.7	500	0.08	40	1650
25(28.8)	100	5×6	500	0.08	30	2050
25(28.8)	100	5×7	500	0.08	30	2200
25(28.8)	100	5×9	500	0.08	30	2400
25(28.8)	100	5×11	500	0.08	20	2550
25(28.8)	100	6.3×5	500	0.08	30	1900
25(28.8)	100	6.3×5.7	500	0.08	30	1900
25(28.8)	100	6.3×7	500	0.08	16	3400
25(28.8)	120	5×7	600	0.08	30	2200
25(28.8)	120	6.3×8	600	0.08	16	3550
25(28.8)	150	5×7	750	0.08	30	2200
25(28.8)	150	6.3×5.7	750	0.08	30	1900
25(28.8)	150	6.3×8	750	0.08	16	3550
25(28.8)	150	8×7	750	0.08	30	2550
25(28.8)	180	6.3×8	900	0.08	16	3550
25(28.8)	180	8×7	900	0.08	30	2550
25(28.8)	220	5×10	1100	0.08	20	2500
25(28.8)	220	5×12	1100	0.08	20	2700
25(28.8)	220	6.3×5.7	1100	0.08	30	1900
25(28.8)	220	6.3×7	1100	0.08	16	3400
25(28.8)	220	6.3×8	1100	0.08	16	3550
25(28.8)	220	6.3×9	1100	0.08	20	3500
25(28.8)	220	8×7	1100	0.08	30	2550

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Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
25(28.8)	220	10×7	1100	0.08	16	4100
25(28.8)	270	5×11	1350	0.08	20	2550
25(28.8)	270	6.3×7	1350	0.08	16	3400
25(28.8)	270	6.3×8	1350	0.08	16	3550
25(28.8)	330	5×12	1650	0.08	20	2700
25(28.8)	330	5×13	1650	0.08	20	2800
25(28.8)	330	5×15	1650	0.08	20	3000
25(28.8)	330	6.3×8	1650	0.08	16	3550
25(28.8)	330	6.3×9	1650	0.08	20	3500
25(28.8)	330	6.3×10	1650	0.08	20	3650
25(28.8)	330	6.3×11	1650	0.08	20	3650
25(28.8)	330	8×9	1650	0.08	16	4000
25(28.8)	330	10×8	1650	0.08	16	4100
25(28.8)	470	5×15	2350	0.08	20	3000
25(28.8)	470	6.3×9	2350	0.08	20	3500
25(28.8)	470	6.3×12	2350	0.08	20	3800
25(28.8)	470	8×7	2350	0.08	30	2550
25(28.8)	470	8×8	2350	0.08	16	3900
25(28.8)	470	8×9	2350	0.08	16	4000
25(28.8)	470	8×11	2350	0.08	16	4200
25(28.8)	470	8×14	2350	0.08	16	4800
25(28.8)	470	10×9	2350	0.08	16	4300
25(28.8)	470	10×12	2350	0.08	16	4700
25(28.8)	560	6.3×10	2800	0.08	20	3650
25(28.8)	560	6.3×12	2800	0.08	20	3800
25(28.8)	560	6.3×14	2800	0.08	20	4000
25(28.8)	560	6.3×15	2800	0.08	20	4100
25(28.8)	560	8×8	2800	0.08	16	3900
25(28.8)	560	8×11	2800	0.08	16	4200
25(28.8)	560	8×14	2800	0.08	16	4800
25(28.8)	560	10×10	2800	0.08	16	4500
25(28.8)	680	6.3×12	3400	0.08	20	3800
25(28.8)	680	6.3×14	3400	0.08	20	4000
25(28.8)	680	6.3×15	3400	0.08	20	4100
25(28.8)	680	6.3×18	3400	0.08	20	4500
25(28.8)	680	8×11	3400	0.08	16	4200
25(28.8)	680	8×14	3400	0.08	16	4800
25(28.8)	680	10×8	3400	0.08	16	4100
25(28.8)	680	10×12	3400	0.08	16	4700
25(28.8)	820	6.3×14	4100	0.08	20	4000
25(28.8)	820	6.3×15	4100	0.08	20	4100
25(28.8)	820	8×12	4100	0.08	16	4550
25(28.8)	820	8×14	4100	0.08	16	4800

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Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
25(28.8)	820	8×16	4100	0.08	16	5050
25(28.8)	820	10×9	4100	0.08	16	4300
25(28.8)	820	10×12	4100	0.08	16	4700
25(28.8)	820	10×13	4100	0.08	16	4800
25(28.8)	1000	6.3×18	5000	0.08	20	4500
25(28.8)	1000	8×14	5000	0.08	16	4800
25(28.8)	1000	8×16	5000	0.08	16	5050
25(28.8)	1000	10×16	5000	0.08	16	5300
25(28.8)	1000	12.5×12.5	5000	0.08	16	5300
25(28.8)	1200	10×14	6000	0.09	16	5000
25(28.8)	1500	10×16	7500	0.09	16	5300
25(28.8)	1500	10×18	7500	0.09	16	5600
25(28.8)	1500	12.5×14	7500	0.09	16	5600
25(28.8)	1800	10×21	7500	0.09	16	6000
25(28.8)	1800	12.5×16	7500	0.09	16	5900
25(28.8)	2200	10×21	7500	0.10	16	6000
25(28.8)	2200	12.5×18	7500	0.10	16	6200
25(28.8)	2700	12.5×20	7500	0.10	16	6500
25(28.8)	3300	10×21	7500	0.11	16	6000
25(28.8)	3300	12.5×25	7500	0.11	16	7250
35(41)	10	5×5.7	300	0.12	60	1350
35(41)	10	6.3×4.2	300	0.12	60	1400
35(41)	10	6.3×7	300	0.12	50	1900
35(41)	15	5×5.7	300	0.12	60	1350
35(41)	15	6.3×4.2	300	0.12	60	1400
35(41)	22	5×5.7	300	0.12	60	1350
35(41)	22	6.3×4.2	300	0.12	60	1400
35(41)	33	5×5.7	300	0.12	60	1350
35(41)	33	6.3×4.2	300	0.12	60	1400
35(41)	39	5×7	300	0.12	50	1700
35(41)	39	6.3×5.7	300	0.12	60	1550
35(41)	47	5×5.7	329	0.12	60	1350
35(41)	47	5×7	329	0.12	50	1700
35(41)	47	6.3×5.7	329	0.12	60	1550
35(41)	47	6.3×8	329	0.12	50	2050
35(41)	56	5×7	392	0.12	50	1700
35(41)	56	6.3×5.7	392	0.12	60	1550
35(41)	68	5×8	476	0.12	50	1800
35(41)	68	6.3×5.7	476	0.12	60	1550
35(41)	82	5×9	574	0.12	50	1900
35(41)	82	6.3×7	574	0.12	50	1900
35(41)	100	5×11	700	0.12	40	2300
35(41)	100	6.3×5	700	0.12	60	1550

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Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
35(41)	100	6.3×7	700	0.12	50	1900
35(41)	120	6.3×8	840	0.12	50	2050
35(41)	120	8×7	840	0.12	60	1900
35(41)	150	5×11	1050	0.12	40	2300
35(41)	150	5×15	1050	0.12	30	2500
35(41)	150	6.3×7	1050	0.12	50	1900
35(41)	150	6.3×9	1050	0.12	50	2150
35(41)	150	8×7	1050	0.12	60	1900
35(41)	180	6.3×8	1260	0.12	50	2050
35(41)	180	6.3×10	1260	0.12	40	2500
35(41)	180	6.3×12	1260	0.12	40	2600
35(41)	180	8×7	1260	0.12	60	1900
35(41)	220	5×15	1540	0.12	30	2500
35(41)	220	6.3×9	1540	0.12	50	2150
35(41)	220	6.3×10	1540	0.12	40	2500
35(41)	220	6.3×11	1540	0.12	40	2600
35(41)	220	8×7	1540	0.12	60	1900
35(41)	220	8×8	1540	0.12	50	2200
35(41)	220	10×7	1540	0.12	50	2350
35(41)	270	8×11	1890	0.12	30	3200
35(41)	330	6.3×10	2310	0.12	40	2500
35(41)	330	6.3×12	2310	0.12	40	2600
35(41)	330	6.3×15	2310	0.12	40	2900
35(41)	330	8×10	2310	0.12	30	3100
35(41)	330	10×8	2310	0.12	50	2350
35(41)	390	8×9	2730	0.12	30	2900
35(41)	390	8×11	2730	0.12	30	3200
35(41)	390	10×8	2730	0.12	50	2350
35(41)	390	10×10	2730	0.12	50	2550
35(41)	470	6.3×15	3290	0.12	40	2900
35(41)	470	8×11	3290	0.12	30	3200
35(41)	470	8×14	3290	0.12	20	4250
35(41)	470	10×12	3290	0.12	30	3400
35(41)	560	6.3×18	3920	0.12	40	3300
35(41)	560	8×14	3920	0.12	20	4250
35(41)	560	8×16	3920	0.12	20	4550
35(41)	560	10×10	3920	0.12	50	2550
35(41)	560	10×12	3920	0.12	30	3400
35(41)	680	6.3×18	4760	0.12	40	3300
35(41)	680	6.3×20	4760	0.12	40	3500
35(41)	680	8×14	4760	0.12	20	4250
35(41)	680	8×16	4760	0.12	20	4550
35(41)	680	10×14	4760	0.12	20	4450

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Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
35(41)	820	6.3×20	5740	0.12	40	3500
35(41)	820	8×18	5740	0.12	20	4650
35(41)	820	10×16	5740	0.12	20	4700
35(41)	820	12.5×12.5	5740	0.12	30	3900
35(41)	1000	6.3×23	7000	0.12	40	3750
35(41)	1000	8×18	7000	0.12	20	4650
35(41)	1000	10×16	7000	0.12	20	4700
35(41)	1000	10×18	7000	0.12	20	5000
35(41)	1000	12.5×14	7000	0.12	30	4100
35(41)	1200	8×20	7500	0.13	20	4900
35(41)	1200	10×18	7500	0.13	20	5000
35(41)	1200	10×21	7500	0.13	20	5300
35(41)	1200	12.5×16	7500	0.13	20	5300
35(41)	1500	10×18	7500	0.13	20	5000
35(41)	1500	12.5×18	7500	0.13	20	5600
35(41)	1500	12.5×20	7500	0.13	20	5850
35(41)	1800	12.5×18	7500	0.13	20	5600
35(41)	1800	12.5×20	7500	0.13	20	5850
35(41)	2200	12.5×20	7500	0.14	20	5850
50(58)	10	5×5.7	300	0.12	120	1350
50(58)	10	6.3×4.2	300	0.12	60	1400
50(58)	12	5×5.7	300	0.12	120	1350
50(58)	12	6.3×4.2	300	0.12	60	1400
50(58)	15	5×5.7	300	0.12	120	1350
50(58)	15	6.3×4.2	300	0.12	60	1400
50(58)	18	5×5.7	300	0.12	120	1350
50(58)	18	6.3×4.2	300	0.12	60	1400
50(58)	22	5×7	300	0.12	60	1450
50(58)	22	6.3×5.7	300	0.12	60	1550
50(58)	33	5×8	330	0.12	50	1800
50(58)	33	6.3×5.7	330	0.12	60	1550
50(58)	39	5×10	390	0.12	40	2200
50(58)	39	6.3×7	390	0.12	50	1900
50(58)	47	6.3×7	470	0.12	50	1900
50(58)	56	6.3×8	560	0.12	50	1900
50(58)	56	8×7	560	0.12	60	1800
50(58)	68	6.3×9	680	0.12	50	2150
50(58)	68	8×7	680	0.12	60	1800
50(58)	82	6.3×10	820	0.12	40	2500
50(58)	82	8×7	820	0.12	60	1800
50(58)	100	6.3×9	1000	0.12	50	2150
50(58)	100	8×8	1000	0.12	50	2200
50(58)	100	8×9	1000	0.12	50	2300

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Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
50(58)	100	8×11	1000	0.12	40	2800
50(58)	120	8×9	1200	0.12	50	2300
50(58)	120	10×7	1200	0.12	60	2050
50(58)	150	6.3×12	1500	0.12	40	2700
50(58)	150	8×9	1500	0.12	50	2300
50(58)	150	10×8	1500	0.12	50	2350
50(58)	180	8×11	1800	0.12	40	2800
50(58)	180	10×9	1800	0.12	50	2450
50(58)	220	6.3×15	2200	0.12	30	3000
50(58)	220	8×14	2200	0.12	30	3500
50(58)	220	10×9	2200	0.12	50	2450
50(58)	220	10×12	2200	0.12	40	2900
50(58)	270	8×16	2700	0.12	30	3700
50(58)	270	10×13	2700	0.12	40	3000
50(58)	330	10×16	3300	0.12	30	3800
50(58)	390	10×12	3900	0.12	40	2900
50(58)	390	10×16	3900	0.12	30	3800
50(58)	390	12.5×12.5	3900	0.12	40	3350
50(58)	470	8×18	4700	0.12	30	3900
50(58)	470	10×16	4700	0.12	30	3800
50(58)	470	10×18	4700	0.12	30	4050
50(58)	470	12.5×14	4700	0.12	40	3500
50(58)	560	10×21	5600	0.12	30	4350
50(58)	560	12.5×16	5600	0.12	30	4300
50(58)	680	10×16	6800	0.12	30	3800
50(58)	680	10×23	6800	0.12	30	4550
50(58)	680	12.5×18	6800	0.12	30	4550
50(58)	820	12.5×20	7500	0.12	30	4750
50(58)	1000	12.5×20	7500	0.12	30	4750
50(58)	1000	12.5×25	7500	0.12	30	5250
50(58)	1500	12.5×23	7500	0.12	30	5050
50(58)	2200	12.5×30	7500	0.12	30	5750
63(73)	6.8	5×5.7	300	0.12	120	1350
63(73)	6.8	6.3×4.2	300	0.12	60	1400
63(73)	8.2	5×5.7	300	0.12	120	1350
63(73)	8.2	6.3×4.2	300	0.12	60	1400
63(73)	10	5×5.7	300	0.12	120	1350
63(73)	10	6.3×4.2	300	0.12	60	1400
63(73)	15	5×7	300	0.12	60	1450
63(73)	15	6.3×4.2	300	0.12	60	1400
63(73)	22	5×9	300	0.12	50	1900
63(73)	22	6.3×7	300	0.12	50	1900
63(73)	22	8×7	300	0.12	60	1800

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Rated voltage (V)	nominal capacity (μF)	nominal capacity (μF)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
63(73)	27	6.3×7	340	0.12	50	1900
63(73)	33	5×12	416	0.12	40	2250
63(73)	33	6.3×7	416	0.12	50	1900
63(73)	33	8×7	416	0.12	60	1800
63(73)	39	6.3×9	491	0.12	50	2150
63(73)	39	8×7	491	0.12	60	1800
63(73)	47	6.3×10	592	0.12	40	2500
63(73)	47	8×7	592	0.12	60	1800
63(73)	56	8×8	706	0.12	50	2200
63(73)	68	8×9	857	0.12	50	2300
63(73)	68	10×7	857	0.12	60	2050
63(73)	82	8×9	1033	0.12	50	2300
63(73)	82	10×7	1033	0.12	60	2050
63(73)	100	6.3×15	1260	0.12	40	3050
63(73)	100	8×10	1260	0.12	40	2700
63(73)	100	10×8	1260	0.12	50	2350
63(73)	120	8×13	1512	0.12	40	3000
63(73)	120	10×9	1512	0.12	50	2450
63(73)	150	8×16	1890	0.12	30	3700
63(73)	150	10×13	1890	0.12	40	3000
63(73)	180	10×14	2268	0.12	30	3600
63(73)	220	10×12	2772	0.12	40	3300
63(73)	220	10×16	2772	0.12	30	3800
63(73)	220	10×20	2772	0.12	30	4250
63(73)	220	12.5×12.5	2772	0.12	40	3350
63(73)	270	10×13	3402	0.12	40	3300
63(73)	270	10×14	3402	0.12	30	3600
63(73)	270	10×16	3402	0.12	30	3800
63(73)	270	10×18	3402	0.12	30	4050
63(73)	270	12.5×14	3402	0.12	40	3500
63(73)	330	10×14	4158	0.12	30	3600
63(73)	330	10×21	4158	0.12	30	4350
63(73)	330	12.5×16	4158	0.12	30	4300
63(73)	390	12.5×18	4914	0.12	30	4550
63(73)	470	10×21	5922	0.12	30	4350
63(73)	470	12.5×20	5922	0.12	30	4750
63(73)	680	12.5×20	7500	0.12	30	4750
80(92)	4.7	5×5.7	300	0.12	120	1350
80(92)	4.7	6.3×4.2	300	0.12	60	1400
80(92)	6.8	5×5.7	300	0.12	120	1350
80(92)	6.8	6.3×4.2	300	0.12	60	1400
80(92)	8.2	5×5.7	300	0.12	120	1350
80(92)	8.2	6.3×4.2	300	0.12	60	1400

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Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
80(92)	10	5×7	300	0.12	60	1450
80(92)	10	6.3×4.2	300	0.12	60	1400
80(92)	15	5×9	300	0.12	50	1900
80(92)	15	6.3×7	300	0.12	50	1900
80(92)	22	6.3×7	352	0.12	50	1900
80(92)	22	8×7	352	0.12	60	1800
80(92)	33	6.3×10	528	0.12	40	2500
80(92)	33	8×7	528	0.12	60	1800
80(92)	39	6.3×11	624	0.12	40	2600
80(92)	39	8×8	624	0.12	50	2200
80(92)	47	6.3×11	752	0.12	40	2600
80(92)	47	8×8	752	0.12	50	2200
80(92)	47	10×7	752	0.12	60	2050
80(92)	56	8×9	896	0.12	50	2300
80(92)	56	10×9	896	0.12	50	2450
80(92)	68	8×10	1088	0.12	40	2700
80(92)	68	10×9	1088	0.12	50	2450
80(92)	82	8×12	1312	0.12	40	2900
80(92)	82	10×10	1312	0.12	50	2550
80(92)	100	6.3×18	1600	0.12	40	3150
80(92)	100	8×14	1600	0.12	30	3500
80(92)	100	10×12	1600	0.12	40	2900
80(92)	100	10×14	1600	0.12	40	3000
80(92)	120	8×16	1920	0.12	30	3700
80(92)	120	10×13	1920	0.12	40	3000
80(92)	150	10×16	2400	0.12	30	3800
80(92)	150	12.5×12.5	2400	0.12	40	3350
80(92)	180	8×21	2880	0.12	20	4200
80(92)	180	10×18	2880	0.12	30	4050
80(92)	180	12.5×14	2880	0.12	40	3500
80(92)	220	10×21	3520	0.12	30	4350
80(92)	220	12.5×16	3520	0.12	30	4300
80(92)	270	12.5×18	4320	0.12	30	4550
80(92)	330	10×21	5280	0.12	30	4350
80(92)	330	12.5×20	5280	0.12	30	4750
80(92)	470	12.5×20	7500	0.12	30	4750
100(115)	2.2	5×5.7	300	0.12	120	1200
100(115)	2.2	6.3×4.2	300	0.12	80	1250
100(115)	3.3	5×5.7	300	0.12	120	1200
100(115)	3.3	6.3×4.2	300	0.12	80	1250
100(115)	4.7	5×7	300	0.12	60	1450
100(115)	4.7	5×11	300	0.12	50	1850
100(115)	4.7	6.3×5.7	300	0.12	80	1350

NPX

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
100(115)	5.6	5×7	300	0.12	60	1450
100(115)	5.6	6.3×5.7	300	0.12	80	1350
100(115)	6.8	5×8	300	0.12	60	1550
100(115)	6.8	6.3×5.7	300	0.12	80	1350
100(115)	8.2	5×9	300	0.12	60	1700
100(115)	8.2	6.3×7	300	0.12	60	1650
100(115)	10	6.3×7	300	0.12	60	1650
100(115)	12	6.3×8	300	0.12	50	1900
100(115)	15	6.3×9	300	0.12	50	2150
100(115)	15	8×7	300	0.12	60	1800
100(115)	18	6.3×10	360	0.12	50	2250
100(115)	18	8×7	360	0.12	60	1800
100(115)	22	6.3×11	440	0.12	50	2300
100(115)	22	8×8	440	0.12	50	2200
100(115)	27	8×8	540	0.12	50	2200
100(115)	27	10×7	540	0.12	60	2050
100(115)	33	8×9	660	0.12	50	2300
100(115)	33	10×9	660	0.12	50	2450
100(115)	39	8×10	780	0.12	50	2400
100(115)	39	10×9	780	0.12	50	2450
100(115)	47	8×12	940	0.12	50	2600
100(115)	47	10×10	940	0.12	50	2550
100(115)	56	8×14	1120	0.12	40	3050
100(115)	56	10×12	1120	0.12	50	2650
100(115)	68	8×16	1360	0.12	40	3200
100(115)	68	10×13	1360	0.12	50	2700
100(115)	82	10×14	1640	0.12	40	3100
100(115)	82	12.5×12.5	1640	0.12	50	3000
100(115)	100	8×18	2000	0.12	40	3350
100(115)	100	10×18	2000	0.12	40	3500
100(115)	100	12.5×14	2000	0.12	50	3150
100(115)	120	10×21	2400	0.12	40	3750
100(115)	120	12.5×16	2400	0.12	40	3700
100(115)	150	12.5×18	3000	0.12	40	3900
100(115)	180	12.5×20	3600	0.12	40	4100
100(115)	220	12.5×25	4400	0.12	40	4550
100(115)	270	12.5×20	5400	0.12	40	4100
100(115)	330	12.5×25	6600	0.12	40	4550

NPH

◆High reliability, low ESR, high permissible ripple current

◆105℃, 2000-hour warranty

◆RoHS compliant

◆High voltage

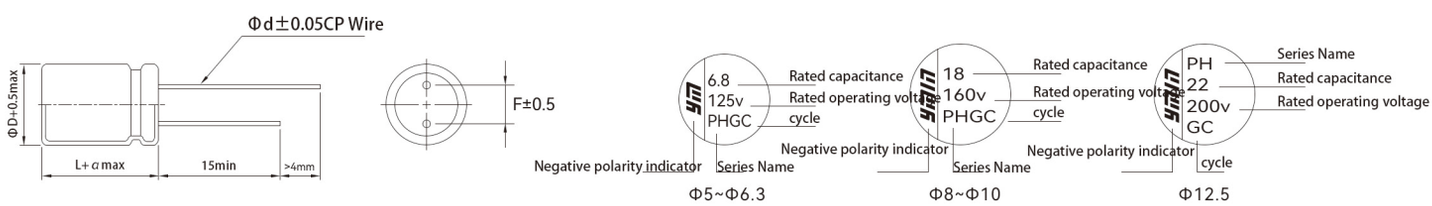


■ Main technical parameters

project	characteristic
Operating temperature range	－55 ~ +105℃
Rated operating voltage	125 ~ 250V
Capacity range	1 ~ 82 μF 120Hz 20℃
Capacity tolerance	±20% (120Hz 20℃)
Loss tangent	The following values are from the standard product list: 120Hz, 20℃
Leakage current	Charge for 2 minutes at rated voltage using 0.2CV or 1000 μA, at 20℃.
Equivalent series resistance (ESR)	The following values are from the standard product list: 100kHz, 20℃.
Durability	After being subjected to the rated operating voltage for 2000 hours at 105℃ and placed at 20℃ for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±20% of the initial value Equivalent series resistance (ESR): ≦ 150% of the initial specification value Loss tangent: ≦ 150% of the initial specification value Leakage current: ≦ Initial specification value
High temperature and humidity	After being placed at 60℃ and 90%~95% RH without voltage for 1000 hours, and then placed at 20℃ for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±20% of the initial value Equivalent series resistance (ESR): ≦ 150% of the initial specification value Loss tangent: ≦ 150% of the initial specification value Leakage current: ≦ Initial specification value

※If there is any doubt about the leakage current value, please place the product at 105° C and apply the rated operating voltage for 2 hours, then cool it down to 20° C before testing the leakage current.

■ Product dimension drawing (unit: mm)



D (±0.5)	5	6.3	8	10	12.5
d (±0.05)	0.45/0.50	0.45/0.50	0.6	0.6	0.6
F (±0.5)	2	2.5	3.5	5	5
α	+1				

■ Frequency correction factor

Frequency (Hz)	120Hz	1kHz	10kHz	100kHz	500kHz
Correction Factor	0.05	0.30	0.70	1.00	1.00

NPH

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
125(144)	1.5	6.3×5.7	300	0.12	400	1200
125(144)	2.2	6.3×5.7	300	0.12	400	1200
125(144)	2.7	6.3×7	300	0.12	350	1550
125(144)	3.3	6.3×7	300	0.12	350	1550
125(144)	4.7	6.3×9	300	0.12	250	1700
125(144)	5.6	6.3×9	300	0.12	250	1700
125(144)	5.6	8×7	300	0.12	200	1450
125(144)	6.8	6.3×11	300	0.12	200	1850
125(144)	6.8	8×8	300	0.12	200	1450
125(144)	8.2	6.3×11	300	0.12	200	1850
125(144)	8.2	8×9	300	0.12	80	1800
125(144)	10	8×9	300	0.12	80	1800
125(144)	12	8×11.5	300	0.12	80	1980
125(144)	12	10×7	300	0.12	100	1500
125(144)	15	8×11.5	375	0.12	80	1980
125(144)	15	10×9	375	0.12	80	1950
125(144)	18	8×13	450	0.12	80	2100
125(144)	18	10×10	450	0.12	80	2050
125(144)	22	8×15	550	0.12	60	2550
125(144)	22	10×12	550	0.12	80	2100
125(144)	27	8×16	675	0.12	60	2600
125(144)	27	10×13	675	0.12	80	2200
125(144)	33	10×16	825	0.12	60	2700
125(144)	39	10×17	975	0.12	60	2700
125(144)	39	12.5×12.5	975	0.12	80	2350
125(144)	47	10×18	1175	0.12	60	2800
125(144)	47	12.5×14	1175	0.12	80	2450
125(144)	56	10×21	1400	0.12	60	3000
125(144)	56	12.5×16	1400	0.12	60	2600
125(144)	68	12.5×18	1700	0.12	60	3200
125(144)	82	12.5×20	2050	0.12	60	3350
160(184)	1.0	5×5	300	0.12	500	1200
160(184)	1.2	5×5	300	0.12	500	1200
160(184)	1.5	6.3×5.7	300	0.12	400	1200
160(184)	2.2	6.3×7	300	0.12	350	1400
160(184)	3.3	6.3×9	300	0.12	250	1700
160(184)	3.3	8×7	300	0.12	200	1450
160(184)	4.7	6.3×11	300	0.12	200	1850
160(184)	4.7	8×8	300	0.12	200	1450
160(184)	5.6	6.3×11	300	0.12	200	1850
160(184)	5.6	8×7	300	0.12	200	1450
160(184)	6.8	6.3×11	300	0.12	200	1850
160(184)	6.8	8×9	300	0.12	80	1800
160(184)	8.2	8×9	300	0.12	80	1800

NPH

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
160(184)	8.2	10×7	300	0.12	100	1500
160(184)	10	5×15	320	0.12	80	2050
160(184)	10	8×11.5	320	0.12	80	1980
160(184)	10	10×9	320	0.12	80	1950
160(184)	12	8×11.5	384	0.12	80	1980
160(184)	12	10×9	384	0.12	80	1950
160(184)	15	8×13	480	0.12	80	2100
160(184)	15	10×10	480	0.12	80	2050
160(184)	18	8×15	576	0.12	60	2550
160(184)	18	10×11	576	0.12	80	2100
160(184)	18	10×12	576	0.12	80	2100
160(184)	22	8×17	704	0.12	60	2650
160(184)	22	10×13	704	0.12	80	2200
160(184)	27	8×17	864	0.12	60	2650
160(184)	27	10×15	864	0.12	60	2700
160(184)	33	10×17	1056	0.12	60	2700
160(184)	39	10×18	1248	0.12	60	2800
160(184)	39	12.5×14	1248	0.12	80	2450
160(184)	47	12.5×16	1504	0.12	80	2600
160(184)	56	12.5×16	1792	0.12	80	2600
160(184)	56	12.5×18	1792	0.12	60	3200
160(184)	68	12.5×20	2176	0.12	60	3350
200(230)	1.0	6.3×5.7	300	0.12	400	1200
200(230)	1.5	6.3×7	300	0.12	350	1400
200(230)	2.2	6.3×9	300	0.12	250	1700
200(230)	3.3	8×7	300	0.12	200	1450
200(230)	3.9	8×9	300	0.12	80	1800
200(230)	4.7	8×9	300	0.12	80	1800
200(230)	4.7	10×7	300	0.12	100	1500
200(230)	5.6	8×11.5	300	0.12	80	1980
200(230)	6.8	8×11.5	300	0.12	80	1980
200(230)	6.8	10×9	300	0.12	80	1950
200(230)	8.2	8×14	328	0.12	80	2150
200(230)	8.2	10×9	328	0.12	80	1950
200(230)	10	8×16	400	0.12	60	2600
200(230)	10	10×12	400	0.12	80	2100
200(230)	15	10×13	600	0.12	80	2200
200(230)	18	10×16	720	0.12	60	2700
200(230)	18	12.5×12.5	720	0.12	60	2350
200(230)	22	10×16	880	0.12	60	2700
200(230)	22	12.5×14	880	0.12	80	2450
200(230)	47	12.5×20	1880	0.12	60	2900
250(288)	4.7	8×11.5	300	0.12	80	1980

NPH

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
250(288)	6.8	8×14	340	0.12	80	2150
250(288)	6.8	10×12	340	0.12	80	2100
250(288)	8.2	8×16	410	0.12	60	2600
250(288)	8.2	10×12	410	0.12	80	2100
250(288)	10	10×12	500	0.12	80	2100
250(288)	22	12.5×16	1100	0.12	80	2600

NPT

◆High reliability, low ESR, high permissible ripple current
◆125℃ 2000-hour warranty
◆RoHS compliant
◆High temperature resistant

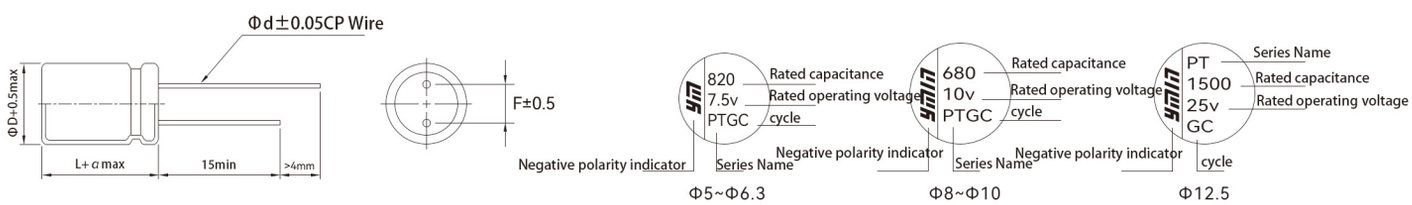


■ Main technical parameters

project	characteristic
Operating temperature range	－55 ~ +125℃
Rated operating voltage	6.3 ~ 100V
Capacity range	2.2 ~ 10000μF 120Hz 20℃
Capacity tolerance	±20% (120Hz 20℃)
Loss tangent	The following values are from the standard product list: 120Hz, 20℃
Leakage current	Charge for 2 minutes at rated voltage using 0.2CV or 1000μA, at 20℃.
Equivalent series resistance (ESR)	The following values are from the standard product list: 100kHz, 20℃.
Durability	After being subjected to the rated operating voltage for 2000 hours at 125℃ and placed at 20℃ for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±20% of the initial value Equivalent series resistance (ESR): ≦ 150% of the initial specification value Loss tangent: ≦ 150% of the initial specification value Leakage current: ≦ Initial specification value
High temperature and humidity	After being placed at 60℃ and 90%~95% RH without voltage for 1000 hours, and then placed at 20℃ for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±20% of the initial value Equivalent series resistance (ESR): ≦ 150% of the initial specification value Loss tangent: ≦ 150% of the initial specification value Leakage current: ≦ Initial specification value

※If there is any doubt about the leakage current value, please place the product at 105° C and apply the rated operating voltage for 2 hours, then cool it down to 20° C before testing the leakage current.

■ Product dimension drawing (unit: mm)



D (±0.5)	5	5.5	6.3	8	10	12.5
d (±0.05)	0.45/0.50	0.45/0.50	0.45/0.50	0.6	0.6	0.6
F (±0.5)	2	2.5	2.5	3.5	5	5
α	+1					

■ Frequency correction factor

Frequency (Hz)	120Hz	1kHz	10kHz	100kHz	500kHz
Correction Factor	0.05	0.30	0.70	1.00	1.00

NPT

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
6.3(7.2)	100	5×5.7	300	0.08	20	1100
6.3(7.2)	150	5×5.7	300	0.08	20	1100
6.3(7.2)	180	5×5.7	300	0.08	20	1100
6.3(7.2)	220	5×5.7	300	0.08	20	1100
6.3(7.2)	220	5×7	300	0.08	12	1550
6.3(7.2)	220	6.3×5.7	300	0.08	18	1550
6.3(7.2)	270	5×7	340	0.08	12	1550
6.3(7.2)	270	6.3×5.7	340	0.08	18	1550
6.3(7.2)	330	5×7	416	0.08	12	1550
6.3(7.2)	330	6.3×5.7	416	0.08	18	1550
6.3(7.2)	390	5×8	491	0.08	12	2200
6.3(7.2)	390	6.3×5.7	491	0.08	18	1550
6.3(7.2)	470	5×8	592	0.08	12	2200
6.3(7.2)	470	6.3×7	592	0.08	8	2200
6.3(7.2)	470	6.3×8	592	0.08	8	2300
6.3(7.2)	560	6.3×7	706	0.08	8	2200
6.3(7.2)	680	6.3×8	857	0.08	8	2300
6.3(7.2)	680	8×7	857	0.08	12	2500
6.3(7.2)	820	6.3×8	1033	0.08	8	2300
6.3(7.2)	820	6.3×9	1033	0.08	8	2350
6.3(7.2)	820	8×7	1033	0.08	12	2500
6.3(7.2)	1000	6.3×10	1260	0.08	8	2500
6.3(7.2)	1000	8×8	1260	0.08	8	2600
6.3(7.2)	1000	10×7	1260	0.08	12	2050
6.3(7.2)	1200	6.3×11	1512	0.09	8	2600
6.3(7.2)	1200	8×9	1512	0.09	8	2650
6.3(7.2)	1200	8×11	1512	0.09	8	2800
6.3(7.2)	1200	10×8	1512	0.09	8	2650
6.3(7.2)	1500	6.3×15	1890	0.09	8	3000
6.3(7.2)	1500	8×11	1890	0.09	8	2800
6.3(7.2)	1500	10×9	1890	0.09	8	2750
6.3(7.2)	2000	8×14	2520	0.10	7	3250
6.3(7.2)	2000	10×10	2520	0.10	8	2900
6.3(7.2)	2200	6.3×20	2772	0.10	8	3450
6.3(7.2)	2200	8×14	2772	0.10	7	3250
6.3(7.2)	2200	10×10	2772	0.10	8	2900
6.3(7.2)	2500	10×12	3150	0.10	8	3000
6.3(7.2)	2700	10×12	3402	0.10	8	3000
6.3(7.2)	3300	10×12	4158	0.11	8	3000
6.3(7.2)	3900	10×14	4914	0.12	7	3500
6.3(7.2)	4700	10×16	5922	0.14	7	3700
6.3(7.2)	4700	12.5×12.5	5922	0.14	8	3500
6.3(7.2)	5600	10×18	7056	0.16	7	3850

NPT

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
6.3(7.2)	5600	12.5×14	7056	0.16	8	3500
6.3(7.2)	6800	10×21	7500	0.18	7	4150
6.3(7.2)	6800	12.5×16	7500	0.18	7	4050
6.3(7.2)	8200	12.5×18	7500	0.19	7	4300
6.3(7.2)	10000	12.5×20	7500	0.21	7	4500
7.5(8.6)	270	5×7	405	0.08	12	1550
7.5(8.6)	270	6.3×5.7	405	0.08	18	1300
7.5(8.6)	330	5×9	495	0.08	12	1750
7.5(8.6)	330	6.3×5.7	495	0.08	18	1300
7.5(8.6)	390	5×10	585	0.08	10	1800
7.5(8.6)	390	6.3×7	585	0.08	12	2000
7.5(8.6)	470	5×9	705	0.08	12	1750
7.5(8.6)	470	5×11	705	0.08	10	2000
7.5(8.6)	470	6.3×8	705	0.08	12	2100
7.5(8.6)	560	6.3×9	840	0.08	9	2150
7.5(8.6)	680	6.3×10	1020	0.08	8	2300
7.5(8.6)	680	8×7	1020	0.08	12	2500
7.5(8.6)	820	6.3×11	1230	0.08	8	2550
7.5(8.6)	820	8×8	1230	0.08	8	2600
7.5(8.6)	1000	6.3×11	1500	0.08	8	2550
7.5(8.6)	1000	8×9	1500	0.08	8	2650
10(11.5)	47	5×5.7	300	0.08	30	900
10(11.5)	68	5×5.7	300	0.08	30	900
10(11.5)	82	5×5.7	300	0.08	30	900
10(11.5)	100	5×5.7	300	0.08	30	900
10(11.5)	150	5×7	300	0.08	15	1400
10(11.5)	150	6.3×5.7	300	0.08	30	1200
10(11.5)	180	5×7	360	0.08	15	1400
10(11.5)	180	6.3×5.7	360	0.08	30	1200
10(11.5)	220	5×7	440	0.08	15	1400
10(11.5)	220	6.3×5.7	440	0.08	30	1200
10(11.5)	270	5×10	540	0.08	12	1800
10(11.5)	270	6.3×5.7	540	0.08	30	1200
10(11.5)	330	5×11	660	0.08	12	1900
10(11.5)	330	6.3×7	660	0.08	16	1800
10(11.5)	390	6.3×7	780	0.08	16	1800
10(11.5)	470	6.3×8	940	0.08	12	1900
10(11.5)	470	8×7	940	0.08	14	2250
10(11.5)	560	6.3×10	1120	0.08	10	2250
10(11.5)	560	8×7	1120	0.08	14	2250
10(11.5)	680	6.3×11	1360	0.08	9	2450
10(11.5)	680	8×8	1360	0.08	10	2300
10(11.5)	820	8×9	1640	0.08	9	2500

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Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
10(11.5)	820	10×7	1640	0.08	14	1800
10(11.5)	1000	6.3×12	2000	0.08	9	2550
10(11.5)	1000	8×11	2000	0.08	9	2650
10(11.5)	1000	10×8	2000	0.08	9	2500
10(11.5)	1500	8×14	3000	0.09	8	3150
10(11.5)	1500	10×12	3000	0.09	8	3150
10(11.5)	2200	10×14	4400	0.10	8	3150
10(11.5)	2500	10×14	5000	0.10	8	3150
10(11.5)	2700	10×16	5400	0.10	8	3500
10(11.5)	3300	10×18	6600	0.11	8	3500
10(11.5)	3300	12.5×14	6600	0.11	9	3500
10(11.5)	3900	10×21	7500	0.12	8	3850
10(11.5)	3900	12.5×16	7500	0.12	8	3850
10(11.5)	4700	12.5×18	7500	0.14	8	4000
10(11.5)	5600	12.5×18	7500	0.16	8	4000
10(11.5)	6800	12.5×20	7500	0.18	8	4200
12(13.8)	180	5×7	432	0.08	15	1400
12(13.8)	180	6.3×5.7	432	0.08	30	1000
12(13.8)	220	5×9	528	0.08	15	1450
12(13.8)	220	6.3×5.7	528	0.08	30	1000
12(13.8)	270	5×10	648	0.08	12	1800
12(13.8)	270	6.3×7	648	0.08	16	1800
12(13.8)	330	5×10	792	0.08	12	1800
12(13.8)	330	6.3×7	792	0.08	16	1800
12(13.8)	390	5×11	936	0.08	12	1800
12(13.8)	390	6.3×8	936	0.08	12	1900
12(13.8)	470	6.3×9	1128	0.08	12	1950
12(13.8)	470	8×7	1128	0.08	14	1600
12(13.8)	560	6.3×10	1344	0.08	10	2250
12(13.8)	560	8×7	1344	0.08	14	1600
12(13.8)	680	6.3×11	1632	0.08	9	2450
12(13.8)	680	8×8	1632	0.08	10	2300
12(13.8)	1000	8×10	2400	0.08	10	2400
16(18.4)	22	5×5.7	300	0.08	30	900
16(18.4)	33	5×5.7	300	0.08	30	900
16(18.4)	47	5×5.7	300	0.08	30	900
16(18.4)	68	5×5.7	300	0.08	30	900
16(18.4)	82	5×5.7	300	0.08	30	900
16(18.4)	100	5×7	320	0.08	30	1000
16(18.4)	100	6.3×5.7	320	0.08	30	1000
16(18.4)	150	5×8	480	0.08	30	1000
16(18.4)	150	6.3×5.7	480	0.08	30	1000
16(18.4)	220	5×9	704	0.08	12	1300

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Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
16(18.4)	220	5×10	704	0.08	12	1300
16(18.4)	220	6.3×7	704	0.08	16	1800
16(18.4)	270	6.3×8	864	0.08	15	1900
16(18.4)	270	8×7	864	0.08	30	1600
16(18.4)	330	6.3×9	1056	0.08	12	1950
16(18.4)	330	8×7	1056	0.08	30	1600
16(18.4)	330	10×12	1056	0.08	9	2900
16(18.4)	390	6.3×9	1248	0.08	12	1950
16(18.4)	470	6.3×11	1504	0.08	10	2000
16(18.4)	470	8×8	1504	0.08	20	2250
16(18.4)	470	10×12	1504	0.08	9	2900
16(18.4)	560	8×9	1792	0.08	12	2250
16(18.4)	560	10×8	1792	0.08	12	2500
16(18.4)	680	8×10	2176	0.08	10	2300
16(18.4)	680	10×8	2176	0.08	12	2500
16(18.4)	820	8×12	2624	0.08	10	2500
16(18.4)	820	10×9	2624	0.08	12	2500
16(18.4)	1000	8×14	3200	0.08	8	2650
16(18.4)	1000	8×16	3200	0.08	8	3150
16(18.4)	1000	10×9	3200	0.08	12	2500
16(18.4)	1500	10×12	4800	0.09	9	2900
16(18.4)	1800	10×16	5760	0.09	8	3150
16(18.4)	2200	10×14	7040	0.10	8	3100
16(18.4)	2200	10×18	7040	0.10	8	3500
16(18.4)	2200	10×20	7040	0.10	8	3650
16(18.4)	2200	12.5×14	7040	0.10	10	3250
16(18.4)	2700	10×21	7500	0.10	8	3850
16(18.4)	2700	12.5×16	7500	0.10	10	3250
16(18.4)	3300	12.5×18	7500	0.11	8	3850
16(18.4)	3900	12.5×20	7500	0.12	8	4000
25(28.8)	10	5×5.7	300	0.08	40	750
25(28.8)	15	5×5.7	300	0.08	40	750
25(28.8)	22	5×5.7	300	0.08	40	750
25(28.8)	33	5×5.7	300	0.08	40	750
25(28.8)	39	5×5.7	300	0.08	40	750
25(28.8)	47	5×5.7	300	0.08	40	750
25(28.8)	68	4×8	340	0.08	100	870
25(28.8)	68	5×7	340	0.08	30	1000
25(28.8)	68	6.3×5.7	340	0.08	40	900
25(28.8)	100	5×5.7	500	0.08	40	750
25(28.8)	100	5×9	500	0.08	30	1100
25(28.8)	100	6.3×5.7	500	0.08	40	900
25(28.8)	150	5×7	750	0.08	30	1000

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Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
25(28.8)	150	5×9	750	0.08	30	1000
25(28.8)	150	6.3×5.7	750	0.08	40	900
25(28.8)	150	6.3×8	750	0.08	16	1600
25(28.8)	180	6.3×8	900	0.08	16	1600
25(28.8)	180	8×7	900	0.08	30	1250
25(28.8)	220	5×10	1100	0.08	20	1100
25(28.8)	220	5×12	1100	0.08	20	1250
25(28.8)	220	6.3×7	1100	0.08	30	1450
25(28.8)	220	6.3×8	1100	0.08	16	1600
25(28.8)	220	6.3×9	1100	0.08	20	1600
25(28.8)	220	8×7	1100	0.08	30	1250
25(28.8)	270	6.3×7	1350	0.08	30	1450
25(28.8)	330	6.3×9	1650	0.08	20	1600
25(28.8)	330	6.3×11	1650	0.08	20	1800
25(28.8)	330	8×9	1650	0.08	16	1850
25(28.8)	330	10×8	1650	0.08	16	1900
25(28.8)	390	5×15	1950	0.08	20	1350
25(28.8)	470	5×15	2350	0.08	20	1350
25(28.8)	470	6.3×10	2350	0.08	20	1750
25(28.8)	470	6.3×12	2350	0.08	20	1800
25(28.8)	470	8×8	2350	0.08	16	1700
25(28.8)	470	8×11	2350	0.08	16	2000
25(28.8)	470	8×14	2350	0.08	16	2200
25(28.8)	470	10×9	2350	0.08	16	1950
25(28.8)	560	6.3×12	2800	0.08	20	1800
25(28.8)	560	8×11	2800	0.08	16	2000
25(28.8)	560	8×14	2800	0.08	16	2200
25(28.8)	560	10×10	2800	0.08	16	2050
25(28.8)	680	6.3×13.5	3400	0.08	20	1900
25(28.8)	680	6.3×15	3400	0.08	20	4050
25(28.8)	680	8×14	3400	0.08	16	2200
25(28.8)	680	10×12	3400	0.08	16	2150
25(28.8)	820	6.3×15	4100	0.08	20	4050
25(28.8)	820	8×12	4100	0.08	16	2050
25(28.8)	820	8×14	4100	0.08	16	2200
25(28.8)	820	8×16	4100	0.08	16	2300
25(28.8)	820	8×17	4100	0.08	16	2300
25(28.8)	820	10×13	4100	0.08	16	2250
25(28.8)	1000	6.3×20	5000	0.08	20	4650
25(28.8)	1000	8×16	5000	0.08	16	2300
25(28.8)	1000	10×16	5000	0.08	16	2400
25(28.8)	1000	12.5×12.5	5000	0.08	16	2400
25(28.8)	1500	10×18	7500	0.09	16	2550

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Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
25(28.8)	1500	12.5×14	7500	0.09	16	2550
25(28.8)	1800	10×21	7500	0.09	16	2750
25(28.8)	1800	12.5×16	7500	0.09	16	2700
25(28.8)	2200	12.5×16	7500	0.10	16	2700
25(28.8)	2200	12.5×18	7500	0.10	16	2800
25(28.8)	2700	12.5×20	7500	0.10	16	3000
35(41)	10	5×5.7	300	0.12	60	650
35(41)	10	6.3×5.7	300	0.12	60	700
35(41)	15	5×5.7	300	0.12	60	650
35(41)	22	5×5.7	300	0.12	60	650
35(41)	33	5×5.7	300	0.12	60	650
35(41)	39	5×7	300	0.12	50	800
35(41)	39	6.3×5.7	300	0.12	60	700
35(41)	47	5×7	329	0.12	50	800
35(41)	47	6.3×5.7	329	0.12	60	700
35(41)	47	8×8	329	0.12	50	1150
35(41)	56	5×7	392	0.12	50	800
35(41)	56	6.3×5.7	392	0.12	60	700
35(41)	68	5×8	476	0.12	50	850
35(41)	68	6.3×5.7	476	0.12	60	700
35(41)	82	5×9	574	0.12	50	900
35(41)	82	6.3×7	574	0.12	50	900
35(41)	100	6.3×7	700	0.12	50	900
35(41)	120	6.3×8	840	0.12	50	950
35(41)	120	6.3×9	840	0.12	50	1000
35(41)	120	8×7	840	0.12	60	900
35(41)	150	6.3×9	1050	0.12	50	1000
35(41)	150	6.3×12	1050	0.12	40	1250
35(41)	150	8×7	1050	0.12	60	900
35(41)	180	6.3×10	1260	0.12	40	1150
35(41)	180	8×7	1260	0.12	60	900
35(41)	220	5×15	1540	0.12	40	1150
35(41)	220	6.3×9	1540	0.12	40	1050
35(41)	220	6.3×10	1540	0.12	40	1150
35(41)	220	6.3×11	1540	0.12	40	1200
35(41)	220	8×8	1540	0.12	50	1150
35(41)	220	10×7	1540	0.12	60	1400
35(41)	330	8×8	2310	0.12	50	1150
35(41)	330	8×9	2310	0.12	40	1200
35(41)	330	8×10	2310	0.12	30	1150
35(41)	330	8×11	2310	0.12	30	1150
35(41)	330	10×8	2310	0.12	50	1400
35(41)	330	10×10	2310	0.12	50	1800

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Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
35(41)	330	10×12	2310	0.12	30	1850
35(41)	390	8×12	2730	0.12	30	1450
35(41)	390	10×10	2730	0.12	50	1800
35(41)	470	6.3×15	3290	0.12	40	1350
35(41)	470	8×14	3290	0.12	20	1950
35(41)	470	10×12	3290	0.12	30	1850
35(41)	560	6.3×18	3920	0.12	40	1500
35(41)	560	8×14	3920	0.12	20	1950
35(41)	560	8×16	3920	0.12	20	2050
35(41)	560	10×12	3920	0.12	30	1850
35(41)	680	6.3×20	4760	0.12	40	1550
35(41)	680	8×16	4760	0.12	20	2050
35(41)	680	10×14	4760	0.12	20	2050
35(41)	680	10×16	4760	0.12	20	2100
35(41)	820	8×18	5740	0.12	20	2150
35(41)	820	10×16	5740	0.12	20	2100
35(41)	820	12.5×12.5	5740	0.12	30	2150
35(41)	1000	8×18	7000	0.12	20	2150
35(41)	1000	8×20	7000	0.12	20	2250
35(41)	1000	10×18	7000	0.12	20	2300
35(41)	1000	12.5×14	7000	0.12	30	2200
35(41)	1200	10×21	7500	0.13	20	2400
35(41)	1200	12.5×16	7500	0.13	20	2400
35(41)	1500	12.5×18	7500	0.13	20	2550
35(41)	1800	12.5×20	7500	0.13	20	2650
50(58)	10	5×5.7	300	0.12	60	650
50(58)	10	5×7	300	0.12	60	700
50(58)	12	5×5.7	300	0.12	60	650
50(58)	15	5×5.7	300	0.12	60	650
50(58)	18	5×7	300	0.12	60	700
50(58)	18	6.3×5.7	300	0.12	60	750
50(58)	22	5×5.7	300	0.12	60	650
50(58)	22	5×7	300	0.12	60	700
50(58)	22	5×11	300	0.12	40	1000
50(58)	22	6.3×5.7	300	0.12	60	750
50(58)	33	5×9	330	0.12	50	900
50(58)	33	6.3×7	330	0.12	60	750
50(58)	39	5×10	390	0.12	40	1000
50(58)	39	6.3×7	390	0.12	60	750
50(58)	47	6.3×8	470	0.12	50	950
50(58)	47	8×7	470	0.12	60	900
50(58)	56	6.3×9	560	0.12	50	1000
50(58)	56	8×7	560	0.12	60	900

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Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
50(58)	68	6.3×10	680	0.12	50	1000
50(58)	68	8×7	680	0.12	60	900
50(58)	82	6.3×11	820	0.12	40	1100
50(58)	82	6.3×12	820	0.12	40	1150
50(58)	82	8×8	820	0.12	60	1150
50(58)	100	8×9	1000	0.12	50	1150
50(58)	100	8×11	1000	0.12	50	1200
50(58)	100	10×7	1000	0.12	60	1000
50(58)	120	8×10	1200	0.12	50	1150
50(58)	120	10×7	1200	0.12	60	1000
50(58)	120	10×12	1200	0.12	50	1350
50(58)	150	8×12	1500	0.12	50	1200
50(58)	150	10×8	1500	0.12	50	1100
50(58)	180	8×14	1800	0.12	40	1400
50(58)	180	10×9	1800	0.12	50	1100
50(58)	220	8×16	2200	0.12	30	1750
50(58)	220	10×12	2200	0.12	50	1350
50(58)	270	10×13	2700	0.12	40	1400
50(58)	330	10×16	3300	0.12	30	1750
50(58)	390	10×18	3900	0.12	30	1750
50(58)	390	12.5×14	3900	0.12	40	1600
50(58)	470	10×21	4700	0.12	30	2000
50(58)	470	12.5×14	4700	0.12	40	1600
50(58)	560	12.5×16	5600	0.12	30	1950
50(58)	680	12.5×20	6800	0.12	30	2150
50(58)	820	12.5×20	7500	0.12	30	2150
63(73)	6.8	5×5.7	300	0.12	60	650
63(73)	8.2	5×5.7	300	0.12	60	650
63(73)	10	5×7	300	0.12	60	650
63(73)	15	5×7	300	0.12	60	650
63(73)	15	6.3×5.7	300	0.12	60	750
63(73)	22	5×9	300	0.12	50	900
63(73)	22	6.3×7	300	0.12	50	900
63(73)	22	8×7	300	0.12	60	850
63(73)	33	6.3×8	416	0.12	50	900
63(73)	33	6.3×11	416	0.12	40	1050
63(73)	33	8×7	416	0.12	60	850
63(73)	39	6.3×9	491	0.12	50	1000
63(73)	39	8×7	491	0.12	60	850
63(73)	47	6.3×10	592	0.12	50	1000
63(73)	47	6.3×11	592	0.12	40	1060
63(73)	47	8×8	592	0.12	60	1150
63(73)	56	8×8	706	0.12	60	1150

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Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
63(73)	56	10×8	706	0.12	60	1000
63(73)	68	8×9	857	0.12	50	1150
63(73)	68	10×7	857	0.12	60	1000
63(73)	68	10×8	857	0.12	60	1000
63(73)	68	10×12	857	0.12	40	1350
63(73)	82	8×10	1033	0.12	50	1150
63(73)	82	10×9	1033	0.12	50	1050
63(73)	100	8×12	1260	0.12	40	1200
63(73)	100	10×10	1260	0.12	50	1150
63(73)	120	8×12	1512	0.12	40	1200
63(73)	120	10×12	1512	0.12	50	1350
63(73)	150	10×13	1890	0.12	40	1400
63(73)	180	10×12	2268	0.12	40	1350
63(73)	180	10×13	2268	0.12	40	1400
63(73)	180	10×14	2268	0.12	30	1650
63(73)	220	8×18	2772	0.12	30	1400
63(73)	220	10×16	2772	0.12	30	1700
63(73)	220	10×21	2772	0.12	30	2000
63(73)	220	12.5×12.5	2772	0.12	40	1750
63(73)	270	10×21	3402	0.12	30	2000
63(73)	270	12.5×14	3402	0.12	40	1800
63(73)	330	10×21	4158	0.12	30	2000
63(73)	330	12.5×16	4158	0.12	30	1950
63(73)	390	10×21	4914	0.12	30	2000
63(73)	390	12.5×18	4914	0.12	30	2050
63(73)	470	12.5×20	5922	0.12	30	2150
63(73)	560	12.5×20	7056	0.12	30	2150
80(92)	4.7	5×5.7	300	0.12	60	650
80(92)	6.8	5×5.7	300	0.12	60	650
80(92)	8.2	5×7	300	0.12	60	650
80(92)	10	5×7	300	0.12	60	650
80(92)	10	6.3×5.7	300	0.12	60	750
80(92)	15	5×9	300	0.12	60	850
80(92)	15	6.3×7	300	0.12	50	750
80(92)	22	6.3×8	352	0.12	50	900
80(92)	22	8×7	352	0.12	60	850
80(92)	33	6.3×10	528	0.12	50	900
80(92)	33	8×7	528	0.12	60	850
80(92)	33	8×8	528	0.12	60	1000
80(92)	39	6.3×11	624	0.12	40	900
80(92)	39	8×8	624	0.12	60	1000
80(92)	47	8×9	752	0.12	50	1000
80(92)	47	8×12	752	0.12	40	1250

NPT

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
80(92)	47	10×7	752	0.12	60	950
80(92)	56	8×10	896	0.12	50	1050
80(92)	56	10×9	896	0.12	50	1050
80(92)	68	8×11	1088	0.12	40	1250
80(92)	68	10×9	1088	0.12	50	1050
80(92)	82	8×14	1312	0.12	40	1300
80(92)	82	10×10	1312	0.12	50	1150
80(92)	82	10×14	1312	0.12	30	1550
80(92)	100	8×16	1600	0.12	30	1600
80(92)	100	10×12	1600	0.12	40	1350
80(92)	120	10×13	1920	0.12	40	1400
80(92)	150	10×16	2400	0.12	30	1550
80(92)	150	12.5×12.5	2400	0.12	40	1750
80(92)	180	10×16	2880	0.12	30	1550
80(92)	180	10×18	2880	0.12	30	1850
80(92)	180	12.5×14	2880	0.12	40	1750
80(92)	220	10×21	3520	0.12	30	2000
80(92)	220	12.5×16	3520	0.12	30	1950
80(92)	270	12.5×18	4320	0.12	30	2050
80(92)	330	12.5×20	5280	0.12	30	2150
100(115)	2.2	5×5.7	300	0.12	60	650
100(115)	3.3	5×5.7	300	0.12	60	650
100(115)	4.7	5×7	300	0.12	60	650
100(115)	4.7	6.3×5.7	300	0.12	80	650
100(115)	5.6	5×7	300	0.12	60	650
100(115)	5.6	6.3×5.7	300	0.12	80	650
100(115)	6.8	5×8	300	0.12	60	750
100(115)	6.8	6.3×5.7	300	0.12	80	650
100(115)	8.2	5×9	300	0.12	60	800
100(115)	8.2	6.3×7	300	0.12	60	750
100(115)	10	6.3×7	300	0.12	60	750
100(115)	12	6.3×8	300	0.12	50	900
100(115)	15	6.3×9	300	0.12	50	1000
100(115)	15	8×7	300	0.12	60	850
100(115)	18	6.3×10	360	0.12	50	1000
100(115)	18	8×8	360	0.12	60	1000
100(115)	22	6.3×12	440	0.12	50	1000
100(115)	22	8×8	440	0.12	60	1000
100(115)	22	10×12	440	0.12	50	1200
100(115)	27	8×11	540	0.12	50	1000
100(115)	27	10×7	540	0.12	60	950
100(115)	33	8×11	660	0.12	50	1000
100(115)	33	10×9	660	0.12	50	1050

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■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
100(115)	39	8×14	780	0.12	50	1100
100(115)	39	10×9	780	0.12	50	1050
100(115)	47	8×12	940	0.12	50	1000
100(115)	47	10×10	940	0.12	50	1150
100(115)	47	10×12	940	0.12	50	1200
100(115)	56	10×12	1120	0.12	50	1200
100(115)	68	10×16	1360	0.12	50	1250
100(115)	82	10×18	1640	0.12	40	1400
100(115)	82	12.5×12.5	1640	0.12	50	1400
100(115)	100	10×21	2000	0.12	40	1600
100(115)	100	12.5×14	2000	0.12	50	1450
100(115)	120	10×18	2400	0.12	40	1400
100(115)	120	10×21	2400	0.12	40	1600
100(115)	120	12.5×16	2400	0.12	40	1650
100(115)	150	12.5×18	3000	0.12	40	1800
100(115)	180	12.5×20	3600	0.12	40	1900

NPL

- ◆ High reliability, low ESR, high permissible ripple current
- ◆ 105℃, 5000-hour warranty
- ◆ RoHS compliant
- ◆ Long lifespan



■ Main technical parameters

project	characteristic
Operating temperature range	－55 ~ +105℃
Rated operating voltage	6.3 ~ 100V
Capacity range	2.2 ~ 10000μF 120Hz 20℃
Capacity tolerance	±20% (120Hz 20℃)
Loss tangent	Values below the standard product list: 120Hz, 20℃
Leakage current	Values below the standard product list: Charged for 2 minutes at rated voltage, 20℃
Equivalent series resistance (ESR)	Values below the standard product list: 100kHz, 20℃
Durability	After being subjected to the rated operating voltage for 2000 hours at 105℃ and placed at 20℃ for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±20% of the initial value Equivalent series resistance (ESR): ≦ 150% of the initial specification value Loss tangent: ≦ 150% of the initial specification value Leakage current: ≦ Initial specification value
High temperature and humidity	After being placed at 60℃ and 90%~95% RH without voltage for 1000 hours, and then placed at 20℃ for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±20% of the initial value Equivalent series resistance (ESR): ≦ 150% of the initial specification value Loss tangent: ≦ 150% of the initial specification value Leakage current: ≦ Initial specification value

※If there is any doubt about the leakage current value, please place the product at 105° C and apply the rated operating voltage for 2 hours, then cool it down to 20° C before testing the leakage current.

■ Product dimension drawing (unit: mm)



D (±0.5)	5	5.5	6.3	8	10	12.5
d (±0.05)	0.45/0.50	0.45/0.50	0.45/0.50	0.6	0.6	0.6
F (±0.5)	2	2.5	2.5	3.5	5	5
α	+1					

■ Frequency correction factor

Frequency (Hz)	120Hz	1kHz	10kHz	100kHz	500kHz
Correction Factor	0.05	0.30	0.70	1.00	1.00

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■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
6.3(7.2)	100	5×5.7	300	0.08	20	2400
6.3(7.2)	150	5×5.7	300	0.08	20	2400
6.3(7.2)	180	5×5.7	300	0.08	20	2400
6.3(7.2)	220	5×5.7	300	0.08	20	2400
6.3(7.2)	220	6.3×7	300	0.08	8	4800
6.3(7.2)	270	5×7	340	0.08	12	3400
6.3(7.2)	270	6.3×5.7	340	0.08	18	2800
6.3(7.2)	330	5×7	416	0.08	12	3400
6.3(7.2)	330	6.3×5.7	416	0.08	18	2800
6.3(7.2)	390	5×8	491	0.08	12	3400
6.3(7.2)	390	6.3×5.7	491	0.08	18	2800
6.3(7.2)	470	5×8	592	0.08	12	3400
6.3(7.2)	470	6.3×7	592	0.08	8	4800
6.3(7.2)	560	6.3×7	706	0.08	8	4800
6.3(7.2)	560	6.3×8	706	0.08	8	5000
6.3(7.2)	560	6.3×9	706	0.08	8	5250
6.3(7.2)	560	8×8	706	0.08	8	5600
6.3(7.2)	680	6.3×8	857	0.08	8	5000
6.3(7.2)	680	6.3×9	857	0.08	8	5250
6.3(7.2)	680	8×7	857	0.08	12	4200
6.3(7.2)	820	6.3×8	1033	0.08	8	5000
6.3(7.2)	820	6.3×9	1033	0.08	8	5250
6.3(7.2)	820	8×7	1033	0.08	12	4200
6.3(7.2)	820	8×8	1033	0.08	8	5600
6.3(7.2)	1000	6.3×10	1260	0.08	8	5500
6.3(7.2)	1000	8×8	1260	0.08	8	5600
6.3(7.2)	1000	10×7	1260	0.08	12	4500
6.3(7.2)	1200	6.3×11	1512	0.08	8	5700
6.3(7.2)	1200	8×9	1512	0.09	8	5800
6.3(7.2)	1200	10×8	1512	0.08	8	5800
6.3(7.2)	1500	6.3×15	1890	0.09	8	6650
6.3(7.2)	1500	8×11	1890	0.09	8	6150
6.3(7.2)	1500	8×16	1890	0.09	7	7750
6.3(7.2)	1500	10×9	1890	0.09	8	6050
6.3(7.2)	1500	10×10	1890	0.09	8	6300
6.3(7.2)	1500	10×12	1890	0.09	8	6500
6.3(7.2)	2000	8×14	2520	0.10	7	7250
6.3(7.2)	2000	10×10	2520	0.10	8	6300
6.3(7.2)	2200	8×14	2772	0.10	7	7250
6.3(7.2)	2200	10×10	2772	0.10	8	6300
6.3(7.2)	2500	10×12	3150	0.10	8	6500
6.3(7.2)	2700	10×12	3402	0.10	8	6500
6.3(7.2)	3300	10×12	4158	0.11	8	6500

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■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
6.3(7.2)	3900	10×14	4914	0.11	7	7600
6.3(7.2)	4700	10×16	5922	0.12	7	8100
6.3(7.2)	4700	12.5×12.5	5922	0.15	8	7600
6.3(7.2)	5600	10×18	7056	0.13	7	8500
6.3(7.2)	5600	12.5×14	7056	0.17	8	7900
6.3(7.2)	6800	10×21	7500	0.14	7	9100
6.3(7.2)	6800	12.5×16	7500	0.20	7	8950
6.3(7.2)	8200	12.5×18	7500	0.20	7	9450
6.3(7.2)	10000	12.5×20	7500	0.22	7	9850
7.5(8.6)	270	5×7	405	0.08	12	3400
7.5(8.6)	270	6.3×5.7	405	0.08	18	2800
7.5(8.6)	330	5×9	495	0.08	12	3800
7.5(8.6)	330	6.3×5.7	495	0.08	18	2800
7.5(8.6)	390	5×10	585	0.08	10	4350
7.5(8.6)	390	6.3×7	585	0.08	12	3900
7.5(8.6)	470	5×9	705	0.08	12	3800
7.5(8.6)	470	5×11	705	0.08	10	4500
7.5(8.6)	470	6.3×8	705	0.08	12	4100
7.5(8.6)	560	6.3×9	840	0.08	9	5000
7.5(8.6)	680	6.3×10	1020	0.08	8	5500
7.5(8.6)	680	8×7	1020	0.08	12	4200
7.5(8.6)	820	6.3×11	1230	0.08	8	5700
7.5(8.6)	820	8×8	1230	0.08	8	5600
7.5(8.6)	1000	6.3×11	1500	0.08	8	5700
7.5(8.6)	1000	8×9	1500	0.08	8	5800
10(11.5)	47	5×5.7	300	0.08	30	1900
10(11.5)	68	5×5.7	300	0.08	30	1900
10(11.5)	82	5×5.7	300	0.08	30	1900
10(11.5)	100	5×5.7	300	0.08	30	1900
10(11.5)	150	5×7	300	0.08	15	3050
10(11.5)	150	6.3×5.7	300	0.08	30	2200
10(11.5)	180	5×7	360	0.08	15	3050
10(11.5)	180	6.3×5.7	360	0.08	30	2200
10(11.5)	220	5×7	440	0.08	15	3050
10(11.5)	220	6.3×5.7	440	0.08	30	2200
10(11.5)	270	5×10	540	0.08	12	3950
10(11.5)	270	6.3×5.7	540	0.08	30	2200
10(11.5)	330	5×11	660	0.08	12	4100
10(11.5)	330	6.3×7	660	0.08	16	3200
10(11.5)	390	6.3×7	780	0.08	16	3200
10(11.5)	470	6.3×8	940	0.08	12	4100
10(11.5)	470	6.3×11	940	0.08	9	5400
10(11.5)	470	8×7	940	0.08	14	3500

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■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
10(11.5)	560	6.3×10	1120	0.08	10	4900
10(11.5)	560	8×7	1120	0.08	14	3500
10(11.5)	680	6.3×11	1360	0.08	9	5400
10(11.5)	680	8×8	1360	0.08	10	5100
10(11.5)	820	8×9	1640	0.08	9	5500
10(11.5)	820	10×7	1640	0.08	12	4500
10(11.5)	1000	8×11	2000	0.08	9	5800
10(11.5)	1000	10×8	2000	0.08	9	5500
10(11.5)	1500	8×14	3000	0.09	8	6800
10(11.5)	1500	10×12	3000	0.09	9	6300
10(11.5)	2200	10×14	4400	0.10	8	7000
10(11.5)	2500	10×14	5000	0.10	8	7000
10(11.5)	2700	10×16	5400	0.10	8	7500
10(11.5)	3300	10×18	6600	0.11	8	7900
10(11.5)	3300	12.5×14	6600	0.11	9	7500
10(11.5)	3900	10×21	7500	0.11	8	8400
10(11.5)	3900	12.5×16	7500	0.12	8	8400
10(11.5)	4700	12.5×18	7500	0.14	8	8400
10(11.5)	5600	12.5×18	7500	0.16	8	8400
10(11.5)	6800	12.5×20	7500	0.18	8	9200
12(13.8)	180	5×7	432	0.08	15	3050
12(13.8)	180	6.3×5.7	432	0.08	30	2200
12(13.8)	220	5×9	528	0.08	15	3400
12(13.8)	220	6.3×5.7	528	0.08	30	2200
12(13.8)	270	5×10	648	0.08	12	3950
12(13.8)	270	6.3×7	648	0.08	16	3200
12(13.8)	330	5×10	792	0.08	12	3950
12(13.8)	330	6.3×7	792	0.08	16	3200
12(13.8)	390	5×11	936	0.08	12	4100
12(13.8)	390	6.3×8	936	0.08	12	4100
12(13.8)	470	6.3×9	1128	0.08	12	4300
12(13.8)	470	8×7	1128	0.08	14	3000
12(13.8)	560	6.3×10	1344	0.08	10	4900
12(13.8)	560	8×7	1344	0.08	14	3000
12(13.8)	680	6.3×11	1632	0.08	9	5400
12(13.8)	680	8×8	1632	0.08	10	5100
12(13.8)	1000	8×10	2400	0.08	10	5200
16(18.4)	22	5×5.7	300	0.08	30	1900
16(18.4)	33	5×5.7	300	0.08	30	1900
16(18.4)	47	5×5.7	300	0.08	30	1900
16(18.4)	68	5×5.7	300	0.08	30	1900
16(18.4)	82	5×5.7	300	0.08	30	1900
16(18.4)	100	5×7	320	0.08	30	2000

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■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
16(18.4)	100	6.3×5	320	0.08	30	2100
16(18.4)	100	6.3×5.7	320	0.08	30	2100
16(18.4)	100	6.3×7	320	0.08	20	2850
16(18.4)	150	5×7	480	0.08	30	2200
16(18.4)	150	5×8	480	0.08	30	2200
16(18.4)	150	6.3×5.7	480	0.08	30	2200
16(18.4)	220	5×10	704	0.08	12	3950
16(18.4)	220	6.3×7	704	0.08	20	2850
16(18.4)	270	6.3×8	864	0.08	15	3500
16(18.4)	270	8×7	864	0.08	30	2550
16(18.4)	330	6.3×9	1056	0.08	12	4300
16(18.4)	330	8×7	1056	0.08	30	2550
16(18.4)	390	6.3×9	1248	0.08	12	4300
16(18.4)	470	6.3×8	1504	0.08	15	3500
16(18.4)	470	6.3×11	1504	0.08	10	4900
16(18.4)	470	6.3×15	1504	0.08	10	5680
16(18.4)	470	8×8	1504	0.08	20	3300
16(18.4)	560	8×7	1792	0.08	30	2550
16(18.4)	560	8×9	1792	0.08	12	4700
16(18.4)	560	10×8	1792	0.08	12	4700
16(18.4)	680	6.3×11	2176	0.08	10	4900
16(18.4)	680	8×10	2176	0.08	10	5200
16(18.4)	680	10×8	2176	0.08	12	4700
16(18.4)	820	8×12	2624	0.08	10	5500
16(18.4)	820	10×9	2624	0.08	12	5200
16(18.4)	1000	8×14	3200	0.08	8	6800
16(18.4)	1000	8×16	3200	0.08	10	7000
16(18.4)	1000	10×9	3200	0.08	12	5200
16(18.4)	1500	10×12	4800	0.09	9	6300
16(18.4)	1800	10×16	5760	0.09	8	7000
16(18.4)	2200	10×16	7040	0.10	8	7000
16(18.4)	2200	10×18	7040	0.10	8	7500
16(18.4)	2200	10×20	7040	0.10	8	7900
16(18.4)	2200	12.5×14	7040	0.10	10	7100
16(18.4)	2700	10×21	7500	0.10	8	8400
16(18.4)	2700	12.5×16	7500	0.10	10	7100
16(18.4)	3300	12.5×18	7500	0.11	8	8400
16(18.4)	3900	12.5×20	7500	0.12	8	8800
25(28.8)	10	5×5.7	300	0.08	40	1650
25(28.8)	15	5×5.7	300	0.08	40	1650
25(28.8)	22	5×5.7	300	0.08	40	1650
25(28.8)	33	5×5.7	300	0.08	40	1650
25(28.8)	39	5×5.7	300	0.08	40	1650

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■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
25(28.8)	47	5×5.7	300	0.08	40	1650
25(28.8)	47	6.3×11	300	0.08	20	3650
25(28.8)	68	5×7	340	0.08	30	2200
25(28.8)	68	6.3×5.7	340	0.08	40	1900
25(28.8)	100	5×9	500	0.08	30	2400
25(28.8)	100	6.3×5.7	500	0.08	40	1900
25(28.8)	150	6.3×7	750	0.08	30	2400
25(28.8)	150	6.3×8	750	0.08	16	3500
25(28.8)	180	6.3×7	900	0.08	30	2400
25(28.8)	180	6.3×8	900	0.08	16	3500
25(28.8)	180	8×7	900	0.08	30	2550
25(28.8)	220	6.3×8	1100	0.08	16	3500
25(28.8)	220	6.3×9	1100	0.08	20	3500
25(28.8)	220	8×7	1100	0.08	30	2550
25(28.8)	220	10×7	1100	0.08	16	4100
25(28.8)	330	6.3×11	1650	0.08	20	3650
25(28.8)	330	8×9	1650	0.08	16	4000
25(28.8)	330	10×8	1650	0.08	16	4100
25(28.8)	390	8×8	1950	0.08	16	3700
25(28.8)	470	6.3×11	2350	0.08	20	3650
25(28.8)	470	6.3×12	2350	0.08	20	3800
25(28.8)	470	8×8	2350	0.08	16	3700
25(28.8)	470	8×11	2350	0.08	16	4200
25(28.8)	470	8×12	2350	0.08	16	4350
25(28.8)	470	8×14	2350	0.08	16	4800
25(28.8)	470	10×9	2350	0.08	16	4300
25(28.8)	470	10×12	2350	0.08	16	4700
25(28.8)	560	8×11	2800	0.08	16	4200
25(28.8)	560	8×14	2800	0.08	16	4800
25(28.8)	560	10×10	2800	0.08	16	4500
25(28.8)	680	8×14	3400	0.08	16	4800
25(28.8)	680	10×12	3400	0.08	16	4700
25(28.8)	820	8×16	4100	0.08	16	5050
25(28.8)	820	8×17	4100	0.08	16	5300
25(28.8)	820	10×12	4100	0.08	16	4700
25(28.8)	820	10×13	4100	0.08	16	4800
25(28.8)	1000	6.3×18	5000	0.08	20	4650
25(28.8)	1000	10×16	5000	0.08	16	5300
25(28.8)	1000	12.5×12.5	5000	0.08	16	5300
25(28.8)	1500	10×18	7500	0.09	16	5600
25(28.8)	1500	12.5×14	7500	0.09	16	5600
25(28.8)	1800	10×21	7500	0.09	16	6000
25(28.8)	1800	12.5×16	7500	0.09	16	5900

NPL

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
25(28.8)	2200	12.5×18	7500	0.10	16	6200
25(28.8)	2700	10×23	7500	0.10	16	6250
25(28.8)	2700	12.5×20	7500	0.10	16	6500
35(41)	10	5×5.7	300	0.12	60	1350
35(41)	15	5×5.7	300	0.12	60	1350
35(41)	22	5×5.7	300	0.12	60	1350
35(41)	22	6.3×5.7	300	0.12	60	1550
35(41)	33	5×5.7	300	0.12	60	1350
35(41)	39	5×7	300	0.12	50	1700
35(41)	39	6.3×5.7	300	0.12	60	1550
35(41)	47	5×7	329	0.12	50	1700
35(41)	47	6.3×5.7	329	0.12	60	1550
35(41)	47	6.3×7	329	0.12	50	1900
35(41)	56	5×7	392	0.12	50	1700
35(41)	56	6.3×5.7	392	0.12	60	1550
35(41)	68	5×8	476	0.12	50	1800
35(41)	68	6.3×5.7	476	0.12	60	1550
35(41)	82	5×9	574	0.12	50	1900
35(41)	82	6.3×7	574	0.12	50	1900
35(41)	100	5×11	700	0.12	40	2100
35(41)	100	6.3×7	700	0.12	50	1900
35(41)	120	6.3×8	840	0.12	50	2050
35(41)	120	8×7	840	0.12	60	1900
35(41)	150	6.3×9	1050	0.12	50	2150
35(41)	150	8×7	1050	0.12	60	1900
35(41)	180	6.3×10	1260	0.12	40	2500
35(41)	180	8×7	1260	0.12	60	1900
35(41)	220	6.3×9	1540	0.12	50	2150
35(41)	220	6.3×11	1540	0.12	40	2600
35(41)	220	8×8	1540	0.12	50	2200
35(41)	220	10×7	1540	0.12	50	2350
35(41)	270	10×9	1890	0.12	50	2450
35(41)	330	6.3×12	2310	0.12	40	2600
35(41)	330	8×9	2310	0.12	30	3100
35(41)	330	8×10	2310	0.12	30	3100
35(41)	330	10×8	2310	0.12	50	2350
35(41)	390	8×12	2730	0.12	30	3200
35(41)	390	10×10	2730	0.12	50	2550
35(41)	470	8×14	3290	0.12	20	4250
35(41)	470	8×20	3290	0.12	20	4880
35(41)	470	10×12	3290	0.12	30	3400
35(41)	560	8×16	3920	0.12	20	4550
35(41)	560	10×12	3920	0.12	30	3400

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■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
35(41)	680	10×14	4760	0.12	20	4450
35(41)	820	10×16	5740	0.12	20	4700
35(41)	820	12.5×12.5	5740	0.12	30	3900
35(41)	1000	10×18	7000	0.12	20	5000
35(41)	1000	12.5×14	7000	0.08	30	4100
35(41)	1200	10×18	7500	0.13	20	5000
35(41)	1200	10×21	7500	0.13	20	5300
35(41)	1200	12.5×16	7500	0.10	20	5300
35(41)	1500	12.5×18	7500	0.10	20	5600
35(41)	1800	12.5×20	7500	0.10	20	5850
35(41)	2200	12.5×25	7500	0.11	20	6500
50(58)	10	5×5.7	300	0.12	60	1350
50(58)	10	5×8	300	0.12	60	1550
50(58)	12	5×5.7	300	0.12	60	1350
50(58)	15	5×5.7	300	0.12	60	1350
50(58)	18	5×7	300	0.12	60	1450
50(58)	18	6.3×5.7	300	0.12	60	1550
50(58)	22	5×7	300	0.12	60	1450
50(58)	22	5×11	300	0.12	40	2300
50(58)	22	6.3×5.7	300	0.12	60	1550
50(58)	33	5×9	330	0.12	50	1800
50(58)	33	6.3×7	330	0.12	60	1650
50(58)	39	5×10	390	0.12	40	2200
50(58)	39	6.3×7	390	0.12	60	1650
50(58)	47	6.3×5.7	470	0.12	60	1550
50(58)	47	6.3×8	470	0.12	50	1900
50(58)	47	8×7	470	0.12	60	1800
50(58)	47	8×8	470	0.12	60	1900
50(58)	56	6.3×9	560	0.12	50	2150
50(58)	56	8×7	560	0.12	60	1800
50(58)	68	6.3×10	680	0.12	40	2500
50(58)	68	8×7	680	0.12	60	1800
50(58)	82	6.3×11	820	0.12	40	2600
50(58)	82	8×8	820	0.12	60	1900
50(58)	100	8×9	1000	0.12	50	2200
50(58)	100	8×11	1000	0.12	40	2800
50(58)	100	10×7	1000	0.12	50	2350
50(58)	120	8×10	1200	0.12	50	2300
50(58)	120	10×7	1200	0.12	50	2350
50(58)	150	8×12	1500	0.12	50	2300
50(58)	150	10×8	1500	0.12	50	2350
50(58)	180	8×14	1800	0.12	40	2800
50(58)	180	10×9	1800	0.12	50	2450

NPL

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
50(58)	220	8×16	2200	0.12	30	3500
50(58)	220	10×12	2200	0.12	40	2900
50(58)	270	10×13	2700	0.12	40	3000
50(58)	270	10×14	2700	0.12	30	3100
50(58)	330	10×16	3300	0.12	30	3800
50(58)	390	10×18	3900	0.12	30	3800
50(58)	390	12.5×14	3900	0.12	40	3500
50(58)	470	10×21	4700	0.12	30	4050
50(58)	470	12.5×14	4700	0.12	40	3500
50(58)	560	12.5×16	5600	0.12	30	4300
50(58)	680	12.5×20	6800	0.12	30	4550
50(58)	820	12.5×20	7500	0.12	30	4550
63(73)	6.8	5×5.7	300	0.12	60	1350
63(73)	8.2	5×5.7	300	0.12	60	1350
63(73)	10	5×7	300	0.12	60	1450
63(73)	15	5×7	300	0.12	60	1450
63(73)	15	6.3×5.7	300	0.12	60	1400
63(73)	22	5×9	300	0.12	50	1800
63(73)	22	6.3×7	300	0.12	60	1650
63(73)	33	6.3×8	416	0.12	50	1900
63(73)	33	8×7	416	0.12	60	1800
63(73)	39	6.3×9	491	0.12	50	2150
63(73)	39	8×7	491	0.12	60	1800
63(73)	47	6.3×10	592	0.12	40	2500
63(73)	47	8×8	592	0.12	60	1900
63(73)	56	8×8	706	0.12	60	1900
63(73)	56	10×8	706	0.12	50	2200
63(73)	68	8×9	857	0.12	50	2200
63(73)	68	10×7	857	0.12	50	2200
63(73)	82	8×10	1033	0.12	50	2300
63(73)	82	10×9	1033	0.12	50	2450
63(73)	100	8×12	1260	0.12	50	2300
63(73)	100	10×10	1260	0.12	50	2500
63(73)	120	8×12	1512	0.12	50	2300
63(73)	120	10×12	1512	0.12	50	2900
63(73)	150	10×13	1890	0.12	40	3000
63(73)	180	10×12	2268	0.12	50	2600
63(73)	180	10×14	2268	0.12	30	3600
63(73)	220	8×16	2772	0.12	30	2650
63(73)	220	10×16	2772	0.12	30	3800
63(73)	220	12.5×12.5	2772	0.12	40	3350
63(73)	270	10×21	3402	0.12	30	4050
63(73)	270	12.5×14	3402	0.12	40	3500

NPL

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
63(73)	330	10×21	4158	0.12	30	4050
63(73)	330	12.5×16	4158	0.12	30	4300
63(73)	390	10×21	4914	0.12	30	4050
63(73)	390	12.5×18	4914	0.12	30	4550
63(73)	470	12.5×20	5922	0.12	30	4550
80(92)	4.7	5×5.7	300	0.12	60	1350
80(92)	6.8	5×5.7	300	0.12	60	1350
80(92)	8.2	5×7	300	0.12	60	1450
80(92)	10	5×7	300	0.12	60	1450
80(92)	10	6.3×5.7	300	0.12	60	1400
80(92)	15	5×9	300	0.12	50	1800
80(92)	15	6.3×7	300	0.12	60	1650
80(92)	22	6.3×8	352	0.12	50	1900
80(92)	22	8×7	352	0.12	60	1800
80(92)	33	6.3×10	528	0.12	40	2500
80(92)	33	8×7	528	0.12	60	1800
80(92)	39	6.3×11	624	0.12	40	2600
80(92)	39	8×8	624	0.12	60	1900
80(92)	47	8×9	752	0.12	50	2200
80(92)	47	10×7	752	0.12	60	2050
80(92)	56	8×10	896	0.12	50	2300
80(92)	56	10×9	896	0.12	50	2450
80(92)	68	8×11	1088	0.12	40	2700
80(92)	68	10×9	1088	0.12	50	2450
80(92)	82	8×14	1312	0.12	40	2800
80(92)	82	10×10	1312	0.12	50	2500
80(92)	100	8×16	1600	0.12	30	3500
80(92)	100	10×12	1600	0.12	50	2900
80(92)	120	10×13	1920	0.12	40	3000
80(92)	150	10×16	2400	0.12	30	3800
80(92)	150	12.5×12.5	2400	0.12	40	3350
80(92)	180	10×18	2880	0.12	30	3800
80(92)	180	12.5×14	2880	0.12	40	3500
80(92)	220	10×21	3520	0.12	30	4050
80(92)	220	12.5×16	3520	0.12	30	4300
80(92)	270	12.5×18	4320	0.12	30	4550
80(92)	330	12.5×20	5280	0.12	30	4550
100(115)	2.2	5×5.7	300	0.12	80	1200
100(115)	3.3	5×5.7	300	0.12	80	1200
100(115)	4.7	5×7	300	0.12	60	1450
100(115)	4.7	6.3×5.7	300	0.12	80	1350
100(115)	5.6	5×7	300	0.12	60	1450
100(115)	5.6	6.3×5.7	300	0.12	80	1350

NPL

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
100(115)	6.8	5×8	300	0.12	60	1550
100(115)	6.8	6.3×5.7	300	0.12	60	1650
100(115)	8.2	5×9	300	0.12	50	1700
100(115)	8.2	6.3×7	300	0.12	60	1650
100(115)	10	6.3×7	300	0.12	60	1650
100(115)	12	6.3×8	300	0.12	50	1900
100(115)	15	5×12	300	0.12	50	1950
100(115)	15	6.3×9	300	0.12	50	2150
100(115)	15	8×7	300	0.12	60	1800
100(115)	18	6.3×10	360	0.12	50	2250
100(115)	18	8×8	360	0.12	60	1900
100(115)	22	6.3×10	440	0.12	50	2250
100(115)	22	6.3×12	440	0.12	50	2300
100(115)	22	8×8	440	0.12	60	1900
100(115)	27	8×11	540	0.12	50	2200
100(115)	27	10×7	540	0.12	60	2050
100(115)	33	8×11	660	0.12	50	2200
100(115)	33	10×9	660	0.12	50	2450
100(115)	39	8×14	780	0.12	50	2400
100(115)	39	10×9	780	0.12	50	2450
100(115)	47	10×10	940	0.12	50	2500
100(115)	56	10×12	1120	0.12	50	2650
100(115)	68	10×16	1360	0.12	50	2700
100(115)	82	10×18	1640	0.12	40	3100
100(115)	82	12.5×12.5	1640	0.12	50	3000
100(115)	100	10×21	2000	0.12	40	3750
100(115)	100	12.5×14	2000	0.12	50	3150
100(115)	120	10×21	2400	0.12	40	3750
100(115)	120	12.5×16	2400	0.12	40	3700
100(115)	150	12.5×18	3000	0.12	40	3900
100(115)	180	12.5×20	3600	0.12	40	4100
100(115)	220	12.5×20	4400	0.12	40	4100

NPG

◆Large capacity, high reliability, low ESR, high permissible ripple current

◆105℃, 2000-hour warranty

◆RoHS compliant

◆Large capacity, miniaturized design

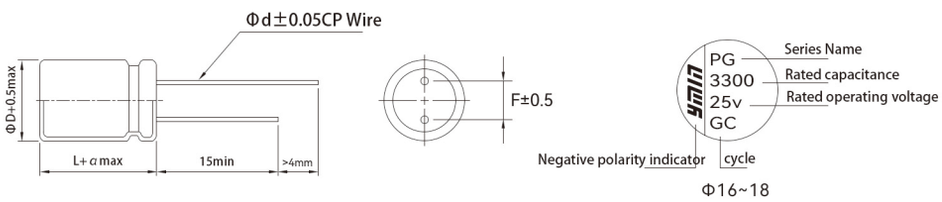


■ Main technical parameters

project	characteristic
Operating temperature range	－55 ~ +105℃
Rated operating voltage	6.3 ~ 100V
Capacity range	180 ~ 18000μF 120Hz 20℃
Capacity tolerance	±20% (120Hz 20℃)
Loss tangent	The following values are from the standard product list: 120Hz, 20℃
Leakage current	Charge for 2 minutes at rated voltage using 0.2CV or 1000μA, at 20℃.
Equivalent series resistance (ESR)	The following values are from the standard product list: 100kHz, 20℃.
Durability	After being subjected to the rated operating voltage for 2000 hours at 105℃ and placed at 20℃ for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±20% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value
High temperature and humidity	After being placed at 60℃ and 90%~95% RH without voltage for 1000 hours, and then placed at 20℃ for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±20% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value

※If there is any doubt about the leakage current value, please place the product at 105° C and apply the rated operating voltage for 2 hours, then cool it down to 20° C before testing the leakage current.

■ Product dimension drawing (unit: mm)



D (±0.5)	16	18
d (±0.05)	0.8	0.8
F (±0.5)	7.5	7.5
α	+1	

■ Frequency correction factor

Frequency (Hz)	120Hz	1kHz	10kHz	100kHz	500kHz
Correction Factor	0.05	0.30	0.70	1.00	1.00

NPG

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
6.3(7.2)	10000	16×16	7500	0.30	7	9200
6.3(7.2)	12000	16×18	7500	0.34	7	9650
6.3(7.2)	15000	16×20	7500	0.40	7	9950
6.3(7.2)	15000	18×18	7500	0.40	7	9650
6.3(7.2)	18000	18×20	7500	0.46	7	9950
10(11.5)	6800	16×16	7500	0.24	8	8600
10(11.5)	8200	16×18	7500	0.26	8	9000
10(11.5)	10000	16×20	7500	0.30	8	9300
10(11.5)	10000	18×18	7500	0.30	8	9000
10(11.5)	12000	18×20	7500	0.34	8	9300
16(18.4)	3900	16×16	7500	0.18	8	8600
16(18.4)	4700	16×18	7500	0.19	8	9000
16(18.4)	5600	16×20	7500	0.20	8	9300
16(18.4)	6800	18×18	7500	0.21	8	9000
16(18.4)	6800	18×20	7500	0.21	8	9300
16(18.4)	8200	16×25	7500	0.23	7	10300
16(18.4)	8200	18×20	7500	0.23	8	9300
25(28.8)	2200	16×16	7500	0.14	16	6000
25(28.8)	2700	16×18	7500	0.14	16	6400
25(28.8)	3300	16×20	7500	0.15	16	6550
25(28.8)	3900	18×18	7500	0.15	16	6400
25(28.8)	4700	18×20	7500	0.16	16	6550
35(41)	1800	16×16	7500	0.14	20	5450
35(41)	2200	16×18	7500	0.15	20	5700
35(41)	2700	16×20	7500	0.15	20	5950
35(41)	2700	18×18	7500	0.15	20	5700
35(41)	3300	18×20	7500	0.16	20	5950
50(58)	680	16×16	6800	0.12	30	4400
50(58)	820	16×18	7500	0.12	30	4650
50(58)	1000	16×20	7500	0.12	30	4800
50(58)	1200	18×18	7500	0.13	30	4650
50(58)	1500	18×20	7500	0.13	30	4800
63(73)	560	16×16	7056	0.12	30	4400
63(73)	680	16×18	7500	0.12	30	4650
63(73)	820	16×20	7500	0.12	30	4800
63(73)	820	18×18	7500	0.12	30	4650
63(73)	1000	16×25	7500	0.12	28	5350
63(73)	1000	18×20	7500	0.12	30	4800
63(73)	1200	16×25	7500	0.13	28	5350
80(92)	330	16×16	5280	0.12	30	4400
80(92)	390	16×18	6240	0.12	30	4650
80(92)	470	16×20	7500	0.12	30	4800
80(92)	560	18×18	7500	0.12	30	4650

NPG

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
80(92)	680	18×20	7500	0.12	30	4800
80(92)	820	18×25	7500	0.12	28	5350
100(115)	180	16×16	3600	0.12	40	3850
100(115)	220	16×18	4400	0.12	40	4000
100(115)	270	16×20	5400	0.12	40	4150
100(115)	270	18×18	5400	0.12	40	4000
100(115)	330	16×20	6600	0.12	40	4150
100(115)	330	18×20	6600	0.12	40	4150
100(115)	1000	18×31.5	7500	0.12	37	5200
160(184)	180	16×25	5760	0.12	50	4400

NPM

- ◆ 3.95mm height ultra-thin solid capacitor
- ◆ Low ESR, high reliability
- ◆ 105℃ 2000-hour warranty
- ◆ Surface mount type, suitable for high-temperature lead-free reflow soldering
- ◆ RoHS compliant

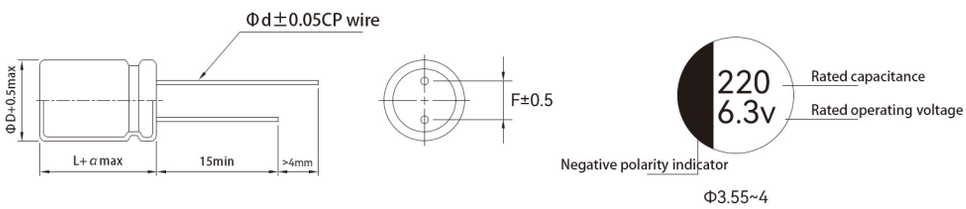


■ Main technical parameters

project	characteristic
Operating temperature range	－55 ~ +105℃
Rated operating voltage	6.3 ~ 100V
Capacity range	1.2 ~ 270μF 120Hz 20℃
Capacity tolerance	±20% (120Hz 20℃)
Loss tangent	The following values are from the standard product list: 120Hz, 20℃
Leakage current	Charge for 2 minutes at rated voltage using 0.2CV or 1000μA, at 20℃.
Equivalent series resistance (ESR)	The following values are from the standard product list: 100kHz, 20℃.
Durability	After being subjected to the rated operating voltage for 2000 hours at 105℃ and placed at 20℃ for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±20% of the initial value Equivalent series resistance (ESR): ≦ 150% of the initial specification value Loss tangent: ≦ 150% of the initial specification value Leakage current: ≦ Initial specification value
High temperature and humidity	After being placed at 60℃ and 90%~95% RH without voltage for 1000 hours, and then placed at 20℃ for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±20% of the initial value Equivalent series resistance (ESR): ≦ 150% of the initial specification value Loss tangent: ≦ 150% of the initial specification value Leakage current: ≦ Initial specification value

※If there is any doubt about the leakage current value, please place the product at 105° C and apply the rated operating voltage for 2 hours, then cool it down to 20° C before testing the leakage current.

■ Product dimension drawing (unit: mm)



D (±0.5)	3.55×11	4×7	4×9	4×11
d (±0.05)	0.40	0.50	0.50	0.50
F (±0.5)	1.5			
α	+1.0			

■ Frequency correction factor

Frequency (Hz)	120Hz	1kHz	10kHz	100kHz	500kHz
Correction Factor	0.05	0.30	0.70	1.00	1.00

NPM

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
6.3(7.2)	100	4×7	300	0.12	100	850
6.3(7.2)	150	4×7	300	0.12	100	850
6.3(7.2)	220	3.55×11	300	0.12	60	950
6.3(7.2)	220	4×7	300	0.12	100	850
6.3(7.2)	270	4×11	340	0.12	60	1250
6.3(7.2)	470	4×11	592	0.12	60	1250
10(11.5)	10	4×7	300	0.12	100	850
10(11.5)	100	4×7	300	0.12	100	850
10(11.5)	120	3.55×11	300	0.12	60	950
10(11.5)	180	4×11	360	0.12	60	1250
10(11.5)	250	4×11	500	0.12	60	1250
16(18.4)	56	4×7	300	0.12	100	850
16(18.4)	68	3.55×11	300	0.12	60	950
16(18.4)	68	4×7	300	0.12	100	850
16(18.4)	100	4×7	320	0.12	100	850
16(18.4)	100	4×11	320	0.12	60	1250
16(18.4)	120	4×9	384	0.12	60	1190
16(18.4)	150	4×7	480	0.12	100	850
16(18.4)	220	4×11	704	0.12	60	1250
25(28.8)	33	4×7	300	0.12	100	650
25(28.8)	47	3.55×11	300	0.12	100	750
25(28.8)	68	4×7	340	0.12	100	650
25(28.8)	68	4×9	340	0.12	100	700
25(28.8)	68	4×11	340	0.12	100	950
25(28.8)	82	4×9	410	0.12	100	700
25(28.8)	82	4×10	410	0.12	100	900
25(28.8)	100	3.55×11	500	0.12	100	750
25(28.8)	100	4×10	500	0.12	100	900
25(28.8)	100	4×11	500	0.12	100	950
25(28.8)	120	4×11	600	0.12	100	950
35(41)	22	4×7	300	0.12	100	650
35(41)	33	3.55×11	300	0.12	100	750
35(41)	56	4×11	392	0.12	100	950
35(41)	68	4×11	476	0.12	100	950
50(58)	10	4×7	300	0.12	100	650
50(58)	12	3.55×11	300	0.12	100	750
50(58)	22	4×7	300	0.12	100	650
50(58)	22	4×11	300	0.12	100	950
63(73)	8.2	4×7	300	0.12	100	650
63(73)	10	3.55×11	300	0.12	100	750
63(73)	10	4×11	300	0.12	100	950
63(73)	15	4×11	300	0.12	100	950
80(92)	4.7	4×7	300	0.12	100	650

NPM

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	L.C. (μA,2min)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
80(92)	5.6	3.55×11	300	0.12	100	750
80(92)	8.2	4×11	300	0.12	100	950
80(92)	10	4×11	300	0.12	100	950
100(115)	2.2	4×7	300	0.12	100	650
100(115)	3.3	3.55×11	300	0.12	100	750
100(115)	4.7	4×11	300	0.12	100	950

VHX

◆Low ESR, high capacity, miniaturized design, high ripple current tolerance, high reliability
◆105℃, 2000~5000 hours
◆Meets vibration resistance requirements
◆Surface mount type, suitable for high-temperature lead-free reflow soldering
◆Compliant with AEC-Q200, RoHS compliant

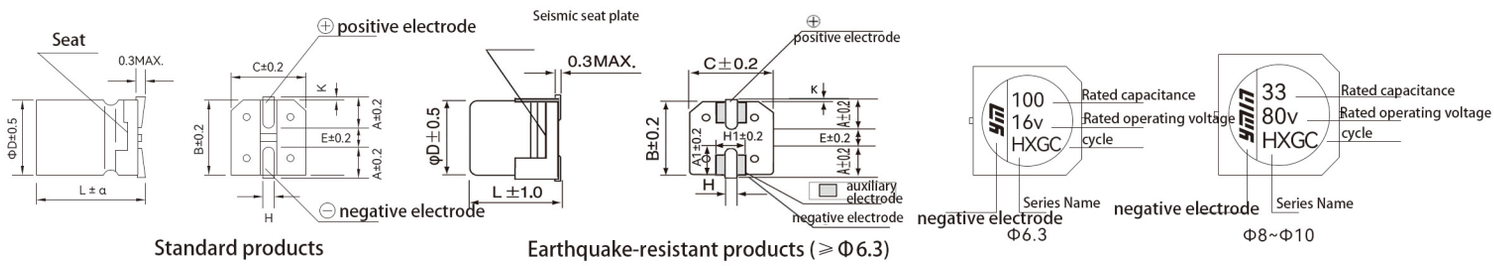


■ Main technical parameters

project	characteristic
Operating temperature range	－55 ~ +105℃
Rated operating voltage	16 ~ 100V
Capacity range	6.8 ~ 1500μF 120Hz 20℃
Capacity tolerance	±20% (120Hz 20℃)
Loss tangent	120Hz 20℃
Leakage current	Below 0.01CV (μA), charge for 2 minutes at rated voltage, 20℃
Equivalent series resistance (ESR)	The following are the values from the standard sample list: 100kHz, 20℃
Temperature characteristics	Z(-25℃)/Z(+20℃)≦2.0 ; Z(-55℃)/Z(+20℃)≦2.5 (100kHz)
Durability	After applying the rated voltage with rated ripple current at 105℃ for 2000H/5000H, and then placing it at 20℃ for 16 hours, the product should meet the following requirements. Guaranteed lifespan: ΦD≦6.3mm:2000小时 ΦD≧8mm:5000小时 Capacitance change rate: ±30% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value
High temperature storage	After storage at 105℃ for 1000 hours, followed by a 16-hour period at room temperature (20℃±2℃), the product should meet the following requirements. Rate of change of capacitance: ±30% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value
High temperature and humidity	After being subjected to rated voltage for 1000 hours at 85° C and 85% RH, and then placed at 20° C for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±30% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value

※If there is any doubt about the leakage current value, please place the product at 105° C and apply the rated operating voltage for 2 hours, then cool it down to 20° C before testing the leakage current.

■ Product dimension drawing (unit: mm)



Standard products　　Earthquake-resistant products (≥Φ6.3)

ΦD	B	C	A	A1	H	H1	E	K	α
5	5.3	5.3	2.1	/	0.65±0.20	/	1.3	0.5MAX	±0.5
6.3	6.6(7.0)	6.6	2.6	1.3	0.70±0.20	2.5	1.8	0.5MAX	
8	8.3(8.8)	8.3	3.0	1.8	0.90±0.20	3.9	3.1	0.5MAX	
10	10.3(10.8)	10.3	3.5	1.8	0.90±0.20	3.9	4.6	0.70±0.20	
12.5	12.8(13.5)	12.8	4.7	2.5	0.90±0.20	4.4	4.6	0.70±0.30	±1.0

■ Frequency correction factor

Capacitance C	Frequency (Hz)	120Hz	500Hz	1kHz	5kHz	10kHz	20kHz	40kHz	100kHz	200kHz	500kHz
C<47μF	Correction factor	0.12	0.20	0.35	0.50	0.65	0.70	0.80	1.00	1.00	1.05
47μF≦C<120μF		0.15	0.30	0.45	0.60	0.75	0.80	0.85	1.00	1.00	1.00
C≧120μF		0.15	0.30	0.45	0.65	0.80	0.85	0.85	1.00	1.00	1.00

VHX

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)	model	
						Standard products	earthquake-resistant products
6.3(7.2)	680	6.3×9.5	0.16	25	2400	VHXC0950J681MVCG	VHXC0950J681MVKZ
10(11.5)	47	5×5.8	0.16	60	1400	VHXB0581A470MVCG	---
10(11.5)	330	6.3×5.8	0.16	45	1600	VHXC0581A331MVCG	VHXC0581A331MVKZ
10(11.5)	470	8×10.5	0.16	22	2500	VHXD1051A471MVCG	VHXD1051A471MVKZ
16(18.4)	47	6.3×5.8	0.16	45	1600	VHXC0581C470MVCG	VHXC0581C470MVKZ
16(18.4)	100	5×5.8	0.16	60	1400	VHXB0581C101MVCG	---
16(18.4)	100	6.3×5.8	0.16	45	1600	VHXC0581C101MVCG	VHXC0581C101MVKZ
16(18.4)	150	6.3×5.8	0.16	45	1600	VHXC0581C151MVCG	VHXC0581C151MVKZ
16(18.4)	150	6.3×7.7	0.16	27	2200	VHXC0771C151MVCG	VHXC0771C151MVKZ
16(18.4)	220	6.3×5.8	0.16	45	1600	VHXC0581C221MVCG	VHXC0581C221MVKZ
16(18.4)	270	6.3×7.7	0.16	27	2200	VHXC0771C271MVCG	VHXC0771C271MVKZ
16(18.4)	330	6.3×8.5	0.16	27	2300	VHXC0851C331MVCG	VHXC0851C331MVKZ
16(18.4)	470	8×10.5	0.16	22	2500	VHXD1051C471MVCG	VHXD1051C471MVKZ
16(18.4)	680	8×10.5	0.16	22	2500	VHXD1051C681MVCG	VHXD1051C681MVKZ
16(18.4)	680	10×10.5	0.16	18	2600	VHXE1051C681MVCG	VHXE1051C681MVKZ
16(18.4)	1000	10×10.5	0.16	18	2600	VHXE1051C102MVCG	VHXE1051C102MVKZ
16(18.4)	1000	10×13	0.16	15	3200	VHXE1301C102MVCG	VHXE1301C102MVKZ
16(18.4)	1500	10×13	0.17	15	3200	VHXE1301C152MVCG	VHXE1301C152MVKZ
25(28.8)	82	6.3×5.8	0.14	50	1300	VHXC0581E820MVCG	VHXC0581E820MVKZ
25(28.8)	100	5×5.8	0.14	80	1150	VHXB0581E101MVCG	---
25(28.8)	100	6.3×7.7	0.14	30	2200	VHXC0771E101MVCG	VHXC0771E101MVKZ
25(28.8)	150	5×7.7	0.14	60	1250	VHXB0771E151MVCG	---
25(28.8)	150	6.3×5.8	0.14	50	1300	VHXC0581E151MVCG	VHXC0581E151MVKZ
25(28.8)	150	6.3×7.7	0.14	30	2000	VHXC0771E151MVCG	VHXC0771E151MVKZ
25(28.8)	220	6.3×5.8	0.14	50	1300	VHXC0581E221MVCG	VHXC0581E221MVKZ
25(28.8)	220	6.3×7.7	0.14	30	2000	VHXC0771E221MVCG	VHXC0771E221MVKZ
25(28.8)	330	8×10.5	0.14	27	2300	VHXD1051E331MVCG	VHXD1051E331MVKZ
25(28.8)	470	8×10.5	0.14	27	2300	VHXD1051E471MVCG	VHXD1051E471MVKZ
25(28.8)	470	10×10.5	0.14	20	2500	VHXE1051E471MVCG	VHXE1051E471MVKZ
25(28.8)	680	10×10.5	0.14	20	2500	VHXE1051E681MVCG	VHXE1051E681MVKZ
25(28.8)	680	10×13	0.14	16	3000	VHXE1301E681MVCG	VHXE1301E681MVKZ
25(28.8)	1000	10×13	0.14	16	3000	VHXE1301E102MVCG	VHXE1301E102MVKZ
35(41)	47	6.3×5.8	0.12	60	1300	VHXC0581V470MVCG	VHXC0581V470MVKZ
35(41)	68	5×7.7	0.12	80	1300	VHXB0771V680MVCG	---
35(41)	68	6.3×7.7	0.12	35	2000	VHXC0771V680MVCG	VHXC0771V680MVKZ
35(41)	100	6.3×5.8	0.12	60	1300	VHXC0581V101MVCG	VHXC0581V101MVKZ
35(41)	120	5×11	0.12	60	1400	VHXB1101V121MVCG	---
35(41)	150	5×12	0.12	60	1450	VHXB1201V151MVCG	---
35(41)	150	6.3×7.7	0.12	35	2000	VHXC0771V151MVCG	VHXC0771V151MVKZ
35(41)	180	8×10.5	0.12	27	2300	VHXD1051V181MVCG	VHXD1051V181MVKZ
35(41)	220	5×15.5	0.12	40	1600	VHXB1551V221MVCG	---
35(41)	220	6.3×9.5	0.12	30	2250	VHXC0951V221MVCG	VHXC0951V221MVKZ
35(41)	220	8×7.7	0.12	40	1950	VHXD0771V221MVCG	VHXD0771V221MVKZ

VHX

■ List of Standard Products

Rated voltage (浪涌电压) (V)	nominal capacity (μF)	size ΦD×L(mm)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)	model	
						Standard products	earthquake-resistant products
35(41)	220	8×9.5	0.12	30	2150	VHXD0951V221MVCG	VHXD0951V221MVKZ
35(41)	330	8×9.5	0.12	30	2150	VHXD0951V331MVCG	VHXD0951V331MVKZ
35(41)	330	8×10.5	0.12	27	2300	VHXD1051V331MVCG	VHXD1051V331MVKZ
35(41)	330	10×10.5	0.12	20	2500	VHXE1051V331MVCG	VHXE1051V331MVKZ
35(41)	470	10×10.5	0.12	20	2500	VHXE1051V471MVCG	VHXE1051V471MVKZ
35(41)	470	10×12.5	0.12	17	3000	VHXE1251V471MVCG	VHXE1251V471MVKZ
35(41)	470	10×13	0.12	17	3000	VHXE1301V471MVCG	VHXE1301V471MVKZ
35(41)	560	10×13	0.12	17	3000	VHXE1301V561MVCG	VHXE1301V561MVKZ
35(41)	680	10×13	0.12	17	3000	VHXE1301V681MVCG	VHXE1301V681MVKZ
35(41)	2200	12.5×21	0.14	16	4250	VHXL2101V222MVCG	VHXL2101V222MVKZ
50(58)	10	5×5.8	0.10	100	950	VHXB0581H100MVCG	---
50(58)	22	6.3×5.8	0.10	80	1100	VHXC0581H220MVCG	VHXC0581H220MVKZ
50(58)	33	6.3×7.7	0.10	40	1800	VHXC0771H330MVCG	VHXC0771H330MVKZ
50(58)	39	6.3×5.8	0.10	80	1100	VHXC0581H390MVCG	VHXC0581H390MVKZ
50(58)	56	6.3×7.7	0.10	40	1800	VHXC0771H560MVCG	VHXC0771H560MVKZ
50(58)	82	8×10.5	0.10	30	2100	VHXD1051H820MVCG	VHXD1051H820MVKZ
50(58)	100	8×10.5	0.10	30	2100	VHXD1051H101MVCG	VHXD1051H101MVKZ
50(58)	120	8×10.5	0.10	30	2100	VHXD1051H121MVCG	VHXD1051H121MVKZ
50(58)	120	10×9.5	0.10	25	2300	VHXE0951H121MVCG	VHXE0951H121MVKZ
50(58)	120	10×10.5	0.10	25	2300	VHXE1051H121MVCG	VHXE1051H121MVKZ
50(58)	180	10×13	0.10	19	2800	VHXE1301H181MVCG	VHXE1301H181MVKZ
50(58)	220	8×12.5	0.10	27	2250	VHXD1251H221MVCG	VHXD1251H221MVKZ
50(58)	220	10×10.5	0.10	25	2300	VHXE1051H221MVCG	VHXE1051H221MVKZ
50(58)	330	10×10.5	0.10	25	2300	VHXE1051H331MVCG	VHXE1051H331MVKZ
50(58)	330	10×13	0.10	19	2800	VHXE1301H331MVCG	VHXE1301H331MVKZ
50(58)	390	10×13	0.10	19	2800	VHXE1301H391MVCG	VHXE1301H391MVKZ
63(73)	15	6.3×5.8	0.08	100	1000	VHXC0581J150MVCG	VHXC0581J150MVKZ
63(73)	22	6.3×7.7	0.08	80	1500	VHXC0771J220MVCG	VHXC0771J220MVKZ
63(73)	27	6.3×5.8	0.08	100	1000	VHXC0581J270MVCG	VHXC0581J270MVKZ
63(73)	47	6.3×7.7	0.08	80	1500	VHXC0771J470MVCG	VHXC0771J470MVKZ
63(73)	56	8×10.5	0.08	40	1900	VHXD1051J560MVCG	VHXD1051J560MVKZ
63(73)	68	8×10.5	0.08	40	1900	VHXD1051J680MVCG	VHXD1051J680MVKZ
63(73)	100	8×10.5	0.08	40	1900	VHXD1051J101MVCG	VHXD1051J101MVKZ
63(73)	100	10×8.5	0.08	40	1850	VHXE0851J101MVCG	VHXE0851J101MVKZ
63(73)	100	10×10.5	0.08	30	2100	VHXE1051J101MVCG	VHXE1051J101MVKZ
63(73)	150	10×10.5	0.08	30	2100	VHXE1051J151MVCG	VHXE1051J151MVKZ
63(73)	150	10×13	0.08	20	2600	VHXE1301J151MVCG	VHXE1301J151MVKZ
63(73)	220	10×13	0.08	20	2600	VHXE1301J221MVCG	VHXE1301J221MVKZ
80(92)	8.2	6.3×5.8	0.08	120	900	VHXC0581K8R2MVCG	VHXC0581K8R2MVKZ
80(92)	10	6.3×5.8	0.08	120	900	VHXC0581K100MVCG	VHXC0581K100MVKZ
80(92)	12	6.3×7.7	0.08	100	1400	VHXC0771K120MVCG	VHXC0771K120MVKZ
80(92)	27	6.3×7.7	0.08	100	1400	VHXC0771K270MVCG	VHXC0771K270MVKZ
80(92)	33	8×10.5	0.08	45	1600	VHXD1051K330MVCG	VHXD1051K330MVKZ

VHX

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)	model	
						Standard products	earthquake-resistant products
80(92)	56	8×10.5	0.08	45	1600	VHXD1051K560MVCG	VHXD1051K560MVKZ
80(92)	56	10×10.5	0.08	35	1800	VHXE1051K560MVCG	VHXE1051K560MVKZ
80(92)	82	10×13	0.08	22	2300	VHXE1301K820MVCG	VHXE1301K820MVKZ
80(92)	100	10×10.5	0.08	35	1800	VHXE1051K101MVCG	VHXE1051K101MVKZ
80(92)	120	10×13	0.08	22	2300	VHXE1301K121MVCG	VHXE1301K121MVKZ
80(92)	330	12.5×21	0.08	30	3250	VHXL2101K331MVCG	VHXL2101K331MVKZ
80(92)	470	12.5×21	0.08	30	3250	VHXL2101K471MVCG	VHXL2101K471MVKZ
100(115)	6.8	6.3×5.8	0.08	120	900	VHXC0582A6R8MVCG	VHXC0582A6R8MVKZ
100(115)	8.2	6.3×7.7	0.08	100	1400	VHXC0772A8R2MVCG	VHXC0772A8R2MVKZ
100(115)	10	6.3×5.8	0.08	120	900	VHXC0582A100MVCG	VHXC0582A100MVKZ
100(115)	15	6.3×7.7	0.08	100	1400	VHXC0772A150MVCG	VHXC0772A150MVKZ
100(115)	22	8×10.5	0.08	50	1600	VHXD1052A220MVCG	VHXD1052A220MVKZ
100(115)	27	10×10.5	0.08	40	1800	VHXE1052A270MVCG	VHXE1052A270MVKZ
100(115)	33	8×10.5	0.08	50	1600	VHXD1052A330MVCG	VHXD1052A330MVKZ
100(115)	33	10×10.5	0.08	40	1800	VHXE1052A330MVCG	VHXE1052A330MVKZ
100(115)	47	10×10.5	0.08	40	1800	VHXE1052A470MVCG	VHXE1052A470MVKZ
100(115)	100	10×13	0.08	30	2000	VHXE1302A101MVCG	VHXE1302A101MVKZ
100(115)	150	12.5×14.5	0.08	30	2350	VHXL1452A151MVCG	VHXL1452A151MVKZ
100(115)	220	12.5×17	0.08	30	2450	VHXL1702A221MVCG	VHXL1702A221MVKZ
100(115)	270	18×16.5	0.08	20	2850	VHXJ1652A271MVCG	VHXJ1652A271MVKZ
100(115)	330	16×26.5	0.08	20	3450	VHXI2652A331MVCG	VHXI2652A331MVKZ

VGY

◆Low ESR, high tolerable ripple current, high reliability
◆105℃, 10,000-hour warranty
◆Meets vibration resistance requirements
◆Surface mount type, suitable for high-temperature lead-free reflow soldering
◆Compliant with AEC-Q200, RoHS compliant

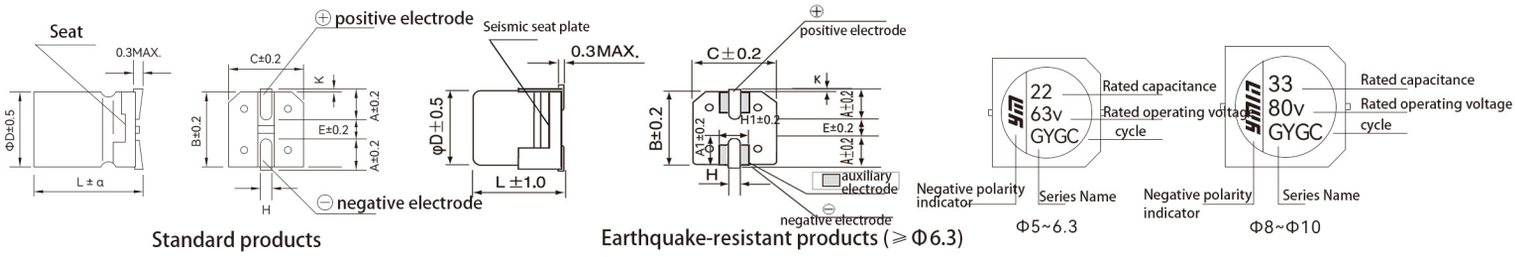


■ Main technical parameters

project	characteristic
Operating temperature range	－55 ~ +105℃
Rated operating voltage	16 ~ 80V
Capacity range	6.8 ~ 470μF 120Hz 20℃
Capacity tolerance	±20% (120Hz 20℃)
Loss tangent	The following are the values from the standard product list: 120Hz, 20℃
Leakage current	Below 0.01CV (μA), charge for 2 minutes at rated voltage, 20℃
Equivalent series resistance (ESR)	The following are the values from the standard sample list: 100kHz, 20℃
Temperature characteristics	Z(-25℃)/Z(+20℃)≦2.0 ; Z(-55℃)/Z(+20℃)≦2.5 (100kHz)
Durability	After applying the rated voltage with rated ripple current at 105℃ for 2000H/5000H, and then placing it at 20℃ for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±30% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value
High temperature storage	After storage at 105℃ for 1000 hours, followed by a 16-hour period at room temperature (20℃±2℃), the product should meet the following requirements. Rate of change of capacitance: ±30% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value Note: Products stored at high temperatures must undergo voltage treatment.
High temperature and humidity	After being subjected to rated voltage for 1000 hours at 85° C and 85% RH, and then placed at 20° C for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±30% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value

※If there is any doubt about the leakage current value, please place the product at 105° C and apply the rated operating voltage for 2 hours, then cool it down to 20° C before testing the leakage current.

■ Product dimension drawing (unit: mm)



Standard products

Earthquake-resistant products (≥Φ6.3)

ΦD	B	C	A	A1	H	H1	E	K	α
5	5.3	5.3	2.1	/	0.65±0.20	/	1.3	0.5MAX	±0.5
6.3	6.6(7.0)	6.6	2.6	1.3	0.70±0.20	2.5	1.8	0.5MAX	
8	8.3(8.8)	8.3	3.0	1.8	0.90±0.20	3.9	3.1	0.5MAX	
10	10.3(10.8)	10.3	3.5	1.8	0.90±0.20	3.9	4.6	0.70±0.20	

■ Frequency correction factor

Capacitance C	Frequency (Hz)	120Hz	500Hz	1kHz	5kHz	10kHz	20kHz	40kHz	100kHz	200kHz	500kHz
C<47μF	Correction factor	0.12	0.20	0.35	0.50	0.65	0.70	0.80	1.00	1.00	1.05
47μF≦C<120μF		0.15	0.30	0.45	0.60	0.75	0.80	0.85	1.00	1.00	1.00
C≧120μF		0.15	0.30	0.45	0.65	0.80	0.85	0.85	1.00	1.00	1.00

VGY

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)	model	
						Standard products	earthquake-resistant products
6.3(7.2)	220	5×5.8	0.16	80	1000	VGYB0580J221MVCG	---
10(11.5)	100	6.3×5.8	0.16	45	1600	VGYC0581A101MVCG	VGYC0581A101MVKZ
16(18.4)	47	5×5.8	0.16	80	900	VGYB0581C470MVCG	---
16(18.4)	56	6.3×5.8	0.16	45	1600	VGYC0581C560MVCG	VGYC0581C560MVKZ
16(18.4)	68	6.3×7.7	0.16	27	2200	VGYC0771C680MVCG	VGYC0771C680MVKZ
16(18.4)	82	6.3×5.8	0.16	45	1600	VGYC0581C820MVCG	VGYC0581C820MVKZ
16(18.4)	100	6.3×7.7	0.16	27	2200	VGYC0771C101MVCG	VGYC0771C101MVKZ
16(18.4)	150	6.3×7.7	0.16	27	2200	VGYC0771C151MVCG	VGYC0771C151MVKZ
16(18.4)	220	6.3×7.7	0.16	27	2200	VGYC0771C221MVCG	VGYC0771C221MVKZ
16(18.4)	270	6.3×7.7	0.16	27	2200	VGYC0771C271MVCG	VGYC0771C271MVKZ
16(18.4)	270	8×10.5	0.16	22	2500	VGYD1051C271MVCG	VGYD1051C271MVKZ
16(18.4)	330	8×7.7	0.16	30	2000	VGYD0771C331MVCG	VGYD0771C331MVKZ
16(18.4)	470	10×10.5	0.16	18	2600	VGYE1051C471MVCG	VGYE1051C471MVKZ
25(28.8)	10	5×5.8	0.14	80	900	VGYB0581E100MVCG	---
25(28.8)	33	5×5.8	0.14	80	900	VGYB0581E330MVCG	---
25(28.8)	47	6.3×5.8	0.14	50	1300	VGYC0581E470MVCG	VGYC0581E470MVKZ
25(28.8)	56	6.3×5.8	0.14	50	1300	VGYC0581E560MVCG	VGYC0581E560MVKZ
25(28.8)	68	6.3×7.7	0.14	30	2000	VGYC0771E680MVCG	VGYC0771E680MVKZ
25(28.8)	100	6.3×7.7	0.14	30	2000	VGYC0771E101MVCG	VGYC0771E101MVKZ
25(28.8)	150	6.3×7.7	0.14	30	2000	VGYC0771E151MVCG	VGYC0771E151MVKZ
25(28.8)	150	8×10.5	0.14	27	2300	VGYD1051E151MVCG	VGYD1051E151MVKZ
25(28.8)	180	8×7.7	0.14	30	1950	VGYD0771E181MVCG	VGYD0771E181MVKZ
25(28.8)	220	6.3×7.7	0.14	30	2000	VGYC0771E221MVCG	VGYC0771E221MVKZ
25(28.8)	220	8×10.5	0.14	27	2300	VGYD1051E221MVCG	VGYD1051E221MVKZ
25(28.8)	270	10×10.5	0.14	20	2500	VGYE1051E271MVCG	VGYE1051E271MVKZ
25(28.8)	330	10×10.5	0.14	20	2500	VGYE1051E331MVCG	VGYE1051E331MVKZ
25(28.8)	330	10×13	0.14	16	3100	VGYE1301E331MVCG	VGYE1301E331MVKZ
35(41)	22	5×5.8	0.12	100	900	VGYB0581V220MVCG	---
35(41)	22	6.3×7.7	0.12	35	2000	VGYC0771V220MVCG	VGYC0771V220MVKZ
35(41)	27	6.3×5.8	0.12	60	1300	VGYC0581V270MVCG	VGYC0581V270MVKZ
35(41)	33	6.3×5.8	0.12	60	1300	VGYC0581V330MVCG	VGYC0581V330MVKZ
35(41)	47	6.3×5.8	0.12	60	1300	VGYC0581V470MVCG	VGYC0581V470MVKZ
35(41)	47	6.3×7.7	0.12	35	2000	VGYC0771V470MVCG	VGYC0771V470MVKZ
35(41)	68	6.3×7.7	0.12	35	2000	VGYC0771V680MVCG	VGYC0771V680MVKZ
35(41)	100	6.3×7.7	0.12	35	2000	VGYC0771V101MVCG	VGYC0771V101MVKZ
35(41)	100	8×10.5	0.12	27	2300	VGYD1051V101MVCG	VGYD1051V101MVKZ
35(41)	150	8×10.5	0.12	27	2300	VGYD1051V151MVCG	VGYD1051V151MVKZ
35(41)	150	10×10.5	0.12	20	2500	VGYE1051V151MVCG	VGYE1051V151MVKZ
35(41)	270	10×10.5	0.12	20	2500	VGYE1051V271MVCG	VGYE1051V271MVKZ
35(41)	270	10×13	0.12	17	3000	VGYE1301V271MVCG	VGYE1301V271MVKZ
35(41)	330	10×10.5	0.12	20	2500	VGYE1051V331MVCG	VGYE1051V331MVKZ
50(58)	10	5×5.8	0.10	120	750	VGYB0581H100MVCG	---
50(58)	10	6.3×5.8	0.10	80	1100	VGYC0581H100MVCG	VGYC0581H100MVKZ

VGY

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)	model	
						Standard products	earthquake-resistant products
50(58)	15	6.3×5.8	0.10	80	1100	VGYC0581H150MVCG	VGYC0581H150MVKZ
50(58)	22	6.3×5.8	0.10	80	1100	VGYC0581H220MVCG	VGYC0581H220MVKZ
50(58)	33	6.3×7.7	0.10	40	1400	VGYC0771H330MVCG	VGYC0771H330MVKZ
50(58)	33	8×10.5	0.10	30	1800	VGYD1051H330MVCG	VGYD1051H330MVKZ
50(58)	47	6.3×7.7	0.10	40	1400	VGYC0771H470MVCG	VGYC0771H470MVKZ
50(58)	47	8×10.5	0.10	30	1800	VGYD1051H470MVCG	VGYD1051H470MVKZ
50(58)	56	8×10.5	0.10	30	1800	VGYD1051H560MVCG	VGYD1051H560MVKZ
50(58)	68	8×10.5	0.10	30	1800	VGYD1051H680MVCG	VGYD1051H680MVKZ
50(58)	100	10×10.5	0.10	28	2000	VGYE1051H101MVCG	VGYE1051H101MVKZ
50(58)	120	10×10.5	0.10	28	2000	VGYE1051H121MVCG	VGYE1051H121MVKZ
50(58)	120	10×12.5	0.10	19	2800	VGYE1251H121MVCG	VGYE1251H121MVKZ
50(58)	120	10×13	0.10	19	2800	VGYE1301H121MVCG	VGYE1301H121MVKZ
63(73)	6.8	6.3×5.8	0.08	120	1000	VGYC0581J6R8MVCG	VGYC0581J6R8MVKZ
63(73)	10	6.3×5.8	0.08	120	1000	VGYC0581J100MVCG	VGYC0581J100MVKZ
63(73)	10	6.3×7.7	0.08	80	1400	VGYC0771J100MVCG	VGYC0771J100MVKZ
63(73)	15	6.3×7.7	0.08	80	1400	VGYC0771J150MVCG	VGYC0771J150MVKZ
63(73)	22	6.3×7.7	0.08	80	1400	VGYC0771J220MVCG	VGYC0771J220MVKZ
63(73)	22	8×10.5	0.08	40	1600	VGYD1051J220MVCG	VGYD1051J220MVKZ
63(73)	33	8×10.5	0.08	40	1600	VGYD1051J330MVCG	VGYD1051J330MVKZ
63(73)	47	8×10.5	0.08	40	1600	VGYD1051J470MVCG	VGYD1051J470MVKZ
63(73)	56	10×10.5	0.08	30	1800	VGYE1051J560MVCG	VGYE1051J560MVKZ
63(73)	68	10×10.5	0.08	30	1800	VGYE1051J680MVCG	VGYE1051J680MVKZ
63(73)	82	10×10.5	0.08	30	1800	VGYE1051J820MVCG	VGYE1051J820MVKZ
63(73)	100	10×12.5	0.08	20	2600	VGYE1251J101MVCG	VGYE1251J101MVKZ
63(73)	100	10×13	0.08	20	2600	VGYE1301J101MVCG	VGYE1301J101MVKZ
63(73)	120	10×13	0.08	20	2600	VGYE1301J121MVCG	VGYE1301J121MVKZ
63(73)	150	10×10.5	0.08	30	1800	VGYE1051J151MVCG	VGYE1051J151MVKZ
63(73)	220	10×17	0.08	30	2950	VGYE1701J221MVCG	VGYE1701J221MVKZ
80(92)	22	8×10.5	0.08	45	1500	VGYD1051K220MVCG	VGYD1051K220MVKZ
80(92)	33	10×10.5	0.08	35	1700	VGYE1051K330MVCG	VGYE1051K330MVKZ
80(92)	39	10×10.5	0.08	35	1700	VGYE1051K390MVCG	VGYE1051K390MVKZ
125(144)	10	10×10.5	0.08	36	1600	VGYE1052B100MVCG	VGYE1052B100MVKZ

VHT

◆Low ESR, high tolerable ripple current, high reliability
◆125℃, 4000-hour warranty
◆Meets vibration resistance requirements
◆Surface mount type, suitable for high-temperature lead-free reflow soldering
◆Compliant with AEC-Q200, RoHS compliant

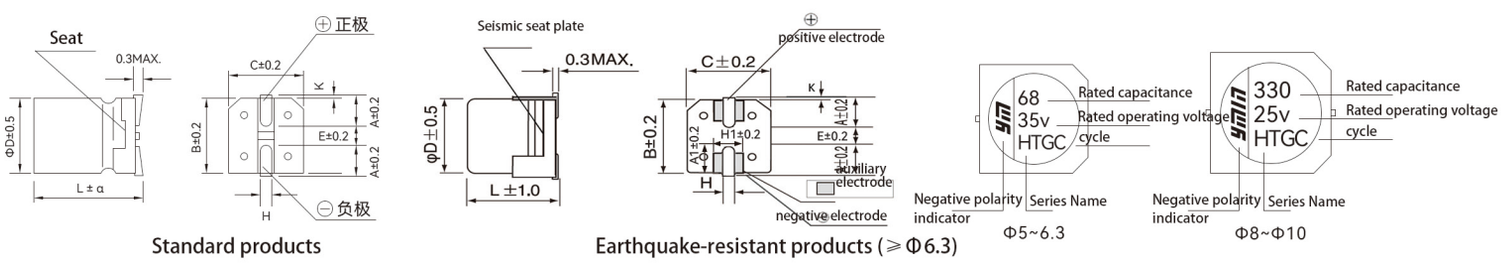


■ Main technical parameters

project	characteristic
Operating temperature range	－55 ~ +125℃
Rated operating voltage	6.3 ~ 100V
Capacity range	4.7 ~ 2200μF 120Hz 20℃
Capacity tolerance	±20% (120Hz 20℃)
Loss tangent	The following are the values from the standard product list: 120Hz, 20℃
Leakage current	Below 0.01CV (μA), charge for 2 minutes at rated voltage, 20℃
Equivalent series resistance (ESR)	The following are the values from the standard sample list: 100kHz, 20℃
Temperature characteristics	Z(-25℃)/Z(+20℃)≦2.0 ; Z(-55℃)/Z(+20℃)≦2.5 (100kHz)
Durability	After applying the rated voltage with rated ripple current at 105℃ for 2000H/5000H, and then placing it at 20℃ for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±30% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value
High temperature storage	After storage at 105℃ for 1000 hours, followed by a 16-hour period at room temperature (20℃±2℃), the product should meet the following requirements. Rate of change of capacitance: ±30% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value Note: Products stored at high temperatures must undergo voltage treatment.
High temperature and humidity	After being subjected to rated voltage for 1000 hours at 85° C and 85% RH, and then placed at 20° C for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±30% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value

※If there is any doubt about the leakage current value, please place the product at 105° C and apply the rated operating voltage for 2 hours, then cool it down to 20° C before testing the leakage current.

■ Product dimension drawing (unit: mm)



Standard products　　Earthquake-resistant products (≥Φ6.3)

ΦD	B	C	A	A1	H	H1	E	K	α
5	5.3	5.3	2.1	/	0.65±0.20	/	1.3	0.5MAX	±0.5
6.3	6.6(7.0)	6.6	2.6	1.3	0.70±0.20	2.5	1.8	0.5MAX	
8	8.3(8.8)	8.3	3.0	1.8	0.90±0.20	3.9	3.1	0.5MAX	
10	10.3(10.8)	10.3	3.5	1.8	0.90±0.20	3.9	4.6	0.70±0.20	
12.5	12.8(13.5)	12.8	4.7	2.5	0.90±0.20	4.4	4.6	0.70±0.30	±1.0

■ Frequency correction factor

Capacitance C	Frequency (Hz)	120Hz	500Hz	1kHz	5kHz	10kHz	20kHz	40kHz	100kHz	200kHz	500kHz
C<47μF	Correction factor	0.12	0.20	0.35	0.50	0.65	0.70	0.80	1.00	1.00	1.05
47μF≦C<120μF		0.15	0.30	0.45	0.60	0.75	0.80	0.85	1.00	1.00	1.00
C≧120μF		0.15	0.30	0.45	0.65	0.80	0.85	0.85	1.00	1.00	1.00

VHT

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/125℃100kHz)	model	
						Standard products	earthquake-resistant products
6.3(7.2)	100	5×5.8	0.16	80	550	VHTB0580J101MVCG	---
10(11.5)	47	6.3×5.8	0.16	45	950	VHTC0581A470MVCG	VHTC0581A470MVKZ
10(11.5)	100	5×5.8	0.16	80	550	VHTB0581A101MVCG	---
10(11.5)	220	6.3×5.8	0.16	45	950	VHTC0581A221MVCG	VHTC0581A221MVKZ
10(11.5)	470	6.3×7.7	0.16	27	1450	VHTC0771A471MVCG	VHTC0771A471MVKZ
16(18.4)	47	5×5.8	0.16	80	550	VHTB0581C470MVCG	---
16(18.4)	82	6.3×5.8	0.16	45	950	VHTC0581C820MVCG	VHTC0581C820MVKZ
16(18.4)	100	5×7.7	0.16	60	600	VHTB0771C101MVCG	---
16(18.4)	100	6.3×5.8	0.16	45	950	VHTC0581C101MVCG	VHTC0581C101MVKZ
16(18.4)	150	6.3×7.7	0.16	27	1450	VHTC0771C151MVCG	VHTC0771C151MVKZ
16(18.4)	220	6.3×5.8	0.16	45	950	VHTC0581C221MVCG	VHTC0581C221MVKZ
16(18.4)	270	6.3×7.7	0.16	27	1450	VHTC0771C271MVCG	VHTC0771C271MVKZ
16(18.4)	270	8×10.5	0.16	22	1700	VHTD1051C271MVCG	VHTD1051C271MVKZ
16(18.4)	470	10×10.5	0.16	18	3000	VHTE1051C471MVCG	VHTE1051C471MVKZ
16(18.4)	1200	10×13	0.17	16	3100	VHTE1301C122MVCG	VHTE1301C122MVKZ
16(18.4)	1800	10×17	0.17	12	4100	VHTE1701C182MVCG	VHTE1701C182MVKZ
25(28.8)	22	5×5.8	0.14	80	550	VHTB0581E220MVCG	---
25(28.8)	33	5×5.8	0.14	80	550	VHTB0581E330MVCG	---
25(28.8)	33	6.3×5.8	0.14	50	900	VHTC0581E330MVCG	VHTC0581E330MVKZ
25(28.8)	47	6.3×5.8	0.14	50	900	VHTC0581E470MVCG	VHTC0581E470MVKZ
25(28.8)	56	5×5.8	0.14	80	550	VHTB0581E560MVCG	---
25(28.8)	56	6.3×5.8	0.14	50	900	VHTC0581E560MVCG	VHTC0581E560MVKZ
25(28.8)	68	6.3×7.7	0.14	30	1400	VHTC0771E680MVCG	VHTC0771E680MVKZ
25(28.8)	100	6.3×5.8	0.14	50	900	VHTC0581E101MVCG	VHTC0581E101MVKZ
25(28.8)	100	6.3×7.7	0.14	30	1400	VHTC0771E101MVCG	VHTC0771E101MVKZ
25(28.8)	150	6.3×7.7	0.14	30	1400	VHTC0771E151MVCG	VHTC0771E151MVKZ
25(28.8)	150	8×10.5	0.14	27	1600	VHTD1051E151MVCG	VHTD1051E151MVKZ
25(28.8)	180	8×8.5	0.14	30	1400	VHTD0851E181MVCG	VHTD0851E181MVKZ
25(28.8)	220	8×8.5	0.14	30	1400	VHTD0851E221MVCG	VHTD0851E221MVKZ
25(28.8)	220	8×10.5	0.14	27	1600	VHTD1051E221MVCG	VHTD1051E221MVKZ
25(28.8)	270	8×10.5	0.14	27	1600	VHTD1051E271MVCG	VHTD1051E271MVKZ
25(28.8)	270	10×10.5	0.14	20	2800	VHTE1051E271MVCG	VHTE1051E271MVKZ
25(28.8)	330	10×10.5	0.14	20	2800	VHTE1051E331MVCG	VHTE1051E331MVKZ
25(28.8)	470	10×10.5	0.14	20	2800	VHTE1051E471MVCG	VHTE1051E471MVKZ
25(28.8)	470	10×13	0.14	16	3100	VHTE1301E471MVCG	VHTE1301E471MVKZ
25(28.8)	560	10×10.5	0.14	20	2800	VHTE1051E561MVCG	VHTE1051E561MVKZ
25(28.8)	560	10×13	0.14	16	3100	VHTE1301E561MVCG	VHTE1301E561MVKZ
25(28.8)	680	10×13	0.14	16	3100	VHTE1301E681MVCG	VHTE1301E681MVKZ
25(28.8)	820	10×13	0.14	16	3100	VHTE1301E821MVCG	VHTE1301E821MVKZ
25(28.8)	1000	10×17	0.14	12	4100	VHTE1701E102MVCG	VHTE1701E102MVKZ
35(41)	10	6.3×7.7	0.12	35	1400	VHTC0771V100MVCG	VHTC0771V100MVKZ
35(41)	22	5×5.8	0.12	100	550	VHTB0581V220MVCG	---
35(41)	27	6.3×5.8	0.12	60	900	VHTC0581V270MVCG	VHTC0581V270MVKZ

VHT

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/125℃100kHz)	model	
						Standard products	earthquake-resistant products
35(41)	47	6.3×5.8	0.12	60	900	VHTC0581V470MVCG	VHTC0581V470MVKZ
35(41)	47	6.3×7.7	0.12	35	1400	VHTC0771V470MVCG	VHTC0771V470MVKZ
35(41)	47	8×10.5	0.12	27	1600	VHTD1051V470MVCG	VHTD1051V470MVKZ
35(41)	56	6.3×5.8	0.12	60	900	VHTC0581V560MVCG	VHTC0581V560MVKZ
35(41)	68	6.3×7.7	0.12	35	1400	VHTC0771V680MVCG	VHTC0771V680MVKZ
35(41)	100	6.3×7.7	0.12	35	1400	VHTC0771V101MVCG	VHTC0771V101MVKZ
35(41)	100	8×10.5	0.12	27	1600	VHTD1051V101MVCG	VHTD1051V101MVKZ
35(41)	100	10×10.5	0.12	20	2800	VHTE1051V101MVCG	VHTE1051V101MVKZ
35(41)	100	10×13	0.12	16	3000	VHTE1301V101MVCG	VHTE1301V101MVKZ
35(41)	120	6.3×7.7	0.12	35	1400	VHTC0771V121MVCG	VHTC0771V121MVKZ
35(41)	150	6.3×7.7	0.12	35	1400	VHTC0771V151MVCG	VHTC0771V151MVKZ
35(41)	150	8×10.5	0.12	27	1600	VHTD1051V151MVCG	VHTD1051V151MVKZ
35(41)	150	10×10.5	0.12	20	2800	VHTE1051V151MVCG	VHTE1051V151MVKZ
35(41)	180	8×10.5	0.12	27	1600	VHTD1051V181MVCG	VHTD1051V181MVKZ
35(41)	220	8×10.5	0.12	27	1600	VHTD1051V221MVCG	VHTD1051V221MVKZ
35(41)	270	10×10.5	0.12	20	2800	VHTE1051V271MVCG	VHTE1051V271MVKZ
35(41)	330	10×10.5	0.12	20	2800	VHTE1051V331MVCG	VHTE1051V331MVKZ
35(41)	390	10×10.5	0.12	20	2800	VHTE1051V391MVCG	VHTE1051V391MVKZ
35(41)	470	10×10.5	0.12	20	2800	VHTE1051V471MVCG	VHTE1051V471MVKZ
35(41)	470	10×13	0.12	16	3000	VHTE1301V471MVCG	VHTE1301V471MVKZ
35(41)	560	10×13	0.12	16	3000	VHTE1301V561MVCG	VHTE1301V561MVKZ
35(41)	680	10×13	0.12	16	3000	VHTE1301V681MVCG	VHTE1301V681MVKZ
35(41)	680	10×17	0.12	12	4100	VHTE1701V681MVCG	VHTE1701V681MVKZ
35(41)	820	12.5×13.5	0.12	16	3850	VHTL1351V821MVCG	VHTL1351V821MVKZ
35(41)	1000	12.5×15	0.12	16	4050	VHTL1501V102MVCG	VHTL1501V102MVKZ
35(41)	2200	18×21.5	0.14	16	5750	VHTJ2151V222MVCG	VHTJ2151V222MVKZ
50(58)	4.7	6.3×5.8	0.10	80	750	VHTC0581H4R7MVCG	VHTC0581H4R7MVKZ
50(58)	10	5×5.8	0.10	120	550	VHTB0581H100MVCG	---
50(58)	10	6.3×5.8	0.10	80	750	VHTC0581H100MVCG	VHTC0581H100MVKZ
50(58)	15	6.3×7.7	0.10	40	1100	VHTC0771H150MVCG	VHTC0771H150MVKZ
50(58)	22	6.3×5.8	0.10	80	750	VHTC0581H220MVCG	VHTC0581H220MVKZ
50(58)	33	6.3×7.7	0.10	40	1100	VHTC0771H330MVCG	VHTC0771H330MVKZ
50(58)	33	8×10.5	0.10	30	1250	VHTD1051H330MVCG	VHTD1051H330MVKZ
50(58)	47	6.3×7.7	0.10	40	1100	VHTC0771H470MVCG	VHTC0771H470MVKZ
50(58)	47	6.3×8.5	0.10	35	1150	VHTC0851H470MVCG	VHTC0851H470MVKZ
50(58)	47	6.3×10	0.10	40	1300	VHTC1001H470MVCG	VHTC1001H470MVKZ
50(58)	47	8×10.5	0.10	30	1250	VHTD1051H470MVCG	VHTD1051H470MVKZ
50(58)	47	10×10.5	0.10	25	1600	VHTE1051H470MVCG	VHTE1051H470MVKZ
50(58)	56	6.3×7.7	0.10	40	1100	VHTC0771H560MVCG	VHTC0771H560MVKZ
50(58)	56	10×10.5	0.10	25	1600	VHTE1051H560MVCG	VHTE1051H560MVKZ
50(58)	68	8×10.5	0.10	30	1250	VHTD1051H680MVCG	VHTD1051H680MVKZ
50(58)	100	8×10.5	0.10	30	1250	VHTD1051H101MVCG	VHTD1051H101MVKZ
50(58)	100	10×10.5	0.10	25	1600	VHTE1051H101MVCG	VHTE1051H101MVKZ

VHT

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/125℃100kHz)	model	
						Standard products	earthquake-resistant products
50(58)	100	10×17	0.10	12	3700	VHTE1701H101MVCG	VHTE1701H101MVKZ
50(58)	120	10×10.5	0.10	25	1600	VHTE1051H121MVCG	VHTE1051H121MVKZ
50(58)	150	10×10.5	0.10	25	1600	VHTE1051H151MVCG	VHTE1051H151MVKZ
50(58)	180	10×13	0.10	20	2400	VHTE1301H181MVCG	VHTE1301H181MVKZ
50(58)	220	10×12.5	0.10	20	2400	VHTE1251H221MVCG	VHTE1251H221MVKZ
50(58)	220	10×13	0.10	20	2400	VHTE1301H221MVCG	VHTE1301H221MVKZ
50(58)	220	10×13.5	0.10	20	2400	VHTE1351H221MVCG	VHTE1351H221MVKZ
50(58)	270	10×17	0.10	12	3700	VHTE1701H271MVCG	VHTE1701H271MVKZ
50(58)	330	10×15.5	0.10	30	3500	VHTE1551H331MVCG	VHTE1551H331MVKZ
50(58)	330	10×17	0.10	12	3700	VHTE1701H331MVCG	VHTE1701H331MVKZ
50(58)	330	12.5×13.5	0.10	20	3500	VHTL1351H331MVCG	VHTL1351H331MVKZ
63(73)	6.8	6.3×5.8	0.08	120	700	VHTC0581J6R8MVCG	VHTC0581J6R8MVKZ
63(73)	10	6.3×5.8	0.08	120	700	VHTC0581J100MVCG	VHTC0581J100MVKZ
63(73)	10	6.3×7.7	0.08	80	900	VHTC0771J100MVCG	VHTC0771J100MVKZ
63(73)	22	6.3×5.8	0.08	120	700	VHTC0581J220MVCG	VHTC0581J220MVKZ
63(73)	22	6.3×7.7	0.08	80	900	VHTC0771J220MVCG	VHTC0771J220MVKZ
63(73)	22	8×10.5	0.08	40	1100	VHTD1051J220MVCG	VHTD1051J220MVKZ
63(73)	33	8×10.5	0.08	40	1100	VHTD1051J330MVCG	VHTD1051J330MVKZ
63(73)	33	10×10.5	0.08	30	1400	VHTE1051J330MVCG	VHTE1051J330MVKZ
63(73)	47	8×8.5	0.08	50	950	VHTD0851J470MVCG	VHTD0851J470MVKZ
63(73)	47	8×10.5	0.08	40	1100	VHTD1051J470MVCG	VHTD1051J470MVKZ
63(73)	47	10×10.5	0.08	30	1400	VHTE1051J470MVCG	VHTE1051J470MVKZ
63(73)	56	10×10.5	0.08	30	1400	VHTE1051J560MVCG	VHTE1051J560MVKZ
63(73)	68	10×10.5	0.08	30	1400	VHTE1051J680MVCG	VHTE1051J680MVKZ
63(73)	82	10×10.5	0.08	30	1400	VHTE1051J820MVCG	VHTE1051J820MVKZ
63(73)	100	10×13	0.08	20	2200	VHTE1301J101MVCG	VHTE1301J101MVKZ
63(73)	150	10×13	0.08	20	2200	VHTE1301J151MVCG	VHTE1301J151MVKZ
63(73)	150	10×16.5	0.08	12	3500	VHTE1651J151MVCG	VHTE1651J151MVKZ
63(73)	150	10×17	0.08	12	3500	VHTE1701J151MVCG	VHTE1701J151MVKZ
63(73)	180	10×17	0.08	12	3500	VHTE1701J181MVCG	VHTE1701J181MVKZ
63(73)	220	10×17	0.08	12	3500	VHTE1701J221MVCG	VHTE1701J221MVKZ
80(92)	10	6.3×5.8	0.10	120	700	VHTC0581K100MVCG	VHTC0581K100MVKZ
80(92)	12	6.3×5.8	0.10	120	700	VHTC0581K120MVCG	VHTC0581K120MVKZ
80(92)	15	6.3×7.7	0.10	80	900	VHTC0771K150MVCG	VHTC0771K150MVKZ
80(92)	22	8×10.5	0.08	45	1100	VHTD1051K220MVCG	VHTD1051K220MVKZ
80(92)	33	10×10.5	0.10	35	1200	VHTE1051K330MVCG	VHTE1051K330MVKZ
80(92)	39	10×10.5	0.10	35	1200	VHTE1051K390MVCG	VHTE1051K390MVKZ
80(92)	47	8×10.5	0.08	45	1100	VHTD1051K470MVCG	VHTD1051K470MVKZ
80(92)	47	10×10.5	0.10	35	1200	VHTE1051K470MVCG	VHTE1051K470MVKZ
80(92)	68	10×10.5	0.10	35	1200	VHTE1051K680MVCG	VHTE1051K680MVKZ
80(92)	82	10×13	0.10	20	2200	VHTE1301K820MVCG	VHTE1301K820MVKZ
80(92)	100	8×17	0.08	30	1450	VHTD1701K101MVCG	VHTD1701K101MVKZ
80(92)	100	10×10.5	0.10	35	1200	VHTE1051K101MVCG	VHTE1051K101MVKZ

VHT

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/125℃100kHz)	model	
						Standard products	earthquake-resistant products
80(92)	100	10×17	0.10	12	3500	VHTE1701K101MVCG	VHTE1701K101MVKZ
80(92)	120	10×17	0.10	12	3500	VHTE1701K121MVCG	VHTE1701K121MVKZ
80(92)	150	10×15.5	0.10	30	3300	VHTE1551K151MVCG	VHTE1551K151MVKZ
80(92)	150	12.5×13.5	0.10	20	3400	VHTL1351K151MVCG	VHTL1351K151MVKZ
80(92)	180	10×17	0.10	12	3500	VHTE1701K181MVCG	VHTE1701K181MVKZ
80(92)	220	12.5×17	0.10	20	3900	VHTL1701K221MVCG	VHTL1701K221MVKZ
80(92)	220	16×16.5	0.10	16	4350	VHTI1651K221MVCG	VHTI1651K221MVKZ
80(92)	270	12.5×19	0.10	20	4100	VHTL1901K271MVCG	VHTL1901K271MVKZ
80(92)	330	12.5×21	0.10	16	4300	VHTL2101K331MVCG	VHTL2101K331MVKZ
80(92)	470	16×21.5	0.10	16	4950	VHTI2151K471MVCG	VHTI2151K471MVKZ
100(115)	5.6	6.3×5.8	0.10	120	700	VHTC0582A5R6MVCG	VHTC0582A5R6MVKZ
100(115)	8.2	6.3×5.8	0.10	120	700	VHTC0582A8R2MVCG	VHTC0582A8R2MVKZ
100(115)	10	6.3×7.7	0.10	80	900	VHTC0772A100MVCG	VHTC0772A100MVKZ
100(115)	18	8×10.5	0.08	45	1100	VHTD1052A180MVCG	VHTD1052A180MVKZ
100(115)	22	8×10.5	0.08	45	1100	VHTD1052A220MVCG	VHTD1052A220MVKZ
100(115)	33	10×10.5	0.10	35	1200	VHTE1052A330MVCG	VHTE1052A330MVKZ
100(115)	47	10×10.5	0.10	35	1200	VHTE1052A470MVCG	VHTE1052A470MVKZ
100(115)	56	10×13	0.10	20	2200	VHTE1302A560MVCG	VHTE1302A560MVKZ
100(115)	82	10×17	0.10	12	3500	VHTE1702A820MVCG	VHTE1702A820MVKZ
100(115)	82	12.5×14.5	0.10	20	3500	VHTL1452A820MVCG	VHTL1452A820MVKZ
100(115)	120	12.5×15	0.10	20	3500	VHTL1502A121MVCG	VHTL1502A121MVKZ
100(115)	220	12.5×21	0.10	16	4100	VHTL2102A221MVCG	VHTL2102A221MVKZ

VHM

◆Miniaturized, high-capacity upgrade of the VHM series
◆Low ESR, high permissible ripple current, high reliability
◆125℃, 4000-hour warranty
◆Compliant with AEC-Q200, RoHS compliant
◆Meets vibration resistance requirements, surface mount type, suitable for high-temperature lead-free reflow soldering

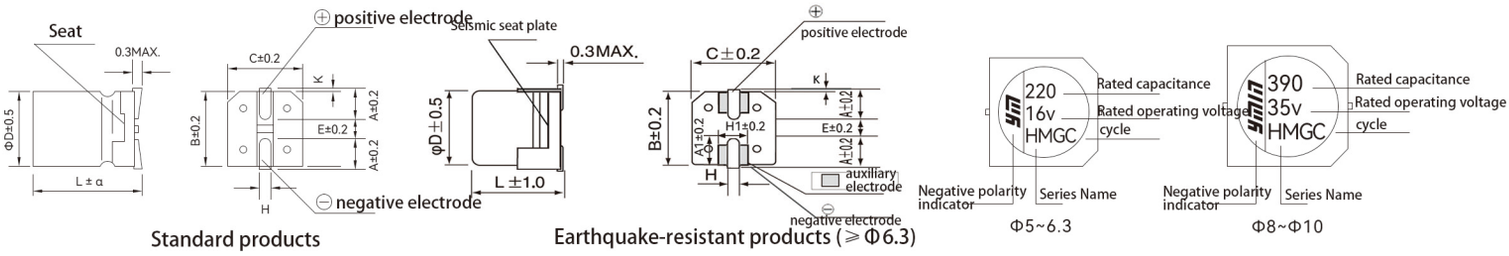


■ Main technical parameters

project	characteristic
Operating temperature range	－55 ~ +125℃
Rated operating voltage	16 ~ 100V
Capacity range	3.3 ~ 1800μF 120Hz 20℃
Capacity tolerance	±20% (120Hz 20℃)
Loss tangent	The following are the values from the standard product list: 120Hz, 20℃
Leakage current	Below 0.01CV (μA), charge for 2 minutes at rated voltage, 20℃
Equivalent series resistance (ESR)	The following are the values from the standard sample list: 100kHz, 20℃
Temperature characteristics	Z(-25℃)/Z(+20℃)≦2.0 ; Z(-55℃)/Z(+20℃)≦2.5 (100kHz)
Durability	After applying the rated voltage with rated ripple current at 105℃ for 2000H/5000H, and then placing it at 20℃ for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±30% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value
High temperature storage	After storage at 105℃ for 1000 hours, followed by a 16-hour period at room temperature (20℃±2℃), the product should meet the following requirements. Rate of change of capacitance: ±30% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value Note: Products stored at high temperatures must undergo voltage treatment.
High temperature and humidity	After being subjected to rated voltage for 1000 hours at 85° C and 85% RH, and then placed at 20° C for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±30% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value

※If there is any doubt about the leakage current value, please place the product at 105° C and apply the rated operating voltage for 2 hours, then cool it down to 20° C before testing the leakage current.

■ Product dimension drawing (unit: mm)



Standard products

Earthquake-resistant products (≥Φ6.3)

Φ5~6.3

Φ8~Φ10

ΦD	B	C	A	A1	H	H1	E	K	α
5	5.3	5.3	2.1	/	0.65±0.20	/	1.3	0.5MAX	±0.5
6.3	6.6(7.0)	6.6	2.6	1.3	0.70±0.20	2.5	1.8	0.5MAX	
8	8.3(8.8)	8.3	3.0	1.8	0.90±0.20	3.9	3.1	0.5MAX	
10	10.3(10.8)	10.3	3.5	1.8	0.90±0.20	3.9	4.6	0.70±0.20	
12.5	12.8(13.5)	12.8	4.7	2.5	0.90±0.30	4.4	4.6	0.70±0.30	±1.0

■ Frequency correction factor

Capacitance C	Frequency (Hz)	120Hz	500Hz	1kHz	5kHz	10kHz	20kHz	40kHz	100kHz	200kHz	500kHz
C<47μF	Correction factor	0.12	0.20	0.35	0.50	0.65	0.70	0.80	1.00	1.00	1.05
47μF≦C<120μF		0.15	0.30	0.45	0.60	0.75	0.80	0.85	1.00	1.00	1.00
C≧120μF		0.15	0.30	0.45	0.65	0.80	0.85	0.85	1.00	1.00	1.00

VHM

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/125℃100kHz)	model	
						Standard products	earthquake-resistant products
16(18.4)	82	5×5.8	0.12	80	850	VHMB0581C820MVCG	---
16(18.4)	82	6.3×5.8	0.12	45	1400	VHMC0581C820MVCG	VHMC0581C820MVKZ
16(18.4)	150	6.3×5.8	0.12	45	1400	VHMC0581C151MVCG	VHMC0581C151MVKZ
16(18.4)	150	6.3×7.7	0.12	27	2000	VHMC0771C151MVCG	VHMC0771C151MVKZ
16(18.4)	220	6.3×7.7	0.12	27	2000	VHMC0771C221MVCG	VHMC0771C221MVKZ
16(18.4)	560	8×10.5	0.12	22	2200	VHMD1051C561MVCG	VHMD1051C561MVKZ
16(18.4)	1000	10×10.5	0.12	18	2800	VHME1051C102MVCG	VHME1051C102MVKZ
16(18.4)	1200	10×13	0.12	16	3200	VHME1301C122MVCG	VHME1301C122MVKZ
16(18.4)	1800	10×17	0.13	12	4100	VHME1701C182MVCG	VHME1701C182MVKZ
25(28.8)	56	5×5.8	0.12	80	850	VHMB0581E560MVCG	---
25(28.8)	100	6.3×5.8	0.12	50	1300	VHMC0581E101MVCG	VHMC0581E101MVKZ
25(28.8)	100	6.3×7.7	0.12	30	1800	VHMC0771E101MVCG	VHMC0771E101MVKZ
25(28.8)	180	6.3×7.7	0.12	30	1800	VHMC0771E181MVCG	VHMC0771E181MVKZ
25(28.8)	330	8×10.5	0.12	27	2000	VHMD1051E331MVCG	VHMD1051E331MVKZ
25(28.8)	560	10×10.5	0.12	20	2800	VHME1051E561MVCG	VHME1051E561MVKZ
25(28.8)	560	10×13	0.12	16	3200	VHME1301E561MVCG	VHME1301E561MVKZ
25(28.8)	820	10×13	0.12	16	3200	VHME1301E821MVCG	VHME1301E821MVKZ
25(28.8)	1000	10×17	0.12	12	4100	VHME1701E102MVCG	VHME1701E102MVKZ
25(28.8)	1500	10×17	0.13	12	4100	VHME1701E152MVCG	VHME1701E152MVKZ
35(41)	39	5×5.8	0.12	100	750	VHMB0581V390MVCG	---
35(41)	47	6.3×7.7	0.12	35	1800	VHMC0771V470MVCG	VHMC0771V470MVKZ
35(41)	68	6.3×5.8	0.12	60	1200	VHMC0581V680MVCG	VHMC0581V680MVKZ
35(41)	120	6.3×7.7	0.12	35	1800	VHMC0771V121MVCG	VHMC0771V121MVKZ
35(41)	220	8×10.5	0.12	27	2000	VHMD1051V221MVCG	VHMD1051V221MVKZ
35(41)	390	10×10.5	0.12	20	2800	VHME1051V391MVCG	VHME1051V391MVKZ
35(41)	390	10×13	0.12	16	3200	VHME1301V391MVCG	VHME1301V391MVKZ
35(41)	560	10×12.5	0.12	16	3200	VHME1251V561MVCG	VHME1251V561MVKZ
35(41)	560	10×13	0.12	16	3200	VHME1301V561MVCG	VHME1301V561MVKZ
35(41)	560	12.5×13.5	0.12	16	3600	VHML1351V561MVCG	VHML1351V561MVKZ
35(41)	680	10×17	0.12	12	4100	VHME1701V681MVCG	VHME1701V681MVKZ
50(58)	12	5×5.8	0.10	120	650	VHMB0581H120MVCG	---
50(58)	22	6.3×5.8	0.10	80	1000	VHMC0581H220MVCG	VHMC0581H220MVKZ
50(58)	33	6.3×7.7	0.10	40	1600	VHMC0771H330MVCG	VHMC0771H330MVKZ
50(58)	82	8×10.5	0.10	30	1800	VHMD1051H820MVCG	VHMD1051H820MVKZ
50(58)	150	10×10.5	0.10	25	2200	VHME1051H151MVCG	VHME1051H151MVKZ
50(58)	220	10×13	0.10	20	2400	VHME1301H221MVCG	VHME1301H221MVKZ
50(58)	270	10×17	0.10	12	3850	VHME1701H271MVCG	VHME1701H271MVKZ
50(58)	680	12.5×21	0.10	16	4450	VHML2101H681MVCG	VHML2101H681MVKZ
63(73)	8.2	5×5.8	0.08	120	650	VHMB0581J8R2MVCG	---
63(73)	15	6.3×5.8	0.08	80	1000	VHMC0581J150MVCG	VHMC0581J150MVKZ
63(73)	22	6.3×7.7	0.08	50	1600	VHMC0771J220MVCG	VHMC0771J220MVKZ
63(73)	56	8×10.5	0.08	40	1800	VHMD1051J560MVCG	VHMD1051J560MVKZ
63(73)	100	10×10.5	0.08	30	2200	VHME1051J101MVCG	VHME1051J101MVKZ

VHM

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/125℃100kHz)	model	
						Standard products	earthquake-resistant products
63(73)	120	10×13	0.08	20	2400	VHME1301J121MVCG	VHME1301J121MVKZ
63(73)	150	10×12.5	0.08	20	2400	VHME1251J151MVCG	VHME1251J151MVKZ
63(73)	150	10×13	0.08	20	2400	VHME1301J151MVCG	VHME1301J151MVKZ
63(73)	180	10×17	0.08	12	3850	VHME1701J181MVCG	VHME1701J181MVKZ
80(92)	5.6	5×5.8	0.10	120	650	VHMB0581K5R6MVCG	---
80(92)	10	6.3×5.8	0.10	80	1000	VHMC0581K100MVCG	VHMC0581K100MVKZ
80(92)	15	6.3×7.7	0.10	50	1500	VHMC0771K150MVCG	VHMC0771K150MVKZ
80(92)	39	8×10.5	0.10	40	1800	VHMD1051K390MVCG	VHMD1051K390MVKZ
80(92)	68	10×10.5	0.10	30	2000	VHME1051K680MVCG	VHME1051K680MVKZ
80(92)	82	10×13	0.10	20	2200	VHME1301K820MVCG	VHME1301K820MVKZ
80(92)	100	10×13	0.10	20	2200	VHME1301K101MVCG	VHME1301K101MVKZ
80(92)	120	10×15.5	0.10	20	2400	VHME1551K121MVCG	VHME1551K121MVKZ
80(92)	120	10×17	0.10	12	3650	VHME1701K121MVCG	VHME1701K121MVKZ
80(92)	150	10×15.5	0.10	20	2400	VHME1551K151MVCG	VHME1551K151MVKZ
80(92)	150	10×17	0.10	12	3650	VHME1701K151MVCG	VHME1701K151MVKZ
80(92)	180	10×17	0.10	12	3650	VHME1701K181MVCG	VHME1701K181MVKZ
80(92)	220	10×22	0.10	12	4150	VHME2201K221MVCG	VHME2201K221MVKZ
100(115)	3.3	5×5.8	0.10	120	650	VHMB0582A3R3MVCG	---
100(115)	5.6	6.3×5.8	0.10	80	1000	VHMC0582A5R6MVCG	VHMC0582A5R6MVKZ
100(115)	10	6.3×7.7	0.10	50	1500	VHMC0772A100MVCG	VHMC0772A100MVKZ
100(115)	22	8×10.5	0.10	40	1800	VHMD1052A220MVCG	VHMD1052A220MVKZ
100(115)	39	10×10.5	0.10	30	2000	VHME1052A390MVCG	VHME1052A390MVKZ
100(115)	56	10×13	0.10	20	2200	VHME1302A560MVCG	VHME1302A560MVKZ
100(115)	82	10×17	0.10	12	3650	VHME1702A820MVCG	VHME1702A820MVKZ

VHU

◆135° C high-temperature resistant product, 4000-hour warranty at 135° C
◆Low ESR, high permissible ripple current, high reliability, long lifespan
◆Compliant with AEC-Q200 and RoHS directive
◆Meets vibration resistance requirements, surface mount type, suitable for high-temperature lead-free reflow soldering

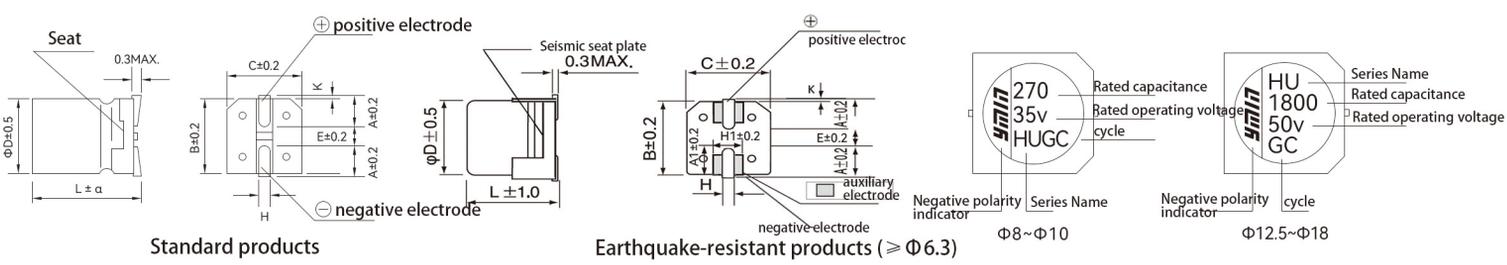


■ Main technical parameters

project	characteristic
Operating temperature range	－55 ~ +135℃
Rated operating voltage	25 ~ 80V
Capacity range	33 ~ 1800μF 120Hz 20℃
Capacity tolerance	±20% (120Hz 20℃)
Loss tangent	The following are the values from the standard product list: 120Hz, 20℃
Leakage current	Below 0.01CV (μA), charge for 2 minutes at rated voltage, 20℃
Equivalent series resistance (ESR)	The following are the values from the standard sample list: 100kHz, 20℃
Temperature characteristics	Z(-25℃)/Z(+20℃)≦2.0 ; Z(-55℃)/Z(+20℃)≦2.5 (100kHz)
Durability	After applying the rated voltage with rated ripple current at 105℃ for 2000H/5000H, and then placing it at 20℃ for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±30% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value
High temperature storage	After storage at 105℃ for 1000 hours, followed by a 16-hour period at room temperature (20℃±2℃), the product should meet the following requirements. Rate of change of capacitance: ±30% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value Note: Products stored at high temperatures must undergo voltage treatment.
High temperature and humidity	After being subjected to rated voltage for 1000 hours at 85° C and 85% RH, and then placed at 20° C for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±30% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value

※If there is any doubt about the leakage current value, please place the product at 105° C and apply the rated operating voltage for 2 hours, then cool it down to 20° C before testing the leakage current.

■ Product dimension drawing (unit: mm)



Standard products

Earthquake-resistant products (≥Φ6.3)

Φ8~Φ10

Φ12.5~Φ18

ΦD	B	C	A	A1	H	H1	E	K	α
6.3	6.6(7.0)	6.6	2.6	1.3	0.70±0.20	2.5	1.8	0.5MAX	±0.5
8	8.3(8.8)	8.3	3.0	1.8	0.70±0.20	3.9	3.1	0.5MAX	
10	10.3(10.8)	10.3	3.5	1.8	0.90±0.20	3.9	4.6	0.7±0.20	
12.5	12.8(13.5)	12.8	4.7	2.5	0.90±0.30	4.4	4.6	0.7±0.30	±1.0
16	17.0(17.5)	17.0	5.5	3.3	1.20±0.30	6.0	6.7	0.7±0.30	
18	19.0(19.5)	19.0	6.7	4.0	1.20±0.30	6.0	6.7	0.7±0.30	

■ Frequency correction factor

Capacitance C	Frequency (Hz)	120Hz	500Hz	1kHz	5kHz	10kHz	20kHz	40kHz	100kHz	200kHz	500kHz
C<47μF	Correction factor	0.12	0.20	0.35	0.50	0.65	0.70	0.80	1.00	1.00	1.05
47μF≦C<120μF		0.15	0.30	0.45	0.60	0.75	0.80	0.85	1.00	1.00	1.00
C≧120μF		0.15	0.30	0.45	0.65	0.80	0.85	0.85	1.00	1.00	1.00

VHU

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/125℃100kHz)	model	
						Standard products	earthquake-resistant products
6.3(7.2)	220	6.3×7.7	0.16	60	1300	VHUC0770J221MVCG	VHUC0770J221MVKZ
6.3(7.2)	330	6.3×7.7	0.16	60	1300	VHUC0770J331MVCG	VHUC0770J331MVKZ
6.3(7.2)	470	6.3×7.7	0.16	60	1300	VHUC0770J471MVCG	VHUC0770J471MVKZ
16(18.4)	82	6.3×5.8	0.14	60	1050	VHUC0581C820MVCG	VHUC0581C820MVKZ
16(18.4)	820	10×10.5	0.14	20	2000	VHUE1051C821MVCG	VHUE1051C821MVKZ
16(18.4)	1000	10×10.5	0.14	20	2000	VHUE1051C102MVCG	VHUE1051C102MVKZ
25(28.8)	68	8×10.5	0.14	22	1600	VHUD1051E680MVCG	VHUD1051E680MVKZ
25(28.8)	100	6.3×7.7	0.14	40	1200	VHUC0771E101MVCG	VHUC0771E101MVKZ
25(28.8)	100	8×10.5	0.14	22	1600	VHUD1051E101MVCG	VHUD1051E101MVKZ
25(28.8)	220	8×10.5	0.14	22	1600	VHUD1051E221MVCG	VHUD1051E221MVKZ
25(28.8)	270	10×10.5	0.14	20	2000	VHUE1051E271MVCG	VHUE1051E271MVKZ
25(28.8)	330	10×10.5	0.14	20	2000	VHUE1051E331MVCG	VHUE1051E331MVKZ
25(28.8)	330	10×13	0.14	16	2500	VHUE1301E331MVCG	VHUE1301E331MVKZ
25(28.8)	470	10×10.5	0.14	20	2000	VHUE1051E471MVCG	VHUE1051E471MVKZ
25(28.8)	470	10×13	0.14	16	2500	VHUE1301E471MVCG	VHUE1301E471MVKZ
25(28.8)	560	10×10.5	0.14	20	2000	VHUE1051E561MVCG	VHUE1051E561MVKZ
25(28.8)	560	10×13	0.14	16	2500	VHUE1301E561MVCG	VHUE1301E561MVKZ
25(28.8)	560	10×17	0.14	16	2850	VHUE1701E561MVCG	VHUE1701E561MVKZ
25(28.8)	1000	10×17	0.14	16	2850	VHUE1701E102MVCG	VHUE1701E102MVKZ
25(28.8)	1500	12.5×21.5	0.15	12	3500	VHUL2151E152MVCG	VHUL2151E152MVKZ
35(41)	120	8×10.5	0.12	22	1600	VHUD1051V121MVCG	VHUD1051V121MVKZ
35(41)	150	8×10.5	0.12	22	1600	VHUD1051V151MVCG	VHUD1051V151MVKZ
35(41)	220	8×10.5	0.12	22	1600	VHUD1051V221MVCG	VHUD1051V221MVKZ
35(41)	220	10×10.5	0.12	20	2000	VHUE1051V221MVCG	VHUE1051V221MVKZ
35(41)	270	10×10.5	0.12	20	2000	VHUE1051V271MVCG	VHUE1051V271MVKZ
35(41)	330	10×10.5	0.12	20	2000	VHUE1051V331MVCG	VHUE1051V331MVKZ
35(41)	330	10×13	0.12	17	2400	VHUE1301V331MVCG	VHUE1301V331MVKZ
35(41)	390	10×10.5	0.12	20	2000	VHUE1051V391MVCG	VHUE1051V391MVKZ
35(41)	470	10×13	0.12	17	2400	VHUE1301V471MVCG	VHUE1301V471MVKZ
35(41)	560	10×17	0.12	16	2700	VHUE1701V561MVCG	VHUE1701V561MVKZ
35(41)	1000	16×16.5	0.12	15	3150	VHUI1651V102MVCG	VHUI1651V102MVKZ
35(41)	1200	18×16.5	0.13	15	3350	VHUJ1651V122MVCG	VHUJ1651V122MVKZ
35(41)	1800	18×26.5	0.13	12	4000	VHUJ2651V182MVCG	VHUJ2651V182MVKZ
50(58)	47	6.3×9.5	0.10	40	1000	VHUC0951H470MVCG	VHUC0951H470MVKZ
50(58)	68	8×10.5	0.10	30	1250	VHUD1051H680MVCG	VHUD1051H680MVKZ
50(58)	82	8×10.5	0.10	30	1250	VHUD1051H820MVCG	VHUD1051H820MVKZ
50(58)	100	10×10.5	0.10	25	1600	VHUE1051H101MVCG	VHUE1051H101MVKZ
50(58)	120	10×10.5	0.10	25	1600	VHUE1051H121MVCG	VHUE1051H121MVKZ
50(58)	150	10×10.5	0.10	25	1600	VHUE1051H151MVCG	VHUE1051H151MVKZ
50(58)	150	10×13	0.10	19	2250	VHUE1301H151MVCG	VHUE1301H151MVKZ
50(58)	180	10×13	0.10	19	2250	VHUE1301H181MVCG	VHUE1301H181MVKZ
50(58)	220	10×17	0.10	19	2550	VHUE1701H221MVCG	VHUE1701H221MVKZ
50(58)	1800	18×31.5	0.11	16	5300	VHUJ3151H182MVCG	VHUJ3151H182MVKZ

VHU

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/125℃100kHz)	model	
						Standard products	earthquake-resistant products
63(73)	47	8×10.5	0.08	40	1100	VHUD1051J470MVCG	VHUD1051J470MVKZ
63(73)	82	10×10.5	0.08	30	1400	VHUE1051J820MVCG	VHUE1051J820MVKZ
63(73)	120	10×13	0.08	22	2100	VHUE1301J121MVCG	VHUE1301J121MVKZ
63(73)	150	10×17	0.08	22	2400	VHUE1701J151MVCG	VHUE1701J151MVKZ
63(73)	1200	18×31.5	0.08	16	5000	VHUJ3151J122MVCG	VHUJ3151J122MVKZ
80(92)	33	8×10.5	0.08	40	1100	VHUD1051K330MVCG	VHUD1051K330MVKZ
80(92)	47	10×10.5	0.08	30	1400	VHUE1051K470MVCG	VHUE1051K470MVKZ
80(92)	68	10×13	0.08	22	2100	VHUE1301K680MVCG	VHUE1301K680MVKZ
80(92)	220	12.5×21	0.08	20	2900	VHUL2101K221MVCG	VHUL2101K221MVKZ
80(92)	680	18×31.5	0.08	16	4700	VHUJ3151K681MVCG	VHUJ3151K681MVKZ

VHR



◆150℃ ultra-high temperature resistant product; 2000-hour warranty at 150℃

◆Low ESR; high permissible ripple current; high reliability

◆Compliant with AEC-Q200; RoHS compliant

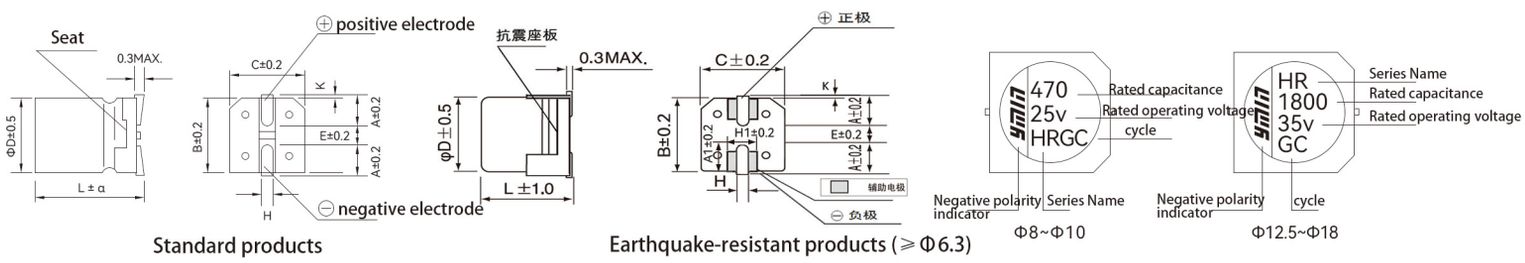
◆Meets vibration resistance requirements; surface mount type; suitable for high-temperature lead-free reflow soldering

■ Main technical parameters

project	characteristic
Operating temperature range	－55 ~ +150℃
Rated operating voltage	25 ~ 80V
Capacity range	33 ~ 1800μF 120Hz 20℃
Capacity tolerance	±20% (120Hz 20℃)
Loss tangent	The following are the values from the standard product list: 120Hz, 20℃
Leakage current	Below 0.01CV (μA), charge for 2 minutes at rated voltage, 20℃
Equivalent series resistance (ESR)	The following are the values from the standard sample list: 100kHz, 20℃
Temperature characteristics	Z(-25℃)/Z(+20℃)≦2.0 ; Z(-55℃)/Z(+20℃)≦2.5 (100kHz)
Durability	After applying the rated voltage containing the rated ripple current at 150° C for a specified time, and then placing it at 20° C for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±30% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value
High temperature storage	After storage at 105℃ for 1000 hours, followed by a 16-hour period at room temperature (20℃±2℃), the product should meet the following requirements. Rate of change of capacitance: ±30% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value Note: Products stored at high temperatures must undergo voltage treatment.
High temperature and humidity	After being subjected to rated voltage for 1000 hours at 85° C and 85% RH, and then placed at 20° C for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±30% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value

※If there is any doubt about the leakage current value, please place the product at 105° C and apply the rated operating voltage for 2 hours, then cool it down to 20° C before testing the leakage current.

■ Product dimension drawing (unit: mm)



Standard products

Earthquake-resistant products (≥Φ6.3)

ΦD	B	C	A	A1	H	H1	E	K	α
6.3	6.6(7.0)	6.6	2.6	1.3	0.70±0.20	2.5	1.8	0.5MAX	±0.5
8	8.3(8.8)	8.3	3.0	1.8	0.90±0.20	3.9	3.1	0.5MAX	
10	10.3(10.8)	10.3	3.5	1.8	0.90±0.20	3.9	4.6	0.70±0.20	
12.5	12.8(13.5)	12.8	4.7	2.5	0.90±0.20	4.4	4.6	0.70±0.30	±1.0
16	17.0(17.5)	17	5.5	3.3	1.20±0.30	6.0	6.7	0.70±0.30	
18	19.0(19.5)	19	6.7	4.0	1.20±0.30	6.0	6.7	0.70±0.30	

■ Frequency correction factor

Capacitance C	Frequency (Hz)	120Hz	500Hz	1kHz	5kHz	10kHz	20kHz	40kHz	100kHz	200kHz	500kHz
C<47μF	Correction factor	0.12	0.20	0.35	0.50	0.65	0.70	0.80	1.00	1.00	1.05
47μF≦C<120μF		0.15	0.30	0.45	0.60	0.75	0.80	0.85	1.00	1.00	1.00
C≧120μF		0.15	0.30	0.45	0.65	0.80	0.85	0.85	1.00	1.00	1.00

VHR

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/125℃100kHz)	model	
						Standard products	earthquake-resistant products
25(28.8)	100	6.3×10.5	0.14	27	600	VHRC1051E101MVCG	VHRC1051E101MVKZ
25(28.8)	220	8×10.5	0.14	27	700	VHRD1051E221MVCG	VHRD1051E221MVKZ
25(28.8)	330	10×10.5	0.14	25	900	VHRE1051E331MVCG	VHRE1051E331MVKZ
25(28.8)	470	10×10.5	0.14	25	900	VHRE1051E471MVCG	VHRE1051E471MVKZ
25(28.8)	560	10×10.5	0.14	25	900	VHRE1051E561MVCG	VHRE1051E561MVKZ
25(28.8)	560	10×13	0.14	20	1050	VHRE1301E561MVCG	VHRE1301E561MVKZ
25(28.8)	1000	10×17	0.14	16	1200	VHRE1701E102MVCG	VHRE1701E102MVKZ
25(28.8)	1500	12.5×21.5	0.15	15	2500	VHRL2151E152MVCG	VHRL2151E152MVKZ
35(41)	120	8×10.5	0.12	27	700	VHRD1051V121MVCG	VHRD1051V121MVKZ
35(41)	220	10×10.5	0.12	25	900	VHRE1051V221MVCG	VHRE1051V221MVKZ
35(41)	330	10×10.5	0.12	25	900	VHRE1051V331MVCG	VHRE1051V331MVKZ
35(41)	330	10×13	0.12	20	1050	VHRE1301V331MVCG	VHRE1301V331MVKZ
35(41)	560	10×17	0.12	16	1200	VHRE1701V561MVCG	VHRE1701V561MVKZ
35(41)	1800	18×26.5	0.13	15	4000	VHRJ2651V182MVCG	VHRJ2651V182MVKZ
50(58)	47	6.3×10	0.10	40	500	VHRC1001H470MVCG	VHRC1001H470MVKZ
50(58)	82	8×10.5	0.10	30	600	VHRD1051H820MVCG	VHRD1051H820MVKZ
50(58)	120	10×10.5	0.10	28	800	VHRE1051H121MVCG	VHRE1051H121MVKZ
50(58)	180	10×12.5	0.10	25	1000	VHRE1251H181MVCG	VHRE1251H181MVKZ
50(58)	180	10×13	0.10	25	1000	VHRE1301H181MVCG	VHRE1301H181MVKZ
50(58)	330	12.5×17	0.10	30	1250	VHRL1701H331MVCG	VHRL1701H331MVKZ
50(58)	1800	18×31.5	0.11	18	5300	VHRJ3151H182MVCG	VHRJ3151H182MVKZ
63(73)	47	8×10.5	0.08	40	600	VHRD1051J470MVCG	VHRD1051J470MVKZ
63(73)	56	10×10.5	0.08	30	800	VHRE1051J560MVCG	VHRE1051J560MVKZ
63(73)	82	10×10.5	0.08	30	800	VHRE1051J820MVCG	VHRE1051J820MVKZ
63(73)	120	10×13	0.08	25	1000	VHRE1301J121MVCG	VHRE1301J121MVKZ
63(73)	180	10×17	0.08	20	1100	VHRE1701J181MVCG	VHRE1701J181MVKZ
63(73)	1200	18×31.5	0.09	20	5000	VHRJ3151J122MVCG	VHRJ3151J122MVKZ
80(92)	33	8×10.5	0.08	40	600	VHRD1051K330MVCG	VHRD1051K330MVKZ
80(92)	47	10×10.5	0.08	30	800	VHRE1051K470MVCG	VHRE1051K470MVKZ
80(92)	68	10×13	0.08	25	1000	VHRE1301K680MVCG	VHRE1301K680MVKZ
80(92)	100	10×13	0.08	25	1000	VHRE1301K101MVCG	VHRE1301K101MVKZ
80(92)	120	10×15.5	0.08	20	1050	VHRE1551K121MVCG	VHRE1551K121MVKZ
80(92)	150	10×17	0.08	30	1100	VHRE1701K151MVCG	VHRE1701K151MVKZ
80(92)	680	18×31.5	0.08	20	4700	VHRJ3151K681MVCG	VHRJ3151K681MVKZ

NGY

◆Low ESR, high tolerable ripple current, high reliability
◆105℃, 10,000-hour warranty
◆Compliant with AEC-Q200
◆RoHS compliant

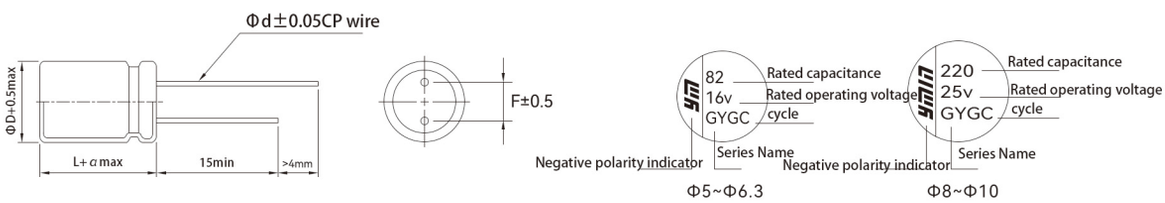


■ Main technical parameters

project	characteristic
Operating temperature range	－55 ~ +105℃
Rated operating voltage	16 ~ 80V
Capacity range	6.8 ~ 470μF 120Hz 20℃
Capacity tolerance	±20% (120Hz 20℃)
Loss tangent	The following are the values from the standard product list: 120Hz, 20℃
Leakage current	Below 0.01CV (μA), charge for 2 minutes at rated voltage, 20℃
Equivalent series resistance (ESR)	The following are the values from the standard sample list: 100kHz, 20℃
Temperature characteristics	Z(-25℃)/Z(+20℃)≦2.0 ; Z(-55℃)/Z(+20℃)≦2.5 (100kHz)
Durability	After applying the rated voltage containing the rated ripple current at 105° C for a specified time, and then placing it at 20° C for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±30% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value
High temperature storage	After storage at 105℃ for 1000 hours, followed by a 16-hour period at room temperature (20℃±2℃), the product should meet the following requirements. Rate of change of capacitance: ±30% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value
High temperature and humidity	After being subjected to rated voltage for 1000 hours at 85° C and 85% RH, and then placed at 20° C for 16 hours, the product should meet the f ollowing requirements. Rate of change of capacitance: ±30% of the initial value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value

※If there is any doubt about the leakage current value, please place the product at 105° C and apply the rated operating voltage for 2 hours, then cool it down to 20° C before testing the leakage current.

■ Product dimension drawing (unit: mm)



D (±0.5)	5	6.3	8	10
d (±0.05)	0.45/0.50	0.45/0.50	0.6	0.6
F (±0.5)	2	2.5	3.5	5
α	+0.5		+1	

■ Frequency correction factor

Capacitance C	Frequency (Hz)	120Hz	500Hz	1kHz	5kHz	10kHz	20kHz	40kHz	100kHz	200kHz	500kHz
C<47μF	Correction factor	0.12	0.20	0.35	0.50	0.65	0.70	0.80	1.00	1.00	1.05
47μF≦C<120μF		0.15	0.30	0.45	0.60	0.75	0.80	0.85	1.00	1.00	1.00
C≧120μF		0.15	0.30	0.45	0.65	0.80	0.85	0.85	1.00	1.00	1.00

NGY

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
10(11.5)	470	6.3×11	0.16	20	2750
16(18.4)	47	5×5.7	0.16	80	900
16(18.4)	82	6.3×5.7	0.16	45	1600
16(18.4)	150	6.3×7	0.16	27	2200
16(18.4)	270	8×9	0.16	22	2500
16(18.4)	470	10×9	0.16	18	2600
25(28.8)	33	5×5.7	0.14	80	900
25(28.8)	47	6.3×5.7	0.14	50	1300
25(28.8)	56	6.3×5.7	0.14	50	1300
25(28.8)	68	6.3×7	0.14	30	2000
25(28.8)	100	6.3×7	0.14	30	2000
25(28.8)	150	8×9	0.14	27	2300
25(28.8)	220	8×9	0.14	27	2300
25(28.8)	220	8×10	0.14	27	2300
25(28.8)	270	10×9	0.14	20	2500
25(28.8)	330	10×9	0.14	20	2500
25(28.8)	330	10×12.5	0.14	16	3100
25(28.8)	560	10×10	0.14	20	2500
25(28.8)	680	10×10	0.14	20	2500
35(41)	22	5×5.7	0.12	100	900
35(41)	27	6.3×5.7	0.12	60	1300
35(41)	47	5×9	0.12	60	1100
35(41)	47	5×11	0.12	60	1250
35(41)	47	6.3×5.7	0.12	60	1300
35(41)	47	6.3×7	0.12	35	2000
35(41)	68	6.3×7	0.12	35	2000
35(41)	100	5×11	0.12	60	1250
35(41)	100	8×8	0.12	30	2150
35(41)	100	8×9	0.12	27	2300
35(41)	150	8×9	0.12	27	2300
35(41)	150	10×9	0.12	20	2500
35(41)	180	5×15	0.12	40	1450
35(41)	270	10×9	0.12	20	2500
35(41)	270	10×12.5	0.12	17	3000
35(41)	390	8×12.5	0.12	25	2700
35(41)	390	10×10	0.12	20	2500
35(41)	470	10×16	0.12	12	3150
35(41)	1200	12.5×20	0.13	20	4200
35(41)	1800	12.5×20	0.13	20	4200
35(41)	2200	12.5×25	0.14	20	4600
50(58)	10	5×5.7	0.10	120	750
50(58)	10	6.3×5.7	0.10	80	1100
50(58)	15	6.3×5.7	0.10	80	1100

NGY

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
50(58)	22	6.3×5.7	0.10	80	1100
50(58)	33	6.3×7	0.10	40	1400
50(58)	33	8×9	0.10	30	1800
50(58)	47	8×9	0.10	30	1800
50(58)	56	8×9	0.10	30	1800
50(58)	68	8×9	0.10	30	1800
50(58)	100	8×9	0.10	30	1800
50(58)	100	10×9	0.10	28	2000
50(58)	120	10×9	0.10	28	2000
50(58)	120	10×12.5	0.10	19	2800
63(73)	6.8	6.3×5.7	0.08	120	1000
63(73)	10	6.3×5.7	0.08	120	1000
63(73)	10	6.3×7	0.08	80	1400
63(73)	15	6.3×7	0.08	80	1400
63(73)	22	6.3×7	0.08	80	1400
63(73)	22	8×9	0.08	40	1600
63(73)	33	8×9	0.08	40	1600
63(73)	47	8×9	0.08	40	1600
63(73)	56	10×9	0.08	30	1800
63(73)	68	10×9	0.08	30	1800
63(73)	82	10×9	0.08	30	1800
63(73)	100	10×12.5	0.08	20	2600
63(73)	150	10×12	0.08	20	2600
63(73)	220	10×16	0.08	20	3000
80(92)	22	8×9	0.08	45	1500
80(92)	33	10×9	0.08	35	1700
80(92)	39	10×9	0.08	35	1700

NHT

◆Low ESR, high tolerable ripple current, high reliability
◆125℃, 4000-hour warranty
◆Compliant with AEC-Q200
◆RoHS compliant

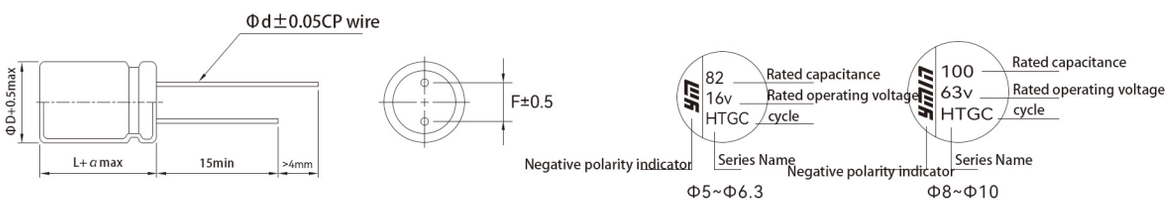


■ Main technical parameters

project	characteristic
Operating temperature range	－55 ~ +125℃
Rated operating voltage	16 ~ 80V
Capacity range	4.7 ~ 2700μF 120Hz 20℃
Capacity tolerance	±20% (120Hz 20℃)
Loss tangent	The following are the values from the standard product list: 120Hz, 20℃
Leakage current	Below 0.01CV (μA), charge for 2 minutes at rated voltage, 20℃
Equivalent series resistance (ESR)	The following are the values from the standard sample list: 100kHz, 20℃
Temperature characteristics	Z(-25℃)/Z(+20℃)≦2.0 ; Z(-55℃)/Z(+20℃)≦2.5 (100kHz)
Durability	After applying the rated voltage containing the rated ripple current at 125° C for a specified time, and then placing it at 20° C for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±30% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value
High temperature storage	After storage at 125℃ for 1000 hours, followed by a 16-hour period at room temperature (20℃±2℃), the product should meet the following requirements. Rate of change of capacitance: ±30% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value
High temperature and humidity	After being subjected to rated voltage for 1000 hours at 85° C and 85% RH, and then placed at 20° C for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±30% of the initial value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value

※If there is any doubt about the leakage current value, please place the product at 105° C and apply the rated operating voltage for 2 hours, then cool it down to 20° C before testing the leakage current.

■ Product dimension drawing (unit: mm)



D (±0.5)	5	6.3	8	10	12.5	16	18
d (±0.05)	0.45/0.50	0.45/0.50	0.6	0.6	0.6	0.8	0.8
F (±0.5)	2	2.5	3.5	5	5	7.5	7.5
α	+0.5		+1				

■ Frequency correction factor

Capacitance C	Frequency (Hz)	120Hz	500Hz	1kHz	5kHz	10kHz	20kHz	40kHz	100kHz	200kHz	500kHz
C<47μF	Correction factor	0.12	0.20	0.35	0.50	0.65	0.70	0.80	1.00	1.00	1.05
47μF≦C<120μF		0.15	0.30	0.45	0.60	0.75	0.80	0.85	1.00	1.00	1.00
C≧120μF		0.15	0.30	0.45	0.65	0.80	0.85	0.85	1.00	1.00	1.00

NHT

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
16(18.4)	47	5×5.7	0.16	80	550
16(18.4)	82	6.3×5.7	0.16	45	950
16(18.4)	150	6.3×7	0.16	27	1450
16(18.4)	270	8×9	0.16	22	1700
16(18.4)	470	8×10	0.16	20	1700
16(18.4)	470	10×9	0.16	18	3000
25(28.8)	33	5×5.7	0.14	80	550
25(28.8)	47	6.3×5.7	0.14	50	900
25(28.8)	56	6.3×5.7	0.14	50	900
25(28.8)	68	6.3×7	0.14	30	1400
25(28.8)	100	6.3×5.7	0.14	50	900
25(28.8)	100	6.3×7	0.14	30	1400
25(28.8)	150	8×9	0.14	27	1600
25(28.8)	220	6.3×9	0.14	30	1550
25(28.8)	220	8×9	0.14	27	1600
25(28.8)	270	10×9	0.14	20	2800
25(28.8)	330	8×9	0.14	27	1600
25(28.8)	330	10×9	0.14	20	2800
25(28.8)	330	10×12.5	0.14	16	3100
25(28.8)	470	10×10	0.14	20	2800
35(41)	22	5×5.7	0.12	100	550
35(41)	27	6.3×5.7	0.12	60	900
35(41)	47	5×11	0.12	60	750
35(41)	47	6.3×5.7	0.12	60	900
35(41)	47	6.3×7	0.12	35	1400
35(41)	68	6.3×7	0.12	35	1400
35(41)	100	5×11	0.12	60	750
35(41)	100	8×9	0.12	27	1600
35(41)	150	8×9	0.12	27	1600
35(41)	150	10×9	0.12	20	2800
35(41)	270	10×9	0.12	20	2800
35(41)	270	10×12.5	0.12	16	3000
35(41)	2700	12.5×30	0.14	16	5700
50(58)	4.7	6.3×7	0.10	80	1100
50(58)	10	5×5.7	0.10	120	550
50(58)	10	6.3×5.7	0.10	80	750
50(58)	15	6.3×7	0.10	80	1100
50(58)	22	6.3×5.7	0.10	80	750
50(58)	33	6.3×7	0.10	80	1100
50(58)	33	8×9	0.10	30	1250
50(58)	47	8×9	0.10	30	1250
50(58)	56	10×9	0.10	25	1600
50(58)	68	8×9	0.10	30	1250

NHT

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
50(58)	100	10×9	0.10	25	1600
50(58)	120	10×9	0.10	25	1600
50(58)	120	10×12.5	0.10	19	2400
63(73)	6.8	6.3×5.7	0.10	120	700
63(73)	10	6.3×5.7	0.10	120	700
63(73)	10	6.3×7	0.10	80	900
63(73)	22	6.3×7	0.10	80	900
63(73)	22	8×9	0.08	40	1100
63(73)	33	8×9	0.08	40	1100
63(73)	33	10×9	0.10	30	1400
63(73)	47	8×9	0.08	40	1100
63(73)	56	8×9	0.08	40	1100
63(73)	56	10×9	0.10	30	1400
63(73)	82	10×9	0.10	30	1400
63(73)	100	8×12	0.08	40	1250
63(73)	100	10×12.5	0.10	20	2200
63(73)	120	10×10	0.10	30	1400
63(73)	120	10×12.5	0.10	20	2200
63(73)	330	10×18	0.10	16	3700
63(73)	390	12.5×20	0.10	30	4400
63(73)	470	12.5×20	0.10	30	4400
80(92)	22	8×9	0.08	45	1100
80(92)	33	10×9	0.10	35	1200
80(92)	39	10×9	0.10	35	1200
80(92)	47	10×10	0.10	35	1200
80(92)	100	8×16	0.08	30	1450
80(92)	220	12.5×16	0.10	20	3900
80(92)	470	12.5×25	0.10	16	4850
80(92)	560	12.5×25	0.10	16	4850
80(92)	560	16×25	0.10	16	5450
80(92)	680	16×25	0.10	16	5450

NHX

◆Low ESR, large capacity, miniaturized design, high ripple current tolerance, high reliability
◆105℃, 2000~5000-hour warranty
◆Compliant with AEC-Q200
◆RoHS compliant

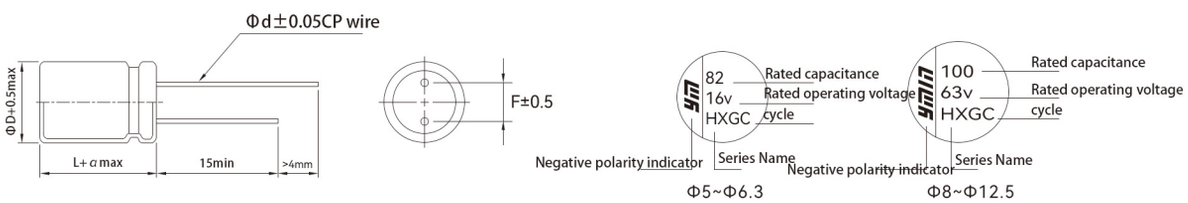


■ Main technical parameters

project	characteristic
Operating temperature range	－55 ~ +105℃
Rated operating voltage	16 ~ 160V
Capacity range	6.8 ~ 3300μF 120Hz 20℃
Capacity tolerance	±20% (120Hz 20℃)
Loss tangent	120Hz 20℃
Leakage current	Below 0.01CV (μA), charge for 2 minutes at rated voltage, 20℃
Equivalent series resistance (ESR)	The following are the values from the standard sample list: 100kHz, 20℃
Temperature characteristics	Z(-25℃)/Z(+20℃)≦2.0 ; Z(-55℃)/Z(+20℃)≦2.5 (100kHz)
Durability	After applying the rated voltage with rated ripple current at 105℃ for 2000H/5000H, and then placing it at 20℃ for 16 hours, the product should meet the following requirements. Guaranteed lifespan: ΦD≦6.3mm: 2000 hours ΦD≧8mm: 5000 hours Capacitance change rate: ±30% of initial value Equivalent series resistance (ESR): ≦200% of initial specification value Loss tangent: ≦200% of initial specification value Leakage current: ≦Initial specification value
High temperature storage	After storage at 105℃ for 1000 hours, followed by a 16-hour period at room temperature (20℃±2℃), the product should meet the following requirements. Rate of change of capacitance: ±30% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value
High temperature and humidity	After being subjected to rated voltage for 1000 hours at 85° C and 85% RH, and then placed at 20° C for 16 hours, the product should meet the following requirements. Rate of change of capacitance: ±30% of the initial value Equivalent series resistance (ESR): ≦ 200% of the initial specification value Loss tangent: ≦ 200% of the initial specification value Leakage current: ≦ Initial specification value

※If there is any doubt about the leakage current value, please place the product at 105° C and apply the rated operating voltage for 2 hours, then cool it down to 20° C before testing the leakage current.

■ Product dimension drawing (unit: mm)



D (±0.5)	5	6.3	8	10	12.5	16	18
d (±0.05)	0.45/0.50	0.45/0.50	0.6	0.6	0.6	0.8	0.6
F (±0.5)	2	2.5	3.5	5	5	7.5	7.5
α	+0.5		+1				

■ Frequency correction factor

Capacitance C	Frequency (Hz)	120Hz	500Hz	1kHz	5kHz	10kHz	20kHz	40kHz	100kHz	200kHz	500kHz
C<47μF	Correction factor	0.12	0.20	0.35	0.50	0.65	0.70	0.80	1.00	1.00	1.05
47μF≦C<120μF		0.15	0.30	0.45	0.60	0.75	0.80	0.85	1.00	1.00	1.00
C≧120μF		0.15	0.30	0.45	0.65	0.80	0.85	0.85	1.00	1.00	1.00

NHX

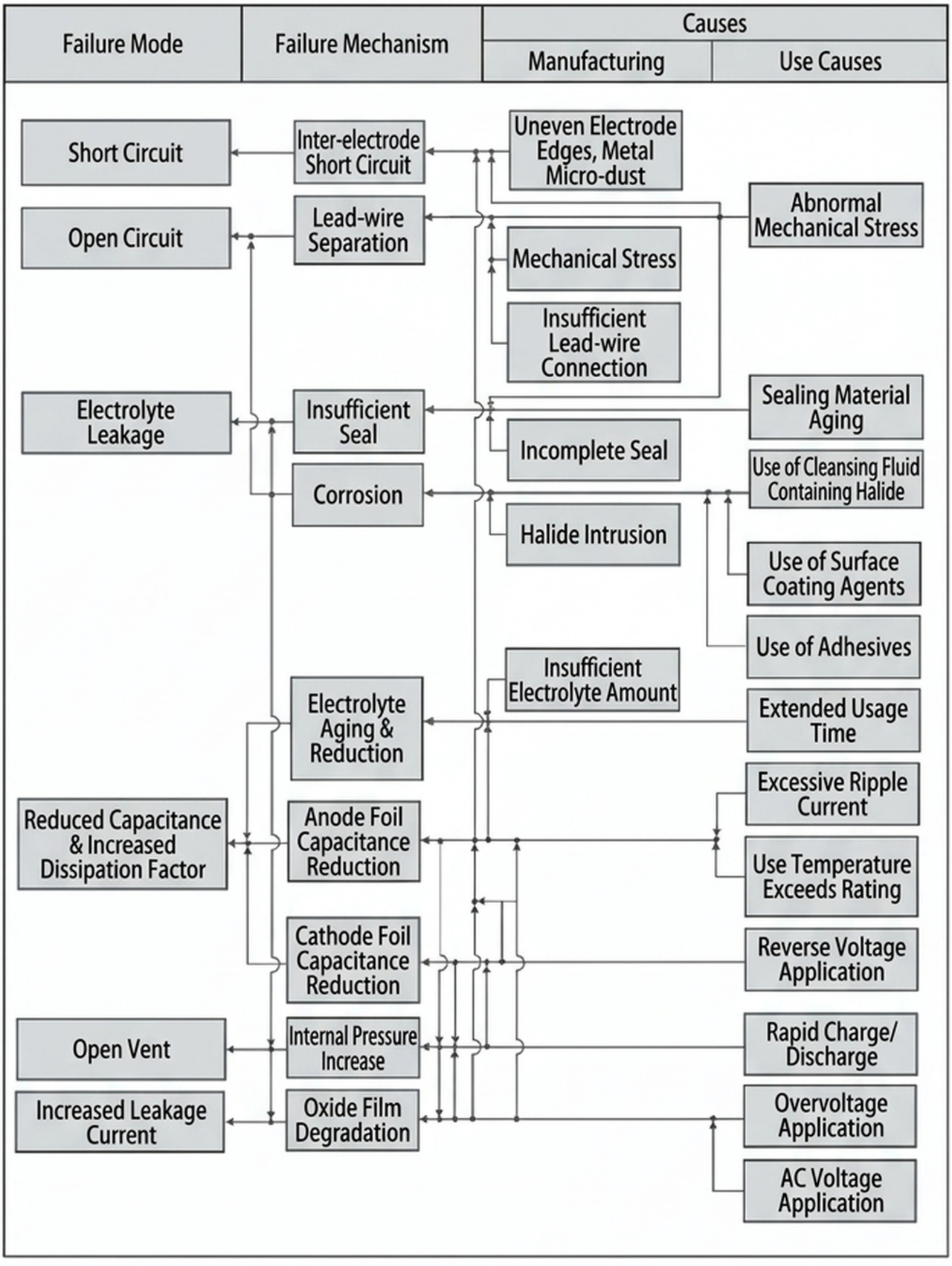
■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
16(18.4)	100	5×5.7	0.16	60	1400
16(18.4)	100	6.3×5.7	0.16	45	1600
16(18.4)	150	6.3×7	0.16	27	2200
16(18.4)	220	6.3×5.7	0.16	45	1600
16(18.4)	220	6.3×7	0.16	27	2200
16(18.4)	270	6.3×7	0.16	27	2200
16(18.4)	470	8×10	0.16	22	2500
16(18.4)	680	8×10	0.16	22	2500
16(18.4)	680	10×10	0.16	18	2600
16(18.4)	1000	10×10	0.16	18	2600
16(18.4)	1000	10×12	0.16	15	3200
16(18.4)	1500	10×12	0.17	15	3200
25(28.8)	82	6.3×5.7	0.14	50	1300
25(28.8)	100	5×5.7	0.14	80	1150
25(28.8)	100	5×7	0.14	60	1250
25(28.8)	150	5×7	0.14	60	1250
25(28.8)	150	6.3×5.7	0.14	50	1300
25(28.8)	150	6.3×7	0.14	30	2000
25(28.8)	180	5×9	0.14	60	1400
25(28.8)	220	5×10	0.14	60	1400
25(28.8)	220	6.3×7	0.14	30	2000
25(28.8)	330	8×10	0.14	27	2300
25(28.8)	470	8×10	0.14	27	2300
25(28.8)	470	8×11	0.14	27	2300
25(28.8)	470	10×10	0.14	20	2500
25(28.8)	680	10×10	0.14	20	2500
25(28.8)	680	10×12	0.14	16	3000
25(28.8)	1000	10×12	0.14	16	3000
35(41)	47	6.3×5.7	0.12	60	1300
35(41)	68	6.3×7	0.12	35	2000
35(41)	100	6.3×5.7	0.12	60	1300
35(41)	150	6.3×7	0.12	35	2000
35(41)	180	8×10	0.12	27	2300
35(41)	220	6.3×9	0.12	30	2250
35(41)	330	8×10	0.12	27	2300
35(41)	330	10×10	0.12	20	2500
35(41)	470	10×9	0.12	20	2500
35(41)	470	10×10	0.12	20	2500
35(41)	470	10×12	0.12	17	3000
35(41)	680	10×12	0.12	17	3000
35(41)	3300	12.5×30	0.15	16	5000
50(58)	22	6.3×5.7	0.10	80	1100
50(58)	33	6.3×7	0.10	40	1800
50(58)	39	6.3×5.7	0.10	80	1100
50(58)	56	6.3×7	0.10	40	1800

NHX

■ List of Standard Products

Rated voltage (V)	nominal capacity (μF)	size ΦD×L(mm)	Tan δ 120Hz	ESR (mΩ100kHz)	Rated ripple current (mA r.m.s/105℃100kHz)
50(58)	82	8×10	0.10	30	2100
50(58)	120	8×10	0.10	30	2100
50(58)	120	10×10	0.10	25	2300
50(58)	180	10×12	0.10	19	2800
50(58)	220	10×10	0.10	25	2300
50(58)	330	10×12	0.10	19	2800
63(73)	15	6.3×5.7	0.08	100	1000
63(73)	22	6.3×7	0.08	80	1500
63(73)	27	6.3×5.7	0.08	100	1000
63(73)	47	6.3×7	0.08	80	1500
63(73)	56	8×10	0.08	40	1900
63(73)	100	8×10	0.08	40	1900
63(73)	100	10×10	0.08	30	2100
63(73)	150	10×10	0.08	30	2100
63(73)	150	10×12	0.08	20	2600
63(73)	220	10×12	0.08	20	2600
63(73)	1000	12.5×30	0.08	20	4400
80(92)	8.2	6.3×5.7	0.08	120	900
80(92)	10	6.3×5.7	0.08	120	900
80(92)	12	6.3×7	0.08	100	1400
80(92)	27	6.3×7	0.08	100	1400
80(92)	33	8×10	0.08	45	1600
80(92)	56	8×10	0.08	45	1600
80(92)	56	10×10	0.08	35	1800
80(92)	82	10×12	0.08	22	2300
80(92)	100	10×10	0.08	35	1800
80(92)	120	8×16	0.08	30	2000
80(92)	120	10×12	0.08	22	2300
80(92)	220	8×25	0.08	25	2500
100(115)	6.8	6.3×5.7	0.08	120	900
100(115)	8.2	6.3×7	0.08	100	1400
100(115)	10	6.3×5.7	0.08	120	900
100(115)	15	6.3×7	0.08	100	1400
100(115)	22	5×11	0.08	80	1100
100(115)	22	8×10	0.08	50	1600
100(115)	33	8×10	0.08	50	1600
100(115)	33	10×10	0.08	40	1800
100(115)	100	10×14	0.08	30	2100
100(115)	200	12.5×16	0.08	30	2450
100(115)	270	12.5×20	0.08	20	2700
100(115)	330	12.5×23	0.08	20	2850
120(138)	150	12.5×16	0.08	30	2450
120(138)	220	12.5×23	0.08	20	2850
160(184)	150	16×25	0.08	20	3450


Failure Mode
Failure Mechanism
Causes
Manufacturing
Use Causes
Short Circuit
Inter-electrode Short Circuit
Uneven Electrode Edges, Metal Micro-dust
Open Circuit
Lead-wire Separation
Abnormal Mechanical Stress
Mechanical Stress
Insufficient Lead-wire Connection
Electrolyte Leakage
Insufficient Seal
Sealing Material Aging
Incomplete Seal
Corrosion
Use of Cleansing Fluid Containing Halide
Halide Intrusion
Use of Surface Coating Agents
Use of Adhesives
Insufficient Electrolyte Amount
Electrolyte Aging & Reduction
Extended Usage Time
Excessive Ripple Current
Reduced Capacitance & Increased Dissipation Factor
Anode Foil Capacitance Reduction
Use Temperature Exceeds Rating
Cathode Foil Capacitance Reduction
Reverse Voltage Application
Open Vent
Internal Pressure Increase
Rapid Charge/ Discharge
Increased Leakage Current
Oxide Film Degradation
Overvoltage Application
AC Voltage Application

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