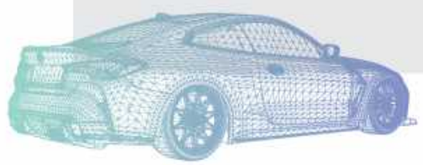
Table of Contents

YMIN Polymer hybrid aluminum electrolytic capacitor

Product and Market Positioning

Primarily used in the automotive electronics market, replacing high-end international competitors:

NCC/Guimigong



Market evaluation

Ymin's hybrid solid-liquid capacitors demonstrate superior performance in the automotive electronics field, widely covering diverse applications such as main drive systems, thermal management, safety components, lighting, battery management, and smart cockpits. With their significant advantages of high reliability and long-term stable performance, they have effectively replaced a large number of high-end Japanese brand capacitors. In the automotive electronics market, they have won the deep trust and high praise of numerous OEMs and Tier 1, Tier 2, and Tier 3 manufacturers, becoming an important force driving the high-quality development of the automotive electronics industry.

Company List

COMPANY LIST

Qualification Certificate

QUALIFICATION CERTIFICATE

AEC-Q200

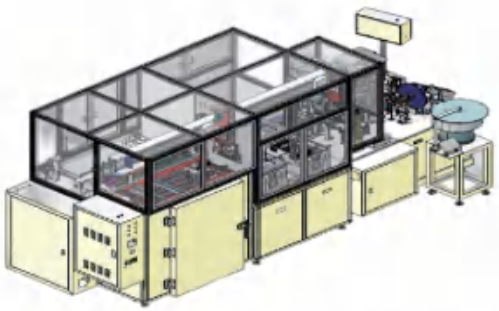
AEC-Q200

IATF16949

CNAS

Introduction to Automotive-Grade Production Line

INTRODUCTION OF AUTOMOBILE CAPACITOR PRODUCTION LINE



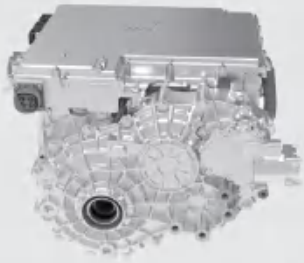
YMIN Electronics' automotive-grade solid-liquid hybrid capacitor production line is a high-end production line integrating automation, digitalization, and intelligence to ensure product manufacturing quality and production efficiency.

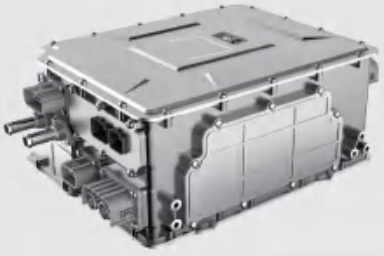
The entire process is automated, connecting five core processes. Materials flow automatically, process parameters are intelligently matched, and equipment automation reaches over 90%, with human intervention less than 10%. Three-dimensional inspection integrates electrical performance testing, CCD vision, and laser measurement, with data uploaded to the cloud in real time, ensuring 100% effective rejection of defective products. The Industrial Internet of Things (IIoT) collects over 300 quality parameters in real time, and the MES system enables full-process traceability and equipment visualization.

motor drive

MOTOR DRIVE

图片仅供参考





AUTOMOTIVE MOTOR DRIVE

Motor Controller - MCU

Application Requirements

High energy efficiency and interference resistance; high temperature resistance and durability; compact design and integration; safety and reliability.

YMIN's advantages in solid-liquid hybrid capacitors

Ultra-low ESR

Ensure effective filtering, maintain clean power supply, and achieve more stable operation of the entire unit; reduce its own heat generation and improve overall energy efficiency;

Long life design

≥4000H@125° C, lifespan matching the vehicle design (≥10 years);

High capacity density

Miniaturized packaging occupies less PCB area, which helps to optimize layout and reduce the size of the whole device;

Overload tolerance

It can withstand voltages ≥ 1.5 times the rated voltage, withstand larger ripple currents, and withstand inrush currents, easily handling overload conditions such as stalled rotor or load dumping scenarios.

Recommended selection (the following are sample specifications for reference only)

series	Temperature life	Rated Voltage (Surge Voltage) (V)	Nominal capacity (μF)	Product dimensions ΦD*L (mm)	Tan (120HZ)	ESR (mΩ 100kHz)	Rated ripple current (mA/100kHz)	LC (μA)	Replace international counterparts			page number
									Nichicon	Panasonic	NIPPON CHEMI-CON	
VHT	125℃ 4000H	35 (41)	120	6.3*7.7	0.12	35	1400	42	GYA/GYE GYF	ZC/ZK ZT/ZKU ZSU	HXA/HXC HXJ	22
		35 (41)	150	8*10.5	0.12	27	1600	52.5				

DC to DC-DC

Application Requirements

High energy efficiency; anti-interference; wide temperature range stability; low power consumption;

YMIN's advantages in solid-liquid hybrid capacitors

Ultra-low ESR

Ensure effective filtering to guarantee clean power supply; reduce self-heating and improve overall energy efficiency;

Wide temperature stability design

The capacitance and ESR change little over a wide temperature range, the parameters are stable over a wide temperature range, and the whole machine can easily cope with extreme temperatures.

Low leakage current

The low leakage current design of the capacitor can effectively reduce standby power consumption, ensure battery life and improve system security;

Recommended selection (the following are sample specifications for reference only)

series	Temperature life	Rated Voltage (Surge Voltage) (V)	Nominal capacity (μF)	Product dimensions ΦD*L (mm)	Tan (120HZ)	ESR (mΩ 100kHz)	Rated ripple current (mA/100kHz)	LC (μA)	Replace international counterparts			page number
									Nichicon	Panasonic	NIPPON CHEMI-CON	
VHT	125℃ 4000H	35 (41)	330	10*10.5	0.12	20	2000	115.5	GYA/GYE GYF	ZC/ZK/ZT ZKU/ZSU	HXA/HXC HXJ	22
VHU	135℃ 4000H	35 (41)	270	10*10.5	0.12	20	2000	94.5	GYC	ZS/ZU	HXE/HXF	27

High-voltage junction box - PDU

Application Requirements

Low power consumption; electromagnetic interference (EMC) immunity; compact and integrated design;

YMIN's advantages in solid-liquid hybrid capacitors

Ultra-low ESR

The capacitor has ultra-low ESR, which reduces the capacitor's own high-frequency loss and temperature rise, and lowers the overall power consumption of the system.

High current ripple

It can withstand large ripple current and ensure excellent filtering effect, thus improving electromagnetic interference resistance (EMC).

High capacity density

The capacitor features a large capacity and miniaturized design, saving PCB space and adapting to PDU modular integration requirements (such as three-in-one/five-in-one solutions).

Recommended selection (the following are sample specifications for reference only)

series	Temperature life	Rated Voltage (Surge Voltage) (V)	Nominal capacity (μF)	Product dimensions ΦD*L (mm)	Tan (120HZ)	ESR (mΩ 100kHz)	Rated ripple current (mA/100kHz)	LC (μA)	Replace international counterparts			page number
									Nichicon	Panasonic	NIPPON CHEMI-CON	
VHT	125℃ 4000H	25 (28.8)	100	6.3*7.7	0.14	30	1400	25	GYA/GYE GYF	ZC/ZK/ZT ZKU/ZSU	HXA/HXC HXJ	22

Vehicle Control Unit (VCU)

Application Requirements

Electromagnetic interference (EMC) resistant; long lifespan and high reliability;

YMIN's advantages in solid-liquid hybrid capacitors

Ultra-low ESR

Reduce high-frequency signal transmission loss and improve the response speed of the vehicle control system;

High reliability and long life

The capacitor has stable long-term durability, with capacitance decay not exceeding 10% throughout its entire lifespan, matching the lifespan of the vehicle control system (≥10 years).

Recommended selection (the following are sample specifications for reference only)

series	Temperature life	Rated Voltage (Surge Voltage) (V)	Nominal capacity (μF)	Product dimensions ΦD*L (mm)	Tan (120HZ)	ESR (mΩ 100kHz)	Rated ripple current (mA/100kHz)	LC (μA)	Replace international counterparts			page number
									Nichicon	Panasonic	NIPPON CHEMI-CON	
VHT	125℃ 4000H	35 (41)	120	6.3*7.7	0.12	35	1400	42	GYA/GYE GYF	ZC/ZK/ZT ZKU/ZSU	HXA/HXC HXJ	22

Battery Management System (BMS)

Application Requirements

Low power consumption; electromagnetic interference (EMC) immunity;

YMIN's advantages in solid-liquid hybrid capacitors

Ultra-low ESR

The capacitor features an ultra-low ESR design, which reduces its own heat generation, energy loss, and electromagnetic interference, avoids CAN bus communication abnormalities, ensures the stability of data interaction between the BMS and the vehicle controller, and better supports the efficient and stable operation of the battery management system.

Low leakage design

The capacitor's low leakage current design effectively reduces battery static power consumption, extends battery life, and reduces battery maintenance.

Recommended selection (the following are sample specifications for reference only)

series	Temperature life	Rated Voltage (Surge Voltage) (V)	Nominal capacity (μF)	Product dimensions ΦD*L (mm)	Tan (120HZ)	ESR (mΩ 100kHz)	Rated ripple current (mA/100kHz)	LC (μA)	Replace international counterparts			page number
									Nichicon	Panasonic	NIPPON CHEMI-CON	
VHT	125℃ 4000H	35 (41)	47	6.3*5.8	0.12	60	900	16.45	GYA/GYE GYF	ZC/ZK ZT/ZKU ZSU	HXA/HXC HXJ	22
		35 (41)	100	6.3*7.7	0.12	35	1400	35				

Safety components

SAFETY COMPONENTS

BRAKING/BS

ELECTRONIC POWER STEERING/EPS

Braking - BS

Application Requirements

High temperature resistance; rapid response; seismic performance; long service life; high reliability; overload resistance;

YMIN's advantages in solid-liquid hybrid capacitors

High temperature resistant design

The capacitor is resistant to high temperatures, making it suitable for high-temperature environments in braking systems (such as localized temperature rise during regenerative braking), reducing the risk of capacitor failure and improving braking response stability.

Ultra-low ESR

Reduce high-frequency braking signal transmission loss and improve braking system response speed;

Seismic performance

The capacitor's shock-resistant performance withstands high-frequency vibrations of the braking system and operates stably, ensuring that the BS function is always effective.

Long life design

The capacitor has stable long-term durability, with capacitance decay not exceeding 10% throughout its entire lifespan. It is designed to match the lifespan of the braking system (≥10 years), ensuring stable braking performance throughout its lifespan.

Recommended selection (the following are sample specifications for reference only)

series	Temperature life	Rated Voltage (Surge Voltage) (V)	Nominal capacity (μF)	Product dimensions ΦD*L (mm)	Tan (120HZ)	ESR (mΩ/100kHz)	Rated ripple current (mA/100kHz)	LC (μA)	Replace international counterparts			page number
									Nichicon	Panasonic	NIPPON CHEMI-CON	
VHT	125℃ 4000H	35 (41)	100	6.3*7.7	0.12	35	1400	35	GYA/GYE GYF	ZC/ZK ZT/ZKU ZSU	HXA/HXC HXJ	22
		35 (41)	330	10*10.5	0.12	20	2000	115.5				
VHU	135℃ 4000H	35 (41)	330	10*10.5	0.12	20	2000	115.5	GYC	ZS/ZU	HXE/HXF	27
		50 (58)	150	10*13	0.10	19	2250	75				

Electronic Power Steering (EPS)

Application Requirements

Rapid response; seismic performance; safety and reliability;

YMIN's advantages in solid-liquid hybrid capacitors

Ultra-low ESR

Reduce high-frequency signal loss and improve the response speed of the assist motor;

Seismic performance

The capacitor withstands vehicle bumps and road vibrations and works stably, ensuring that the EPS function is always effective.

Overload capacity

The capacitor can withstand the instantaneous high current surge during motor start-up/stop/rotation/lock conditions, making the whole machine more reliable and stable;

Recommended selection (the following are sample specifications for reference only)

series	Temperature life	Rated Voltage (Surge Voltage) (V)	Nominal capacity (μF)	Product dimensions ΦD*L (mm)	Tan (120HZ)	ESR (mΩ/100kHz)	Rated ripple current (mA/100kHz)	LC (μA)	Replace international counterparts			page number
									Nichicon	Panasonic	NIPPON CHEMI-CON	
VHT	125℃ 4000H	35 (41)	68	6.3*7.7	0.12	35	1400	23.8	GYA/GYE GYF	ZC/ZK ZT/ZKU ZSU	HXA/HXC HXJ	22
		35 (41)	330	10*10.5	0.12	20	2000	115.5				

Thermal management components

THERMAL MANAGEMENT COMPONENTS

IMAGE FOR REFERENCE ONLY.

ELECTRONIC WATER PUMP/OIL PUMP

AIR CONDITIONER COMPRESSOR CONTROLLER

COOLING FAN CONTROLLER

ELECTRONIC WATER VALVE

electric water pump
Electronic oil pump

Application Requirements

Compact and integrated design; high temperature and corrosion resistance; seismic performance; high energy efficiency and interference resistance;

Yongming's advantages in solid-liquid hybrid capacitors

High capacity density

It can meet the requirements of small overall size, saving PCB space, and is compatible with compact electronic water pump/oil pump modules;

High temperature and oil

The capacitor can meet the working environment of the oil pump and work stably under high temperature and oil immersion conditions;

Seismic performance

Ensure the capacitor's performance remains stable under long-term vehicle bumps and mechanical vibrations, and ensure the normal functioning of the entire unit;

Ultra-low ESR

Reduce high-frequency signal loss and improve the response speed of water pump/oil pump motors.

Recommended selection (the following are sample specifications for reference only)

series	Temperature life	Rated Voltage (Surge Voltage) (V)	Nominal capacity (μF)	Product dimensions ΦD*L (mm)	Tan (120HZ)	ESR (mΩ 100kHz)	Rated ripple current (mA/100kHz)	LC (μA)	Replace international counterparts			page number
									Nichicon	Panasonic	NIPPON CHEMI-CON	
VHT	125℃ 4000H	25 (28.8)	330	10*10.5	0.14	20	2800	82	GYA/GYE GYF	ZC/ZK ZT/ZKU ZSU	HXA/HXC HXJ	22
		25 (28.8)	470	10*10.5	0.14	20	2800	117.5				
VHU	135℃ 4000H	35 (41)	330	10*10.5	0.12	20	2000	115.5	GYC	ZS/ZU	HXE/HXF	27
VHR	150℃ 2000H	25 (28.8)	470	10*13	0.14	20	1050	117.5	GYD	ZE/ZF	HXE	29
		35 (41)	330	10*10.5	0.12	25	900	115.5				

Air Conditioner Compressor Controller

Application Requirements

Compactness and integration; low power consumption;

YMIN's advantages in solid-liquid hybrid capacitors

High capacity density design

It can meet the requirements of small overall size, adapt to the PCB layout of air conditioner controller, and save space;

Ultra-low ESR

Ensure fast overall response, improve filtering effect, and reduce power supply filtering loss;

Recommended selection (the following are sample specifications for reference only)

series	Temperature life	Rated Voltage (Surge Voltage) (V)	Nominal capacity (μF)	Product dimensions ΦD*L (mm)	Tan (120HZ)	ESR (mΩ 100kHz)	Rated ripple current (mA/100kHz)	LC (μA)	Replace international counterparts			page number
									Nichicon	Panasonic	NIPPON CHEMI-CON	
VHT	125℃ 4000H	35 (41)	68	6.3*7.7	0.12	35	1400	23.8	GYA/GYE GYF	ZC/ZK ZT/ZKU ZSU	HXA/HXC HXJ	23
		35 (41)	100	6.3*7.7	0.12	35	1400	35				

Cooling fan controller

Application Requirements

High temperature resistance; safety and reliability; seismic performance; long service life and durability;

YMIN's advantages in solid-liquid hybrid capacitors

High temperature resistance

The capacitor adapts to the extreme temperature environment of the engine compartment and operates stably under high-temperature conditions (such as continuous heat dissipation requirements in summer);

Overload resistance

To mitigate the risk of capacitor overheating during fan start-up and shutdown and sudden load changes;

Seismic design

Excellent shock resistance ensures that the capacitor can withstand vehicle bumps and mechanical vibrations, preventing internal structural breakage or pin detachment.

Stable durability

The capacitor has stable long-term durability, with capacitance decay not exceeding 10% throughout its entire lifespan, ensuring stable and new-like performance of the entire device.

Recommended selection (the following are sample specifications for reference only)

series	Temperature life	Rated Voltage (Surge Voltage) (V)	Nominal capacity (μF)	Product dimensions ΦD*L (mm)	Tan (120HZ)	ESR (mΩ 100kHz)	Rated ripple current (mA/100kHz)	LC (μA)	Replace international counterparts			page number
									Nichicon	Panasonic	NIPPON CHEMI-CON	
VHT	125℃ 4000H	35 (41)	330	10*10.5	0.12	20	2000	115.5	GYA/GYE GYF	ZC/ZK/ZT ZKU/ZSU	HXA/HXC HXJ	22
VHM	125℃ 4000H	35 (41)	560	10*13	0.12	16	3200	196				25
NHT	125℃ 4000H	35 (41)	1200	12.5*20	0.12	16	4500	420				31

Electronic water valve

Application Requirements

Compactness and integration; long lifespan and durability;

YMIN's advantages in solid-liquid hybrid capacitors

High capacity density design

Miniaturized packaging, compatible with water valve ECU module design, saving PCB space;

Long life design

The capacitor has stable long-term durability, with capacitance decay not exceeding 10% throughout its entire lifespan, matching the full lifespan requirements of automotive thermal management systems and preventing reduced flow regulation performance due to capacitor

Recommended selection (the following are sample specifications for reference only)

series	Temperature life	Rated Voltage (Surge Voltage) (V)	Nominal capacity (μF)	Product dimensions ΦD*L (mm)	Tan (120HZ)	ESR (mΩ 100kHz)	Rated ripple current (mA/100kHz)	LC (μA)	Replace international counterparts			page number
									Nichicon	Panasonic	NIPPON CHEMI-CON	
VHT	125℃ 4000H	35 (41)	22	6.3*5.8	0.12	60	900	7.7	GVA/GYE GYF	ZC/ZK ZT/ZKU ZSU	HXA/HXC HXJ	22
		35 (41)	47	6.3*5.8	0.12	60	900	16.45				

Car lights

CAR LIGHTS

IMAGE FOR REFERENCE ONLY.

CAR LIGHTS

MODULAR HEADLIGHTS

New energy vehicle headlights

Application Requirements

Compact and integrated design; high and low temperature resistance; high voltage resistance, compatible with 48V voltage;

YMIN's advantages in solid-liquid hybrid capacitors

High capacity

Miniaturized packaging, compatible with automotive lighting control modules (such as matrix LED light groups), saving PCB space, replacing multiple MLCC capacitors in terms of

Wide tempera-

The capacitor exhibits only a 5% capacitance decay at low temperatures (-40℃) and a capacitance change of no more than +7% at high temperatures (+125℃), smoothing out PWM dimming

High pressure

Products with withstand voltage of 80V/100V/120V have been stably mass-produced and are compatible with 48V voltage, stabilizing circuit voltage and ensuring circuit safety.

Recommended selection (the following are sample specifications for reference only)

series	Temperature life	Rated Voltage (Surge Voltage) (V)	Nominal capacity (μF)	Product dimensions ΦD*L (mm)	Tan (120HZ)	ESR (mΩ 100kHz)	Rated ripple current (mA/100kHz)	LC (μA)	Replace international counterparts			page number
									Nichicon	Panasonic	NIPPON CHEMI-CON	
VHT	125℃ 4000H	35 (41)	47	6.3*5.8	0.12	60	900	16.45	GYA/GYE GYF	ZC/ZK ZT/ZKU ZSU	HXA/HXC HXJ	22
		35 (41)	68	6.3*5.8	0.12	60	900	23.8				
		50 (58)	33	6.3*7.7	0.10	40	1100	16.5				
		50 (58)	47	6.3*7.7	0.10	40	1100	23.5				
		50 (58)	68	8*10	0.10	30	1250	34				
		63 (73)	47	8*10.5	0.08	40	1100	29.61				
VHM	125℃ 4000H	80 (92)	68	10*10.5	0.10	30	2000	54.4				25

Intelligent driving

INTELLIGENT DRIVING

IMAGE FOR REFERENCE ONLY.

CHASSIS DOMAIN CONTROLLER

LIDAR

Chassis Domain Controller

Application Requirements

Low power consumption; safety and reliability;

Yongming's advantages in solid-liquid hybrid capacitors

Low leakage current

The capacitor has a low leakage current design, ensuring low power consumption for the whole machine;

Low ESR and resistant to overload shock

The capacitor has low ESR and is resistant to overload surges, which can easily cope with the instantaneous current surges in the motor drive and power conversion circuits in the domain control module (such as the power supply of LiDAR in the autonomous driving domain), reducing the risk of capacitor overheating.

Recommended selection (the following are sample specifications for reference only)

series	Temperature life	Rated Voltage (Surge Voltage) (V)	Nominal capacity (μF)	Product dimensions ΦDxL (mm)	Tan (120HZ)	ESR (mΩ/100kHz)	Rated ripple current (mA/100kHz)	LC (μA)	Replace international counterparts			page number
									Nichicon	Panasonic	NIPPON CHEMI-CON	
VHT	125℃ 4000H	35 (41)	330	10*10.5	0.12	20	2000	115.5	GYA/GYE GYF	2C/ZK/ZT ZKU/ZSU	HXA/HXC HXJ	22
VHM	125℃ 4000H	50 (58)	120	10*10.5	0.10	25	2200	60				25

radar

Application Requirements

Compactness and integration; Electromagnetic interference (EMC) immunity; Safety and reliability;

YMIN's advantages in solid-liquid hybrid capacitors

High capacity density

With its miniaturized package and the absence of DC bias capacitance degradation issues, it can replace MLCC arrays, saving PCB space and overall system cost.

Ultra-low ESR

It can effectively suppress high-frequency switching noise in radar modules (such as power supply ripple interference in 77GHz millimeter-wave radar), ensure the signal stability of microwave transceiver chips, and improve detection accuracy and anti-interference capability.

Overload capacity

Capacitors can withstand instantaneous current surges in radar modules (such as those affecting lidar pulse power supply), reducing the risk of performance degradation or failure due to capacitor temperature rise.

Recommended selection (the following are sample specifications for reference only)

series	Temperature life	Rated Voltage (Surge Voltage) (V)	Nominal capacity (μF)	Product dimensions ΦD*L (mm)	Tan (120HZ)	ESR (mΩ/100kHz)	Rated ripple current (mA/100kHz)	LC (μA)	Replace international counterparts			page number
									Nichicon	Panasonic	NIPPON CHEMI-CON	
VHT	125℃ 4000H	35 (41)	47	6.3*5.8	0.12	60	900	9.45	GYA/GYE GYF	ZC/ZK ZT/ZKU ZSU	HXA/HXC HXJ	22
		35 (41)	68	6.3*7.7	0.12	35	1400	23.8				

multimedia

MULTIMEDIA

IMAGE FOR REFERENCE ONLY.

METER

IN-VEHICLE SCREEN/NAVIGATION

HUD

T-BOX

Instrument cluster, in-vehicle screen

Application Requirements

Electromagnetic interference (EMC) immunity; long lifespan and durability;

Yongming's advantages in solid-liquid hybrid capacitors

Ultra-low ESR

It can effectively suppress high-frequency ripple (10kHz~1MHz) in the power supply circuit, reduce noise in the MCU power supply, and improve the accuracy of instrument signal processing and the stability of the display screen.

Long life design

The capacitor has stable long-term durability, with capacitance decay not exceeding 10% throughout its entire lifespan, matching the full lifespan requirements of automotive instrument systems and preventing overall system performance degradation due to capacitor performance deterioration.

Recommended selection (the following are sample specifications for reference only)

series	Temperature life	Rated Voltage Surge Voltage (V)	Nominal capacity (μF)	Product dimensions ΦD*L (mm)	Tan (120HZ)	ESR (mΩ 100kHz)	Rated ripple current (mA/100kHz)	LC (μA)	Replace international counterparts			page number
									Nichicon	Panasonic	NIPPON CHEMI-CON	
VHM	125℃ 4000H	16 (18.4)	82	5*5.8	0.12	80	850	13.12	GYA/GYE GYF	ZC/ZK ZT/ZKU ZSU	HXA/HXC HXJ	25
		35 (41)	68	6.3*5.8	0.12	60	1200	23.8				
VHT	125℃ 4000H	35 (41)	220	8*10.5	0.12	27	1600	77				22

Head-up Display (HUD)
Remote Communication Module - T-BOX

Application Requirements

High and low temperature resistance; safety and reliability; long lifespan and durability;

Yongming's advantages in solid-liquid hybrid capacitors

Wide tem-

To ensure stable operation of the HUD in high-temperature (such as direct sunlight on the center console) or low-temperature (winter start-up) environments inside the

Overload

To address transient current surges in the HUD backlight driver and power conversion circuits (such as LED backlight startup) and reduce performance fluctuations caused by

Long life design

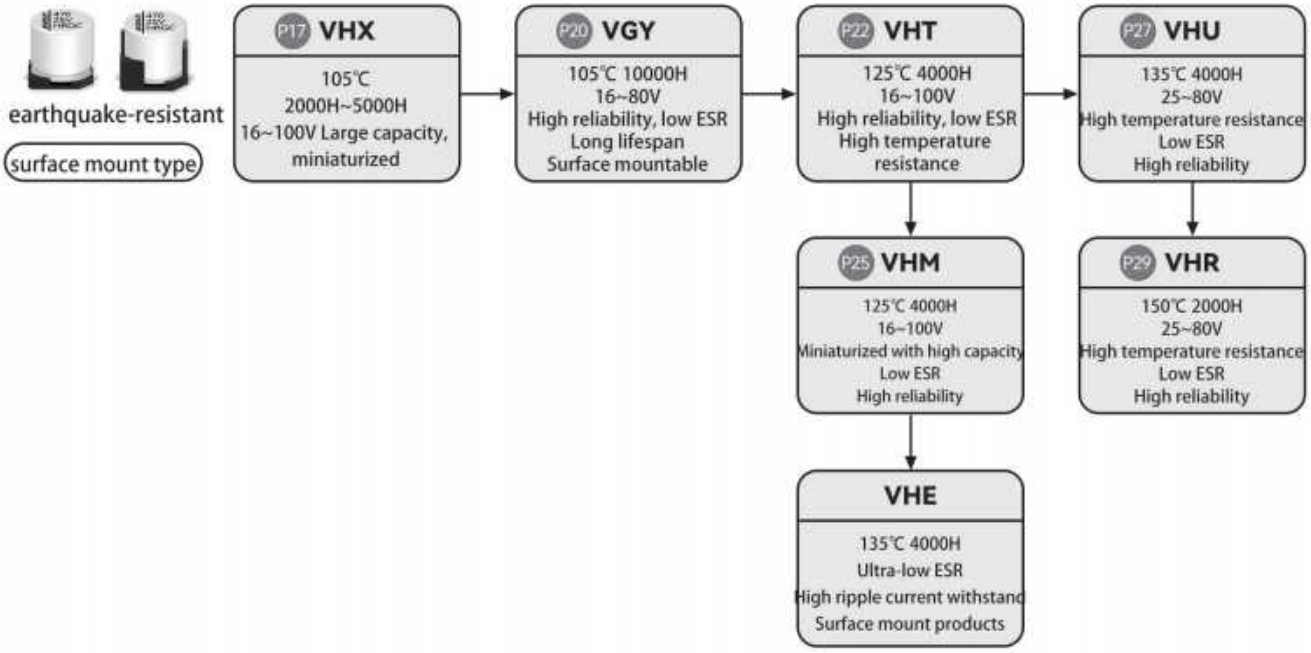
The capacitor has stable long-term durability, with capacitance decay not exceeding 10% throughout its entire lifespan, matching the full lifespan requirements of the HUD

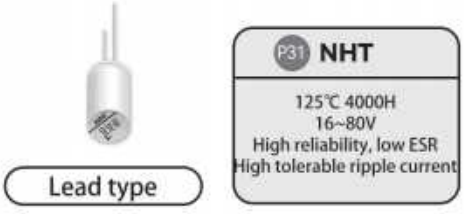
Recommended selection (the following are sample specifications for reference only)

series	Temperature life	Rated Voltage (Surge Voltage) (V)	Nominal capacity (μF)	Product dimensions ΦDxL (mm)	Tan (120HZ)	ESR (mΩ 100kHz)	Rated ripple current (mA/100kHz)	LC (μA)	Replace international counterparts			page number
									Nichicon	Panasonic	NIPPON CHEMI-CON	
VGY	105℃ 10000H	35 (41)	68	6.3*7.7	0.12	35	2000	23.8	GYB	ZA	HXD	20
		35 (41)	330	10*10.5	0.12	20	2500	115.5				
		50 (58)	47	6.3*7.7	0.10	40	1400	23.5				
VHT	125℃ 4000H	16 (18.4)	82	6.3*5.8	0.16	45	950	13.12	GYA/GYE GYF	ZC/ZK/ZT ZKU/ZSU	HXA/HXC HXJ	22

Polymer hybrid aluminum electrolytic capacitor

POLYMER HYBRID AL-CAPS





VHX

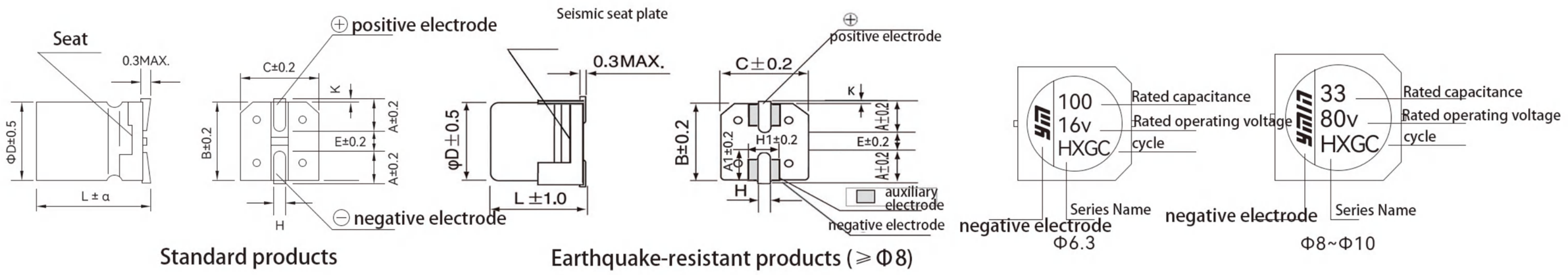
- ◆Low ESR, high capacity, miniaturized design, high ripple current tolerance, high reliability
- ◆105℃, 2000~5000 hours
- ◆Meets vibration resistance requirements
- ◆Surface mount type, suitable for high-temperature lead-free reflow soldering
- ◆Compliant with AEC-Q200, RoHS compliant

■ 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 (≥Φ8)

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

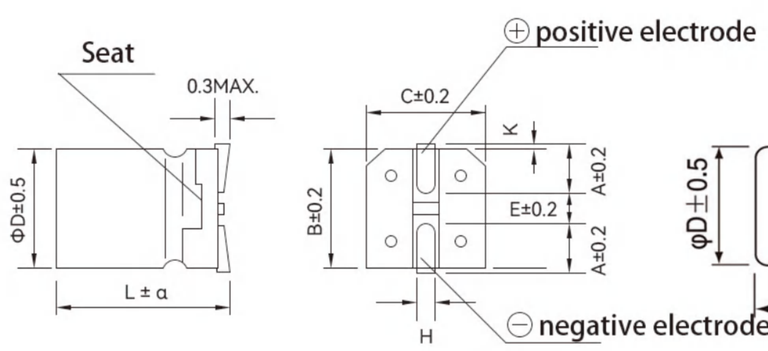
- ◆Low ESR, high tolerable ripple current, high reliability
- ◆105℃, 10,000-hour warranty
- ◆Meets vibration resistance requirements
- ◆Surface mount type, suitable for high-temperature lead-free reflow soldering
- ◆Compliant with AEC-Q200, RoHS compliant

■ Main technical parameters

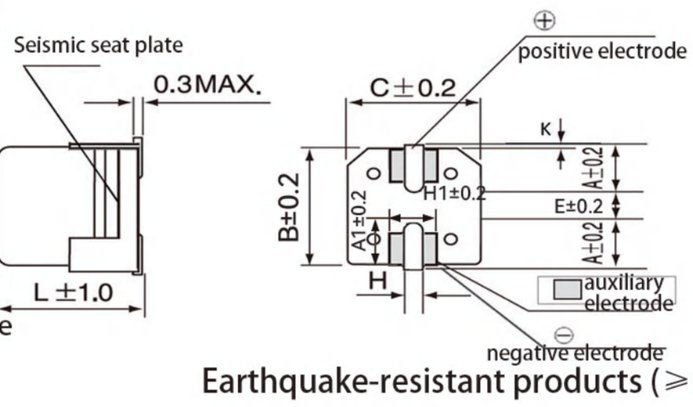
project	characteristic
Operating temperature range	－55 ~ +105℃
Rated operating voltage	16 ~ 80V
Capacity range	6.8 ~ 470μF 120Hz 20℃
Capacity tolerance	±20% (120Hz 20℃)
Loss tangent	The following are the values from the standard product list: 120Hz, 20℃
Leakage current	Below 0.01CV (μA), charge for 2 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.

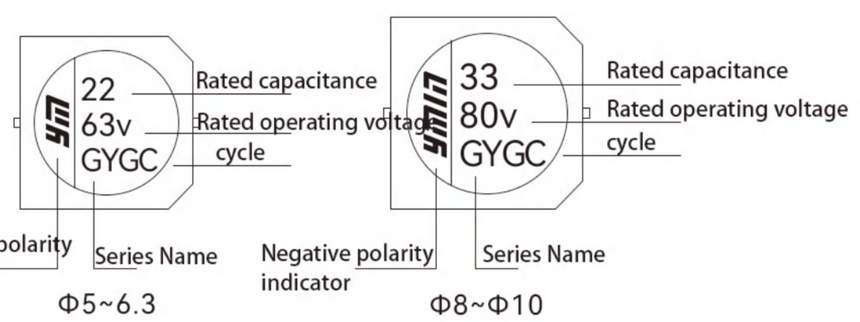
■ Product dimension drawing (unit: mm)



Standard products



Earthquake-resistant products (⩾Φ8)



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

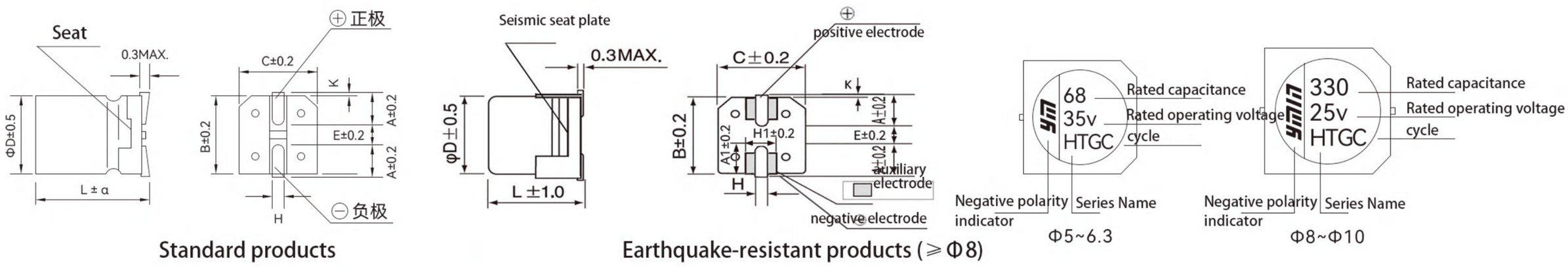
- ◆Low ESR, high tolerable ripple current, high reliability
- ◆125℃, 4000-hour warranty
- ◆Meets vibration resistance requirements
- ◆Surface mount type, suitable for high-temperature lead-free reflow soldering
- ◆Compliant with AEC-Q200, RoHS compliant

■ 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 (⩾Φ8)

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±0.20	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

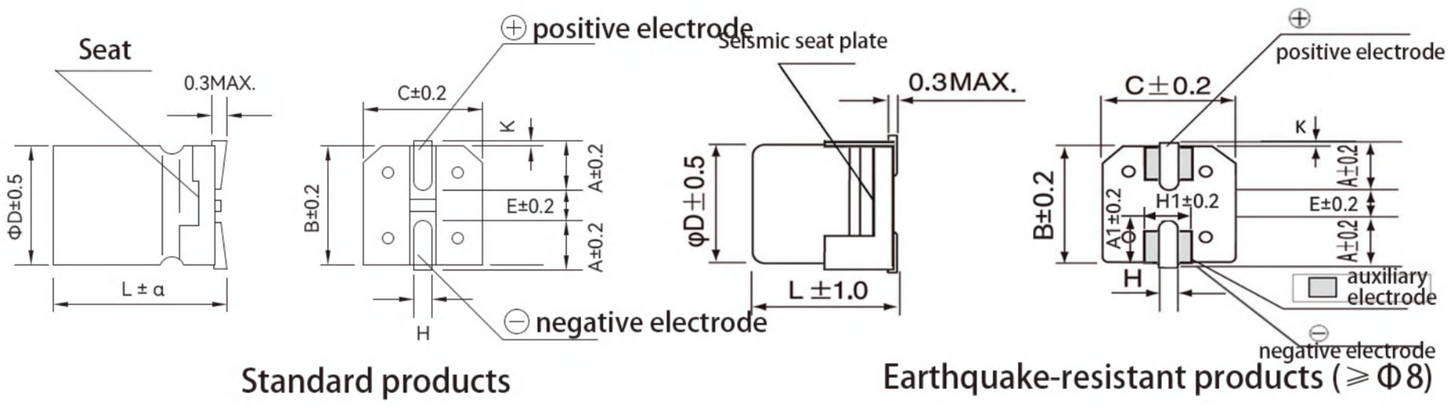
◆Miniaturized, high-capacity upgrade of the VHM series
◆Low ESR, high permissible ripple current, high reliability
◆125℃, 4000-hour warranty
◆Compliant with AEC-Q200, RoHS compliant
◆Meets vibration resistance requirements, surface mount type, suitable for high-temperature lead-free reflow soldering

■ 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

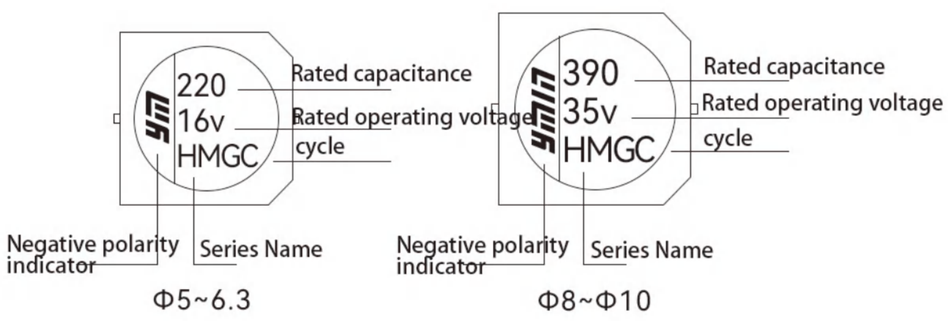
※If there is any doubt about the leakage current value, please place the product at 105° C and apply the rated operating voltage for 2 hours, then cool it down to 20° C before testing the leakage current.

■ Product dimension drawing (unit: mm)



Standard products

Earthquake-resistant products (≥Φ8)



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

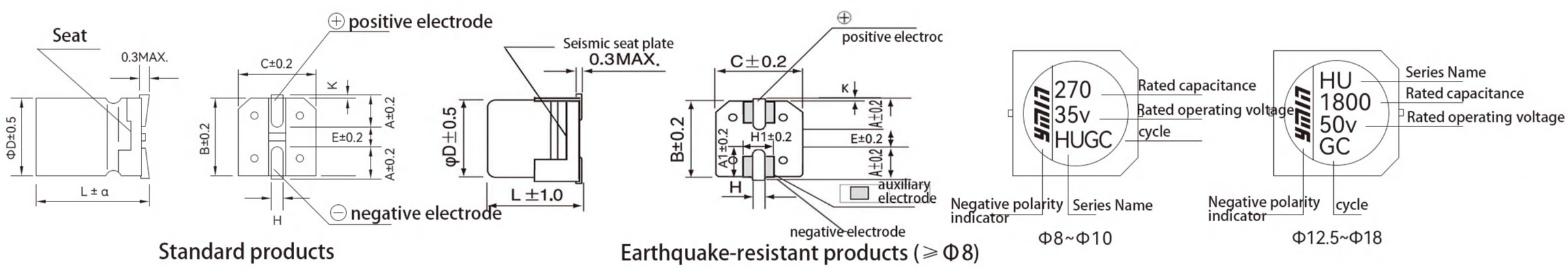
◆135° C high-temperature resistant product, 4000-hour warranty at 135° C
◆Low ESR, high permissible ripple current, high reliability, long lifespan
◆Compliant with AEC-Q200 and RoHS directive
◆Meets vibration resistance requirements, surface mount type, suitable for high-temperature lead-free reflow 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 (≥Φ8)

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

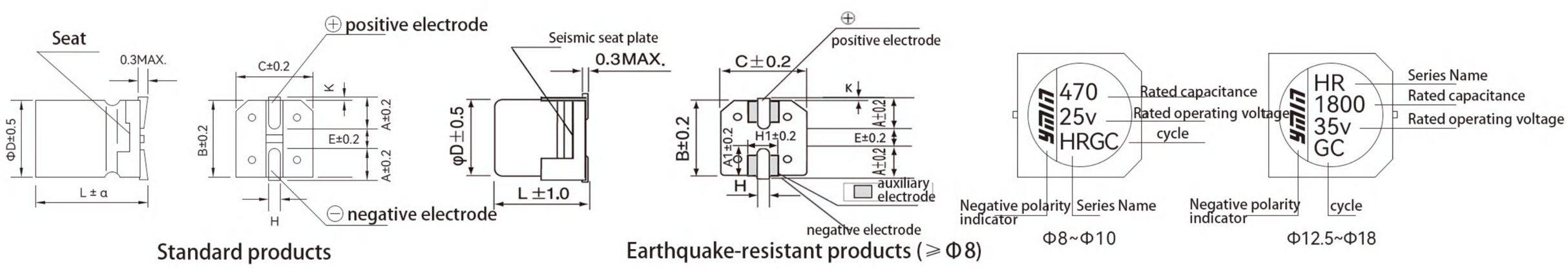
◆Meets vibration resistance requirements; surface mount type; suitable for high-temperature lead-free reflow soldering

■ 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 (≥Φ8)

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

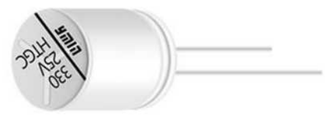
VHR

■ 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

NHT

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

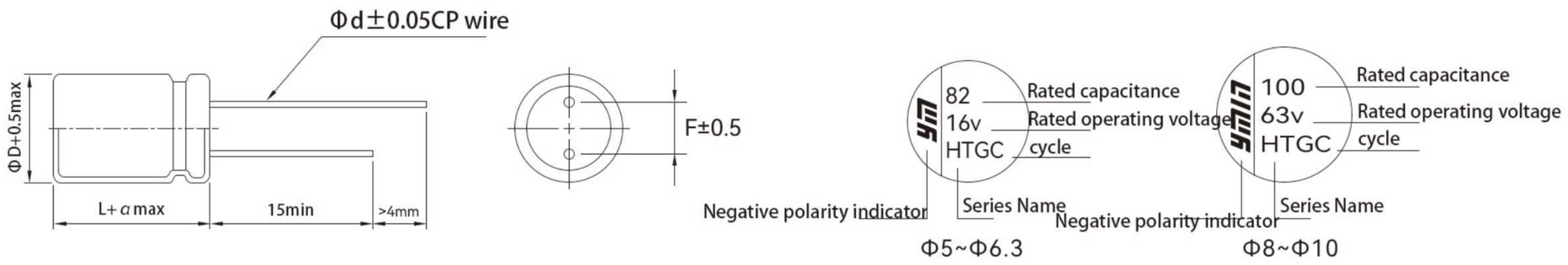


■ Main technical parameters

project	characteristic
Operating temperature range	−55 ~ +125℃
Rated operating voltage	16 ~ 80V
Capacity range	6.8 ~ 470μF 120Hz 20℃
Capacity tolerance	±20%（120Hz 20℃)
Loss tangent	标准品一览表的值以下 120Hz 20℃
Leakage current	0.01CV(μA)以下，额定电压下充电2分钟，20℃
Equivalent series resistance (ESR)	标准品一览表的值以下 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 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	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