

Shanghai Yongming Electronic Co., Ltd.

AI SERVER

APPLICATION MANUAL FOR SPECIALIZED CAPACITORS

V1.2 202608

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Introduction to Capacitor Series
P03~P04

Polymer Solid/Hybrid Aluminum Electrolytic Capacitors

105℃

VPC Series (2000H)
NPC Series (2000H)
NPL Series (5000H)
NHX Series (2000 - 5000 h)
NGY Series (10,000 h)

125℃

VHT Series (4000H)
NHT Series (4000H)

Stacked Polymer Solid Aluminum Electrolytic Capacitors

105℃

MPS Series (2000H)
MPD19 Series (2000H)
MPD28 Series (2000H)

125℃

MPX Series (2000H)

Conductive polymer tantalum electrolytic capacitors

105℃

TQD15 Series (2000H)
TQD19 Series (2000H)
TQW19 Series (2000H)

Liquid aluminum electrolytic capacitors

105℃

IDC3 Series (3,000 h)
LKF Series (10,000 h)
LKG Series (12,000 h)

130℃

LKL Series (5000H)

Company Overview

COMPANY LIST









Qualification Certificate

QUALIFICATION CERTIFICATE



NATIONAL MILITARY STANDARD QUALITY MANAGEMENT SYSTEM CERTIFICATION



IATF 16949 SYSTEM CERTIFICATION



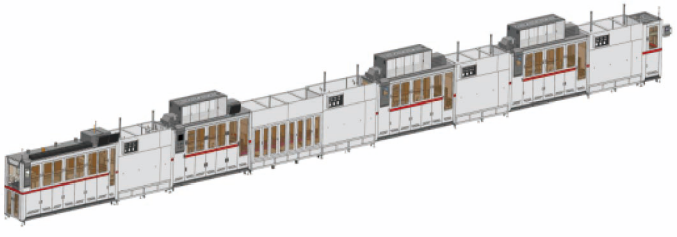
CNAS LABORATORY MANAGEMENT SYSTEM CERTIFICATION

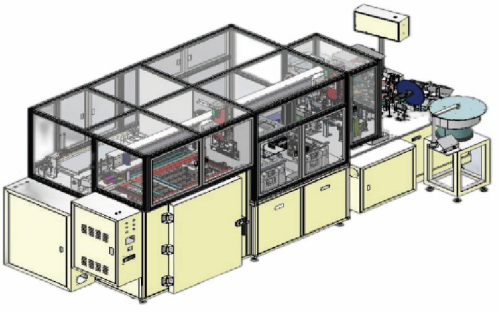


AEC-Q200 PRODUCT CERTIFICATION

Automated production line

AUTOMATED PRODUCTION LINE





Yongming Electronics' fully automated capacitor production line integrates automation, digitalization, and intelligent technologies to ensure superior manufacturing quality and production efficiency.

The line features seamless, fully automated integration across five core processes—including automated material handling and intelligent matching of process parameters—achieving over 90% equipment automation and limiting manual intervention to less than 10%. A 3D inspection system combines electrical performance testing, CCD vision, and laser measurement; data is uploaded to the cloud in real-time, ensuring 100% effective rejection of defective products. An Industrial IoT system captures over 300 quality parameters in real-time, while the MES system enables end-to-end traceability and equipment visualization.

Product System Diagram

PRODUCT SYSTEM DIAGRAM

Conductive polymer tantalum electrolytic capacitors



Surface-mount type

TQD15

7.3×4.3×1.5mm
16V/100μF~63V/10μF
105℃2000H

TQD19

7.3×4.3×1.9mm
16V/220μF~35V/68μF
105℃2000H

TQW19

7.3×6.0×1.9mm
35V/100μF
105℃2000H

Stacked Polymer Solid Aluminum Electrolytic Capacitors



Surface-mount type

MPX P17

7.3×4.3×1.9mm
2V/330μF~6.3V/150μF
125℃3000H

MPS P19

7.3×4.3×1.9mm
2V/330~2.5V/470μF
105℃2000H

MPD19 P19

7.3×4.3×1.9mm
2V/330μF~50V/10μF
105℃2000H

MPD28 P19

7.3×4.3×2.8mm
6.3V/270μF~80V/4.7μF
105℃2000H

Polymer solid aluminum electrolytic capacitors



Surface-mount type

VPC

105℃ 2000H
2.5~16V
Ultra-low ESR, high ripple current capability



Leaded type

NPC

105℃ 2000H
2.5~16V
Ultra-low ESR, high ripple current capability

NPL

105℃ 5000H
6.3~100V
High-frequency, high-ripple-current capability
Low ESR, long-life series

Hybrid polymer aluminum electrolytic capacitors



Surface-mount type

VHT

125℃ 4000H
6.3~100V
High reliability, low ESR
High permissible ripple current, high-temperature resistanceSurface-mount type



Leaded type

NHX

105℃ 2000H~5000H
16~160V
High Voltage Rating, Long LifeHigh Permissible Ripple Current

→

NGY

105℃ 10000H
10~80V
High Reliability, Low ESR
High Ripple Current Capability, Long Life

→

NHT

125℃ 4000H
16~80V
High Reliability, Low ESR
High Allowable Ripple Current, High-Temperature Resistance

Liquid aluminum electrolytic capacitors



Leaded type

LKF

105℃
10000H
High ripple current
Low impedance, standard series

→

LKG

105℃
12000H
High ripple current
Low impedance, long life

→

LKL

130℃
5000H
High-temperature resistant, long-life product



Base plate independent type

IDC3

105℃ 3000H
450~500V
High capacity density

AI Server Motherboards & Graphics Cards

SMART MOBILITY

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MOTHERBOARD



GRAPHICS CARD

Graphics Processing Unit (GPU), Central Processing Unit (CPU)

Application Requirements

Ultra-low ESR, high energy density, excellent high-frequency characteristics, high stability, high-temperature reliability, miniaturization, and high-density surface mounting.

Product Advantages of Yongming Stacked Solid Aluminum Electrolytic Capacitors

Ultra-low ESR

① High ESR consistency contributes to low power consumption and high energy efficiency for the entire system. ② The MPS series features a maximum ESR of just 3 mΩ.

High energy density

① Capacitance of up to 820 μF at 2V in a D-case size. ② Ensures sufficient charge storage within limited space.

High-temperature reliability

① Capacitance change does not exceed 5% within the -55° C to +105° C range; ② Capacitance change does not exceed -10% after long-term operation. This ensures stable server performance under 24/7 high-load, high-temperature conditions, reduces failure rates and maintenance requirements, and meets the demands of harsh data center environments.

Excellent high-frequency characteristics

① Compatible with high frequencies of 100 – 300 kHz; ② Ensures consistent high-frequency filtering performance across varying temperatures, resulting in more reliable system design.

Recommended Selection (The following specifications are examples and are for reference only.)

Capacitor Type	shape	series	Thermal life	Rated voltage (Surge voltage) (V)	Nominal capacitance (μF)	Product Dimensions (mm)	Tan (120HZ)	ESR (mΩ/100kHz)	Ripple current (mA/100kHz)	LC (μA)	Product Part Number
Stacked Polymer SolidAluminum Electrolytic Capacitor	Surface-mount type	MPD19	105℃ 2000H	4 (5)	150	7.3*4.3*1.9	0.06	18	4600	60	MPD151M0JD19018R
		MPD19	105℃ 2000H	4 (5)	330	7.3*4.3*1.9	0.06	9	6300	132	MPD331M0JD19009R
		MPD19	105℃ 2000H	6.3 (7.9)	220	7.3*4.3*1.9	0.06	15	5100	139	MPD221M0LD19015R
		MPD19	105℃ 2000H	16 (20)	100	7.3*4.3*1.9	0.06	40	3200	160	MPD101M1CD19040R

Recommended Selection (The following specifications are examples and are for reference only.)

Capacitor Type	shape	series	Thermal life	Rated voltage (Surge voltage) (V)	Nominal capacitance (μF)	Product Dimensions (mm)	Tan (120HZ)	ESR (mΩ/100kHz)	Ripple current (mA/100kHz)	LC (μA)	Product Part Number
Stacked Polymer Solid Aluminum Electrolytic Capacitor	Surface-mount type	MPD19	105℃ 2000H	25 (31)	68	7.3*4.3*1.9	0.06	40	3200	170	MPD680M1ED19040R
		MPD28	105℃ 2000H	2 (2.5)	820	7.3*4.3*2.8	0.06	6	7200	164	MPD821M0DD28006R
		MPD28	105℃ 2000H	4 (5)	470	7.3*4.3*2.8	0.06	15	5100	188	MPD471M0JD28015R
		MPD28	105℃ 2000H	6.3 (7.9)	330	7.3*4.3*2.8	0.06	15	5100	208	MPD331M0LD28015R
		MPD28	105℃ 2000H	6.3 (7.9)	470	7.3*4.3*2.8	0.06	15	5100	296	MPD471M0LD28015R
		MPD28	105℃ 2000H	16 (20)	150	7.3*4.3*2.8	0.06	40	3200	240	MPD151M1CD28040R
		MPD28	105℃ 2000H	25 (31)	120	7.3*4.3*2.8	0.06	40	3200	300	MPD121M1ED28040R
		MPD28	105℃ 2000H	35 (44)	47	7.3*4.3*2.8	0.06	40	3200	165	MPD470M1VD28040R
		MPX	125℃ 3000H	2 (2.5)	470	7.3*4.3*1.9	0.06	6	7200	94	MPX471M0DD19006RC
		MPX	125℃ 3000H	2.5 (3.12)	470	7.3*4.3*1.9	0.06	4.5	8500	117.5	MPX471M0ED194R5RC
		MPX	125℃ 3000H	2.5 (3.12)	220	7.3*4.3*1.9	0.06	9	6300	55	MPX221M0ED19009RC
		MPS	105℃ 2000H	2.5 (3.12)	470	7.3*4.3*1.9	0.06	3	10200	82.5	MPS471M0ED19003R

DC-DC converter

Application Requirements

Ultra-low ESR, high ripple current capability; miniaturized, high capacitance density; high reliability, wide temperature range, and long service life;

Product Advantages of Yongming Solid Aluminum Electrolytic Capacitors

Ultra-low ESR (ultra-high allowable ripple current)

By utilizing a high-conductivity electrolyte and an optimized electrode structure, the component achieves ultra-low ESR characteristics. It offers excellent high-frequency response and ripple current handling capabilities, significantly reducing energy loss and temperature rise, thereby ensuring stable equipment operation under high-temperature conditions.

Miniaturization/High Capacity Density

Innovative materials and structural designs push the boundaries of product size, achieving industry-leading miniaturization for a given capacitance value; this facilitates high-density PCB layouts and frees up valuable space.

High Reliability & Wide Temperature Range, Long Lifespan

Stable performance across a wide temperature range (-55° C to +105° C) with capacitance variation of no more than 5%, ensuring stable server operation under 24/7 high-load conditions; minimal capacitance degradation in high-temperature environments reduces failure rates and maintenance needs, making it suitable for the demanding conditions of data centers.

Recommended Selection (The following specifications are examples and are for reference only.)

Capacitor Type	shape	series	Thermal life	Rated voltage (Surge voltage) (V)	Nominal capacitance (μF)	Product Dimensions (mm)	Tan (120HZ)	ESR (mΩ/100kHz)	Ripple current (mA/100kHz)	LC (μA)	Product Part Number
Conductive Polymer Aluminum Solid Electrolytic Capacitors	Surface-mount type	VPC	105℃ 2000H	16 (18.4)	100	6.3*5.8	0.08	20	2700	500	VPCC0581C101MVTM
		VPC	105℃ 2000H	16 (18.4)	270	8*10	0.08	10	5000	864	VPCD1001C271MVTM
	Surface-mount type	NPC	105℃ 2000H	6.3 (7.2)	560	6.3*9	0.08	12	5250	353	NPCC0900J561MJTM
		NPC	105℃ 2000H	16 (18.4)	100	6.3*5.7	0.08	20	2700	320	NPCC0571C101MJTM
		NPC	105℃ 2000H	16 (18.4)	270	8*9	0.08	10	5000	864	NPCD0901C271MJTM
Stacked Polymer SolidAluminum Electrolytic Capacitor	Surface-mount type	MPD19	105℃ 2000H	25 (31)	33	7.3*4.3*1.9	0.06	40	3200	83	MPD330M1ED19040R
		MPD19	105℃ 2000H	6.3 (7.9)	220	7.3*4.3*1.9	0.06	15	5100	139	MPD221M0LD19015R
Conductive polymers Tantalum electrolytic capacitors	Surface-mount type	TQD19	105℃ 2000H	16 (20)	150	7.3*4.3*1.9	0.10	100	1400	240	TQD151M1CD19100RN
		TQD19	105℃ 2000H	25 (31)	100	7.3*4.3*1.9	0.10	100	1400	250	TQD101M1ED19100RN

AI Server Power Supply

AI SERVER POWER SUPPLY

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MAIN POWER SUPPLY

Main Power Supply - PSU

Application Requirements

Ultra-low equivalent series resistance (ESR); high ripple current capability; excellent temperature characteristics and long service life; high reliability and stability;

Product Advantages of Yongming Liquid Aluminum Electrolytic Capacitors

Ultra-high capacity and energy density

A single unit can provide immense capacitance, acting as a high-efficiency "energy reservoir" to buffer the extremely high instantaneous power demands of AI accelerator cards (such as GPUs) and prevent voltage droop.

High ripple current capability

AI server power supplies experience massive current fluctuations during operation. This product can withstand extremely high ripple currents without overheating, ensuring stability and a long service life under extreme loads.

High Voltage Withstand Capability and Reliability

With a high rated voltage (e.g., above 500V), it operates stably on the high-voltage DC bus of the PFC stage, providing a reliable foundation for the entire power supply system.

Low ESR

Its low ESR (equivalent series resistance) characteristic enables it to respond quickly to drastic changes in the AI chip load, rapidly release or absorb huge currents, and ensure stable output voltage.

Product Advantages of Yongming Solid-State and Hybrid Aluminum Electrolytic Capacitors

Ultra-high capacity and energy density

Sufficient voltage withstand margin to ensure the long-term stability and reliability of the entire system's power supply;

Ultra-low ESR

Ultra-low ESR products deliver excellent filtering performance, ensuring low system-level EMC and robust anti-interference capabilities, thereby guaranteeing stable and reliable operation.

Ultra-compact size

It facilitates PCB layout optimization and further miniaturization of the complete device.

Withstands surges of extremely high current

The individual capacitor can withstand massive surge currents exceeding 20A, enabling the server power supply to handle overload conditions with ease and preventing issues such as blue screens, system restarts, or graphics artifacts caused by overloads.

Recommended Selection (The following specifications are examples and are for reference only.)

Capacitor Type	shape	series	Thermal life	Rated voltage (Surge voltage) (V)	Nominal capacitance (μF)	Product Dimensions (mm)	Tan (120HZ)	ESR (mΩ/100kHz)	Ripple current (mA/100kHz)	LC (μA)	Product Part Number
Conductive Polymer Aluminum Solid Electrolytic Capacitors	Leaded type	NPL	105℃ 5000H	63 (79)	680	10*30	0.12	25	5100	428	NPLE3001J681MJTM
		NPL	105℃ 5000H	63 (79)	470	10*21	0.12	30	4350	296	NPLE2101J471MJTM
		NPL	105℃ 5000H	80 (92)	330	12.5*20	0.12	30	4550	264	NPLL2001K331MJTM
Hybrid Polymer Aluminum Electrolytic Capacitors	Surface-mount type	VHT	125℃ 4000H	80 (92)	10	6.3*5.8	0.12	120	700	8	VHTC0581K100MVCG
	Leaded type	NHX	105℃ 5000H	63 (79)	270	10*16	0.12	20	3000	170	NHXE1601J271MJCG
		NHX	105℃ 5000H	63 (79)	470	10*21	0.12	18	3400	296	NHXE2101J471MJCG
		NHX	105℃ 5000H	63 (79)	560	10*30	0.12	16	4100	353	NHXE3001J561MJCG
		NHX	105℃ 5000H	63 (79)	1000	12.5*30	0.12	15	4400	630	NHXL3001J102MJCG
		NHT	125℃ 4000H	63 (79)	120	10*10	0.1	30	1400	76	NHTE1001J121MJCG
		NHT	125℃ 4000H	63 (79)	390	10*25	0.1	12	4200	246	NHTE2501J391MJCG
		NHT	125℃ 4000H	80 (92)	47	10*10	0.1	35	1200	38	NHTE1001K470MJCG
Liquid Aluminum Electrolytic Capacitors	Leaded type	LKF	105℃ 10000H	475 (525)	220	18*60	0.2	300	2650	2100	LKFJ6002a221FF
		LKF	105℃ 10000H	500 (550)	180	16*50	0.2	420	2250	1810	LKFI5002H181MF
		LKH	150℃ 1000H	100 (125)	100	10*20	0.1	950	620	100	LKHE2002A101MF
		LKH	150℃ 1000H	100 (125)	220	13*20	0.1	650	1000	220	LKHS2002A221MF
		LKG	105℃ 12000H	450 (500)	33	12.5*25	0.12	4250	600	307	LKGL2502W330MF
		LKG	105℃ 12000H	450 (500)	47	14.5*20	0.12	4200	810	433	LKGU2002W470MF
		LKG	105℃ 12000H	450 (500)	68	14.5*27	0.12	2000	900	622	LKGU2702W680MF
		LKL	130℃ 5000H	63 (79)	470	12.5*20	0.09	758	1170	296	LKLL2001J471MF
		LKL	130℃ 5000H	63 (79)	1000	14.5*27	0.09	450	1850	630	LKLU2701J102MF
		LKL	130℃ 5000H	63 (79)	1200	12.5*30	0.09	45	1600	756	LKLL3001J122MF
		LKL	130℃ 5000H	63 (79)	2700	18*31.5	0.11	38	2500	1701	LKLJ3151J272MF
	Base plate independent type	IDC3	105℃ 3000H	450 (500)	1400	30*70	0.15	215	2750	940	IDC32W142MNN3070S2
		IDC3	105℃ 3000H	475 (525)	1670	30*100	0.2	305	3910	2672	IDC32Y1672MNN30A0S2
		IDC3	105℃ 3000H	475 (525)	2030	30*120	0.2	282	4670	2946	IDC32Y2032MNN30C0S2
		IDC3	105℃ 3000H	475 (525)	2270	35*100	0.2	260	4290	3115	IDC32Y2272MNN35A0S2
		IDC3	105℃ 3000H	475 (525)	2770	35*120	0.2	226	5120	3441	IDC32Y2772MNN35C0S2
		IDC3	105℃ 3000H	500 (550)	1500	30*85	0.2	175	3520	940	IDC32H152MNN3085S2
		IDC3	105℃ 3000H	500 (550)	1600	30*100	0.2	385	6220	2683	IDC32H1602MNN30A0S2
		IDC3	105℃ 3000H	500 (550)	1900	30*120	0.2	320	6530	2924	IDC32H1902MNN30C0S2
		IDC3	105℃ 3000H	500 (550)	2100	35*100	0.2	288	4910	3074	IDC32H2102MNN35A0S2
		IDC3	105℃ 3000H	500 (550)	2500	35*120	0.2	230	5150	3354	IDC32H2502MNN35C0S2

AI Server Storage

AI SERVER STORAGE



ENTERPRISE-GRADE SSD

Enterprise-grade SSD

Application Requirements

Reliability of power-loss protection (PLP); resistance to high-frequency switching surges; long service life and stability in high-temperature environments; high ripple current capability; high reliability and consistency.

Product Advantages of Yongming Solid-Liquid Hybrid Aluminum Electrolytic Capacitors

Power-loss protection	Resistant to switching surges	High-temperature resistance and long service life	High ripple current capability	High reliability and consistency
Conductive polymer hybrid capacitors provide millisecond-level power-loss protection; their ultra-low ESR ensures efficient energy discharge, perfectly meeting PLP requirements.	Yongming's solid-liquid hybrid aluminum electrolytic capacitors can withstand 300,000 charge-discharge cycles;	Utilizing solid-liquid hybrid technology, it fundamentally resolves the issue of electrolyte dry-out and offers a lifespan of 4,000 hours at 125° C—far exceeding the expected service life of AI servers.	Solid-liquid hybrid capacitors feature high ripple current capability, enabling system stability under heavy loads.	Through intelligent production lines and digital management platforms, Yongming implements rigorous quality control to deliver high-quality , consistent products, meeting enterprise-level clients' exacting demands for reliability.

Product Advantages of Yongming Tantalum Electrolytic Capacitors

Ultra-high capacity density	Immediacy of power-loss protection	Wide-Temperature Stability & High Reliability
It offers exceptional volumetric efficiency, delivering maximum capacity per unit volume within the minimal physical footprint required for space-constrained SSD PCBs, thereby freeing up valuable layout space while meeting energy requirements for power-loss protection.	It enables rapid energy release on a millisecond scale to meet power-loss protection requirements while effectively suppressing inrush current during normal power-up; this perfectly supports critical functions such as hot-swapping, thereby enhancing the robustness and safety of system applications.	Selected product series can withstand 1,000 hours of "double 85" testing, with capacity degradation remaining below 15% after 20,000 charge-discharge cycles. Their exceptional long-term high-temperature durability and resistance to aging provide a solid guarantee for absolute data security and long-term system reliability.

Recommended Selection (The following specifications are examples and are for reference only.)

Capacitor Type	shape	series	Thermal life	Rated voltage (Surge voltage) (V)	Nominal capacitance (μF)	Product Dimensions (mm)	Tan (120HZ)	ESR (mΩ/100kHz)	Ripple current (mA/100kHz)	LC (μA)	Product Part Number
Hybrid Polymer Aluminum Electrolytic Capacitors	Leaded type	NGY	105℃ 10000H	35 (41)	100	5*11	0.12	60	1250	35	NGYB1101V101MJCG
		NGY	105℃ 10000H	35 (41)	150	5*13	0.12	50	1350	52.5	NGYB1301V151MJCG
		NGY	105℃ 10000H	35 (41)	220	5*15	0.12	40	1450	77	NGYB1501V221MJCG
		NGY	105℃ 10000H	35 (41)	820	8*18	0.12	20	3240	287	NGYD1801V821MJCG
		NGY	105℃ 10000H	35 (41)	2200	12.5*25	0.14	20	4600	770	NGYL2501V222MJCG
		NHT	125℃ 4000H	35 (41)	3300	12.5*30	0.14	16	5700	1155	NHTL3001V332MJCG
Conductive polymers Tantalum electrolytic capacitors	Surface-mount type	TQD15	105℃ 2000H	35 (40.3)	47	7.3*4.3*1.5	0.10	100	1400	64.5	TQD470M1VD15100RN
		TQD19	105℃ 2000H	35 (40.3)	68	7.3*4.3*1.9	0.10	100	1400	238	TQD680M1VD19100RN
		TQW19	105℃ 2000H	35 (40.3)	100	7.3*6.0*1.9	0.10	100	1600	350	TQW101M1VW19100RN
		TQW19	105℃ 2000H	25 (28)	220	7.3*6.0*1.9	0.10	100	1600	550	TQW221M1EW19100RN
Liquid Aluminum Electrolytic Capacitors	Leaded type	LKL	130℃ 5000H	35 (44)	2200	10*32	0.14	60	2500	770	LKLE3201V222MF
		LKL	130℃ 5000H	35 (44)	2200	12.5*30	0.14	35	2400	770	LKLL3001V222MF
		LKL	130℃ 5000H	35 (44)	2700	12.5*30	0.14	32	2600	945	LKLL3001V272MF
		LKL	130℃ 5000H	35 (44)	3300	12.5*30	0.16	30	2800	1155	LKLL3001V332MF
		LKF	105℃ 10000H	35 (44)	47	5*11	0.12	1110	345	16.45	LKF(U)B1101V470MF
		LKF	105℃ 9000H	35 (44)	470	6.3*23	0.12	550	1150	164.5	LKFC2301V471MF
		LKF	105℃ 10000H	35 (44)	1800	12.5*25	0.12	35	3450	630	LKFL2501V182MF
		LKF	105℃ 10000H	35 (44)	2200	12.5*25	0.12	100	3480	770	LKFL2501V222MF

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