DEKI CAPACITOR GUIDE
Lighting Applications

A series on topics of relevance and advances from the Technical Centre, Deki Electronics Ltd, India *February 2012*

Common to almost all eco-friendly lighting.

RoHS compliant film capacitors from Deki.

DEKI
Film Capacitor Solutions

Get Deki quality working for you:
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www.dekielectronics.com

Deki Electronics is like a bonsai. Small yet complete.
Complete range of plastic film capacitors with a choice of technologies.

Every branch and twig shaped or eliminated until the chosen image is achieved.
Clear focus on quality and providing solutions.

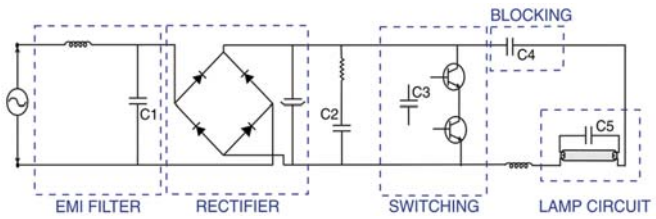
The image maintained and improved by constant pruning and trimming.
Commitment to training and knowledge enhancement.

DEKI
Film Capacitor Solutions

CONTENTS

Film Capacitors for High Wattage CFL

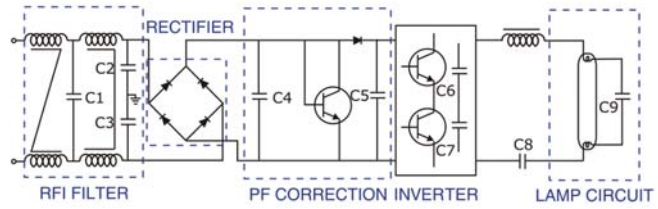
A CFL circuit can be divided into five parts: filter, rectifier, switching section, blocking and lamp circuit. The critical section of a CFL is the lamp circuit since it has to withstand high voltage spikes with high frequency during the ignition phase of the CFL.



Cap	Function	Type	Typical Dv/dt for function	Rated Req'ment	Rated cap. value
C1	EMI Suppression	X2/MPET	-	275 V AC/ 400~630 V DC	68nfd ~ 220nfd
C2	Starting	PET/MPET	-	100 V DC	10nfd ~100nfd
C3	Snubber	PET/PP/ PEP/DTSH	<1000V/µs	630~1250 V DC	680Pfd ~ 2.0nfd
C4	Blocking	PET/MPET	-	250~400 V DC	10nfd ~ 68nfd
C5	Striking	PET/PP/ PEP/DTSH DPSH/ MPP-MPP	<500V/µs	630~2000 V DC	1.5nfd ~ 10nfd

Film Capacitors for HF Ballast

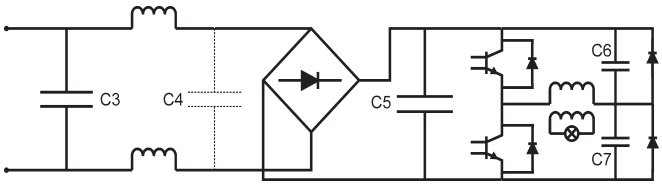
An HF ballast has five sections: filter, rectifier, power factor correction, inverter and lamp circuit. The critical section in this is the lamp circuit because it has to withstand a high voltage spike and high current during the ignition phase.



Cap	Function	Type	Typical Dv/dt for function	Rated Req'ment	Rated cap value
C1	EMI Suppression	X2/MPET (low cost)	-	275 V AC	22nfd ~ 470 nfd
C2	EMI Suppression	Y2		250 V AC	1.0 nfd ~ 5.6 nfd
C3	EMI Suppression	Y2		250 V AC	1.0 nfd ~ 5.6 nfd
C4	Smoothing	MPET/MPP	-	400~630 V DC	100 nfd ~ 330 nfd
C5	Smoothing	MPET/MPP	-	350~500 V DC	2.2 µfd ~ 10 µfd
C6	Snubber	PP/(low cost) PSH/MPP-MPP/MMPP	-	630~1600 V DC (250 V AC/500 V AC/ 700 V AC)	680 pfd ~ 4.7nfd
C7	Snubber	PP/(low cost) PSH/MPP-MPP/MMPP	<1000µs	630~1600 V DC (250 V AC/500 V AC/ 700 V AC)	680 pfd ~ 4.7nfd
C8	Blocking	MPET/MPP	<300µs	400 ~630 V DC	22 nfd ~120nfd
C9	Striking	PSH/(low cost) MPP MMPP	<500µs	1000~2000 V DC 250~700 V AC	470 pfd ~ 120nfd

Film Capacitors for Electronic Transformers

Transformers have to be used for operating low-voltage halogen lamps that bring the mains voltage down to the required lamp voltage of 12 V.

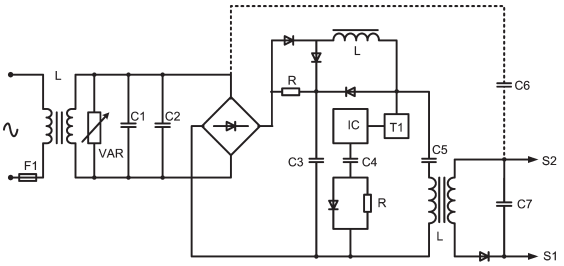


Cap	Function	Type	Typical Dv/dt for function	Rated Req'ment	Rated cap value
C3	EMI Suppression	X2/MPET	-	275 V AC/ 630 V DC	100nfd ~ 470nfd
C4	EMI Suppression	X2/MPET	-	275 V AC/ 630 V DC	100nfd ~ 470nfd
C5	Smoothing/ Filtering	MPET (low cost) MPP	-	400~630 V DC	22nfd ~ 330nfd
C6	Snubber	MPP*	Up to 60 kHz	630~1000 V DC	10nfd ~ 47nfd
C6	Snubber	MPP*	Up to 60 kHz	630~1000 V DC	10nfd ~ 47nfd

*MPP-MPP DPSH series

Film Capacitors for LED Driver

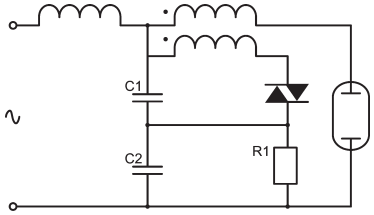
LEDs are the future light source for automotive, traffic signals, contour and even general lighting. Impressive features include exceptional lifetime of up to 100,000 hours and very small size.



Cap	Function	Type	Typical Dv/dt for function	Rated Req'ment	Rated cap value
C1	EMI Suppression	X2/MPET	-	400~630 V DC	100nfd ~ 470nfd
C2	EMI Suppression	X2/MPET	-	400~630 V DC	100nfd ~ 470nfd
C3		MPET	-	630~1000 V DC	2.2nfd ~ 10nfd
C5		MPET	-	400~630 V DC	1.0 nfd ~ 2.2nfd
C6	EMI Suppression	Y2	-	250 V AC	1.0nfd ~ 2.7nfd

Film Capacitors for Igniters for Discharge Lamps

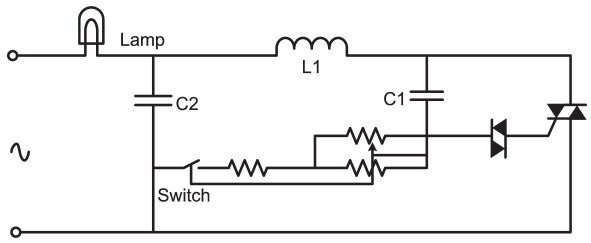
To ignite a high-pressure discharge lamp it is necessary to provide the lamp with a defined ignition voltage to ionise the discharge path. The level of the ignition voltage required depends on the type of lamp used. An electronic control circuit is used to generate voltage impulse. The ignition voltages of normal high-pressure discharge lamps range between 1kV and 5 kV.



Lighting Applications

Cap	Function	Type	Typical Dv/dt for function	Rated Req'ment	Rated cap value
C1	Ignition	MPET	-	630~1000 V DC	100nfd ~150nfd
C2	Ignition	MPET	-	630~1000 V DC	220nfd ~470nfd

Film Capacitors for for Dimmers



Cap	Function	Type	Typical Dv/dt for function	Rated Req'ment	Rated cap value
C1	Timer	MPET/MPP	-	400~630 V DC	22nfd ~ 220nfd
C2	EMI Suppression	X2/MPET	-	400~630 V DC	22nfd ~ 220nfd

Capacitor Selection Guidelines

When you select the capacitor for above applications please follow these guidelines:

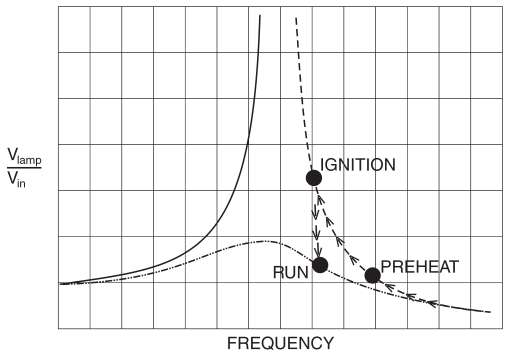
- Ambient working temperature for capacitor. Generally, it varies according to the wattage of the ballast and type of lamp, eg., ambient temperature inside the capsule for spiral lamp is high compared to normal lamps.
- For each series, maximum operating temperature and temperature derating curve are mentioned in the datasheets to select the right series accordingly.
- Working frequency of the ballast is another important parameter for selecting right series. You need to calculate the power handling capability of the capacitor during selection.
- The switching cycle test requirement since this varies according to customer requirements from 6000 cycles to 12000 cycles.
- Depending upon the Vpk to Vpk voltage during ignition time you can select self-healing or non- self-healing type capacitors. Generally, self-healing capacitors are recommended for striking application as these capacitors can handle higher Vpk to Vpk voltage and perform better in switching cycle tests.
- Vrms rating of each voltage series at different frequencies are mention in the datasheets. While selecting the series you have to consider the rated voltage at working frequency very carefully.
- Finally dimensions and location of the capacitor are also important. You have to ensure that the temperature of the hot spot is less than the rated temperature of the capacitor.

Thus, self-healing inductive capacitors are the ideal choice for high wattage CFLs and high reliability ballasts.

When the lamp is ignited, the lamp resistance is very high so that it can be treated as open circuit. The gain curve of the lamp voltage over Vin as a function of the switching frequency is shown in figure (right top). The lamp operating point goes from preheat to ignition which means that the switching frequency is decreasing and the lamp voltage is increasing. At the point of ignition the lamp resistance drops quickly. The operation point then moves from ignition to run, the steady state operation point.

The critical portions in the cycle are the preheating and ignition phases because of high current and high frequency in preheating and high voltage spikes in ignition.

Most HF ballasts use MPP/MPP or MMPP (double side metallised) capacitors. The unique inductive self-healing



polypropylene design from Deki is an ideal replacement with the following advantages:

- High reliability
- Self-healing
- Smaller pitch (5 and 7.5 mm)
- Improved AC performance compared to inductive type
- Cost effective series vs. MPP/MPP capacitors.

We, at Deki perform the reliability and switching test for striking capacitors in our own laboratory. Switching conditions vary according to designs and we can create test conditions as per customer requirement with the help of our High Frequency simulator.

The wave form for switching test is given below. The filament capacitor will go through the electrical stress as per the details mentioned below. At the time of switch on the voltage level is high and once the lamp is on, electrical stress across the capacitor is low.

Vpk-

Vpk-pk-

V'pk-

V'pk-pk- Generally Vpk-Vpk voltages are converted to Vrms voltage for testing.

T1(sec): Can be set as per user requirement.

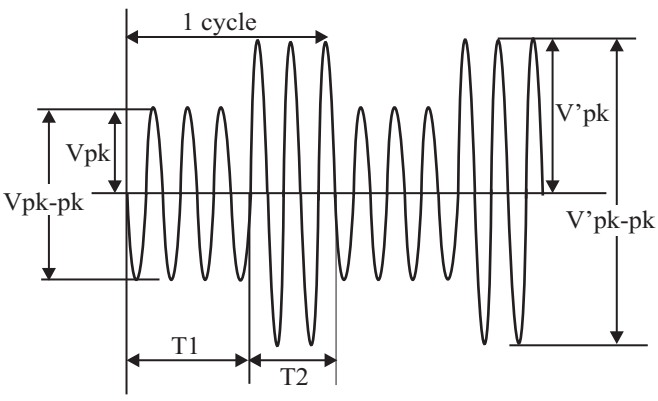
T2 (sec): Can be set as per user requirement.

Frequency: Can be set as per user requirement (From 20kHz to 100kHz)

No. of cycles: Can be set as per user requirement.

Some customers ask for switching test at room temperature while others ask for the test at elevated temperature.

Both the tests can be performed as per customer requirement in our laboratory.



PLAIN POLYESTER FILM CAPACITORS
(Inductive)

MAIN APPLICATION: Blocking, bypassing, filtering, coupling and decoupling, interference suppression in low voltage application, low pulse application

CONSTRUCTION: Film/foil inductive type construction with aluminum foil as electrode and polyester (PET) film as dielectric, coated with flame retardant epoxy resin

CLIMATIC CATEGORY: 40/100/56

MAX. OPERATING TEMPERATURE: 125° C

APPLICABLE SPECIFICATION: IEC 384-11

CAPACITANCE VALUE, RATED VOLTAGE (DC): Refer dimension chart

CAPACITANCE TOLERANCE: ±5%, ±10%

VOLTAGE PROOF: Between terminals: 2 times of rated voltage for 2 seconds

TAN δ: 0.8% (maximum) at 1 kHz

LIFE TEST CONDITIONS:
(Loading at elevated temperature)
Loaded at 1.5 times of rated voltage at 85° C or 1.5 times of category voltage at 100° C 1000 hours
Category voltage is 80% of rated voltage

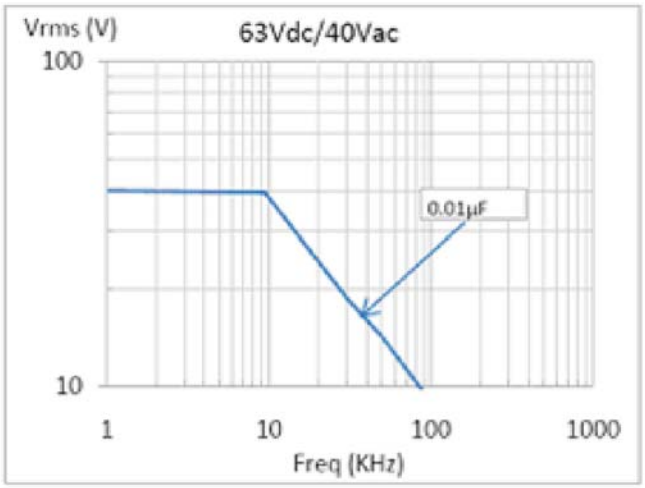
Criteria after the test:
Δc/c: ≤ 5% of initial value
Change in Tan δ: ≤ 0.01 or 1.2 times the value measured before the test, whichever is higher
Insulation resistance: ≥ 50% of the initial value mentioned in IR chart

APPROVALS: Capacitors tested at ERTL (North) as per IEC 384-11

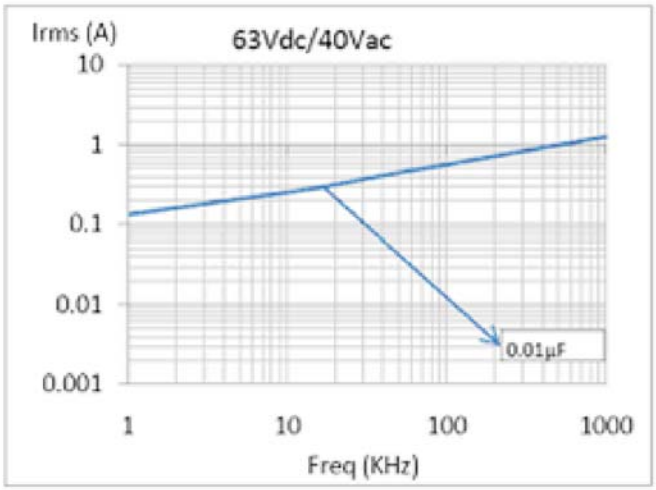
INSULATION RESISTANCE

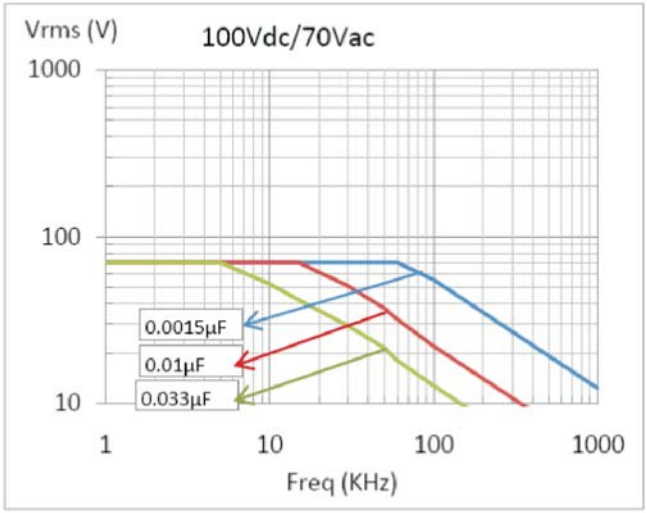
Minimum Insulation Resistance R_{IS}	V_R	$C_R \leq 0.33$ F	$C_R > 0.33$ F
(or) time constant $T = C_R \times R_{IS}$	≤ 100 V DC	30 GΩ	10000 s
at 25° C, relative humidity ≤ 70%	≥ 250 V DC	100 GΩ	10000 s

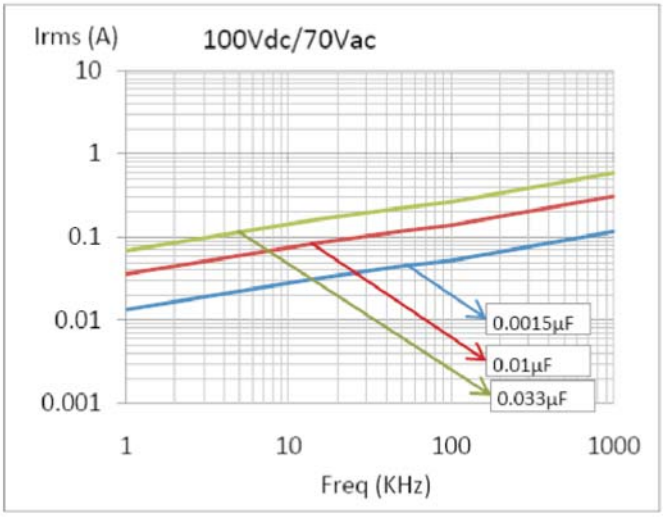
Max. Voltage (Vrms) vs. Frequency
(Sinusoidal Waveform at T ≤ 55° C)



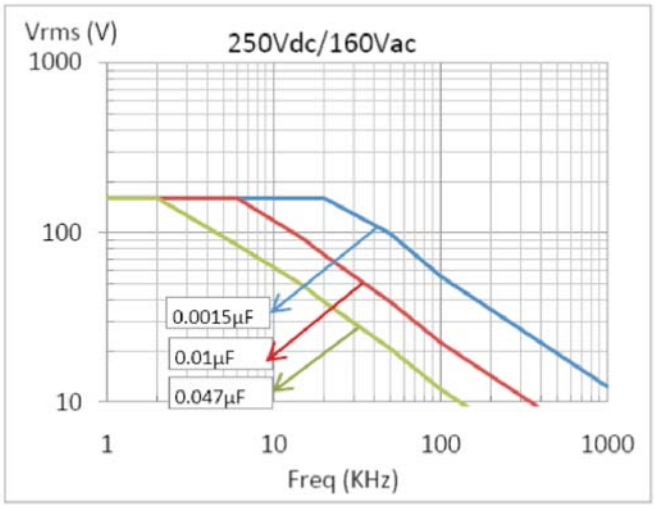
Max. Current (Irms) vs. Frequency
(Sinusoidal Waveform at T ≤ 55° C)

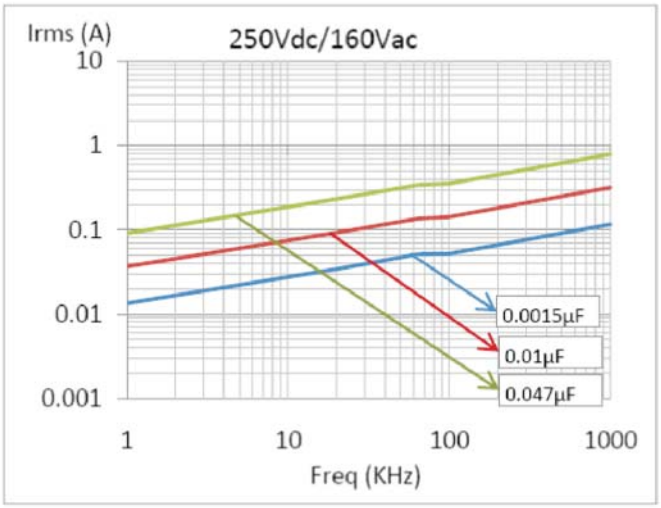


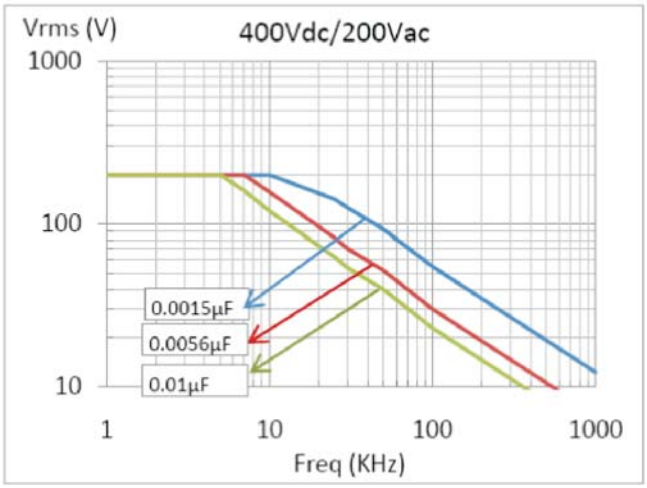


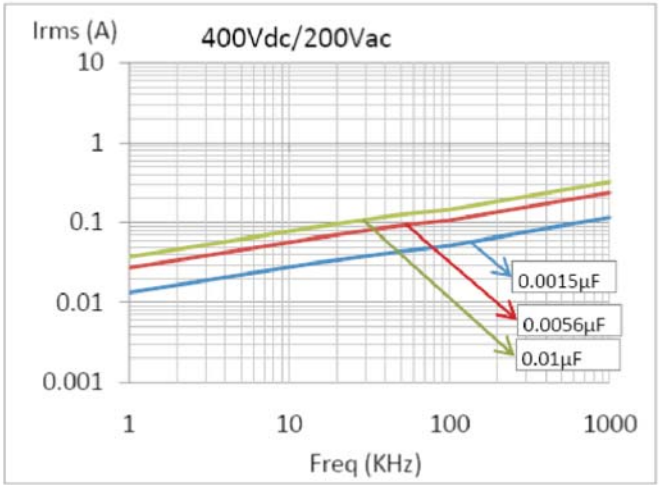


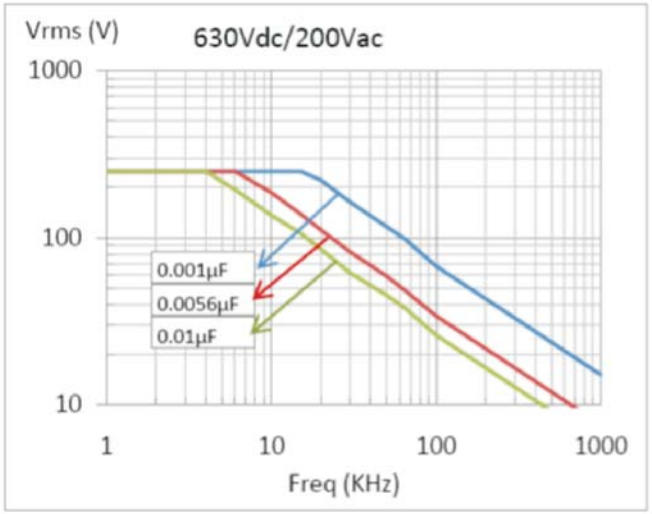
Lighting Applications

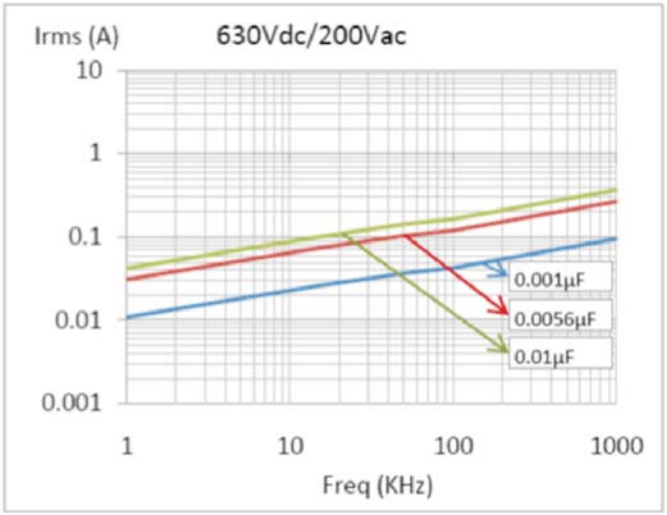


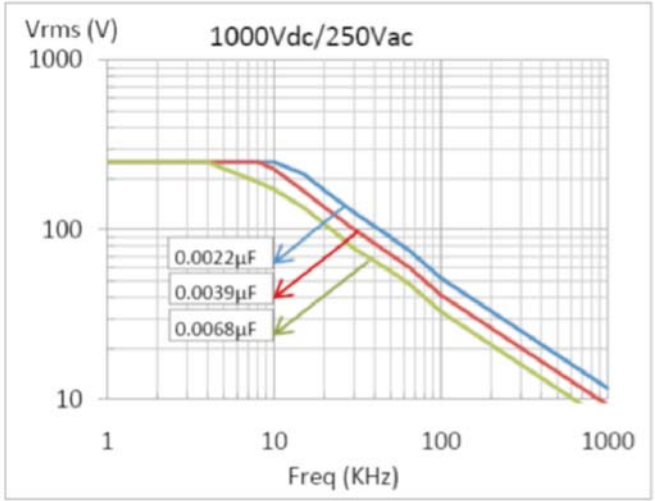


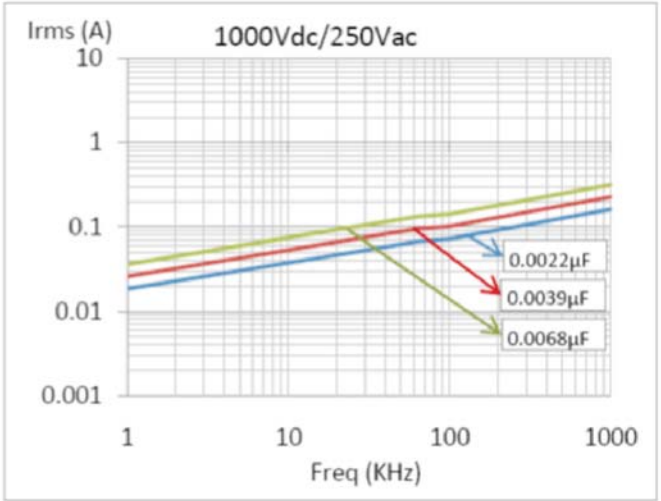




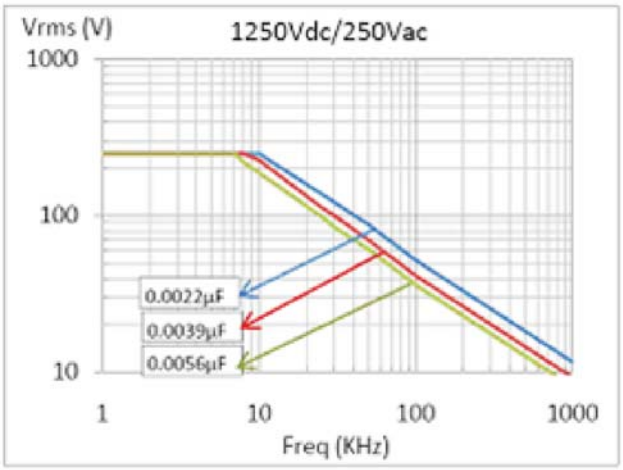


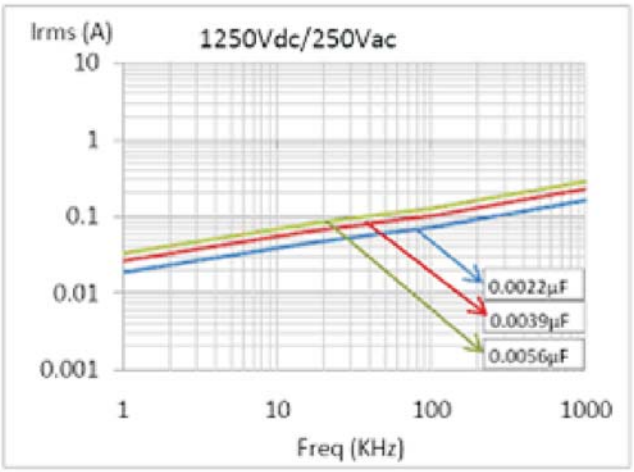


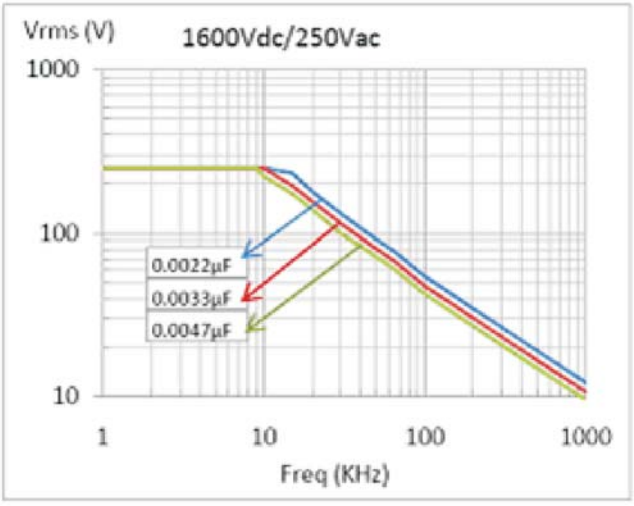


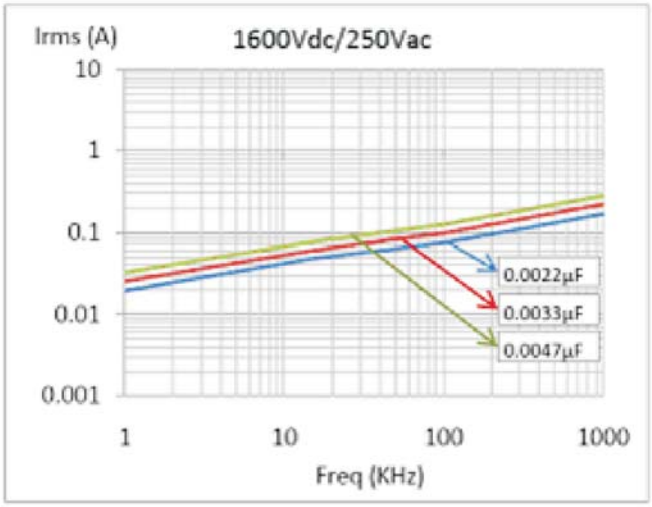


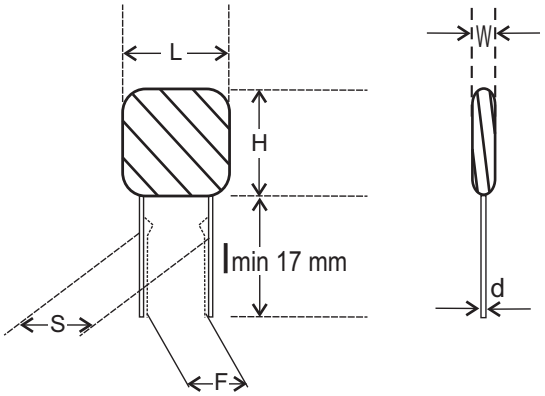
Lighting Applications











PLAIN POLYESTER FILM CAPACITORS (Inductive)

Ordering codes and packaging units

Rated Voltage	Rated Cap. (µF)	Dimensions(mm) W ±0.5	H ±0.5	L ±0.5	d ±0.05	S ±0.5	F .8/-.2	DV/DT V/µs	Wt. g	Ordering code	Packing units Ammo	Bulk
63V DC	0.1	6.0	14.0	11.0	0.5	7.0	5.0	10000	0.76	01 104 +1J*^	2000	2000
100V DC	0.001	3.5	11.5	6.5	0.5	4.0	5.0	10000	0.22	01 102 +2A*^	5000	2000
	0.0015	3.5	11.5	6.0	0.5	4.0	5.0	10000	0.22	01 152 +2A*^	5000	2000
	0.0022	3.5	11.5	6.0	0.5	4.0	5.0	10000	0.28	01 222 +2A*^	5000	2000
	0.0033	3.5	11.5	6.5	0.5	4.0	5.0	10000	0.32	01 332 +2A*^	5000	2000
	0.0047	3.5	11.5	6.5	0.5	4.0	5.0	10000	0.25	01 472 +2A*^	5000	2000
	0.0068	3.5	11.5	6.5	0.5	4.0	5.0	10000	0.25	01 682 +2A*^	5000	2000
	0.0091	3.5	11.5	6.5	0.5	4.0	5.0	10000	0.28	01 912 +2A*^	5000	2000
	0.01	4.0	11.5	7.5	0.5	4.0	5.0	10000	0.35	01 103 +2A*^	4500	2000
	0.015	4.0	11.5	7.5	0.5	4.0	5.0	10000	0.35	01153 +2A*^	4500	2000
	0.022	4.0	13.0	7.5	0.5	4.5	5.0	10000	0.35	01 223 +2A*^	4500	2000
	0.033	5.0	13.0	7.5	0.5	5.0	5.0	10000	0.40	01 333 +2A*^	4000	2000
	0.047	5.0	13.0	9.5	0.5	5.5	5.0	10000	0.45	01473 +2A*^	2500	2000
	0.056	5.0	13.0	10.0	0.5	6.0	5.0	10000	0.52	01 563 +2A*^	2500	2000
	0.068	5.5	14.0	10.0	0.5	7.0	5.0	10000	0.60	01 683 +2A*^	2000	2000
	0.082	6.0	14.0	11.0	0.5	7.0	5.0	10000	0.70	01 823 +2A*^	2000	2000
	0.100	6.0	14.0	11.0	0.5	7.0	5.0	10000	0.75	01 104 +2A*^	2000	2000
	0.15	6.5	15.0	12.0	0.5	7.5	5.0	10000	1.10	01 154 +2A*^	1500	1000
	0.22	6.5	17.0	12.0	0.5	8.5	-	10000	1.56	01 224 +2A*^	-	1000
	0.47	8.5	19.0	16.0	0.5	11.5	-	10000	2.88	01 474 +2A*^	-	400
250V DC	0.001	3.5	11.5	6.5	0.5	4.0	5.0	10000	0.28	01102 +2E*^	5000	2000
	0.0015	3.5	12.0	6.0	0.5	4.0	5.0	10000	0.30	01 152 +2E*^	5000	2000
	0.0022	3.5	12.0	6.0	0.5	4.0	5.0	10000	0.28	01 222 +2E*^	5000	2000
	0.0027	3.5	12.0	6.5	0.5	4.0	5.0	10000	0.32	01 272 +2E*^	5000	2000
	0.0033	3.5	12.0	6.5	0.5	4.0	5.0	10000	0.28	01 332 +2E*^	5000	2000
	0.0047	3.5	12.0	6.0	0.5	4.0	5.0	10000	0.32	01 472 +2E*^	5000	2000
	0.01	4.0	13.0	7.5	0.5	5.0	5.0	10000	0.35	01 103 +2E*^	2500	2000
	0.015	4.5	13.0	8.0	0.5	5.5	5.0	10000	0.42	01 153 +2E*^	2500	2000
	0.022	4.5	13.0	9.0	0.5	6.0	5.0	10000	0.45	01 223 +2E*^	2500	2000
	0.033	5.0	13.0	9.5	0.5	7.0	5.0	10000	0.64	01 333 +2E*^	2500	2000
	0.047	6.0	14.0	11.0	0.5	7.0	7.5	10000	0.80	01 473 +2E*^	2000	2000
	0.056	6.5	14.0	13.0	0.5	7.0	-	10000	0.90	01 563 +2E*^	-	2000
	0.1	6.5	18.0	13.0	0.5	9.0	-	10000	1.30	01 104 +2E*^	-	1000
400V DC	0.001	3.5	11.5	6.5	0.5	4.0	5.0	10000	0.28	01 102 +2G*^	5000	2000
	0.0015	3.5	11.5	6.5	0.5	4.0	5.0	10000	0.30	01 152 +2G*^	5000	2000
	0.0022	3.5	11.5	6.5	0.5	4.0	5.0	10000	0.30	01 222 +2G*^	5000	2000
	0.0033	4.0	11.5	6.5	0.5	4.0	5.0	10000	0.35	01 332 +2G*^	5000	2000
	0.0047	4.0	11.5	7.0	0.5	5.0	5.0	10000	0.40	01 472 +2G*^	4500	2000
	0.0056	4.0	11.5	8.5	0.5	5.5	5.0	10000	0.45	01 562 +2G*^	4000	2000
	0.01	4.5	12.0	8.5	0.5	6.5	5.0	10000	0.65	01 103 +2G*^	4000	2000
	0.015	5.0	13.0	9.5	0.5	7.0	5.0	10000	0.62	01 153 +2G*^	2000	2000
	0.022	5.5	14.0	10.0	0.5	7.0	5.0	10000	0.70	01 223 +2G*^	2000	2000
	0.033	6.5	15.0	11.0	0.5	7.0	7.5	10000	0.95	01 333 +2G*^	2000	2000
	0.039	6.5	15.0	12.0	0.5	7.0	-	10000	0.98	01 393 +2G^	-	1000
	0.047	8.0	15.0	12.0	0.5	7.0	-	10000	1.00	01 473 +2G*^	-	1000
	0.056	8.0	15.0	10.0	0.5	7.5	-	10000	1.30	01 563 +2G*^	-	1000
	0.1	9.0	18.0	15.0	0.5	11.0	-	10000	2.16	01 104 +2G*^	-	400
630V DC	0.001	3.5	11.5	6.5	0.5	4.0	5.0	10000	0.28	01 102 +2J*^	5000	2000
	0.0015	3.5	11.5	6.5	0.5	4.0	5.0	10000	0.30	01 152 +2J*^	5000	2000
	0.0022	3.5	11.5	6.5	0.5	4.0	5.0	10000	0.32	01 222 +2J*^	5000	2000
	0.0033	4.5	15.0	8.5	0.5	5.0	5.0	10000	0.45	01 332 +2J*^	4000	2000
	0.0047	4.5	15.0	8.5	0.5	5.0	5.0	10000	0.50	01 472 +2J*^	4000	2000
	0.0056	4.5	15.0	8.5	0.5	5.0	5.0	10000	0.52	01 562 +2J*^	4000	2000
	0.0068	5.0	15.0	9.0	0.5	5.5	5.0	10000	0.55	01 682 +2J*^	2000	2000
	0.0091	5.0	15.0	9.5	0.5	6.5	5.0	10000	0.55	01 912 +2J*^	2000	2000
	0.01	5.5	15.0	10.0	0.5	7.5	7.5	10000	0.75	01 103 +2J*^	2000	2000
	0.015	7.0	15.0	11.0	0.5	7.5	-	10000	0.80	01 153 +2J*^	-	2000
	0.022	7.6	15.0	13.0	0.5	8.5	-	10000	1.08	01 223 +2J*^	-	1000
	0.033	8.0	15.0	13.0	0.5	8.5	-	10000	1.70	01 333 +2J*^	-	1000
1000V DC	0.0022	5.0	15.0	8.5	0.5	5.0	5.0	10000	0.48	01 222 +3A*^	4000	2000
	0.0027	5.0	15.0	9.0	0.5	5.0	5.0	10000	0.56	01 272 +3A*^	4000	2000
	0.0033	5.0	15.0	9.0	0.5	5.0	5.0	10000	0.62	01 332 +3A*^	4000	2000
	0.0039	6.0	15.0	10.0	0.5	5.0	5.0	10000	0.62	01 392 +3A*^	4000	2000
	0.0047	6.0	15.0	10.0	0.5	5.0	5.0	10000	0.72	01 472 +3A*^	4000	2000
	0.0056	6.5	15.0	10.5	0.5	5.0	5.0	10000	0.84	01 562 +3A*^	3000	2000
	0.0068	6.5	15.0	11.0	0.5	5.0	5.0	10000	0.84	01 682 +3A*^	3000	2000
1250V DC	0.0022	5.0	15.0	8.5	0.5	5.0	5.0	10000	0.48	01 222 +3B*^	3000	2000
	0.0027	5.5	15.0	9.0	0.5	5.0	5.0	10000	0.56	01 272 +3B*^	3000	2000
	0.0033	6.0	15.0	9.5	0.5	5.0	5.0	10000	0.65	01 332 +3B*^	2500	2000
	0.0039	6.5	15.0	9.5	0.5	5.0	5.0	10000	0.72	01 392 +3B*^	2500	2000
	0.0047	7.0	15.0	11.0	0.5	5.0	5.0	10000	0.84	01 472 +3B*^	1500	2000
	0.0056	7.0	15.0	11.0	0.5	5.0	5.0	10000	0.85	01 562 +3B*^	1500	2000
1600V DC	0.0022	6.0	17.0	10.0	0.5	5.0	5.0	10000	0.70	01 222 +3C*^	1500	2000
	0.0027	6.5	18.0	10.0	0.5	7.5	5.0	10000	0.75	01 272 +3C*^	1500	2000
	0.0033	7.0	19.0	10.0	0.5	5.0	5.0	10000	0.80	01 332 +3C*^	1500	2000
	0.0039	6.5	19.0	11.0	0.5	7.5	5.0	10000	1.00	01 392 +3C*^	1000	2000
	0.0047	7.5	20.0	12.0	0.5	7.5	5.0	10000	1.15	01 472 +3C*^	1000	2000

PLAIN POLYESTER FILM CAPACITORS
(Starter applications for Lighting)

MAIN APPLICATION: Suitable for radio interference suppression in starters for fluorescent lamps, compact fluorescent lamps and PL lamps

CONSTRUCTION: Film/foil inductive type construction with aluminum foil as electrode and polyester (PET) film as dielectric coated with flame retardant epoxy resin

CLIMATIC CATEGORY: 40/100/21

APPLICABLE SPECIFICATION: IEC 384-11, IEC 68

CAPACITANCE VALUE: 0.0012, 0.0033, 0.0047 and 0.006 µf

CAPACITANCE TOLERANCE: ±10%, ±20%

RATED VOLTAGE (DC): 630 V

VOLTAGE PROOF: Between terminals: 2 times of rated voltage for 2 seconds

INSULATION RESISTANCE
Measured at 500 V DC after 1 minute 50,000 MΩ (Minimum value)

DIELECTRIC STRENGTH:
At 1500 V AC > 60 seconds (Flat radial type)
At 2200 V AC > 8 seconds (Round radial type)

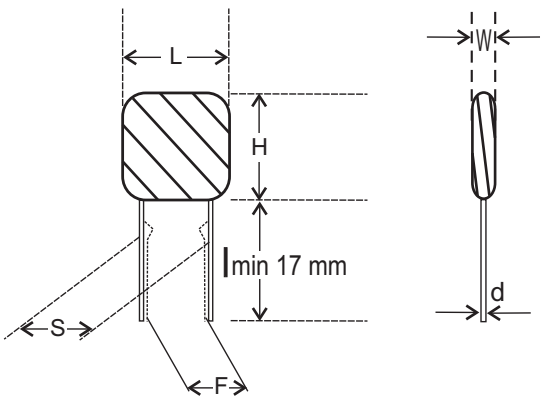
TAN δ: 0.8% (maximum) at 1 kHz

LIFE TEST CONDITIONS
(Loading at elevated temperature)
Loaded at 1.5 times of rated voltage at 85° C or 1.5 times of category voltage at 100° C 1000 hours
Category voltage is 80% of rated voltage

After the test:
Δc/c: ≤ 5% of initial value.
Change in Tan δ: ≤ 0.01 or 1.2 times the value measured before the test, whichever is higher
Insulation resistance: ≥ 50% of the value mentioned in IR chart

ENDURANCE TEST: Deactivated lamp test as per IEC 155 - 1993

Rated Voltage	Rated Cap. (µF)	Dimensions(mm) W ±0.5	H ±0.5	L ±0.5	d ±0.05	S ±0.5	F .8/-.2	DV/DT V/µs	Wt. g	Ordering code	Packing units Ammo	Bulk
Epoxy Coated												
630 VDC/	0.0033	4.5	15	8.5	0.5	5.0	5.0	10000	0.56	10 332 +2J*^	4500	2000
250 VAC	0.0047	4.5	15	8.5	0.5	5.0	5.0	10000	0.64	10 472 +2J*^	4500	2000
	0.0068	4.5	15	8.5	0.5	5.5	5.0	10000	0.72	10 602 +2J*^	2000	2000
Only Impregnated												
630 VDC/	0.003	4.0	14	10.0	0.5	5.0	7.5	10000	0.50	11 302 +2J*^	4500	2000
250 VAC	0.0033	4.5	15	8.5	0.5	5.0	5.0	10000	0.50	11 332 +2J*^	4500	2000
	0.0047	4.5	15	8.5	0.5	5.0	5.0	10000	0.60	11 472 +2J*^	4500	2000
	0.0068	4.5	15	8.5	0.5	5.5	5.0	10000	0.65	11 602 +2J*^	2000	2000
1000 VDC	0.005	5.0	19	9.0	0.5	5.5	12.5	10000	0.68	11 502 +3A*^	4000	2000



METALLISED POLYESTER FILM CAPACITORS
(Standard Pitch: 10-27.5 mm)

MAIN APPLICATION: Blocking, bypassing, filtering, timing, coupling and decoupling, interference suppression in low voltage applications, low pulse operations

CONSTRUCTION (DIP TYPE): Low inductive cell of metallised polyester film coated with flame retardant epoxy resin or enclosed in flame retardant box

CLIMATIC CATEGORY: 40/100/56

RATED TEMPERATURE: 85° C

APPLICABLE SPECIFICATION: IEC 384-2

CAPACITANCE VALUE, RATED VOLTAGE (DC): Refer dimension chart

CAPACITANCE TOLERANCE: ±5%, ±10%

VOLTAGE PROOF: Between terminals: 1.6 times of rated voltage for 2 seconds.

LIFE TEST CONDITIONS
(Loading at elevated temperature)
Loaded at 1.25 times of rated voltage at 85° C or 1.25 times of category voltage at 100° C for 1000 hours
Category voltage is 80% of rated voltage at 100° C

Criteria after the test:
Δc/c: ≤ 5% of initial value
Change in Tan δ: ≤ 0.003, C_R ≤ 1 F; ≤ 0.002, C_R > 1 F
Insulation resistance: ≥ 50% of the value mentioned in IR chart

APPROVALS: Capacitors are tested at ERTL (North) as per IEC 384-2 and approved by CACT for telecom application.

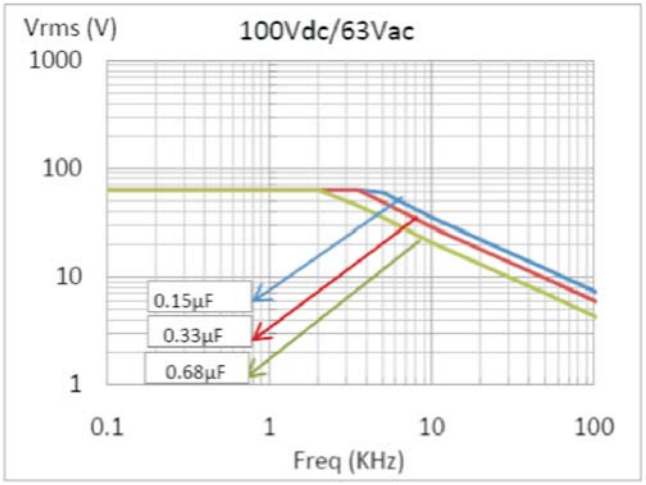
TAN δ (DISSIPATION FACTOR) AT 20°C

Frequency (kHz)	C_R < 0.1 F	0.1 F < C_R ≤ 1 F	C_R >1 F
At 1	0.8%	0.8%	1.0%
At 10	1.5%	1.5%	-
At 100	3.0%	3.0%	

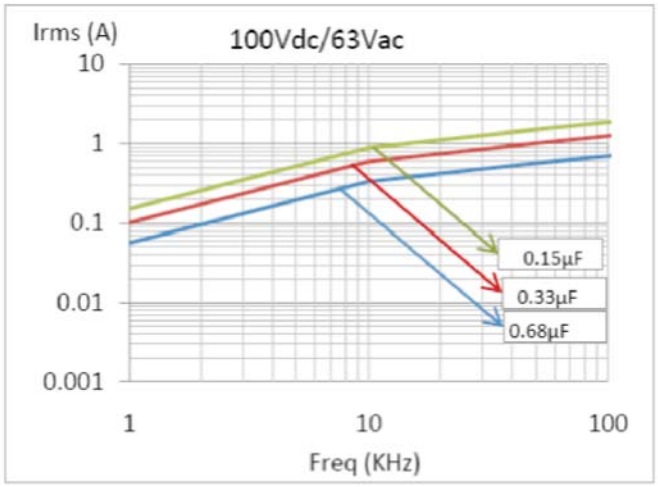
INSULATION RESISTANCE

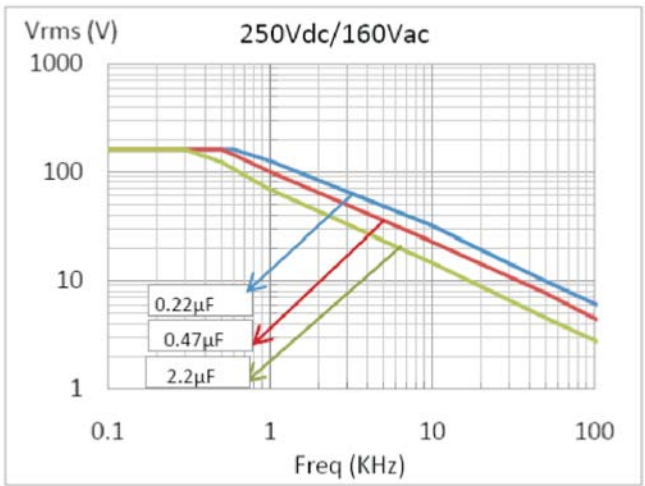
Minimum Insulation Resistance R_{IS}	V_R	C_R ≤ 0.33 F	C_R > 0.33 F
(or) time constant $T=C_R \times R_{IS}$	≤ 100 V DC	3750 MΩ	1250 s
at 25° C, relative humidity ≤ 70%	> 100 V DC	7500 MΩ	2500 s

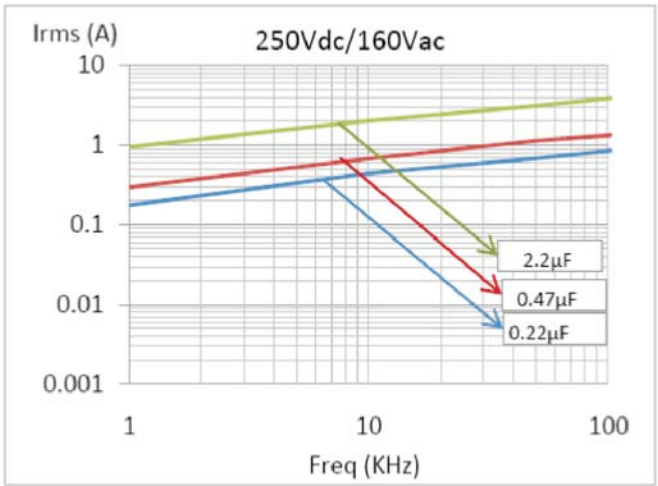
Max. Voltage (Vrms) vs. Frequency
(Sinusoidal Waveform at T ≤ 55° C)



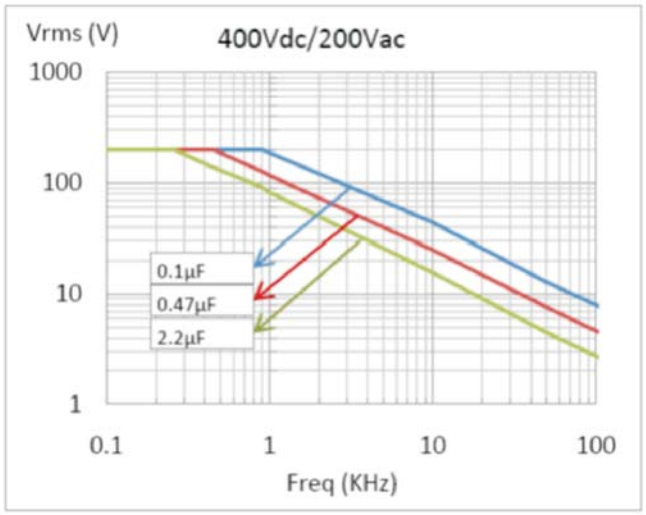
Max. Current (Irms) vs. Frequency
(Sinusoidal Waveform at T ≤ 55° C)

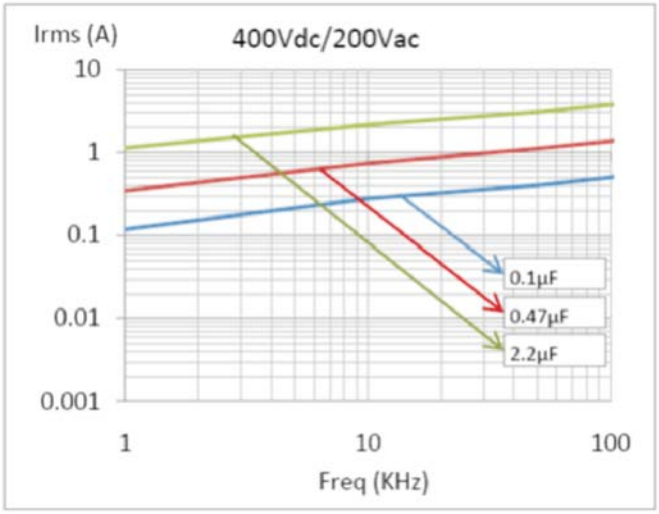


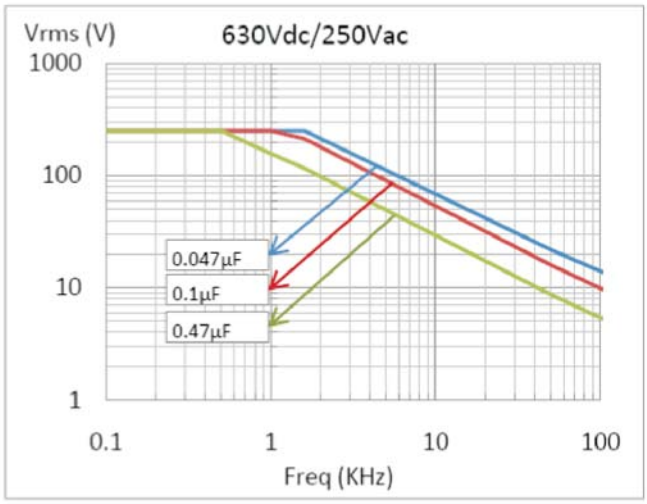


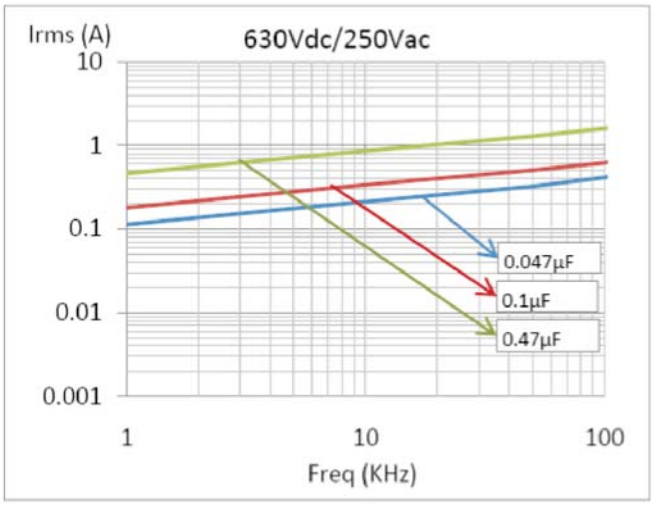


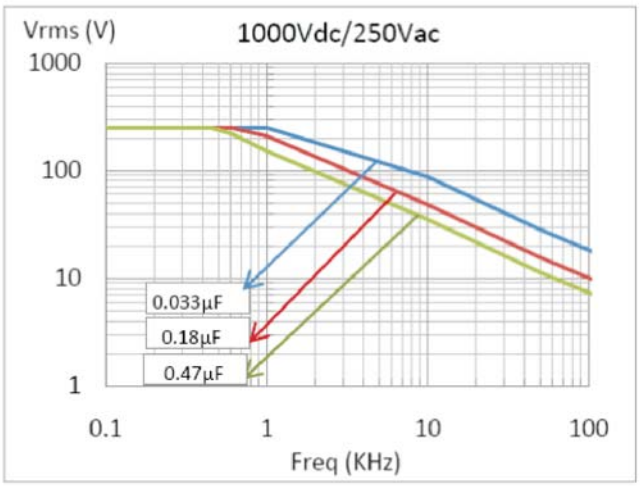
Lighting Applications

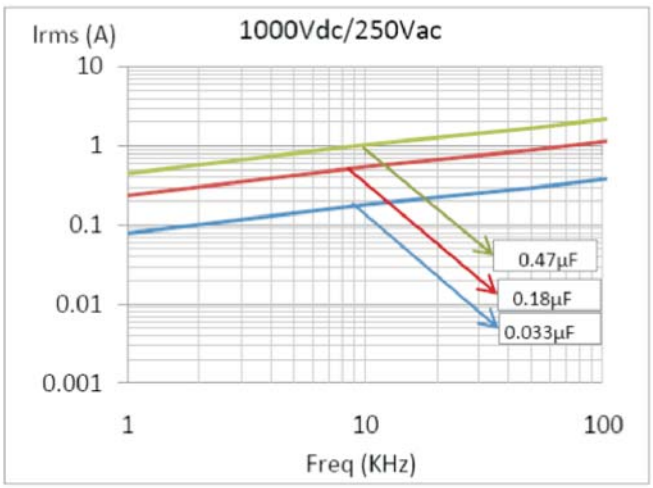








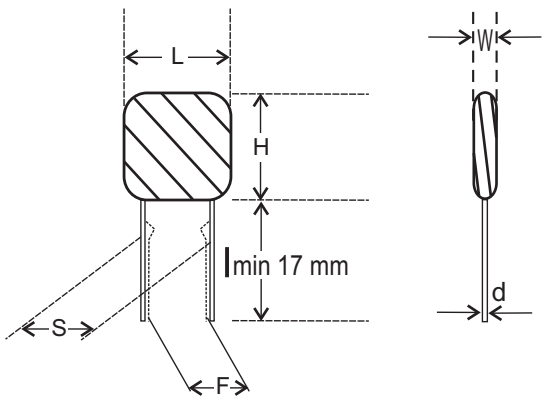




METALLISED POLYESTER FILM CAPACITORS (Standard Pitch: 10-27.5 mm)

Ordering codes and packaging units

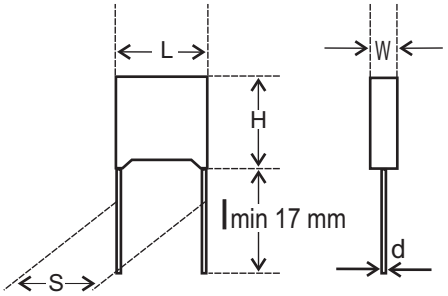
Rated Voltage	Rated Cap. (µF)	Dimensions(mm) W ±0.5	H ±0.5	L ±0.5	d ±0.05	S ±0.5	F ±0.5	DV/DT V/µs	Wt. g	Ordering code	Packing units Ammo	Bulk
100 VDC	0.1	5.0	10.0	13	0.6	10.0	10.0	28	0.6	02 104 +2A*^	1500	1000
	0.15	6.0	12.0	13	0.6	10.0	10.0	28	0.65	02 154 +2A*^	1500	1000
	0.22	7.0	12.0	13	0.6	10.0	10.0	28	0.9	02 224 +2A*^	1500	1000
	0.33	6.0	12.0	19	0.8	10.0	10.0	20	0.9	02 334 +2A*^	-	1000
	0.47	9.0	15.0	19	0.8	15.0	15.0	20	0.9	02 474 +2A*^	-	1000
	0.68	6.0	12.0	19	0.8	15.0	15.0	20	1.0	02 684 +2A*^	-	1000
	1.0	9.0	15.0	19	0.8	15.0	15.0	20	1.3	02 105 +2A*^	-	1000
	1.5	6.0	15.0	27	0.8	22.5	15.0	8	2.0	02 155 +2A*^	-	1000
	2.2	10.0	18.0	27	0.8	22.5	15.0	8	2.8	02 225 +2A*^	-	500
	3.3	8.5	18.0	27	0.8	22.5	22.5	8	4.0	02 335 +2A*^	-	500
	4.7	15.0	22.0	27	0.8	22.5	-	7	5.2	02 475 +2A*^	-	500
250 VDC	0.027	4.0	9.0	13	0.6	10.0	10.0	70	0.65	02 273 +2E*^	1500	1000
	0.033	4.0	9.0	13	0.6	10.0	10.0	70	0.65	02 333 +2E*^	1500	1000
	0.047	6.0	10.0	13	0.6	10.0	10.0	70	0.7	02 473 +2E*^	1500	1000
	0.068	7.0	12.0	13	0.6	10.0	10.0	70	0.7	02 683 +2E*^	1500	1000
	0.082	5.0	10.0	13	0.6	10.0	10.0	70	0.75	02 823 +2E*^	1500	1000
	0.1	6.0	12.0	13	0.6	10.0	10.0	70	0.75	02 104 +2E*^	1500	1000
	0.15	6.0	12.0	13	0.8	10.0	10.0	70	0.8	02 154 +2E*^	-	1000
	0.22	6.0	12.0	19	0.8	15.0	15.0	28	1.4	02 224 +2E*^	-	1000
	0.33	7.0	13.0	19	0.8	15.0	15.0	28	1.4	02 334 +2E*^	-	1000
	0.47	9.0	15.0	19	0.8	15.0	15.0	28	2.1	02 474 +2E*^	-	1000
	0.68	9.0	14.0	19	0.8	15.0	15.0	28	2.9	02 684 +2E*^	-	1000
	1.0	7.5	16.5	27	0.8	22.5	22.5	12	3.6	02 105 +2E*^	-	500
	1.5	8.5	17.5	27	0.8	22.5	-	12	5.1	02 155 +2E*^	-	500
	2.2	10.0	20.0	27	0.8	22.5	-	12	6.5	02 225 +2E*^	-	250
	3.3	12.0	21.0	27	0.8	22.5		12	7.5	02 335 +2E*^	-	250
400 VDC	0.01	4.0	9.0	13	0.6	10.0	10.0	110	0.6	02 103 +2G*^	1500	1000
	0.015	6.0	15.0	13	0.6	10.0	10.0	110	0.6	02 153 +2G*^	1500	1000
	0.022	6.0	12.0	13	0.6	10.0	10.0	110	0.6	02 223 +2G*^	1500	1000
	0.033	5.0	10.0	13	0.6	10.0	10.0	110	0.6	02 333 +2G*^	1500	1000
	0.047	6.0	12.0	13	0.8	10.0	10.0	110	0.62	02 473 +2G*^	-	1000
	0.068	6.0	12.0	13	0.8	10.0	10.0	110	0.7	02 683 +2G*^	-	1000
	0.1	6.0	12.5	19	0.8	15.0	15.0	44	1.0	02 104 +2G*^	-	1000
	0.15	8.0	16.0	19	0.8	15.0	15.0	44	1.3	02 154 +2G*^	-	1000
	0.22	8.0	15.0	19	0.8	15.0	15.0	44	1.7	02 224 +2G*^	-	1000
	0.33	6.0	15.0	27	0.8	22.5	22.5	20	2.6	02 334 +2G*^	-	1000
	0.47	7.5	16.5	27	0.8	22.5	22.5	20	3.4	02 474 +2G*^	-	500
	0.68	8.0	15.0	27	0.8	22.5	-	20	3.5	02 564 +2G*^	-	500
	0.82	7.0	16.0	32	0.8	27.5	-	16	4.0	02 824 +2G*^	-	500
	1.0	7.0	16.0	32	0.8	27.5	-	16	4.0	02 105 +2G*^	-	250
	1.5	10.0	18.0	32	0.8	27.5	-	16	5.0	02 155 +2G*^	-	250
	2.2	10.3	19.6	31	0.8	27.5	-	16	6.87	02 225 +2G*^	-	250
	3.3	13.7	21.2	31	0.8	27.5	-	16	9.5	02 335 +2G*^	-	250
630 VDC	0.01	5.0	12.0	13	0.6	10.0	10.0	70	0.65	02 103 +2J*^	1500	1000
	0.015	6.0	12.0	13	0.6	10.0	10.0	70	0.65	02 153 +2J*^	1500	1000
	0.022	6.0	12.0	13	0.6	10.0	10.0	70	0.7	02 223 +2J*^	1500	1000
	0.033	6.0	12.0	19	0.8	15.0	15.0	70	1.0	02 333 +2J*^	-	1000
	0.047	7.0	13.0	19	0.8	15.0	15.0	70	1.2	02 473 +2J*^	-	1000
	0.068	8.0	14.0	19	0.8	15.0	15.0	70	1.4	02 683 +2J*^	-	1000
	0.082	8.0	14.5	19	0.8	15.0	15.0	70	1.8	02 823 +2J*^	-	1000
	0.1	8.0	16.0	19	0.8	15.0	15.0	70	2.0	02 104 +2J*^	-	1000
	0.15	8.0	16.0	19	0.8	15.0	15.0	70	2.5	02 154 +2J*^	-	500
	0.22	8.0	15.0	27	0.8	22.5	22.5	28	3.0	02 224 +2J*^	-	500
	0.33	10.0	19.0	32	0.8	27.5	-	24	5.0	02 334 +2J*^	-	250
	0.47	12.0	21.0	32	0.8	27.5	-	24	6.5	02 474 +2J*^	-	250
	1.0	17.0	29.0	31	0.8	27.5		24	9.5	02 105 +2J*^	-	250
1000 VDC	0.18	10.0	22.5	31	0.8	27.5	-			02 184 + 3A*^	-	250
	0.47	16.0	28.0	31	0.8	27.5	-			02 474 + 3A*^	-	250



METALLISED POLYESTER FILM CAPACITORS (Standard Pitch: 10-27.5 mm)

Ordering codes and packaging units

Rated Voltage	Rated Cap. (µF)	Dimensions(mm) W ±0.5	H ±0.5	L ±0.5	d ±0.05	S ±0.5	F ±0.5	DV/DT V/µs	Wt. g	Ordering code	Packing units Ammo	Bulk
100 VDC	0.056	4.0	9.0	13.0	0.6	10.0	10.0	28	0.4	06 563 +2A*^	-	1000
	0.082	4.0	9.0	13.0	0.6	10.0	10.0	28	0.4	06 823 +2A*^	-	1000
	0.1	4.0	9.0	13.0	0.6	10.0	10.0	28	0.4	06 104 +2A*^	-	1000
	0.15	4.0	9.0	13.0	0.6	10.0	10.0	28	0.4	06 154 +2A*^	-	1000
	0.22	4.5	9.5	13.0	0.6	10.0	10.0	28	0.5	06 224 +2A*^	-	1000
	0.33	5.0	11.0	19.0	0.8	15.0	15.0	20	0.6	06 334 +2A*^	-	1000
	0.47	5.5	11.5	19.0	0.8	15.0	15.0	20	0.7	06 474 +2A*^	-	1000
	0.68	6.0	12.0	19.0	0.8	15.0	15.0	20	1.0	06 684 +2A*^	-	1000
	1.0	7.5	13.5	19.0	0.8	15.0	15.0	20	1.3	06 105 +2A*^	-	1000
	1.5	6.0	12.0	18.0	0.8	15.0	15.0	8	2.0	06 155 +2A*^	-	1000
	2.2	6.5	16.5	27.0	0.8	22.5	22.5	8	2.8	06 225 +2A*^	-	500
	3.3	8.5	18.0	27.0	0.8	22.5	22.5	8	4.0	06 335 +2A*^	-	500
	4.7	9.5	18.5	32.0	0.8	27.5	-	7	5.2	06 475 +2A*^	-	500
	6.8	11.5	20.5	32.0	0.8	27.5	-	7	6.5	06 685 +2A*^	-	250
250 VDC	0.027	4.0	9.0	13.0	0.6	10.0	10.0	70	0.4	06 273 +2E*^	-	1000
	0.033	4.0	9.0	13.0	0.6	10.0	10.0	70	0.4	06 333 +2E*^	-	1000
	0.047	4.0	9.0	13.0	0.6	10.0	10.0	70	0.4	06 473 +2E*^	-	1000
	0.068	4.5	9.5	13.0	0.6	10.0	10.0	70	0.4	06 683 +2E*^	-	1000
	0.082	5.0	10.0	13.0	0.6	10.0	10.0	70	0.5	06 823 +2E*^	-	1000
	0.1	5.0	10.0	13.0	0.6	10.0	10.0	70	0.5	06 104 +2E*^	-	1000
	0.15	5.0	11.0	19.0	0.8	15.0	15.0	28	0.7	06 154 +2E*^	-	1000
	0.22	6.0	12.0	18.0	0.8	15.0	15.0	28	0.9	06 224 +2E*^	-	1000
	0.33	7.0	13.0	19.0	0.8	15.0	15.0	28	1.3	06 334 +2E*^	-	1000
	0.47	5.5	14.5	27.0	0.8	22.5	22.5	12	2.1	06 474 +2E*^	-	1000
	0.68	6.5	15.5	27.0	0.8	22.5	22.5	12	2.9	06 684 +2E*^	-	1000
	1.0	7.5	16.5	27.0	0.8	22.5	22.5	12	3.6	06 105 +2E*^	-	500
	1.5	8.5	17.5	32.0	0.8	27.5	-	10	5.1	06 155 +2E*^	-	500
	2.2	10.5	19.5	32.0	0.8	27.5	-	10	6.4	06 224 +2E*^	-	250
400 VDC	0.01	4.0	9.0	13.0	0.6	10.0	10.0	110	0.4	06 103 +2G*^	-	1000
	0.015	4.0	9.0	13.0	0.6	10.0	10.0	110	0.4	06 153 +2G*^	-	1000
	0.022	4.0	9.0	13.0	0.6	10.0	10.0	110	0.4	06 223 +2G*^	-	1000
	0.033	4.5	9.5	13.0	0.6	10.0	10.0	110	0.4	06 333 +2G*^	-	1000
	0.047	4.5	10.5	19.0	0.8	15.0	15.0	44	0.6	06 473 +2G*^	-	1000
	0.068	5.5	11.5	13.5	0.8	15.0	15.0	44	0.7	06 683 +2G*^	-	1000
	0.1	5.5	12.5	19.0	0.8	15.0	15.0	44	0.9	06 104 +2G*^	-	1000
	0.15	5.5	12.5	19.0	0.8	15.0	15.0	44	1.3	06 154 +2G*^	-	1000
	0.22	6.0	15.0	27.0	0.8	22.5	22.5	20	1.9	06 224 +2G*^	-	1000
	0.33	6.0	15.0	27.0	0.8	22.5	22.5	20	2.6	06 334 +2G*^	-	1000
	0.47	7.5	16.5	27.0	0.8	22.5	22.5	20	3.4	06 474 +2G*^	-	500
	0.56	7.5	16.5	32.0	0.8	27.5	-	16	3.5	06 564 +2G*^	-	500
	0.82	9.0	18.0	32.0	0.8	27.5	-	16	4.5	06 824 +2G*^	-	500
	1.0	10.0	19.0	32.0	0.8	27.5	-	16	5.0	06 105 +2G*^	-	250
630 VDC	0.01	5.0	11.0	13.0	0.6	10.0	10.0	70	0.4	06 103 +2J*^	-	1000
	0.015	5.5	10.5	13.0	0.6	10.0	10.0	70	0.6	06 153 +2J*^	-	1000
	0.022	5.0	11.0	13.0	0.6	10.0	10.0	70	0.7	06 223 +2J*^	-	1000
	0.033	6.0	12.0	19.0	0.8	15.0	15.0	70	1.0	06 333 +2J*^	-	1000
	0.047	7.0	13.0	19.0	0.8	15.0	15.0	70	1.2	06 473 +2J*^	-	1000
	0.068	8.0	14.0	19.0	0.8	15.0	15.0	70	1.4	06 683 +2J*^	-	1000
	0.082	5.5	14.5	27.0	0.8	22.5	22.5	28	1.8	06 823 +2J*^	-	1000
	0.1	6.0	15.0	27.0	0.8	22.5	22.5	28	2.1	06 104 +2J*^	-	1000
	0.15	7.5	16.5	27.0	0.8	22.5	22.5	28	2.9	06 154 +2J*^	-	500
	0.22	9.5	18.5	27.0	0.8	22.5	22.5	28	3.5	06 224 +2J*^	-	500
	0.33	10.0	19.0	32.0	0.8	27.5	-	24	5.0	06 334 +2J*^	-	250
	0.47	12.0	21.0	32.0	0.8	27.5	-	24	6.5	06 474 +2J*^	-	250



METALLISED POLYESTER FILM CAPACITORS
(Sub-Miniature Box / Dip Type) 5.0 mm Pitch

MAIN APPLICATION: Blocking, bypassing, filtering, timing, coupling and decoupling, interference suppression in low voltage applications, low pulse operations

CONSTRUCTION (BOX TYPE): Low inductive cell of metallized polyester film encased in flame retardant box or coated with flame retardant epoxy resin

CLIMATIC CATEGORY: 55/100/56

APPLICABLE SPECIFICATION: IEC 384-2

CAPACITANCE VALUE, RATED VOLTAGE (DC): Refer dimension chart

CAPACITANCE TOLERANCE: ±5%, ±10%, ±20%

TAN δ (DISSIPATION FACTOR) AT 20°C

Frequency (kHz)	$C_R < 0.1$ F	0.1 F $< C_R \leq 1$ F	$C_R > 1$ F
At 1	≤ 0.8%	≤ 0.8%	1.0%
At 10	≤ 1.5%	≤ 1.5%	-
At 100	≤ 3.0%	≤ 3.0%	

INSULATION RESISTANCE

Minimum Insulation Resistance R_{IS}	V_R	$C_R \leq 0.33$ F	$C_R > 0.33$ F
(or) time constant $T = C_R \times R_{IS}$	≤ 100 V DC	3750 MΩ	1250 s
at 25° C, relative humidity ≤ 70%	> 100 V DC	7500 MΩ	2500 s

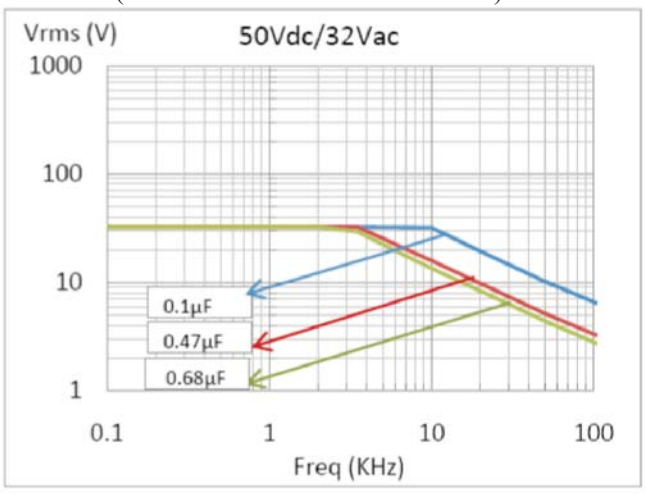
VOLTAGE PROOF: Between terminals: 1.6 times of rated voltage for 2 seconds.

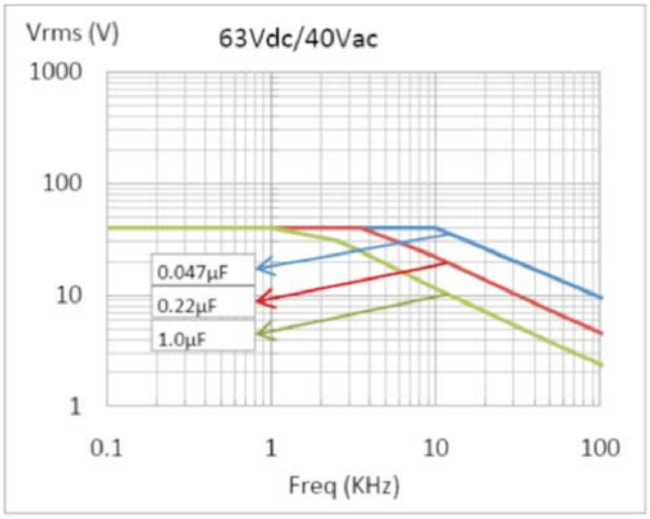
LIFE TEST CONDITIONS
(Loading at elevated temperature)
Loaded at 1.25 times of rated voltage at 85° C or 1.25 times of category voltage at 100° C for 1000 hours
Category voltage is 80% of rated voltage at 100° C

Criteria after the test:
Δc/c: ≤ 5% of initial value
Change in Tan δ: ≤ 0.003, $C_R \leq 1$ F; ≤ 0.002, $C_R > 1$ F
Insulation resistance: ≥ 50% of the value mentioned in IR chart

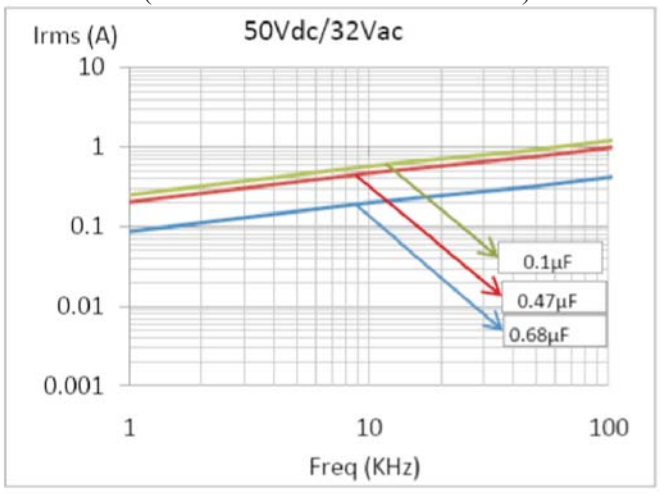
APPROVALS: Capacitors are tested at ERTL (North) as per IEC 384-2 and approved by CACT for telecom application.

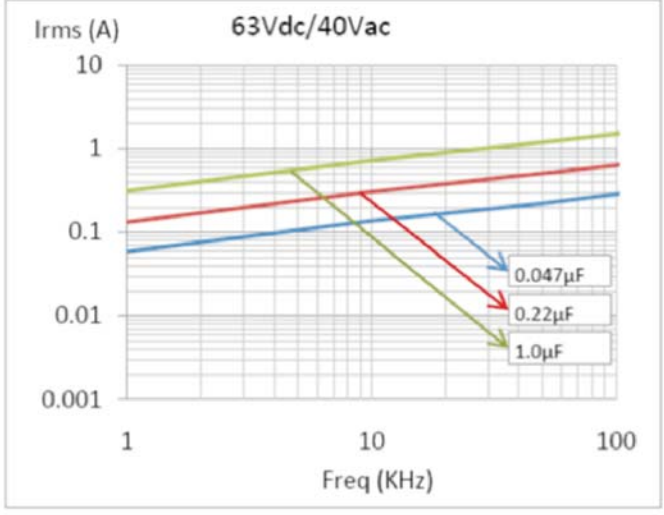
Max. Voltage (Vrms) vs. Frequency
(Sinusoidal Waveform at T ≤ 55° C)

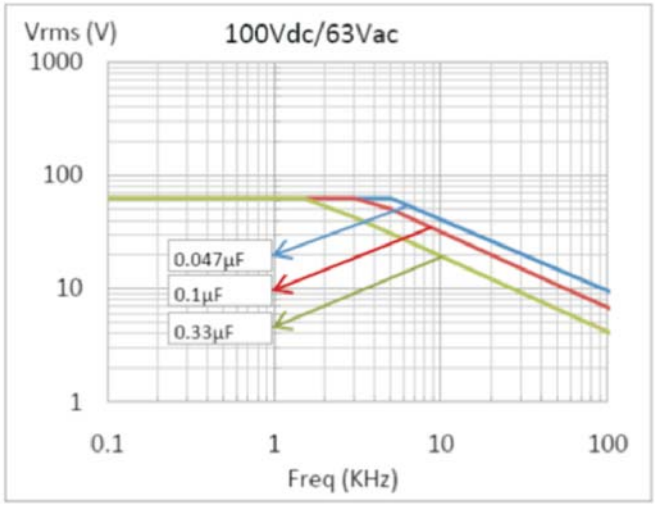


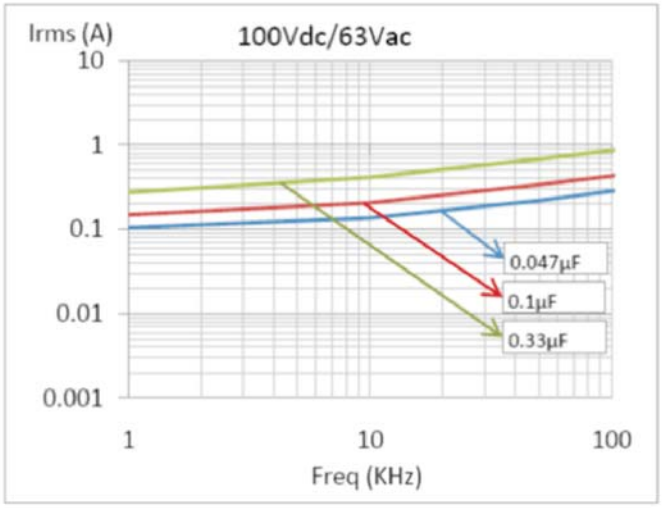


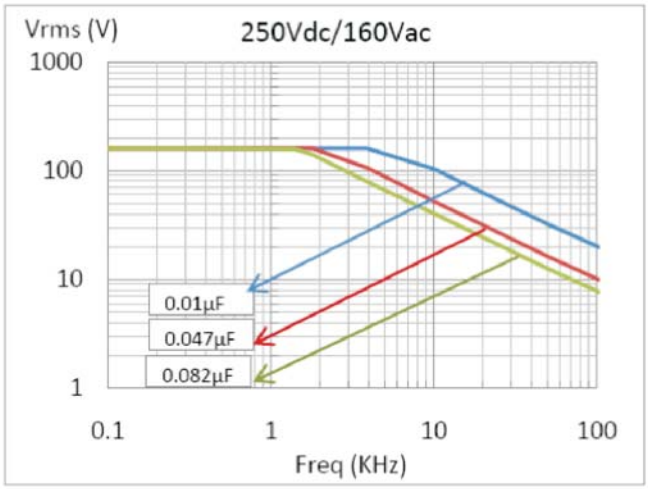
Max. Current (Irms) vs. Frequency
(Sinusoidal Waveform at T ≤ 55° C)

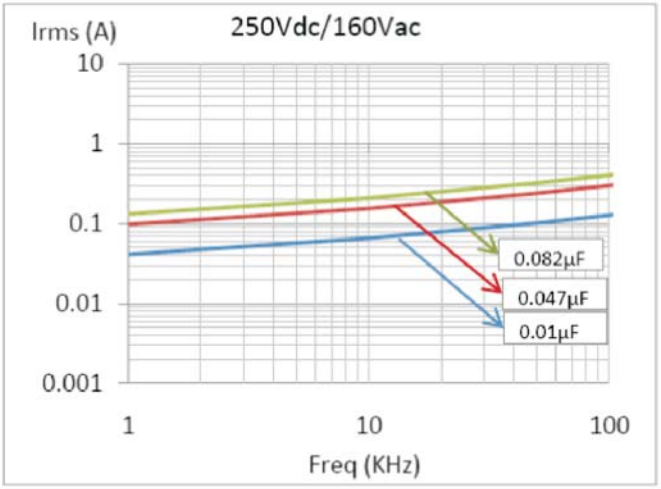


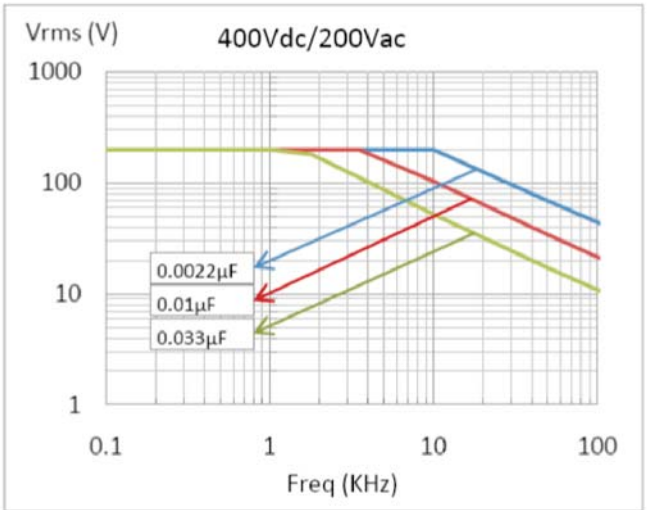


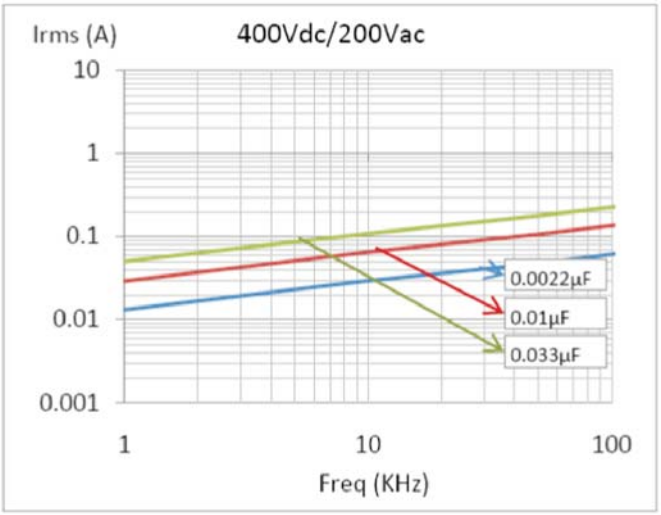

Vrms (V)
100Vdc/63Vac
1000
100
10
1
0.1
1
10
100
Freq (KHz)
0.047μF
0.1μF
0.33μF


Irms (A)
100Vdc/63Vac
10
1
0.1
0.01
0.001
1
10
100
Freq (KHz)
0.047μF
0.1μF
0.33μF


Vrms (V)
250Vdc/160Vac
1000
100
10
1
0.1
1
10
100
Freq (KHz)
0.01μF
0.047μF
0.082μF


Irms (A)
250Vdc/160Vac
10
1
0.1
0.01
0.001
1
10
100
Freq (KHz)
0.082μF
0.047μF
0.01μF

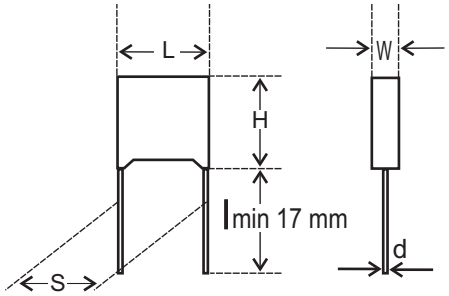

Vrms (V)
400Vdc/200Vac
1000
100
10
1
0.1
1
10
100
Freq (KHz)
0.0022μF
0.01μF
0.033μF


Irms (A)
400Vdc/200Vac
10
1
0.1
0.01
0.001
1
10
100
Freq (KHz)
0.0022μF
0.01μF
0.033μF

METALLISED POLYESTER FILM CAPACITORS (Sub-Miniature Box / Dip Type)

5.0 mm Pitch - Ordering codes and packaging units

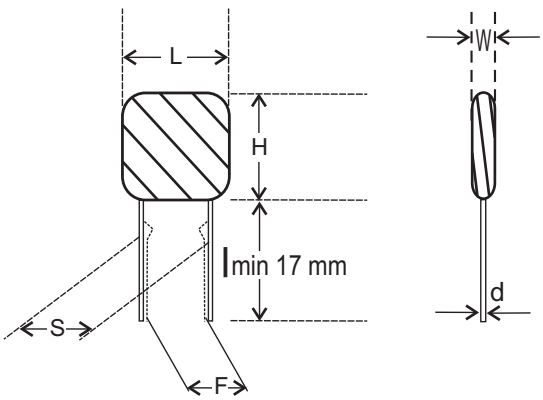
Rated Voltage	Rated Cap. (µF)	Dimensions(mm) W ±0.5	H ±0.5	L ±0.5	d ±0.05	S ±0.5	F .8/-.2	DV/DT V/µs	Wt. g	Ordering code	Packing units Ammo	Bulk
50 V	0.1	2.5	6.5	7.2	0.6	5	5	50	0.25	16 104 +1H*^	3000	4000
	0.15	3.5	7.5	7.2	0.6	5	5	50	0.35	16 154 +1H*^	2000	4000
	0.22	3.5	7.5	7.2	0.6	5	5	50	0.35	16 224 +1H*^	2000	4000
	0.33	3.5	7.5	7.2	0.6	5	5	50	0.35	16 334 +1H*^	2000	4000
	0.47	4.5	9.5	7.2	0.6	5	5	50	0.45	16 474 +1H*^	1500	2000
	0.68	6.0	11.0	7.2	0.6	5	5	50	0.60	16 684 +1H*^	1500	2000
	1.0	6.0	11.0	7.2	0.6	5	5	50	0.60	16 105 +1H*^	1000	4000
63 V	0.047	2.5	6.5	7.2	0.6	5	5	60	0.25	16 473 +1J*^	3000	4000
	0.068	3.5	7.5	7.2	0.6	5	5	60	0.27	16 683 +1J*^	3000	4000
	0.1	2.5	6.5	7.2	0.6	5	5	60	0.25	16 104 +1J*^	3000	4000
	0.15	3.5	7.5	7.2	0.6	5	5	60	0.35	16 154 +1J*^	2000	4000
	0.22	3.5	7.5	7.2	0.6	5	5	60	0.37	16 224 +1J*^	2000	4000
	0.33	4.5	9.5	7.2	0.6	5	5	60	0.52	16 334 +1J*^	1500	2000
	0.47	6.0	11.0	7.2	0.6	5	5	60	0.60	16 474 +1J*^	1500	2000
	0.68	6.0	11.0	7.2	0.6	5	5	60	0.60	16 684 +1J*^	1000	2000
	1.0	6.0	11.0	7.2	0.6	5	5	60	0.75	16 105 +1J*^	1000	2000
100 V	0.001	2.5	6.5	7.2	0.6	5	5	110	0.25	16 102 +2A*^	3000	4000
	0.0015	2.5	6.5	7.2	0.6	5	5	110	0.25	16 152 +2A*^	3000	4000
	0.0022	2.5	6.5	7.2	0.6	5	5	110	0.25	16 222 +2A*^	3000	4000
	0.0033	2.5	6.5	7.2	0.6	5	5	110	0.25	16 332 +2A*^	3000	4000
	0.0047	2.7	6.7	7.4	0.6	5	5	110	0.30	16 472 +2A*^	2500	4000
	0.0068	3.0	6.5	7.2	0.6	5	5	110	0.30	16 682 +2A*^	2500	4000
	0.01	2.7	6.7	7.4	0.6	5	5	110	0.28	16 103 +2A*^	2500	4000
	0.015	3.0	6.5	7.2	0.6	5	5	110	0.25	16 153 +2A*^	2500	4000
	0.022	3.0	6.5	7.2	0.6	5	5	110	0.25	16 223 +2A*^	2500	4000
	0.033	3.7	7.7	7.4	0.6	5	5	110	0.35	16 333 +2A*^	2500	4000
	0.047	2.7	6.7	7.4	0.6	5	5	110	0.35	16 473 +2A*^	2500	4000
	0.068	3.5	7.5	7.2	0.6	5	5	110	0.35	16 683 +2A*^	2000	4000
	0.1	3.7	7.7	7.4	0.6	5	5	110	0.35	16 104 +2A*^	2000	4000
	0.15	4.7	9.7	7.4	0.6	5	5	110	0.45	16 154 +2A*^	1500	4000
	0.22	5.0	10.0	7.2	0.6	5	5	110	0.60	16 224 +2A*^	1500	2000
	0.33	6.0	11.0	7.2	0.6	5	5	110	0.60	16 334 +2A*^	1000	2000
250 V	0.001	2.5	6.5	7.2	0.6	5	5	320	0.35	16 102 +2E*^	3000	4000
	0.0015	2.5	6.5	7.2	0.6	5	5	320	0.35	16 152 +2E*^	3000	4000
	0.0022	2.5	6.5	7.2	0.6	5	5	320	0.35	16 222 +2E*^	3000	4000
	0.0033	2.5	6.5	7.2	0.6	5	5	320	0.35	16 332 +2E*^	3000	4000
	0.0047	2.5	6.5	7.2	0.6	5	5	320	0.35	16 472 +2E*^	3000	4000
	0.0068	3.0	6.5	7.2	0.6	5	5	320	0.35	16 682 +2E*^	2500	4000
	0.01	2.7	6.7	7.4	0.6	5	5	320	0.35	16 103 +2E*^	2500	4000
	0.015	3.0	6.5	7.2	0.6	5	5	320	0.35	16 153 +2E*^	2500	4000
	0.022	3.0	6.5	7.2	0.6	5	5	320	0.35	16 223 +2E*^	2500	4000
	0.033	3.5	7.5	7.2	0.6	5	5	320	0.35	16 333 +2E*^	2000	4000
	0.047	3.7	7.7	7.4	0.6	5	5	320	0.45	16 473 +2E*^	1500	2000
	0.068	4.5	9.5	7.2	0.6	5	5	320	0.45	16 683 +2E*^	1500	2000
	0.1	6.0	11.0	7.2	0.6	5	5	320	0.60	16 104 +2E*^	1000	2000
400 V	0.001	2.5	6.5	7.2	0.6	5	5	600	0.35	16 102 +2G*^	3000	4000
	0.0015	2.5	6.5	7.2	0.6	5	5	600	0.35	16 152 +2G*^	3000	4000
	0.0022	2.5	6.5	7.2	0.6	5	5	600	0.35	16 222 +2G*^	3000	4000
	0.0033	2.5	6.5	7.2	0.6	5	5	600	0.35	16 332 +2G*^	3000	4000
	0.0047	3.0	6.5	7.2	0.6	5	5	600	0.35	16 472 +2G*^	2500	4000
	0.0068	3.0	6.5	7.2	0.6	5	5	600	0.35	16 682 +2G*^	2500	4000
	0.01	3.7	7.7	7.4	0.6	5	5	600	0.35	16 103 +2G*^	2000	4000
	0.015	4.5	9.5	7.2	0.6	5	5	600	0.50	16 153 +2G*^	1500	2000
	0.022	4.7	9.7	7.4	0.6	5	5	600	0.50	16 223 +2G*^	1500	2000
	0.033	5.0	10.0	7.2	0.6	5	5	600	0.60	16 333 +2G*^	1500	2000
	0.047	6.0	11.0	7.2	0.6	5	5	600	0.60	16 473 +2G*^	1000	2000



METALLISED POLYESTER FILM CAPACITORS (Sub-Miniature Box / Dip Type)

5.0 mm Pitch - Ordering codes and packaging units

Rated Voltage	Rated Cap. (µF)	Dimensions(mm) W ±0.5	H ±0.5	L ±0.5	d ±0.05	S ±0.5	F .8/-.2	DV/DT V/µs	Wt. g	Ordering code	Packing units Ammo	Bulk
50 V	0.1	2.5	6.5	7.2	0.6	5	5	50	0.25	14 104 +1H*^	3000	4000
	0.15	3.5	8.5	7.2	0.6	5	5	50	0.35	14 154 +1H*^	2000	4000
	0.22	3.5	8.5	7.2	0.6	5	5	50	0.35	14 224 +1H*^	2000	4000
	0.33	3.5	8.5	7.2	0.6	5	5	50	0.35	14 334 +1H*^	2000	4000
	0.47	4.5	9.5	7.2	0.6	5	5	50	0.45	14 474 +1H*^	1500	2000
	0.68	5.0	11.0	7.2	0.6	5	5	50	0.60	14 684 +1H*^	1500	2000
	1.0	6.0	11.0	7.2	0.6	5	5	50	0.60	14 105 +1H*^	1000	4000
63V	0.01	2.5	6.5	7.2	0.6	5	5	60	0.25	14 103 +1J*^	3000	4000
	0.015	2.5	6.5	7.2	0.6	5	5	60	0.25	14 153 +1J*^	3000	4000
	0.022	2.5	6.5	7.2	0.6	5	5	60	0.25	14 223 +1J*^	3000	4000
	0.033	2.5	6.5	7.2	0.6	5	5	60	0.25	14 333 +1J*^	3000	4000
	0.047	2.5	6.5	7.2	0.6	5	5	60	0.25	14 473 +1J*^	3000	4000
	0.068	2.5	6.5	7.2	0.6	5	5	60	0.25	14 683 +1J*^	3000	4000
	0.1	2.5	6.5	7.2	0.6	5	5	60	0.25	14 104 +1J*^	3000	4000
	0.15	3.5	8.5	7.2	0.6	5	5	60	0.35	14 154 +1J*^	2000	4000
	0.22	3.5	8.5	7.2	0.6	5	5	60	0.35	14 224 +1J*^	2000	4000
	0.33	4.5	9.5	7.2	0.6	5	5	60	0.45	14 334 +1J*^	1500	2000
	0.47	5.0	11.0	7.2	0.6	5	5	60	0.60	14 474 +1J*^	1500	2000
	0.68	6.0	11.0	7.2	0.6	5	5	60	0.60	14 684 +1J*^	1000	2000
100 V	0.0015	2.5	6.5	7.2	0.6	5	5	110	0.25	14 152 +2A*^	3000	4000
	0.0022	2.5	6.5	7.2	0.6	5	5	110	0.25	14 222 +2A*^	3000	4000
	0.0033	2.5	6.5	7.2	0.6	5	5	110	0.25	14 332 +2A*^	3000	4000
	0.0047	2.5	6.5	7.2	0.6	5	5	110	0.25	14 472 +2A*^	2500	4000
	0.0068	2.5	6.5	7.2	0.6	5	5	110	0.25	14 682 +2A*^	2500	4000
	0.01	2.5	6.5	7.2	0.6	5	5	110	0.25	14 103 +2A*^	2500	4000
	0.015	2.5	6.5	7.2	0.6	5	5	110	0.25	14 153 +2A*^	2500	4000
	0.022	2.5	6.5	7.2	0.6	5	5	110	0.25	14 223 +2A*^	2500	4000
	0.033	2.5	6.5	7.2	0.6	5	5	110	0.25	14 333 +2A*^	2500	4000
	0.047	3.0	6.5	7.2	0.6	5	5	110	0.35	14 473 +2A*^	2500	4000
	0.068	3.5	8.5	7.2	0.6	5	5	110	0.35	14 683 +2A*^	2000	4000
	0.1	3.5	8.5	7.2	0.6	5	5	110	0.35	14 104 +2A*^	2000	4000
	0.15	4.5	9.5	7.2	0.6	5	5	110	0.45	14 154 +2A*^	2000	4000
	0.22	5.0	11.0	7.2	0.6	5	5	110	0.60	14 224 +2A*^	1500	2000
	0.33	6.0	11.0	7.2	0.6	5	5	110	0.60	14 334 +2A*^	1000	2000
250 V	0.0015	2.5	6.5	7.2	0.6	5	5	320	0.35	14 152 +2E*^	3000	4000
	0.0022	2.5	6.5	7.2	0.6	5	5	320	0.35	14 222 +2E*^	3000	4000
	0.0033	2.5	6.5	7.2	0.6	5	5	320	0.35	14 332 +2E*^	3000	4000
	0.0047	2.5	6.5	7.2	0.6	5	5	320	0.35	14 472 +2E*^	3000	4000
	0.0068	2.5	6.5	7.2	0.6	5	5	320	0.35	14 682 +2E*^	2500	4000
	0.01	3.0	6.5	7.2	0.6	5	5	320	0.35	14 103 +2E*^	2500	4000
	0.015	3.0	6.5	7.2	0.6	5	5	320	0.35	14 153 +2E*^	2500	4000
	0.022	3.0	6.5	7.2	0.6	5	5	320	0.35	14 223 +2E*^	2500	4000
	0.033	3.5	8.5	7.2	0.6	5	5	320	0.35	14 333 +2E*^	2000	4000
	0.047	4.5	9.5	7.2	0.6	5	5	320	0.45	14 473 +2E*^	1500	2000
	0.068	4.5	9.5	7.2	0.6	5	5	320	0.45	14 683 +2E*^	1500	2000
	0.1	6.0	11.0	7.2	0.6	5	5	320	0.60	14 104 +2E*^	1000	2000
400 V	0.0015	2.5	6.5	7.2	0.6	5	5	600	0.35	14 152 +2G*^	3000	4000
	0.0022	2.5	6.5	7.2	0.6	5	5	600	0.35	14 222 +2G*^	3000	4000
	0.0033	2.5	6.5	7.2	0.6	5	5	600	0.35	14 332 +2G*^	3000	4000
	0.0047	2.5	6.5	7.2	0.6	5	5	600	0.35	14 472 +2G*^	2500	4000
	0.0068	3.0	6.5	7.2	0.6	5	5	600	0.35	14 682 +2G*^	2500	4000
	0.01	3.5	8.5	7.2	0.6	5	5	600	0.35	14 103 +2G*^	2000	4000
	0.015	4.5	9.5	7.2	0.6	5	5	600	0.45	14 153 +2G*^	1500	2000
	0.022	4.5	9.5	7.2	0.6	5	5	600	0.45	14 223 +2G*^	1500	2000
	0.033	5.0	11.0	7.2	0.6	5	5	600	0.60	14 333 +2G*^	1500	2000



METALLISED POLYESTER FILM CAPACITORS
(Miniature Box / Dip Type) 7.5 mm Pitch

MAIN APPLICATION: Blocking, bypassing, filtering, timing, coupling and decoupling, interference suppression in low voltage applications, low pulse operations

CONSTRUCTION (BOX TYPE): Low inductive cell of metallised polyester film encased in flame retardant box or coated with flame retardant epoxy resin

CLIMATIC CATEGORY: 55/100/56

APPLICABLE SPECIFICATION: IEC 384-2

CAPACITANCE VALUE, RATED VOLTAGE (DC): Refer dimension chart

CAPACITANCE TOLERANCE: ±5%, ±10%, ±20%

VOLTAGE PROOF: Between terminals: 1.6 times of rated voltage for 2 seconds.

LIFE TEST CONDITIONS
(Loading at elevated temperature)
Loaded at 1.25 times of rated voltage at 85° C or 1.25 times of category voltage at 100° C for 1000 hours
Category voltage is 80% of rated voltage at 100° C

Criteria after the test:
Δc/c: ≤ 5% of initial value
Change in Tan δ: ≤ 0.003, C_R ≤ 1 F; ≤ 0.002, C_R > 1 F
Insulation resistance: ≥ 50% of the value mentioned in IR chart

APPROVALS: Capacitors are tested at ERTL (North) as per IEC 384-2 and approved by CACT for telecom application.

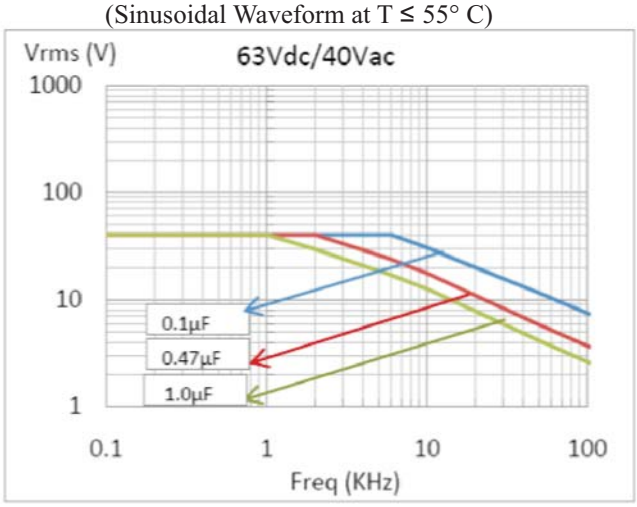
TAN δ (DISSIPATION FACTOR) AT 20°C

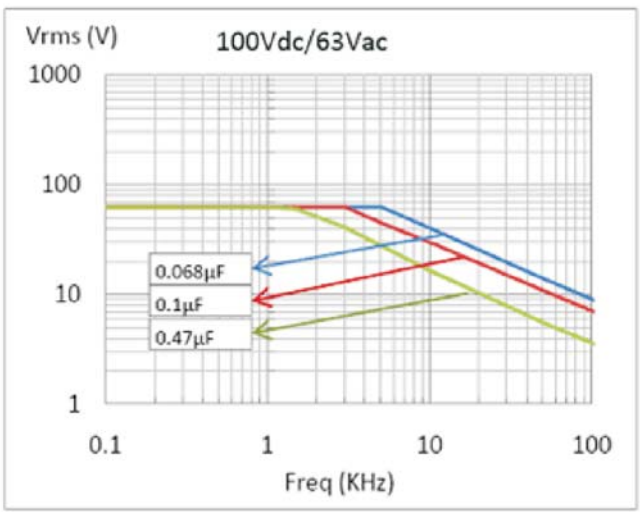
Frequency (kHz)	C_R < 0.1 F	0.1 F < C_R ≤ 1 F	C_R >1 F
At 1	≤ 0.8%	≤ 0.8%	1.0%
At 10	≤ 1.5%	≤ 1.5%	-
At 100	≤ 3.0%	≤ 3.0%	

INSULATION RESISTANCE

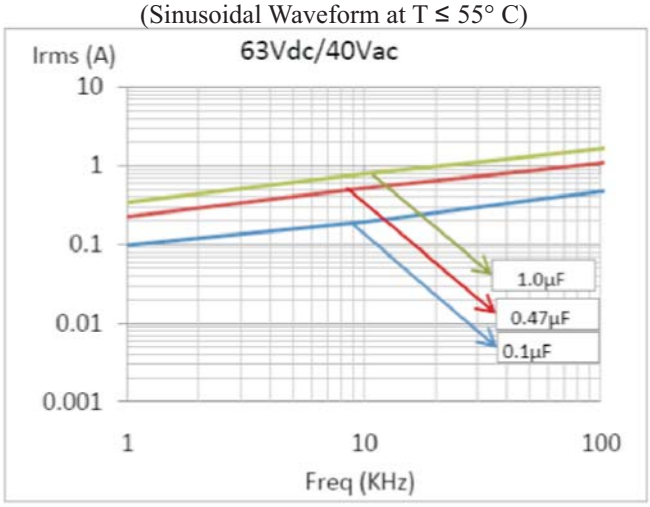
Minimum Insulation Resistance R_{IS}	V_R	C_R ≤ 0.33 F	C_R > 0.33 F
(or) time constant T = C_R × R_{IS}	≤ 100 V DC	3750 MΩ	1250 s
at 25° C, relative humidity ≤ 70%	≥ 250 V DC	7500 MΩ	2500 s

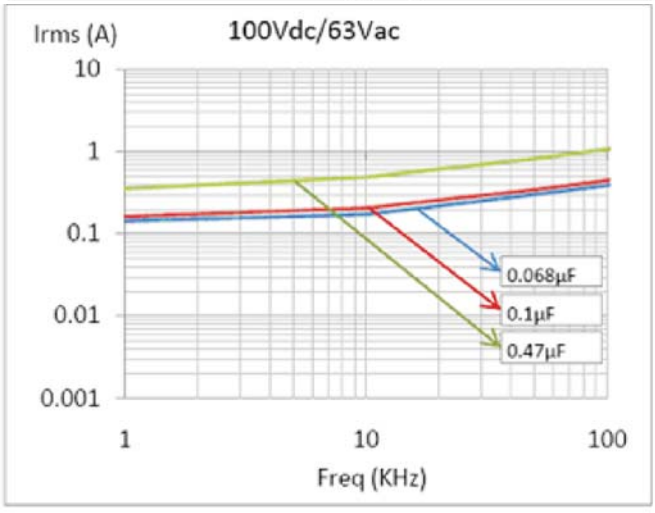
Max. Voltage (Vrms) vs. Frequency
(Sinusoidal Waveform at T ≤ 55° C)

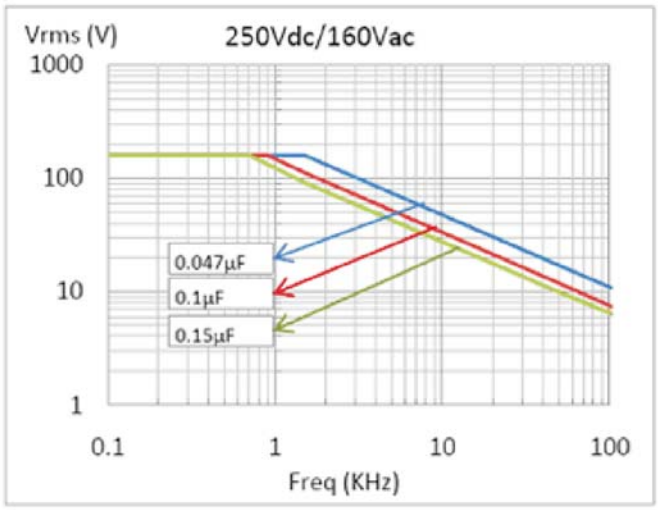


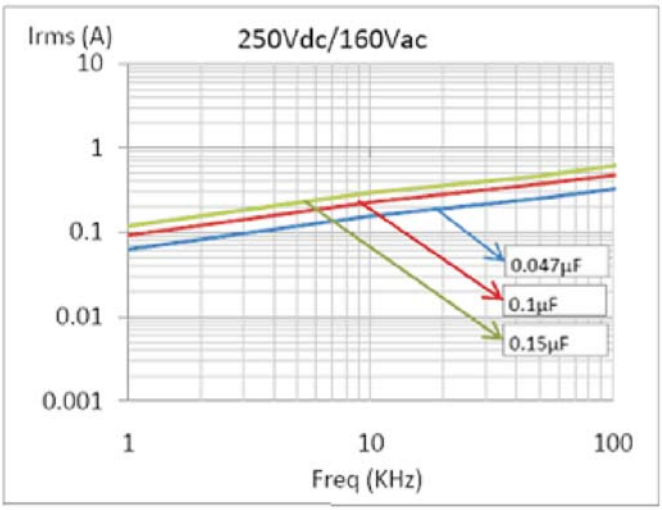


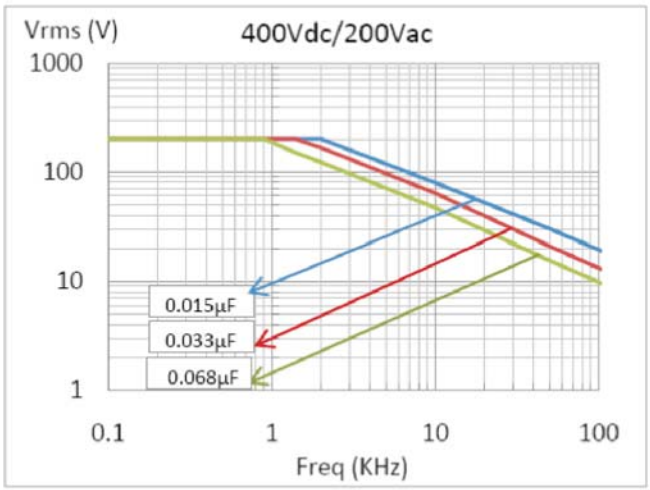
Max. Current (Irms) vs. Frequency
(Sinusoidal Waveform at T ≤ 55° C)

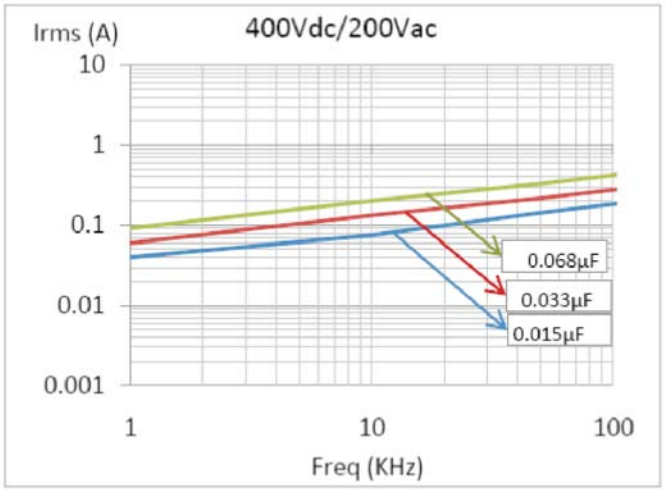





Vrms (V)
250Vdc/160Vac
1000
100
10
1
0.1
1
10
100
Freq (KHz)
0.047μF
0.1μF
0.15μF


Irms (A)
250Vdc/160Vac
10
1
0.1
0.01
0.001
1
10
100
Freq (KHz)
0.047μF
0.1μF
0.15μF

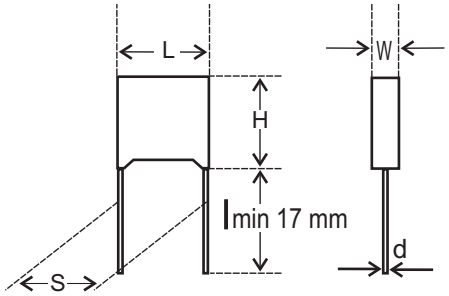

Vrms (V)
400Vdc/200Vac
1000
100
10
1
0.1
1
10
100
Freq (KHz)
0.015μF
0.033μF
0.068μF


Irms (A)
400Vdc/200Vac
10
1
0.1
0.01
0.001
1
10
100
Freq (KHz)
0.068μF
0.033μF
0.015μF

METALLISED POLYESTER FILM CAPACITORS (Miniature Box / Dip Type)

7.5 mm Pitch - Ordering codes and packaging units

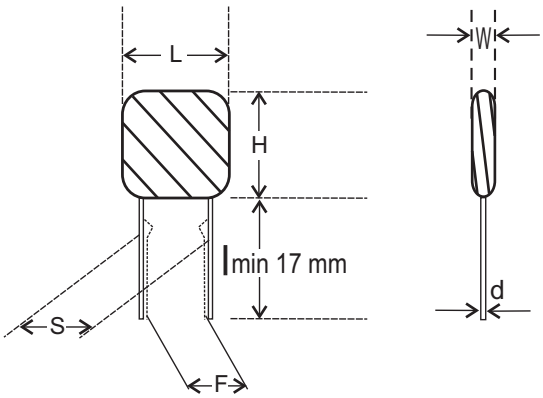
Rated Voltage	Rated Cap. (µF)	Dimensions(mm) W ±0.5	H ±0.5	L ±0.5	d ±0.05	S ±0.5	F ±0.5	DV/DT V/µs	Wt. g	Ordering code	Packing units Ammo	Reel	Bulk
63V	0.1	3.5	6.5	10.5	0.6	7.5	7.5	18	0.45	15 104 +1J*^	1500	1500	1000
	0.15	3.5	6.5	10.5	0.6	7.5	7.5	18	0.45	15 154 +1J*^	1500	1500	1000
	0.22	3.5	6.5	10.5	0.6	7.5	7.5	18	0.45	15 224 +1J*^	1500	1500	1000
	0.33	4.0	9.0	10.5	0.6	7.5	7.5	18	0.60	15 334 +1J*^	1500	1000	1000
	0.47	5.0	11.0	10.5	0.6	7.5	7.5	18	0.70	15 474 +1J*^	1000	1000	1000
	0.68	5.0	11.0	10.5	0.6	7.5	7.5	18	0.70	15 684 +1J*^	1000	1000	1000
	1.0	6.0	12.0	10.5	0.6	7.5	7.5	18	0.80	15 105 +1J*^	750	750	1000
100 V	0.033	3.5	6.5	10.5	0.6	7.5	7.5	36	0.45	15 333 +2A*^	1500	1500	1000
	0.047	3.5	6.5	10.5	0.6	7.5	7.5	36	0.45	15 473 +2A*^	1500	1500	1000
	0.068	3.5	6.5	10.5	0.6	7.5	7.5	36	0.45	15 683 +2A*^	1500	1500	1000
	0.1	4.5	9.0	10.5	0.6	7.5	7.5	36	0.60	15 104 +2A*^	1500	1000	1000
	0.15	4.5	9.0	10.5	0.6	7.5	7.5	36	0.50	15 154 +2A*^	1500	1000	1000
	0.22	4.5	9.0	10.5	0.6	7.5	7.5	36	0.50	15 224 +2A*^	1500	1000	1000
	0.33	5.0	11.0	10.5	0.6	7.5	7.5	36	0.70	15 334 +2A*^	1000	1000	1000
	0.47	6.0	12.0	10.5	0.6	7.5	7.5	36	0.90	15 474 +2A*^	750	750	1000
250 V	0.01	3.5	6.5	10.5	0.6	7.5	7.5	70	0.50	15 103 +2E*^	1500	1500	1000
	0.015	3.5	6.5	10.5	0.6	7.5	7.5	70	0.45	15 153 +2E*^	1500	1500	1000
	0.022	3.5	6.5	10.5	0.6	7.5	7.5	70	0.45	15 223 +2E*^	1500	1500	1000
	0.033	3.5	6.5	10.5	0.6	7.5	7.5	70	0.50	15 333 +2E*^	1500	1000	1000
	0.047	4.0	9.0	10.5	0.6	7.5	7.5	70	0.60	15 473 +2E*^	1500	1000	1000
	0.068	4.0	9.0	10.5	0.6	7.5	7.5	70	0.70	15 683 +2E*^	1500	1000	1000
	0.1	4.0	9.0	10.5	0.6	7.5	7.5	70	0.70	15 104 +2E*^	1500	1000	1000
	0.15	5.0	11.0	10.5	0.6	7.5	7.5	70	0.90	15 154 +2E*^	1000	750	1000
	0.22	6.0	12.0	10.5	0.6	7.5	7.5	70	0.90	15 224 +2E*^	750	750	1000
400 V	0.0047	3.5	6.5	10.5	0.6	7.5	7.5	190	0.45	15 472 +2G*^	1500	1500	1000
	0.0068	3.5	6.5	10.5	0.6	7.5	7.5	190	0.60	15 682 +2G*^	1500	1500	1000
	0.01	4.0	9.0	10.5	0.6	7.5	7.5	190	0.60	15 103 +2G*^	1500	1000	1000
	0.015	4.0	9.0	10.5	0.6	7.5	7.5	190	0.50	15 153 +2G*^	1500	1000	1000
	0.022	4.0	9.0	10.5	0.6	7.5	7.5	190	0.60	15 223 +2G*^	1500	1000	1000
	0.033	4.0	9.0	10.5	0.6	7.5	7.5	190	0.80	15 333 +2G*^	1500	1000	1000
	0.047	5.0	11.0	10.5	0.6	7.5	7.5	190	0.90	15 473 +2G*^	1000	750	1000
	0.056	5.0	11.0	10.5	0.6	7.5	7.5	190	0.90	15 563 +2G*^	1000	750	1000
	0.068	6.0	12.0	10.5	0.6	7.5	7.5	190	0.90	15 683 +2G*^	750	750	1000
630V	0.01	5.0	11.0	10.5	0.6	7.5	7.5	450	0.60	15 103 +2J*^	1000	1000	1000
	0.015	6.0	12.0	10.5	0.6	7.5	7.5	450	0.60	15 153 +2J*^	750	750	1000
	0.022	6.0	12.0	10.5	0.6	7.5	7.5	450	0.70	15 223 +2J*^	750	750	1000



METALLISED POLYESTER FILM CAPACITORS (Miniature Box / Dip Type)

7.5 mm Pitch - Ordering codes and packaging units

Rated Voltage	Rated Cap. (µF)	Dimensions(mm) W ±0.5	H ±0.5	L ±0.5	d ±0.05	S ±0.5	F ±0.5	DV/DT V/µs	Wt. g	Ordering code	Packing units Ammo	Reel	Bulk
63V	0.1	3.5	6.5	10.5	0.6	7.5	7.5	18	0.45	13 104 +1J*^	1500	1500	1000
	0.15	3.5	6.5	10.5	0.6	7.5	7.5	18	0.45	13 154 +1J*^	1500	1500	1000
	0.22	3.5	6.5	10.5	0.6	7.5	7.5	18	0.45	13 224 +1J*^	1500	1500	1000
	0.33	4.0	9.0	10.5	0.6	7.5	7.5	18	0.50	13 334 +1J*^	1500	1000	1000
	0.47	5.0	11.0	10.5	0.6	7.5	7.5	18	0.70	13 474 +1J*^	1000	1000	1000
	0.68	5.0	11.0	10.5	0.6	7.5	7.5	18	0.70	13 684 +1J*^	1000	1000	1000
	1.0	6.0	12.0	10.5	0.6	7.5	7.5	18	0.80	13 105 +1J*^	750	750	1000
100 V	0.033	3.5	6.5	10.5	0.6	7.5	7.5	36	0.45	13 333 +2A*^	1500	1500	1000
	0.047	3.5	6.5	10.5	0.6	7.5	7.5	36	0.45	13 473 +2A*^	1500	1500	1000
	0.068	3.5	6.5	10.5	0.6	7.5	7.5	36	0.45	13 683 +2A*^	1500	1500	1000
	0.1	5.0	10.0	10.5	0.6	7.5	7.5	36	0.50	13 104 +2A*^	1500	1000	1000
	0.15	4.0	9.0	10.5	0.6	7.5	7.5	36	0.50	13 154 +2A*^	1500	1000	1000
	0.22	4.5	9.0	10.5	0.6	7.5	7.5	36	0.50	13 224 +2A*^	1500	1000	1000
	0.33	5.0	11.0	10.5	0.6	7.5	7.5	36	0.70	13 334 +2A*^	1000	1000	1000
	0.47	5.5	11.0	10.5	0.6	7.5	7.5	36	0.90	13 474 +2A*^	750	750	1000
250 V	0.022	3.5	8.0	10.5	0.6	7.5	7.5	70	0.45	13 223 +2E*^	1500	1500	1000
	0.033	4.0	9.0	10.5	0.6	7.5	7.5	70	0.50	13 333 +2E*^	1500	1000	1000
	0.047	4.0	9.0	10.5	0.6	7.5	7.5	70	0.50	13 473 +2E*^	1500	1000	1000
	0.068	4.0	9.0	10.5	0.6	7.5	7.5	70	0.70	13 683 +2E*^	1500	1000	1000
	0.1	5.0	10.0	10.5	0.6	7.5	7.5	70	0.70	13 104 +2E*^	1500	1000	1000
	0.15	5.0	11.0	10.5	0.6	7.5	7.5	70	0.90	13 154 +2E*^	1000	750	1000
	0.22	6.0	12.0	10.5	0.6	7.5	7.5	70	0.90	13 224 +2E*^	750	750	1000
400 V	0.022	4.5	10.0	10.5	0.6	7.5	7.5	190	0.50	13 223 +2G*^	1500	1000	1000
	0.033	5.5	11.0	10.5	0.6	7.5	7.5	190	0.70	13 333 +2G*^	1500	1000	1000
	0.047	5.5	11.0	10.5	0.6	7.5	7.5	190	0.70	13 473 +2G*^	1000	750	1000
	0.056	5.5	11.0	10.5	0.6	7.5	7.5	190	1.10	13 563 +2G*^	1000	750	1000
	0.068	6.0	12.0	10.5	0.6	7.5	7.5	190	1.10	13 683 +2G*^	750	750	1000
630V	0.0015	3.5	6.5	10.5	0.6	7.5	7.5	450	0.50	13 152 +2J*^	1500	1000	1000
	0.0022	3.5	6.5	10.5	0.6	7.5	7.5	450	0.50	13 222 +2J*^	1500	1000	1000
	0.0033	3.5	6.5	10.5	0.6	7.5	7.5	450	0.55	13 332 +2J*^	1500	1000	1000
	0.0047	4.0	9.0	10.5	0.6	7.5	7.5	450	0.60	13 472 +2J*^	1500	1000	1000
	0.0068	4.0	9.0	10.5	0.6	7.5	7.5	450	0.65	13 682 +2J*^	1500	1000	1000
	0.01	5.5	11.0	10.5	0.6	7.5	7.5	450	0.70	13 103 +2J*^	1000	1000	1000
	0.015	6.5	12.0	10.5	0.6	7.5	7.5	450	0.90	13 153 +2J*^	750	750	1000
	0.022	6.5	12.0	10.5	0.6	7.5	7.5	450	0.90	13 223 +2J*^	750	750	1000



INDUCTIVE SELF HEALING POLYESTER CAPACITORS
DTSH CAPACITORS

CONSTRUCTION: Film/foil inductive type internally series construction with aluminum foil as electrode and polyester (PET) film as dielectric and MPET film as connecting electrode, coated with flame retardant epoxy resin

CAPACITANCE RANGE: 0.001 µF to 0.01 µF

RATED VOLTAGES: 1250 VDC / 500 VAC, 1600 VDC / 500 VAC, 2000VDC /500 VAC

CAPACITANCE TOLERANCES: ±5%, ±10%

APPLICABLE SPECIFICATION: IEC 60384-2

VOLTAGE PROOF: 1.6 times the rated voltage for 2 sec

INSULATION RESISTANCE AT +20°C: > 30000 MΩ

OPERATING TEMPERATURE RANGE: -40°C to +125°C

RATED TEMPERATURE: 85°C

PITCH: 5 mm, 7.5 mm

CAPACITANCE TOLERANCES: ±5%, ±10%

INSULATION RESISTANCE AT +20°C: > 30000 MΩ

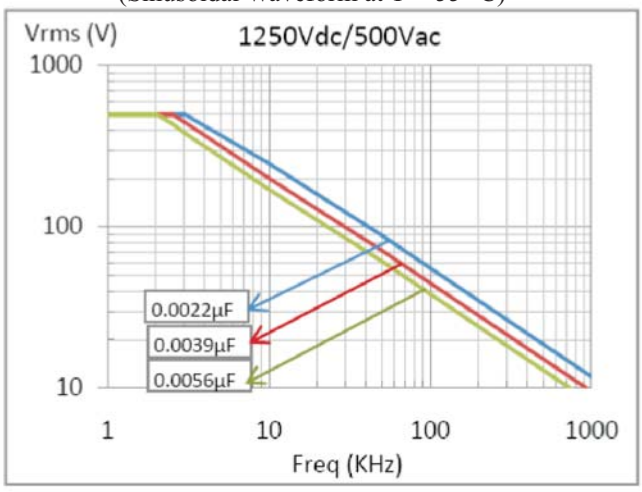
TAN δ: 0.8% at 1 kHz, 3% at 100 kHz

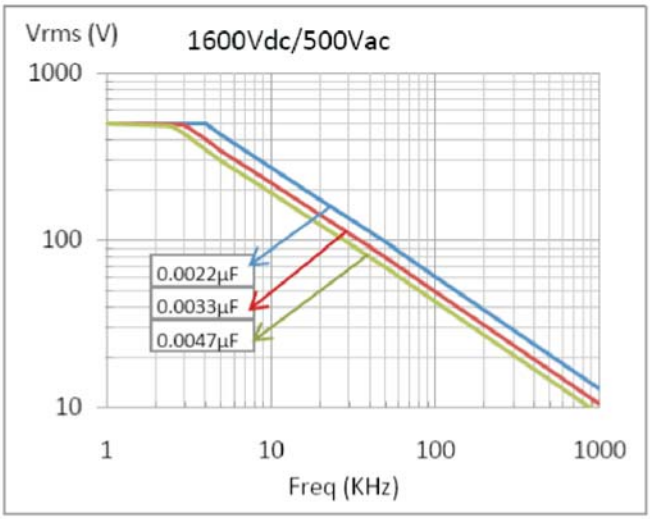
VOLTAGE DERATING: For temperatures between +85° C and +125 °C, a decreasing factor of 1.25% per °C on the rated voltage Ur (DC and AC), has to be applied

ENDURANCE:
Test conditions (DC)
Temperature: +85°C ±2°C
Test duration: 1000 h
Voltage applied: 1.25 × V_R (DC)
Performance
Capacitance change |ΔC/C|: ≤ 5%
DF change (Δtgδ): ≤ 0.01 or 1.2 times value measured before the test whichever is higher
Insulation resistance : ≥ 50% of initial limit

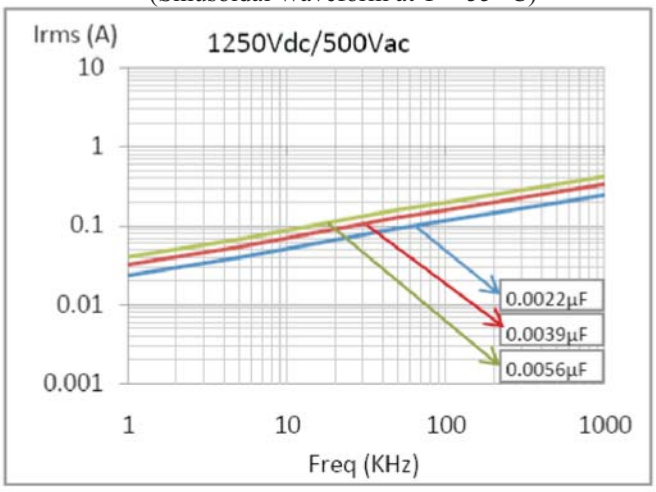
Test conditions (AC)
Temperature: +85°C ±2°C
Test duration: 1000 h
Voltage applied: 1.25 × V_R (AC)
Performance
Capacitance change |ΔC/C|: ≤ 5%
DF change (Δtgδ): ≤ 0.01 or 1.2 times value measured before the test whichever is higher
Insulation resistance : ≥ 50% of initial limit

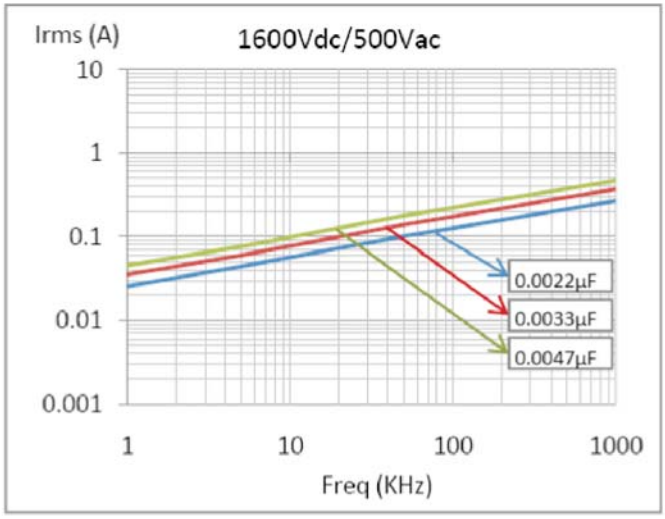
Max. Voltage (Vrms) vs. Frequency
(Sinusoidal Waveform at T ≤ 55° C)





Max. Current (Irms) vs. Frequency
(Sinusoidal Waveform at T ≤ 55° C)

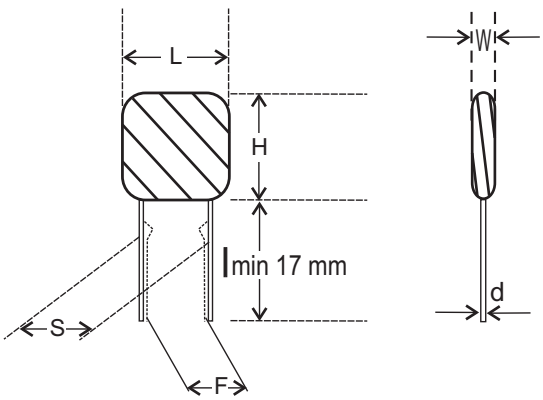




INDUCTIVE SELF HEALING POLYESTER CAPACITORS - DTSH CAPACITORS

Ordering codes and packaging units

Rated Voltage	Rated Cap. (µF)	Dimensions(mm) W ±0.5	H ±0.5	L ±0.5	d ±0.05	S ±0.5	F ±0.5	DV/DT V/µs	Wt. g	Ordering code	Packing units Bulk
1250 VDC	0.0033	4.5	17.5	8.0	0.5	5.5±0.5	10000	0.52	80	272 + 3C * ^	500
	0.0039	5.0	17.5	8.5	0.5	5.5±0.5	10000	0.64	80	332 + 3C * ^	500
	0.0047	5.5	17.5	8.5	0.5	5.5±0.5	10000	0.66	80	472 + 3C * ^	500
	0.0056	5.5	17.5	9.0	0.5	5.5±0.5	10000	0.69	80	562 + 3C * ^	500
	0.0062	6.0	17.5	9.0	0.5	5.5±0.5	10000	0.71	80	622 + 3C * ^	500
	0.0068	6.0	17.5	9.5	0.5	5.5±0.5	10000	0.78	80	682 + 3C * ^	500
	0.0082	6.0	17.5	10.0	0.5	5.5±0.5	10000	0.87	80	822 + 3C * ^	500
	0.01	6.5	18.0	10.0	0.5	5.5±0.5	10000	0.97	80	103 + 3C * ^	500
1600 VDC	0.0033	6.0	19.0	9.5	0.5	7.0±0.5	10000	0.65	80	332 + 3B * ^	500
	0.0039	6.0	19.0	9.5	0.5	7.5±0.5	10000	0.8	80	392 + 3B * ^	500
	0.0047	6.5	19.0	10.5	0.5	7.5±0.5	10000	0.83	80	472 + 3B * ^	500
	0.0056	7.0	19.0	11.0	0.5	7.5±0.5	10000	0.86	80	562 + 3B * ^	500
	0.0062	7.5	19.0	11.0	0.5	7.5±0.5	10000	0.89	80	622 + 3B * ^	500
	0.0068	8.0	19.0	11.5	0.5	7.5±0.5	10000	0.97	80	682 + 3B * ^	500
	0.0082	8.5	19.0	12.0	0.5	7.5±0.5	10000	1.08	80	822 + 3B * ^	500
	0.01	9.0	19.0	12.5	0.5	7.5±0.5	10000	1.20	80	103 + 3B * ^	500



PLAIN POLYPROPYLENE + PLAIN POLYESTER FILM (PEP) CAPACITORS (Inductive Type)

MAIN APPLICATION: Oscillator, timing and LC/RC filter circuits, Snubber circuits, high frequency coupling of fast digital and analog ICs. Wherever stable capacitance with respect to frequency and temperature is required. Mainly used in CFL and where stable temperature characteristics are required

CONSTRUCTION (BOX TYPE): Film/foil inductive type construction with aluminum foil as electrode and PET + PP film as mixed dielectric coated with flame retardant epoxy resin

CLIMATIC CATEGORY: 40/100/56

RATED TEMPERATURE: 85° C

MAXIMUM OPERATING TEMPERATURE: 110° C

INSULATION RESISTANCE

Minimum Insulation Resistance R_{IS}	$C_R \leq 0.33$ µF
(or) time constant $T = C_R \times R_{IS}$	100 GΩ

at 25° C, relative humidity ≤ 70%

CAPACITANCE VALUE, RATED VOLTAGE (DC):
Refer dimension chart

CAPACITANCE TOLERANCE: ±1%, ±2%, ±2.5%, ±5%, ±10%

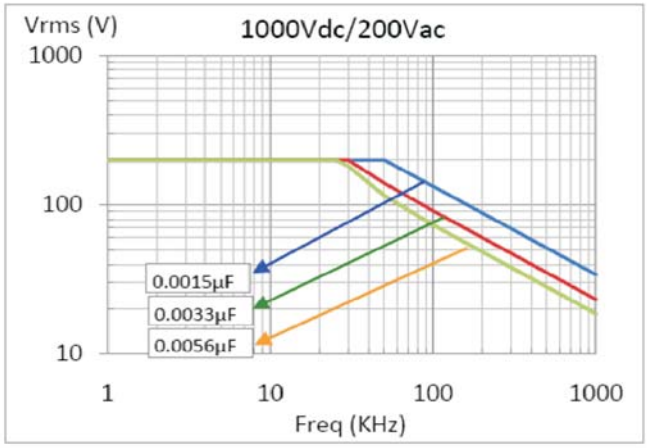
VOLTAGE PROOF: Between terminals: 2 times of rated voltage.

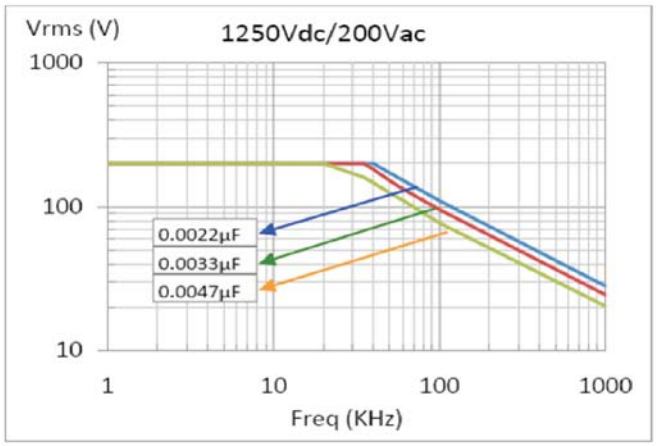
TAN δ: 0.25% (maximum) at 1.0 kHz, 0.50% at 100 kHz

LIFE TEST CONDITIONS
(Loading at elevated temperature)
Loaded at 1.5 times of rated voltage at 85° C or 1.5 times of category voltage at 100° C for 1000 hours.
Category voltage is 80% of rated voltage at 100° C

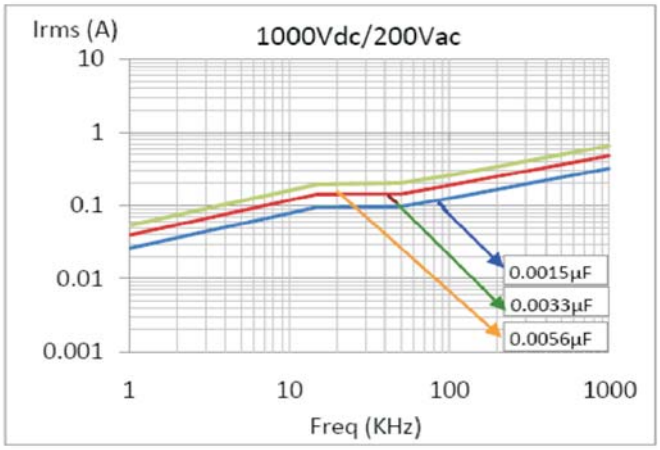
Criteria after the test:
Δc/c: ≤ 3% ±5 pfd of initial value
Change in Tan δ: ≤ 1.4 times the value measured before the test
Insulation resistance: ≥ 50% of the value mentioned in IR chart

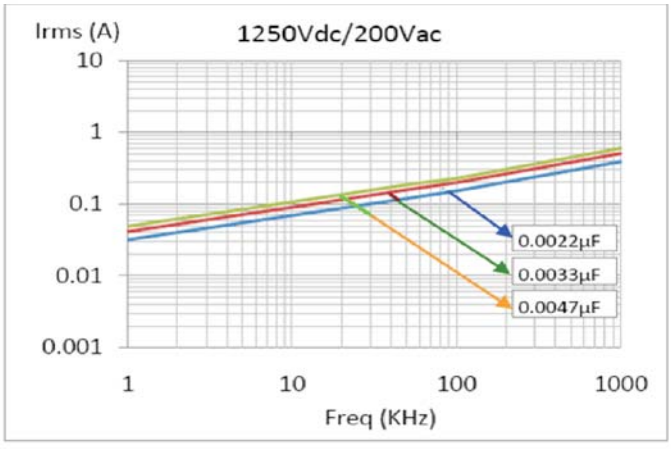
Max. Voltage (Vrms) vs. Frequency
(Sinusoidal Waveform at T ≤ 55° C)





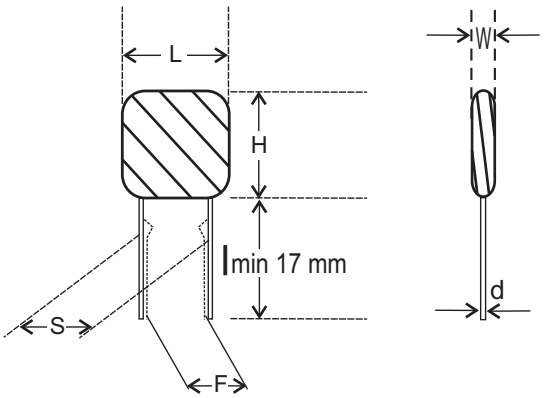
Max. Current (Irms) vs. Frequency
(Sinusoidal Waveform at T ≤ 55° C)





PLAIN POLYPROPYLENE + PLAIN POLYESTER FILM (PEP) CAPACITORS
(Inductive Type) - Ordering codes and packaging units

Rated Voltage	Rated Cap. (µF)	Dimensions(mm) W ±0.5	H ±0.5	L ±0.5	d ±0.05	S ±0.5	F .8/-.2	DV/DT V/µs	Wt. g	Ordering code	Packing units Ammo	Bulk
1000 V	0.00068	4.0	12.5	7.0	0.5	5.0	5	10000	0.04	38 681 +3A*^	3500	2000
	0.001	4.0	13.0	7.5	0.5	4.5	5	10000	0.35	38 102 +3A*^	5000	2000
	0.0015	5.0	14.0	8.5	0.5	5.0	5	10000	0.35	38 152 +3A*^	5000	2000
	0.0022	5.0	14.0	8.5	0.5	5.0	5	10000	0.40	38 222 +3A*^	3000	2000
	0.0027	5.5	14.0	8.5	0.5	5.0	5	10000	0.42	38 272 +3A*^	3000	2000
	0.0033	5.5	14.0	8.5	0.5	5.0	5	10000	0.45	38 332 +3A*^	3000	2000
	0.0039	6.5	14.0	9.5	0.5	5.0	5	10000	0.55	38 392 +3A*^	4000	2000
	0.0047	6.5	14.0	9.5	0.5	5.0	5	10000	0.60	38 472 +3A*^	2500	2000
	0.0056	6.5	14.0	9.5	0.5	5.0	5	10000	0.65	38 562 +3A*^	2000	2000
1250 V	0.00068	5.0	13.5	8.5	0.5	5.0	5	10000	0.55	38 681 +3B*^	3500	2000
	0.001	4.0	14.0	7.5	0.5	5.0	5	10000	0.045	38 102 +3B*^	3500	2000
	0.0015	5.0	14.0	8.5	0.5	5.0	5	10000	0.50	38 152 +3B*^	3000	2000
	0.0022	5.0	14.0	8.5	0.5	5.0	5	10000	0.055	38 222 +3B*^	3000	2000
	0.0027	5.5	14.0	8.5	0.5	5.0	5	10000	0.55	38 272 +3B*^	2000	2000
	0.0033	6.0	14.0	9.5	0.5	5.0	5	10000	0.55	38 332 +3B*^	2000	2000
	0.0039	6.5	14.0	9.5	0.5	5.0	5	10000	0.72	38 392 +3B*^	1500	2000
	0.0047	6.5	14.0	9.5	0.5	5.0	5	10000	0.75	38 472 +3B*^	1500	2000
	0.0056	6.5	14.0	9.5	0.5	5.0.	5	10000	0.82	38 562 +3B*^	1500	2000



PLAIN POLYPROPYLENE FILM CAPACITORS (Inductive)

MAIN APPLICATION: Oscillator, timing and LC/RC filter circuits, high frequency coupling of fast digital and analog ICs

CONSTRUCTION: Film/foil inductive type construction with aluminum foil as electrode and PP film as dielectric coated with flame retardant epoxy resin

CLIMATIC CATEGORY: 40/100/56

MAX TEMP RATING: 100° C

APPLICABLE SPECIFICATION: IEC 384-13

CAPACITANCE VALUE, RATED VOLTAGE (DC): Refer dimension chart

CAPACITANCE TOLERANCE: ±5%, ±10%

VOLTAGE PROOF: Between terminals: 2 times of rated voltage for 2 seconds

TAN δ: 0.08% (maximum) at 1 kHz

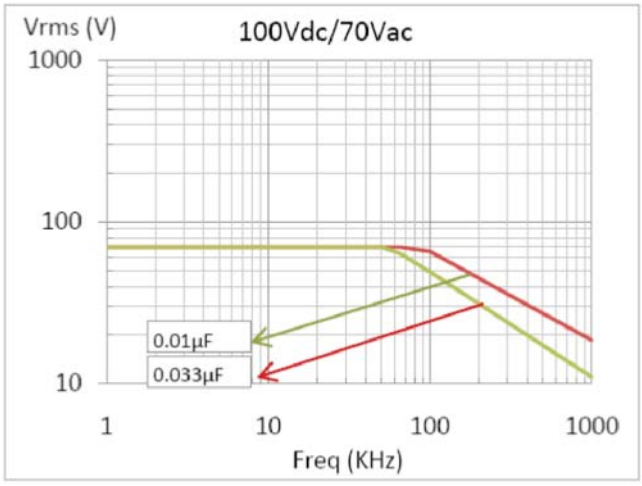
LIFE TEST CONDITIONS:
(Loading at elevated temperature)
Loaded at 1.5 times of rated voltage at 85° C or 1.5 times of category voltage at 100° C 1000 hours
Category voltage is 80% of rated voltage

Criteria after the test:
Δc/c: ≤ 5% of initial value
Change in Tan δ: ≤ 0.01 or 1.2 times the value measured before the test, whichever is higher
Insulation resistance: ≥ 50% of the initial value mentioned in IR chart

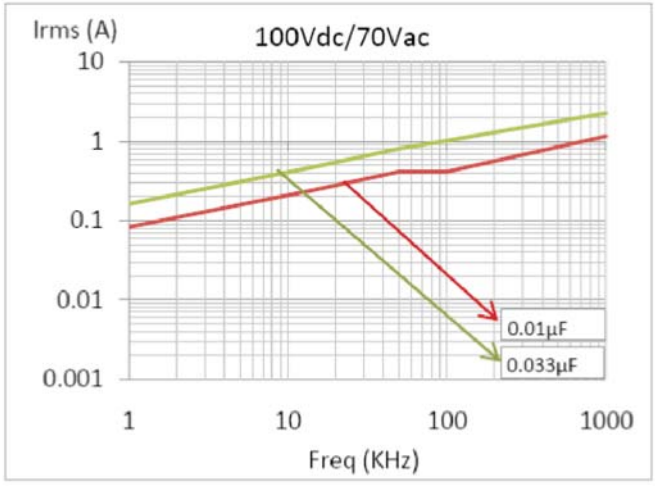
INSULATION RESISTANCE

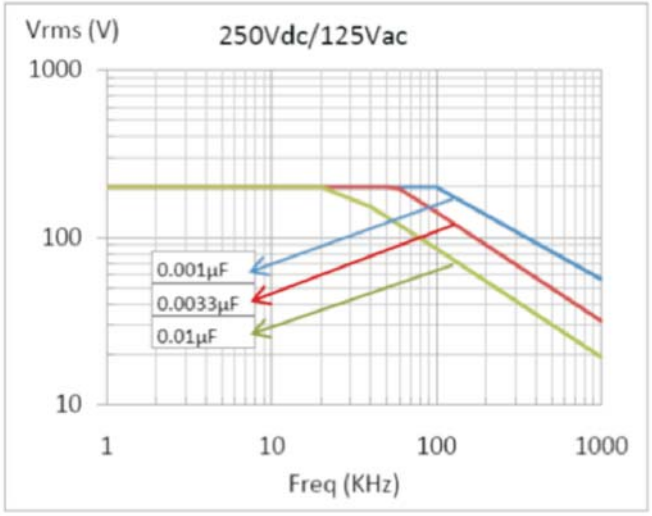
Minimum Insulation Resistance R_{IS}	V_R	$C_R \leq 0.1$ µF	$C_R > 0.1$ µF
(or) time constant $T = C_R \times R_{IS}$	≤ 100 V DC	100 GΩ	10000
at 25° C, relative humidity ≤ 70%	≥ 250 V DC	100 GΩ	10000

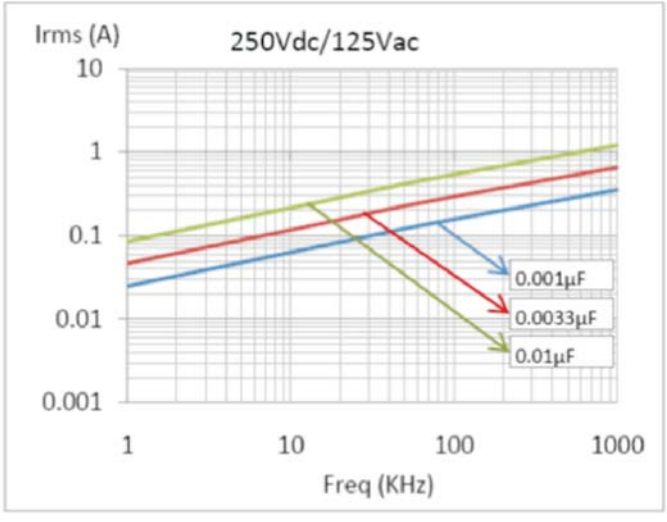
Max. Voltage (Vrms) vs. Frequency
(Sinusoidal Waveform at T ≤ 55° C)



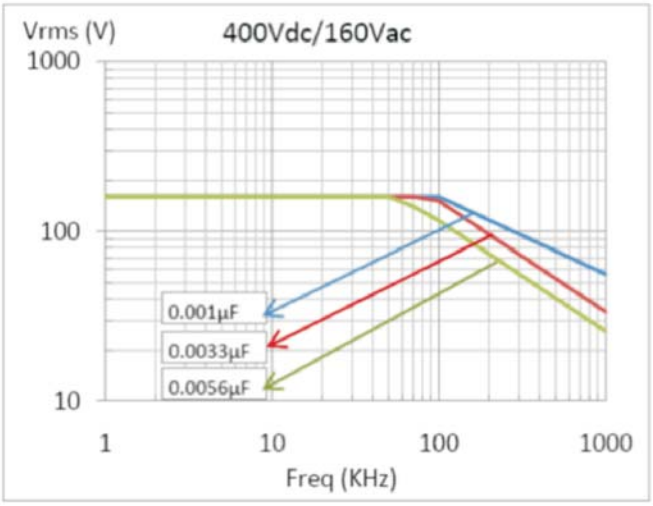
Max. Current (Irms) vs. Frequency
(Sinusoidal Waveform at T ≤ 55° C)

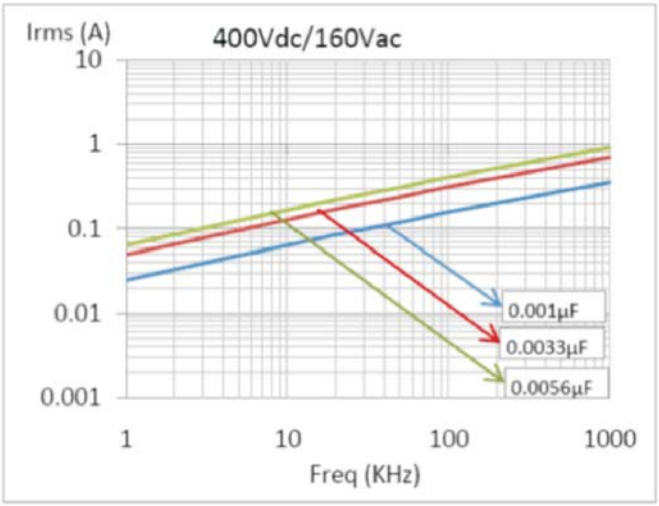


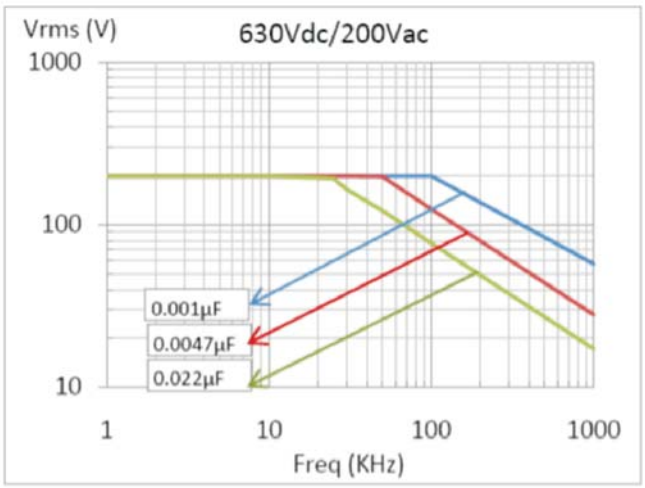


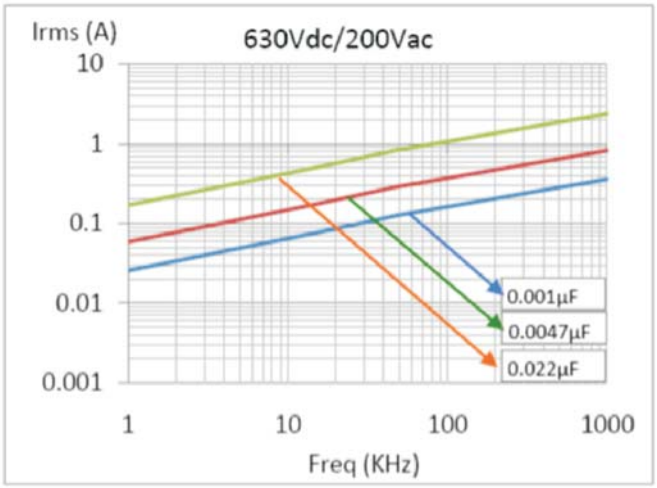


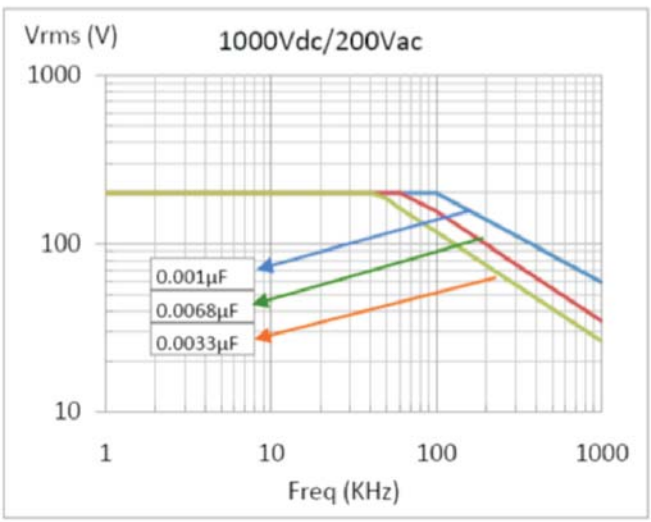
PLAIN POLYPROPYLENE FILM CAPACITORS
(Inductive)

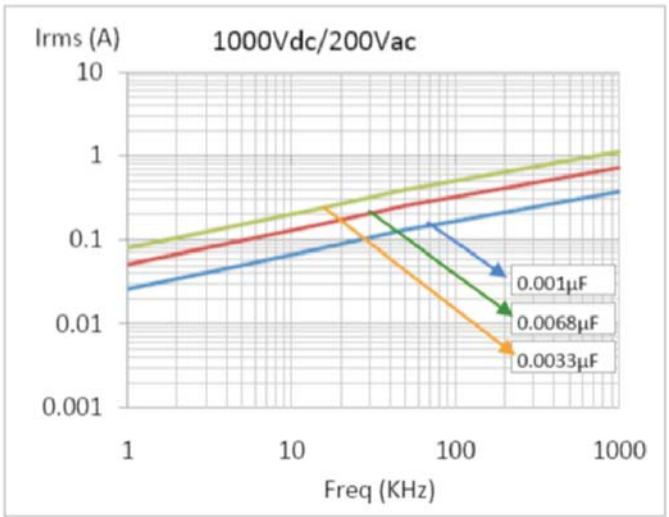












PLAIN POLYPROPYLENE FILM CAPACITORS (Inductive)

Ordering codes and packaging units

Rated Voltage	Rated Cap. (µF)	Dimensions(mm) W ±0.5	H ±0.5	L ±0.5	d ±0.05	S ±0.5	F 0.8/-0.2	DV/DT V/µs	Wt. g	Ordering code	Packing units Ammo	Bulk
100 VDC	0.00022	6.5	14	9.5	0.5	5.0	5	10000	0.38	03 221 +2A*^	4000	2000
	0.00027	6.5	14	9.5	0.5	5.0	5	10000	0.40	03 271 +2A*^	3500	2000
	0.00033	6.5	14	9.5	0.5	5.0	5	10000	0.40	03 331 +2A*^	3500	2000
	0.00047	4.5	13	7.5	0.5	4.0	5	10000	0.17	03 471 +2A*^	4500	2000
	0.00068	4.5	12	7.5	0.5	4.0	5	10000	0.19	03 681 +2A*^	4500	2000
	0.001	4.5	13	7.5	0.5	4.0	5	10000	0.22	03 102 +2A*^	4500	2000
	0.0015	5.0	13	7.5	0.5	4.0	5	10000	0.20	03 152 +2A*^	4500	2000
	0.0022	5.5	13	7.5	0.5	4.0	5	10000	0.20	03 222 +2A*^	4500	2000
	0.0033	5.5	13	7.5	0.5	4.5	5	10000	0.24	03 332 +2A*^	4500	2000
	0.0039	5.5	13	8.0	0.5	4.5	5	10000	0.25	03 392 +2A*^	4500	2000
	0.0047	5.5	13	8.0	0.5	4.5	5	10000	0.28	03 472 +2A*^	4500	2000
	0.0068	5.5	13	8.0	0.5	4.5	5	10000	0.30	03 682 +2A*^	4500	2000
	0.01	5.5	13	8.5	0.5	5.0	5	10000	0.30	03 103 +2A*^	4500	2000
	0.022	6.0	13	10.0	0.5	6.0	5	10000	0.35	03 223 +2A*^	4000	2000
	0.033	6.5	14	10.0	0.5	7.0	5	10000	0.37	03 333 +2A*^	2500	2000
	0.047	5.5	13	9.5	0.5	7.5	5	10000	0.60	03 473 +2A*^	2000	2000
	0.082	6.5	14	11.0	0.5	7.5	5	10000	0.82	03 823 +2A*^	2000	1000
	0.1	8.0	15	12.5	0.5	7.5	5	10000	0.95	03 104 +2A*^	2000	1000
250 VDC	0.00022	6.5	14	9.5	0.5	5.0	5	10000	0.38	03 221 +2E*^	4000	2000
	0.00033	6.5	14	9.5	0.5	5.0	5	10000	0.40	03 331 +2E*^	4500	2000
	0.00039	5.5	13	8.5	0.5	5.0	5	10000	0.42	03 391 +2E*^	4500	2000
	0.00047	4.5	12	6.5	0.5	4.0	5	10000	0.17	03 471 +2E*^	4500	2000
	0.00068	4.5	12	6.5	0.5	4.0	5	10000	0.19	03 681 +2E*^	4500	2000
	0.00082	5.5	13	8.5	0.5	4.0	5	10000	0.22	03 821 +2E*^	4500	2000
	0.001	4.5	13	7.5	0.5	4.0	5	10000	0.22	03 102 +2E*^	4500	2000
	0.0022	5.5	13	7.5	0.5	4.0	5	10000	0.24	03 222 +2E*^	4500	2000
	0.0033	5.5	13	7.5	0.5	4.5	5	10000	0.45	03 332 +2E*^	4500	2000
	0.0047	4.5	12	7.5	0.5	4.5	5	10000	0.85	03 472 +2E*^	4500	2000
	0.0068	4.5	12	7.5	0.5	4.5	5	10000	0.84	03 682 +2E*^	4500	2000
	0.01	6.0	13	9.5	0.5	5.5	5	10000	0.85	03 103 +2E*^	4000	2000
400 VDC	0.001	4.5	13	7.5	0.5	4.0	5	10000	0.22	03 102 +2G*^	4500	2000
	0.0015	5.0	13	7.5	0.5	4.0	5	10000	0.24	03 152 +2G*^	4500	2000
	0.0022	6.5	13	7.5	0.5	4.0	5	10000	0.24	03 222 +2G*^	4500	2000
	0.0033	6.0	15	8.5	0.5	5.0	5	10000	0.45	03 332 +2G*^	4500	2000
	0.0047	6.0	15	8.5	0.5	5.0	5	10000	0.55	03 472 +2G*^	2500	2000
	0.0056	6.0	15	8.5	0.5	5.5	5	10000	0.60	03 562 +2G*^	2500	2000
630 VDC	0.001	5.5	13	7.5	0.5	4.0	5	10000	0.24	03 102 +2J*^	4500	2000
	0.0015	5.0	13	7.5	0.5	4.0	5	10000	0.36	03 152 +2J*^	4500	2000
	0.0022	5.5	14	8.5	0.5	5.0	5	10000	0.32	03 222 +2J*^	4500	2000
	0.0033	5.0	14	9.5	0.5	5.0	5	10000	0.28	03 332 +2J*^	4000	2000
	0.0047	6.0	13	9.5	0.5	5.0	5	10000	0.45	03 472 +2J*^	2500	2000
	0.0068	6.5	14	10.5	0.5	5.5	5	10000	0.60	03 682 +2J*^	1500	2000
	0.01	8.0	15	12.5	0.5	7.5	5	10000	0.75	03 103 +2J*^	1500	2000
	0.022	10.0	20	14.0	0.5	8.5	5	10000	1.12	03 223 +2J*^	1500	1000
1000 VDC	0.001	6.0	14	8.5	0.5	4.5	5	10000	0.28	03 102 +3A*^	4500	2000
	0.0022	6.5	15	9.5	0.5	5.0	5	10000	0.28	03 222 +3A*^	4500	2000
	0.0033	6.5	14	10.0	0.5	5.0	5	10000	0.35	03 332 +3A*^	4000	2000
	0.0047	8.0	15	11.0	0.5	5.0	5	10000	0.36	03 472 +3A*^	2500	2000
	0.0068	8.0	15	11.5	0.5	5.0	5	10000	0.55	03 682 +3A*^	2500	2000

AC & PULSE METALLISED POLYPROPYLENE FILM CAPACITORS (MPP Series)

MAIN APPLICATION: Where steep pulses occur, e.g., SMPS, motor control circuits, S-correction, etc

CONSTRUCTION: Low inductive wound cell of metallised polypropylene film coated with flame epoxy resin or enclosed in a flame retardant box.

CLIMATIC CATEGORY: 40/100/56

MAX OPERATING TEMPERATURE: 100° C

RATED TEMPERATURE: 85° C

APPLICABLE SPECIFICATION: IEC 384-16

CAPACITANCE VALUE RATED VOLTAGE (DC): Refer dimension chart.

CAPACITANCE TOLERANCE: ±5%

VOLTAGE PROOF: Between terminals: 1.6 times the rated voltage for 2 seconds

LIFE TEST CONDITIONS:
(Loading at elevated temperature)
Loaded at 1.25 times of rated voltage at 85° C or 1.25 times of category voltage at 100° C for 1000 hours
Category voltage is 80% of the rated voltage at 100° C

Criteria after the test:
Δc/c: ≤ 5% of initial value
Increase of Tan δ: ≤ 0.002, C_R>1 F
Insulation resistance: ≥ 50% of the initial value mentioned in IR chart

APPROVALS: Capacitors tested as per IEC 384-16

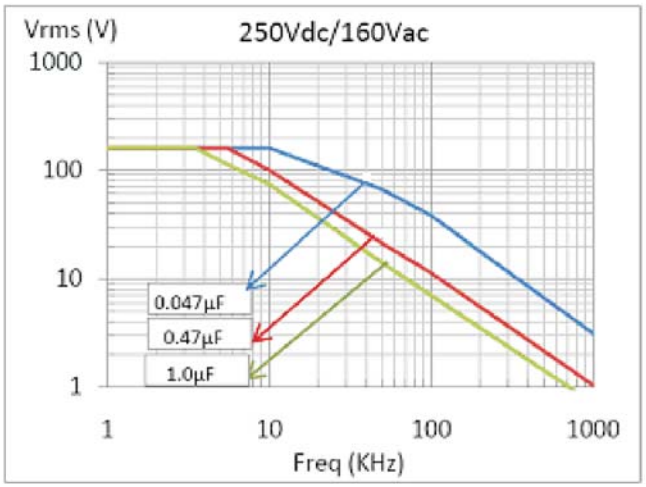
TAN δ (DISSIPATION FACTOR) AT 20° C

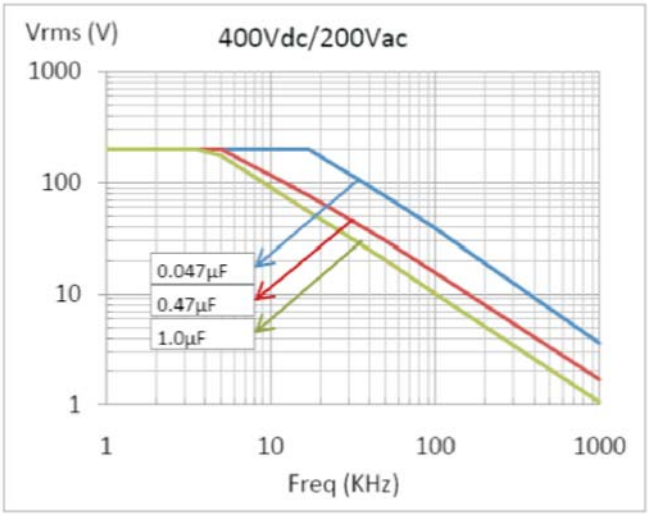
Frequency (kHz)	C_R < 0.1 F	0.1 F < C_R ≤ 1 F	C_R > 1 F
At 1	≤ 0.08%	≤ 0.08%	0.08%
At 10	≤ 0.1%	≤ 0.1%	0.1%
At 100	≤ 0.3%	≤ 0.8%	1.0%

INSULATION RESISTANCE

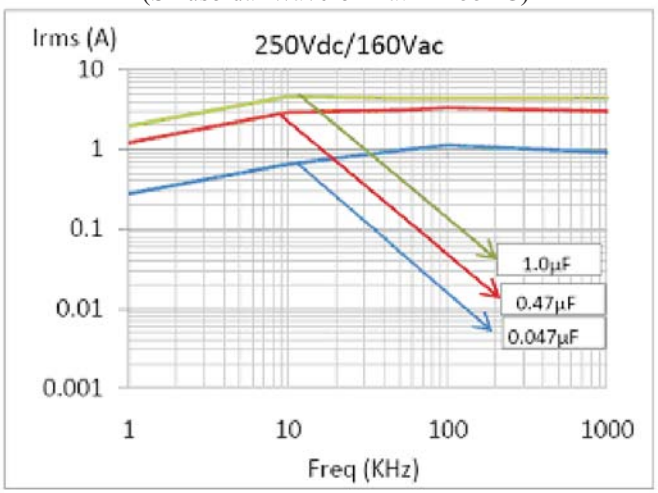
Minimum Insulation Resistance R_{IS}	C_R ≤ 0.33 F	C_R > 0.33 F
(or) time constant T = C_R × R_{IS}	> 100000 MΩ	> 30000 s
at 25° C, relative humidity ≤ 70%		

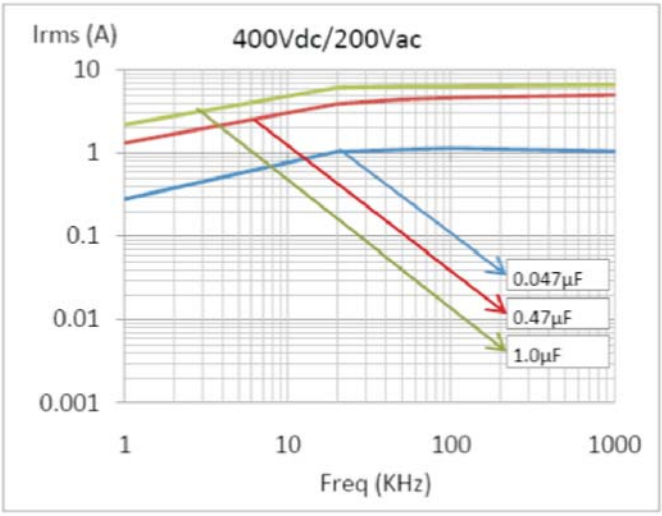
Max. Voltage (Vrms) vs. Frequency
(Sinusoidal Waveform at T ≤ 55° C)



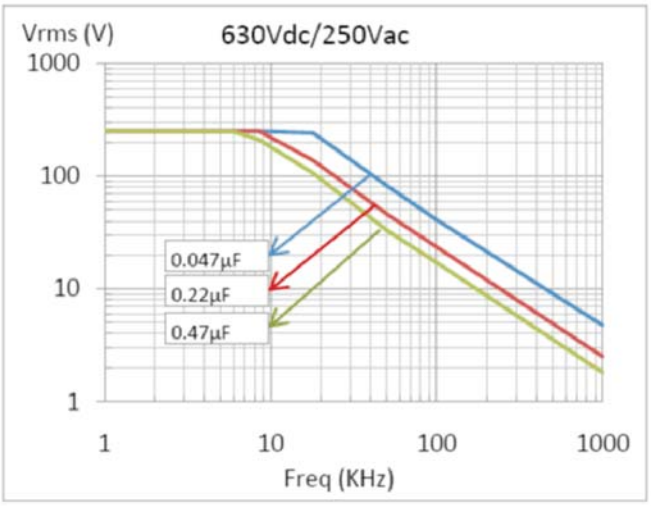


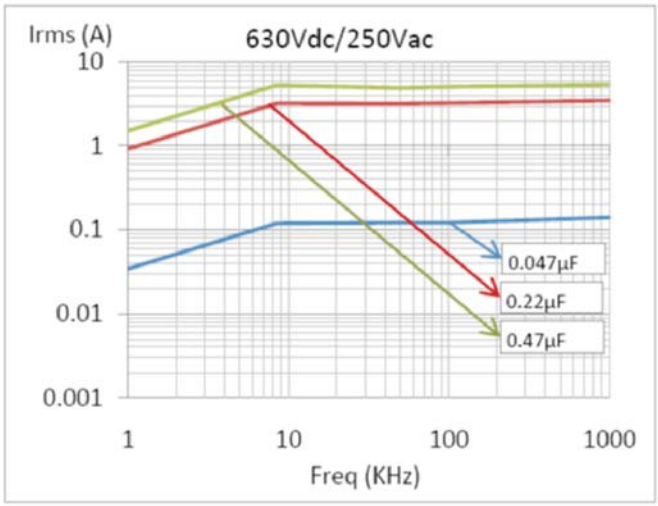
Max. Current (Irms) vs. Frequency
(Sinusoidal Waveform at T ≤ 55° C)





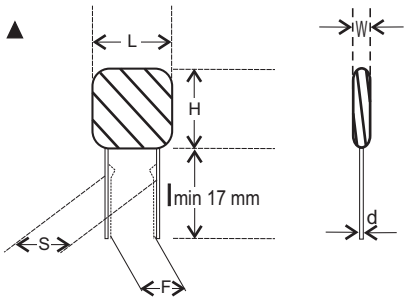
Lighting Applications

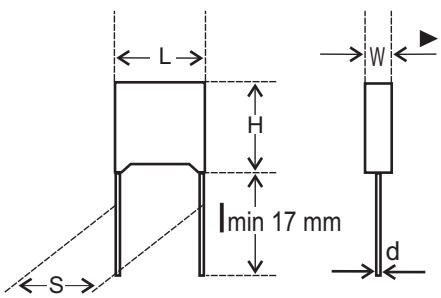




Ordering codes and packaging units

Rated Voltage	Rated Cap. (µF)	Dimensions(mm) W ±0.5	H ±0.5	L ±0.5	d ±0.05	S ±0.5	F .8/-.2	DV/DT V/µs	Wt. g	Ordering code	Packing units Bulk
250 VDC	0.047	6.0	15.0	13	0.6	10.0	10.0	70	0.9	04 473 +2E*^	1000
	0.068	7.0	12.0	13	0.6	10.0	10.0	70	0.9	04 683 +2E*^	1000
	0.082	6.0	12.0	13	0.6	10.0	10.0	70	0.9	04 823 +2E*^	1000
	0.1	6.0	12.0	13	0.6	10.0	10.0	70	1.0	04 104 +2E*^	1000
	0.15	7.0	12.0	19	0.8	15.0	15.0	60	1.3	04 154 +2E*^	1000
	0.22	8.0	12.0	19	0.8	15.0	15.0	60	1.3	04 224 +2E*^	1000
	0.33	8.0	15.0	27	0.8	22.5	22.5	60	1.6	04 334 +2E*^	1250
	0.47	10.0	17.0	27	0.8	22.5	22.5	60	2.5	04 474 +2E*^	900
	0.56	9.0	17.0	27	0.8	22.5	22.5	30	1.8	04 564+2E*^	650
	0.68	9.5	17.0	27	0.8	22.5	22.5	30	1.9	04 684 +2E*^	600
	0.82	10.0	18.5	27	0.8	22.5	22.5	30	2.1	04 824 +2E*^	500
	1.0	11.0	19.5	27	0.8	22.5	22.5	30	2.5	04 105 +2E*^	450
	1.5	10.5	20.5	32	0.8	27.5	-	20	5.0	04 155 +2E*^	450
	2.2	12.0	21.0	31	0.8	27.5	-	20	6.5	04 225 +2E*^	300
400 VDC	0.022	5.0	16.0	13	0.6	10.0	10.0	80	0.9	04 223 +2G*^	1000
	0.033	6.0	12.0	13	0.6	10.0	10.0	80	0.9	04 333 +2G*^	1000
	0.047	5.0	11.0	13	0.6	10.0	10.0	80	0.9	04 473 +2G*^	1000
	0.068	6.0	12.5	19	0.8	15.0	15.0	70	1.3	04 683 +2G*^	1500
	0.082	7.0	12.5	19	0.8	15.0	15.0	70	1.3	04 823 +2G*^	1500
	0.1	7.0	14.0	19	0.8	15.0	15.0	70	1.4	04 104 +2G*^	1250
	0.15	8.0	13.0	19	0.8	15.0	15.0	70	1.5	04 154 +2G*^	1250
	0.22	8.0	16.0	19	0.8	15.0	15.0	70	1.8	04 224 +2G*^	1000
	0.27	7.0	20.0	27	0.8	22.5	22.5	35	1.8	04 274 +2G*^	750
	0.33	8.0	15.0	27	0.8	22.5	22.5	35	1.9	04 334 +2G*^	600
	0.47	9.0	21.5	27	0.8	22.5	22.5	35	2.4	04 474 +2G*^	450
	0.56	10.0	19.0	27	0.8	22.5	22.5	35	2.6	04 564 +2G*^	450
	0.68	9.0	18.0	31	0.8	27.5	-	29	5.0	04 684 +2G*^	450
	0.82	11.0	21.0	31	0.8	27.5	-	29	5.5	04 824 +2G*^	400
	1.0	12.0	22.0	31	0.8	27.5	-	29	6.0	04 105 +2G*^	350
630VDC	0.01	5.0	10.0	13	0.6	10.0	10.0	100	0.9	04 103 +2J*^	1000
	0.015	6.0	11.0	13	0.6	10.0	10.0	100	0.9	04 153 +2J*^	1000
	0.022	7.0	12.0	13	0.6	10.0	10.0	100	0.9	04 223 +2J*^	1000
	0.033	6.0	11.0	19	0.8	15.0	15.0	90	1.3	04 333 +2J*^	1500
	0.047	7.0	13.0	19	0.8	15.0	15.0	90	1.3	04 473 +2J*^	1500
	0.068	8.0	14.0	19	0.8	15.0	15.0	90	1.5	04 683 +2J*^	1250
	0.082	8.0	14.0	19	0.8	15.0	15.0	90	1.6	04 823 +2J*^	1250
	0.1	9.0	15.0	19	0.8	15.0	15.0	90	1.8	04 104 +2J*^	1000
	0.12	7.0	15.0	27	0.8	22.5	22.5	45	1.7	04 124 +2J*^	750
	0.15	8.0	16.5	27	0.8	22.5	22.5	45	1.9	04 154 +2J*^	600
	0.22	10.0	17.0	27	0.8	22.5	22.5	45	2.4	04 224 +2J*^	450
	0.33	10.0	19.0	31	0.8	27.5	-	30	5.0	04 334 +2J*^	550
	0.47	12.0	20.0	32	0.8	27.5	-	30	5.5	04 474 +2J*^	450





Ordering codes and packaging units

Rated Voltage	Rated Cap. (µF)	Dimensions(mm) W ±0.5	H ±0.5	L ±0.5	d ±0.05	S ±0.5	F .8/-.2	DV/DT V/µs	Wt. g	Ordering code	Packing units Ammo	Bulk
250 VDC	0.033	4.0	9.0	13.0	0.6	10.0	10.0	280	0.6	27 333 +2E*^	2000	1100
	0.047	4.0	9.0	13.0	0.6	10.0	10.0	280	0.6	27 473 +2E*^	2000	1100
	0.068	4.0	9.0	13.0	0.6	10.0	10.0	280	0.6	27 683 +2E*^	2000	1100
	0.082	5.0	11.0	13.0	0.6	10.0	10.0	280	0.8	27 823 +2E*^	2000	1100
	0.1	5.5	11.5	13.5	0.6	10.0	10.0	280	0.8	27 104 +2E*^	2000	1100
	0.15	6.0	12.0	13.0	0.6	10.0	10.0	280	0.9	27 154 +2E*^	2000	1100
	0.15	5.0	10.8	18.0	0.8	15.0	15.0	200	1.1	27 154 +2E*^	1100	1000
	0.18	5.0	10.8	18.0	0.8	15.0	15.0	200	1.1	27 184 +2E*^	1100	1000
	0.22	5.0	10.8	18.0	0.8	15.0	15.0	200	1.1	27 224 +2E*^	1100	1000
	0.33	6.0	11.9	18.0	0.8	15.0	15.0	200	1.5	27 334 +2E*^	1100	1000
	0.47	7.5	13.5	18.0	0.8	15.0	15.0	200	2.0	27 474 +2E*^	900	1000
	0.56	7.5	13.5	18.0	0.8	15.0	15.0	200	2.0	27 564 +2E*^	900	1000
	0.68	8.5	14.5	18.0	0.8	15.0	15.0	200	2.6	27 684 +2E*^	700	1000
	0.82	10.0	16.0	18.0	0.8	15.0	15.0	200	2.8	27 824 +2E*^	700	1000
	1.0	10.0	16.0	18.0	0.8	15.0	15.0	200	2.8	27 105 +2E*^	700	1000
	0.39	6.0	15.0	26.5	0.8	22.5	22.5	125	2.8	27 394 +2E*^	650	400
	0.47	6.0	15.0	26.5	0.8	22.5	22.5	125	2.8	27 474 +2E*^	650	400
	0.68	6.0	15.0	26.5	0.8	22.5	22.5	125	2.8	27 684 +2E*^	650	400
	0.82	7.0	16.0	26.5	0.8	22.5	22.5	125	3.5	27 824 +2E*^	650	400
	1.0	7.0	16.0	26.5	0.8	22.5	22.5	125	3.5	27 105 +2E*^	650	400
	1.2	8.5	17.0	26.5	0.8	22.5	22.5	125	4.5	27 125 +2E*^	500	400
	1.5	10.0	18.5	26.5	0.8	22.5	22.5	125	5.4	27 155 +2E*^	-	200
	1.8	10.0	18.5	26.5	0.8	22.5	22.5	125	5.4	27 185 +2E*^	-	200
400 VDC	0.015	4.0	9.0	13.0	0.6	10.0	10.0	420	0.6	27 153 +2G*^	2000	1100
	0.022	4.0	9.0	13.0	0.6	10.0	10.0	420	0.6	27 223 +2G*^	2000	1100
	0.027	4.0	9.0	13.0	0.6	10.0	10.0	420	0.6	27 273 +2G*^	2000	1100
	0.033	5.0	11.0	13.0	0.6	10.0	10.0	420	0.8	27 333 +2G*^	2000	1100
	0.047	5.0	11.0	13.0	0.6	10.0	10.0	420	0.8	27 473 +2G*^	2000	1100
	0.056	6.0	12.0	13.0	0.6	10.0	10.0	420	0.9	27 563 +2G*^	2000	1100
	0.068	6.0	12.0	13.0	0.6	10.0	10.0	420	0.9	27 683 +2G*^	2000	1100
	0.068	5.0	10.8	18.0	0.8	15.0	15.0	300	1.1	27 683 +2G*^	1100	1000
	0.082	5.0	10.8	18.0	0.8	15.0	15.0	300	1.1	27 823 +2G*^	1100	1000
	0.1	5.0	10.8	18.0	0.8	15.0	15.0	300	1.1	27 104 +2G*^	1100	1000
	0.15	6.0	11.9	18.0	0.8	15.0	15.0	300	1.5	27 154 +2G*^	1100	1000
	0.18	7.5	13.5	18.0	0.8	15.0	15.0	300	2.0	27 184 +2G*^	900	1000
	0.22	7.5	13.5	18.0	0.8	15.0	15.0	300	2.0	27 224 +2G*^	900	1000
	0.33	10.0	16.0	18.0	0.8	15.0	15.0	300	2.8	27 334 +2G*^	700	1000
	0.18	6.0	15.0	26.5	0.8	22.5	22.5	180	2.8	27 184 +2G*^	650	400
	0.27	6.0	15.0	26.5	0.8	22.5	22.5	180	2.8	27 274 +2G*^	650	400
	0.33	6.0	15.0	26.5	0.8	22.5	22.5	180	2.8	27 334 +2G*^	650	400
	0.47	7.0	16.0	26.5	0.8	22.5	22.5	180	3.5	27 474 +2G*^	650	400
	0.56	7.0	16.0	26.5	0.8	22.5	22.5	180	3.5	27 564 +2G*^	650	400
	0.68	10.0	18.5	26.5	0.8	22.5	22.5	180	5.4	27 684 +2G*^	-	200
630 VDC	0.001	4.0	9.0	13.0	0.6	10.0	10.0	550	0.6	27 102 +2J*^	2000	1100
	0.0015	4.0	9.0	13.0	0.6	10.0	10.0	550	0.6	27 152 +2J*^	2000	1100
	0.0018	4.0	9.0	13.0	0.6	10.0	10.0	550	0.6	27 182 +2J*^	2000	1100
	0.0022	4.0	9.0	13.0	0.6	10.0	10.0	550	0.6	27 222 +2J*^	2000	1100
	0.0033	4.0	9.0	13.0	0.6	10.0	10.0	550	0.6	27 332 +2J*^	2000	1100
	0.0039	4.0	9.0	13.0	0.6	10.0	10.0	550	0.6	27 392 +2J*^	2000	1100
	0.0047	4.0	9.0	13.0	0.6	10.0	10.0	550	0.6	27 472 +2J*^	2000	1100
	0.0056	4.0	9.0	13.0	0.6	10.0	10.0	550	0.6	27 562 +2J*^	2000	1100
	0.0082	4.0	9.0	13.0	0.6	10.0	10.0	550	0.6	27 822 +2J*^	2000	1100
	0.01	4.0	9.0	13.0	0.6	10.0	10.0	550	0.6	27 102 +2J*^	2000	1100
	0.012	4.0	9.0	13.0	0.6	10.0	10.0	550	0.6	27 123 +2J*^	2000	1100
	0.15	5.0	11.0	13.0	0.6	10.0	10.0	550	0.8	27 153 +2J*^	2000	1100
	0.18	5.0	11.0	13.0	0.6	10.0	10.0	550	0.8	27 183 +2J*^	2000	1100
	0.022	6.0	12.0	13.0	0.6	10.0	10.0	550	0.9	27 223 +2J*^	2000	1100
	0.027	6.0	12.0	13.0	0.6	10.0	10.0	550	0.9	27 273 +2J*^	2000	1100
	0.027	5.0	10.8	18.0	0.8	15.0	15.0	400	1.1	27 273 +2J*^	1100	1000
	0.033	5.0	10.8	18.0	0.8	15.0	15.0	400	1.1	27 333 +2J*^	1100	1000
	0.047	6.0	12.0	18.0	0.8	15.0	15.0	400	1.1	27 473 +2J*^	1100	1000
	0.068	6.0	11.9	18.0	0.8	15.0	15.0	400	1.5	27 683 +2J*^	1100	1000
	0.082	6.0	11.9	18.0	0.8	15.0	15.0	400	1.5	27 823 +2J*^	1100	1000
	0.1	7.5	13.5	18.0	0.8	15.0	15.0	400	2.0	27 104 +2J*^	900	1000
	0.15	8.5	14.5	18.0	0.8	15.0	15.0	400	2.6	27 154 +2J*^	700	1000
	0.18	10.0	16.0	18.0	0.8	15.0	15.0	400	2.8	27 184 +2J*^	700	1000
	0.22	10.0	16.0	18.0	0.8	15.0	15.0	400	2.8	27 224 +2J*^	700	1000
	0.082	6.0	15.0	26.5	0.8	22.5	22.5	250	2.8	27 823 +2J*^	650	400
	0.1	6.0	15.0	26.5	0.8	22.5	22.5	250	2.8	27 104 +2J*^	650	400
	0.15	6.0	15.0	26.5	0.8	22.5	22.5	250	2.8	27 154 +2J*^	650	400
	0.18	7.0	16.0	26.5	0.8	22.5	22.5	250	3.5	27 184 +2J*^	650	400
	0.22	7.0	16.0	26.5	0.8	22.5	22.5	250	3.5	27 224 +2J*^	650	400
	0.27	8.5	17.0	26.5	0.8	22.5	22.5	250	4.5	27 274 +2J*^	500	400
	0.33	10.0	18.5	26.5	0.8	22.5	22.5	250	5.4	27 334 +2J*^	-	200
	0.39	10.0	18.5	26.5	0.8	22.5	22.5	250	5.4	27 394 +2J*^	-	200

AC & PULSE METALLISED POLYPROPYLENE FILM CAPACITORS (MPP/MPP) – DC Applications

MAIN APPLICATION: SMPS, Motor control circuits, deflection circuit in TV sets (fly back) and monitors, electronic ballast, snubber and SCR commutating circuits and applications with high voltage and high current

CONSTRUCTION: Series constructed, low inductive wound cell of metallised polypropylene film as electrodes coated with flame retardant epoxy resin or enclosed in a flame retardant box

CLIMATIC CATEGORY: 40/100/56

MAX OPERATING TEMPERATURE: 100° C

RATED TEMPERATURE: 85° C

APPLICABLE SPECIFICATION: IEC 384-16

CAPACITANCE VALUE RATED VOLTAGE (DC): Refer dimension chart.

CAPACITANCE TOLERANCE: ± 5%, ± 10%, ± 20%

VOLTAGE PROOF: Between terminals: 1.6 times the rated voltage for 2 seconds

INSULATION RESISTANCE

Between leads for $C_R \leq 1\mu F \geq 100{,}000\ M\Omega$

Between connected terminals and case >100,000 MΩ

TAN δ (DISSIPATION FACTOR) AT 20° C

Frequency (kHz)	$C_R \leq 0.1\ \mu F$	$0.1\ \mu F \leq C_R \leq 1\ \mu F$
At 1	0.05%	0.05%
At 10	0.08%	0.08%
At 100	0.50%	

LIFE TEST CONDITIONS:

(Loading at elevated temperature)
Loaded at 1.25 times of rated DC voltage at 85° C or 1.25 times of category voltage at 100° C for 1000 hours
Category voltage is 80% of the rated voltage at 100 °C

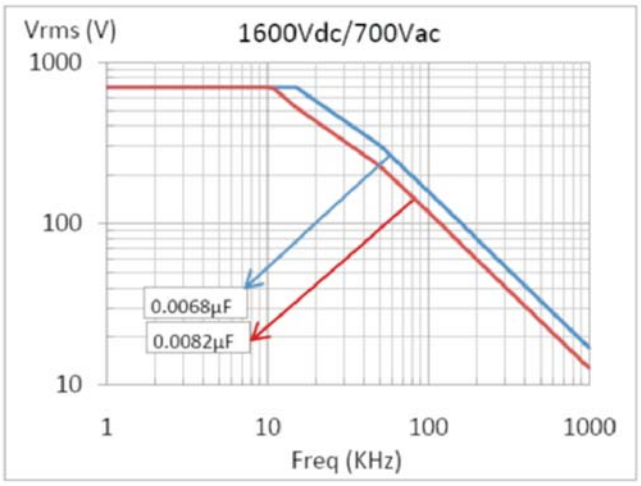
Criteria after the test:

Δc/c: ≤ 5% of initial value

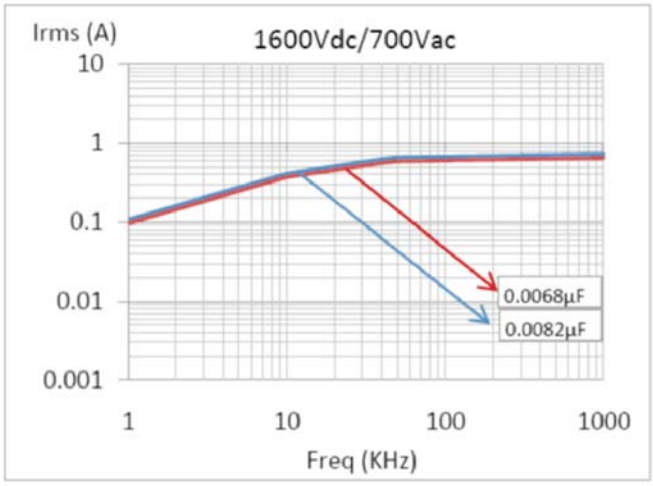
Increase of Tan δ: ≤ 0.002

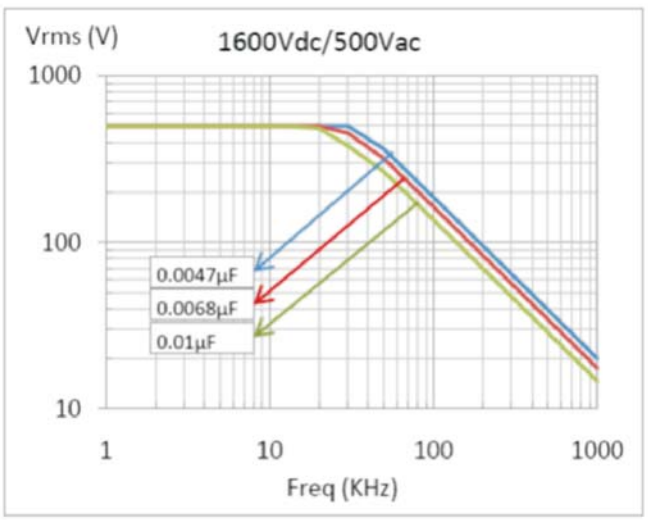
Insulation resistance: ≥ 50% of the initial value mentioned in IR chart

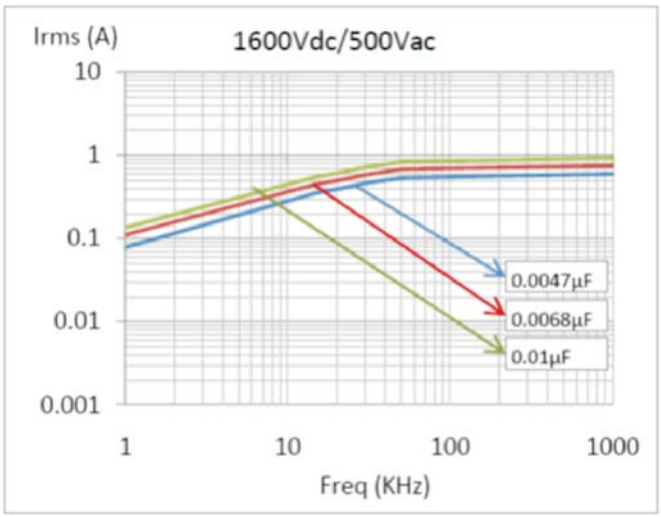
Max. Voltage (Vrms) vs. Frequency
(Sinusoidal Waveform at T ≤ 55° C)

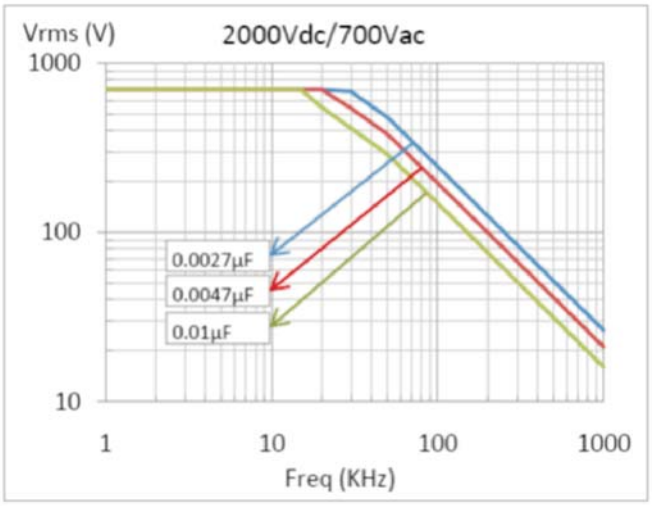


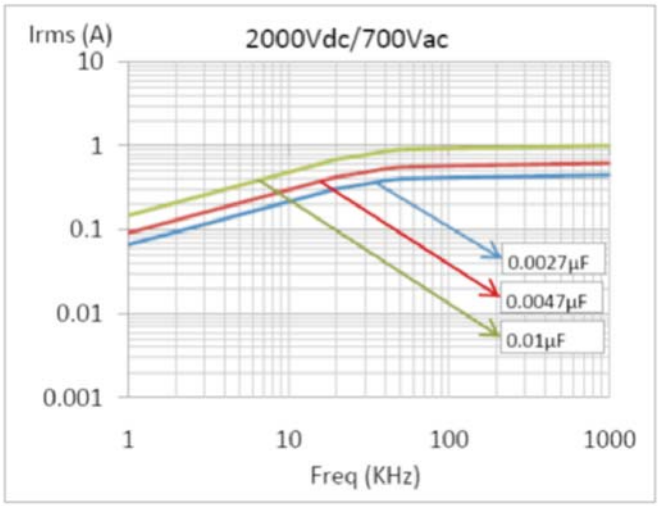
Max. Current (Irms) vs. Frequency
(Sinusoidal Waveform at T ≤ 55° C)

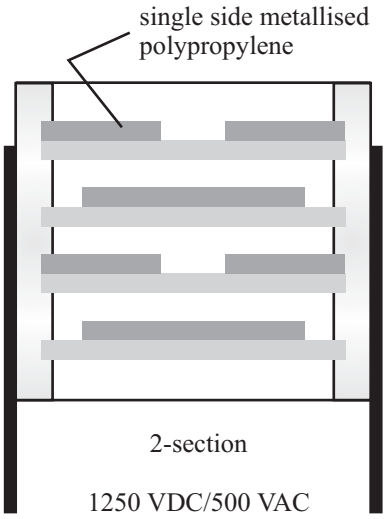






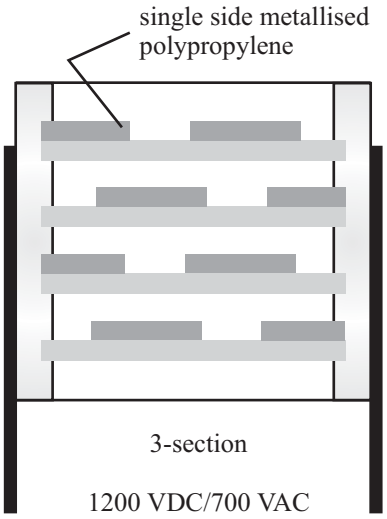






2-section

1250 VDC/500 VAC
1600 VDC/500 VAC

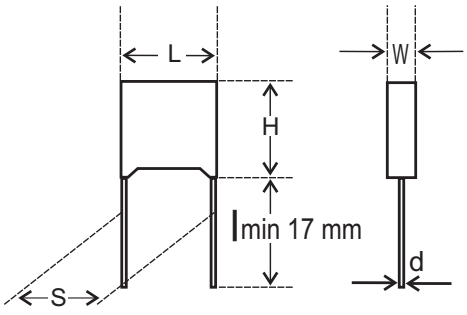


3-section

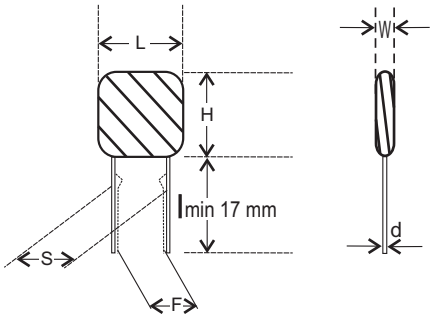
1200 VDC/700 VAC
2000 VDC/700 VAC

For Ordering Codes and Packing Units overleaf

Box Type



Dip Type



AC & PULSE METALLISED POLYPROPYLENE FILM CAPACITORS (MPP/MPP) – DC Applications - Ordering codes and packaging units

Rated Voltage	Rated Cap. (µF)	Dimensions(mm) W ±0.5	H ±0.5	L ±0.5	d ±0.05	S ±0.5	F .8/-.2	DV/DT V/µs	Wt. g	Ordering code	Packing units Ammo	Bulk
1250 V DC	0.0082	5.0	10.8	18.0	0.8	15.0	15.0	3300	1.1	30 822 +3B*^	1100	1000
500 V AC	0.01	5.0	10.8	18.0	0.8	15.0	15.0	3300	1.1	30 103 +3B*^	1100	1000
	0.012	6.0	11.9	18.0	0.8	15.0	15.0	3300	1.5	30 123 +3B*^	1100	1000
	0.015	6.0	11.9	18.0	0.8	15.0	15.0	3300	1.5	30 153 +3B*^	1100	1000
	0.018	7.5	13.5	18.0	0.8	15.0	15.0	3300	2.0	30 183 +3B*^	900	1000
	0.022	7.5	13.5	18.0	0.8	15.0	15.0	3300	2.0	30 223 +3B*^	900	1000
	0.027	8.5	14.5	18.0	0.8	15.0	15.0	3300	2.6	30 273 +3B*^	700	1000
	0.033	10.0	16.0	18.0	0.8	15.0	15.0	3300	2.8	30 333 +3B*^	700	1000
	0.039	10.0	16.0	18.0	0.8	15.0	15.0	3300	2.8	30 393 +3B*^	700	1000
	0.033	6.0	15.0	26.5	0.8	22.5	22.5	2100	2.8	30 333 +3B*^	650	400
	0.039	6.0	15.0	26.5	0.8	22.5	22.5	2100	2.8	30 393 +3B*^	650	400
	0.047	7.0	16.0	26.5	0.8	22.5	22.5	2100	3.5	30 473 +3B*^	650	400
	0.056	7.0	16.0	26.5	0.8	22.5	22.5	2100	3.5	30 563 +3B*^	650	400
	0.068	8.5	17.0	26.5	0.8	22.5	22.5	2100	4.5	30 683 +3B*^	500	400
	0.082	10.0	18.5	26.5	0.8	22.5	22.5	2100	5.4	30 823 +3B*^	-	200
	0.1	10.0	18.5	26.5	0.8	22.5	22.5	2100	5.4	30 104 +3B*^	-	200
1600 V DC	0.0022	5.0	10.8	18.0	0.8	15.0	15.0	4500	1.1	30 222 +3C*^	1100	1000
500 V AC	0.0033	5.0	10.8	18.0	0.8	15.0	15.0	4500	1.1	30 332 +3C*^	1100	1000
	0.0039	6.0	11.9	18.0	0.8	15.0	15.0	4500	1.5	30 392 +3C*^	1100	1000
	0.0047	6.0	11.9	18.0	0.8	15.0	15.0	4500	1.5	30 473 +3C*^	1100	1000
	0.0056	6.0	11.9	18.0	0.8	15.0	15.0	4500	1.5	30 563 +3C*^	1100	1000
	0.0068	6.0	11.9	18.0	0.8	15.0	15.0	4500	1.5	30 683 +3C*^	1100	1000
	0.0082	7.5	13.5	18.0	0.8	15.0	15.0	4500	2.0	30 823 +3C*^	900	1000
	0.01	8.5	14.5	18.0	0.8	15.0	15.0	4500	2.0	30 103 +3C*^	900	1000
	0.015	8.5	14.5	18.0	0.8	15.0	15.0	4500	2.6	30 153 +3C*^	700	1000
	0.022	10.0	16.0	18.0	0.8	15.0	15.0	4500	2.8	30 223 +3C*^	700	1000
1600 V DC	0.0056	5.0	10.8	18.0	0.8	15.0	15.0	6000	1.1	30 562 +3C*^	1100	1000
700 V AC	0.0068	5.0	10.8	18.0	0.8	15.0	15.0	6000	1.1	30 682 +3C*^	1100	1000
	0.0082	6.0	11.9	18.0	0.8	15.0	15.0	6000	1.5	30 822 +3C*^	1100	1000
	0.01	6.0	11.9	18.0	0.8	15.0	15.0	6000	1.5	30 103 +3C*^	1100	1000
	0.012	7.5	13.5	18.0	0.8	15.0	15.0	6000	2.0	30 123 +3C*^	900	1000
	0.015	7.5	13.5	18.0	0.8	15.0	15.0	6000	2.0	30 153 +3C*^	900	1000
	0.018	8.5	14.5	18.0	0.8	15.0	15.0	6000	2.6	30 183 +3C*^	700	1000
	0.022	10.0	16.0	18.0	0.8	15.0	15.0	6000	2.8	30 223 +3C*^	700	1000
	0.027	10.0	16.0	18.0	0.8	15.0	15.0	6000	2.8	30 273 +3C*^	700	1000
	0.027	6.0	15.0	26.5	0.8	22.5	22.5	3000	2.8	30 273 +3C*^	650	400
	0.033	7.0	16.0	26.5	0.8	22.5	22.5	3000	3.5	30 333 +3C*^	650	400
	0.039	7.0	16.0	26.5	0.8	22.5	22.5	3000	3.5	30 393 +3C*^	650	400
	0.047	8.5	17.0	26.5	0.8	22.5	22.5	3000	4.5	30 473 +3C*^	500	400
	0.056	10.0	18.5	26.5	0.8	22.5	22.5	3000	5.4	30 563 +3C*^	-	200
	0.068	10.0	18.5	26.5	0.8	22.5	22.5	3000	5.4	30 683 +3C*^	-	200
2000 V DC	0.001	5.0	10.8	18.0	0.8	15.0	15.0	9500	1.1	30 102 +3D*^	1100	1000
700 V AC	0.0012	5.0	10.8	18.0	0.8	15.0	15.0	9500	1.1	30 122 +3D*^	1100	1000
	0.0015	5.0	10.8	18.0	0.8	15.0	15.0	9500	1.1	30 152 +3D*^	1100	1000
	0.0018	5.0	10.8	18.0	0.8	15.0	15.0	9500	1.1	30 182 +3D*^	1100	1000
	0.0022	5.0	10.8	18.0	0.8	15.0	15.0	9500	1.1	30 222 +3D*^	1100	1000
	0.0027	5.0	10.8	18.0	0.8	15.0	15.0	9500	1.1	30 272 +3D*^	1100	1000
	0.0033	5.0	10.8	18.0	0.8	15.0	15.0	9500	1.1	30 332 +3D*^	1100	1000
	0.0039	5.0	10.8	18.0	0.8	15.0	15.0	9500	1.1	30 392 +3D*^	1100	1000
	0.0047	5.0	10.8	18.0	0.8	15.0	15.0	9500	1.1	30 472 +3D*^	1100	1000
	0.0056	6.0	11.9	18.0	0.8	15.0	15.0	9500	1.5	30 562 +3D*^	1100	1000
	0.0068	6.0	11.9	18.0	0.8	15.0	15.0	9500	1.5	30 682 +3D*^	1100	1000
	0.0082	7.5	13.5	18.0	0.8	15.0	15.0	9500	2.0	30 822 +3D*^	1100	1000
	0.01	7.5	13.5	18.0	0.8	15.0	15.0	9500	2.0	30 103 +3D*^	900	1000
	0.012	8.5	14.5	18.0	0.8	15.0	15.0	9500	2.6	30 123 +3D*^	700	1000
	0.015	8.5	14.5	18.0	0.8	15.0	15.0	9500	2.6	30 153 +3D*^	700	1000
	0.018	10.0	16.0	18.0	0.8	15.0	15.0	9500	2.8	30 183 +3D*^	700	1000
	0.0047	6.0	15.0	26.5	0.8	22.5	22.5	3500	2.8	30 472 +3D*^	650	400
	0.0056	6.0	15.0	26.5	0.8	22.5	22.5	3500	2.8	30 562 +3D*^	650	400
	0.0068	6.0	15.0	26.5	0.8	22.5	22.5	3500	2.8	30 682 +3D*^	650	400
	0.0082	6.0	15.0	26.5	0.8	22.5	22.5	3500	2.8	30 822 +3D*^	650	400
	0.01	6.0	15.0	26.5	0.8	22.5	22.5	3500	2.8	30 103 +3D*^	650	400
	0.012	6.0	15.0	26.5	0.8	22.5	22.5	3500	2.8	30 123 +3D*^	650	400
	0.015	6.0	15.0	26.5	0.8	22.5	22.5	3500	2.8	30 153 +3D*^	650	400
	0.018	6.0	15.0	26.5	0.8	22.5	22.5	3500	2.8	30 183 +3D*^	650	400
	0.022	6.0	15.0	26.5	0.8	22.5	22.5	3500	2.8	30 223 +3D*^	650	400
	0.027	7.0	16.0	26.5	0.8	22.5	22.5	3500	3.5	30 273 +3D*^	650	400
	0.033	8.5	17.0	26.5	0.8	22.5	22.5	3500	4.5	30 333 +3D*^	500	400
	0.039	10.0	18.5	26.5	0.8	22.5	22.5	3500	5.4	30 393 +3D*^	-	200
	0.047	10.0	18.5	26.5	0.8	22.5	22.5	3500	5.4	30 473 +3D*^	-	200

Lighting Applications

Rated Voltage	Rated Cap. (µF)	Dimensions(mm) W ±0.5	H ±0.5	L ±0.5	d ±0.05	S ±0.5	F .8/-.2	DV/DT V/µs	Wt. g	Ordering code	Packing units Ammo	Bulk
1250VDC	0.0082	5.5	11.5	19	0.8	15.0	15.0	3300	1.4	18 822 +3B*^	1100	1000
500VAC	0.01	5.5	11.5	19	0.8	15.0	15.0	3300	1.4	18 103 +3B*^	1100	1000
	0.012	6.5	12.5	19	0.8	15.0	15.0	3300	1.5	18 123 +3B*^	1100	1000
	0.015	6.5	12.5	19	0.8	15.0	15.0	3300	1.6	18 153 +3B*^	1100	1000
	0.018	8.0	14.0	19	0.8	15.0	15.0	3300	2.0	18 183 +3B*^	900	1000
	0.022	8.0	14.0	19	0.8	15.0	15.0	3300	2.0	18 223 +3B*^	900	1000
	0.027	9.0	15.0	19	0.8	15.0	15.0	3300	2.4	18 273 +3B*^	700	1000
	0.033	10.5	16.5	19	0.8	15.0	15.0	3300	2.6	18 333 +3B*^	700	1000
	0.039	10.5	16.5	19	0.8	15.0	15.0	3300	2.6	18 393 +3B*^	700	1000
	0.047	10.5	17.0	19	0.8	15.0	15.0	3300	2.6	18 473 +3B*^	700	1000
	0.033	6.5	15.5	27	0.8	22.5	22.5	2100	2.5	18 333 +3B*^	650	400
	0.039	6.5	15.5	27	0.8	22.5	22.5	2100	2.5	18 393 +3B*^	650	400
	0.047	7.5	16.5	27	0.8	22.5	22.5	2100	3.2	18 473 +3B*^	650	400
	0.056	7.5	16.5	27	0.8	22.5	22.5	2100	3.2	18 563 +3B*^	650	400
	0.068	8.5	17.5	27	0.8	22.5	22.5	2100	4.1	18 683 +3B*^	650	400
	0.082	10.5	19.0	27	0.8	22.5	22.5	2100	5.0	18 823 +3B*^	650	400
	0.1	10.5	19.0	27	0.8	22.5	22.5	2100	5.0	18 104 +3B*^	500	400
	0.15	13.0	21.0	27	0.8	22.5	22.5	2100	5.2	18 154 +3B*^	-	200
1600VDC	0.0022	5.5	12.0	19	0.8	15.0	15.0	4500	1.1	18 222 +3C*^	1100	1000
500VAC	0.0033	5.5	12.0	19	0.8	15.0	15.0	4500	1.1	18 332 +3C*^	1100	1000
	0.0039	6.0	12.0	19	0.8	15.0	15.0	4500	1.5	18 392 +3C*^	1100	1000
	0.0047	7.0	12.0	19	0.8	15.0	15.0	4500	1.5	18 473 +3C*^	1100	1000
	0.0056	7.0	13.0	19	0.8	15.0	15.0	4500	1.5	18 563 +3C*^	1100	1000
	0.0068	6.5	14.0	19	0.8	15.0	15.0	4500	1.5	18 683 +3C*^	1100	1000
	0.0082	8.0	14.0	19	0.8	15.0	15.0	4500	2.0	18 823 +3C*^	1100	1000
	0.01	7.0	16.0	19	0.8	15.0	15.0	4500	2.0	18 103 +3C*^	900	1000
	0.015	9.0	17.0	19	0.8	15.0	15.0	4500	2.6	18 153 +3C*^	700	1000
	0.022	10.5	17.0	19	0.8	15.0	15.0	4500	2.8	18 223 +3C*^	700	1000
1600V DC	0.0056	7.0	13.0	19	0.8	15.0	15.0	6000	1.1	18 562 +3C*^	1100	1000
700V AC	0.0068	6.5	14.0	19	0.8	15.0	15.0	6000	1.1	18 682 +3C*^	1100	1000
	0.0082	8.0	14.0	19	0.8	15.0	15.0	6000	1.5	18 822 +3C*^	1100	1000
	0.01	7.0	16.0	19	0.8	15.0	15.0	6000	1.5	18 103 +3C*^	1100	1000
	0.012	9.0	16.0	19	0.8	15.0	15.0	6000	2.0	18 123 +3C*^	1100	1000
	0.015	8.0	14.0	19	0.8	15.0	15.0	6000	2.0	18 153 +3C*^	1100	1000
	0.018	8.5	15.0	19	0.8	15.0	15.0	6000	2.4	18 183 +3C*^	1100	1000
	0.022	10.5	16.5	19	0.8	15.0	15.0	6000	2.6	18 223 +3C*^	1100	1000
	0.027	10.5	16.5	19	0.8	15.0	15.0	6000	2.6	18 273 +3C*^	900	1000
	0.033	11.0	18.0	19	0.8	15.0	15.0	6000	2.6	18 333 +3C*^	900	1000
	0.027	6.5	15.5	27	0.8	22.5	22.5	3000	2.6	18 273 +3C*^	650	400
	0.033	7.5	16.5	27	0.8	22.5	22.5	3000	3.2	18 333 +3C*^	650	400
	0.039	7.5	16.5	27	0.8	22.5	22.5	3000	3.2	18 393 +3C*^	650	400
	0.047	9.0	17.5	27	0.8	22.5	22.5	3000	4.1	18 473 +3C*^	500	400
	0.056	10.5	19.0	27	0.8	22.5	22.5	3000	5.0	18 563 +3C*^	500	400
	0.068	10.5	19.0	27	0.8	22.5	22.5	3000	5.0	18 683 +3C*^	-	200
	0.082	11.0	19.0	27	0.8	22.5	22.5	3000	5.0	18 823 +3C*^	-	200
	0.1	12.0	21.0	27	0.8	22.5	22.5	3000	5.2	18 104 +3C*^	-	200
2000VDC	0.001	5.5	11.5	19	0.8	15.0	15.0	9500	1.1	18 102 +3D*^	1100	1000
700VAC	0.0012	5.5	11.5	19	0.8	15.0	15.0	9500	1.1	18 122 +3D*^	1100	1000
	0.0015	6.0	15.0	19	0.8	15.0	15.0	9500	1.1	18 152 +3D*^	1100	1000
	0.0018	7.0	17.0	19	0.8	15.0	15.0	9500	1.1	18 182 +3D*^	1100	1000
	0.0022	6.0	11.0	19	0.8	15.0	15.0	9500	1.1	18 222 +3D*^	1100	1000
	0.0027	6.0	15.0	19	0.8	15.0	15.0	9500	1.1	18 272 +3D*^	1100	1000
	0.0033	7.0	13.0	19	0.8	15.0	15.0	9500	1.1	18 332 +3D*^	1100	1000
	0.0039	6.0	15.0	19	0.8	15.0	15.0	9500	1.1	18 392 +3D*^	1100	1000
	0.0047	7.0	15.0	19	0.8	15.0	15.0	9500	1.1	18 472 +3D*^	1100	1000
	0.0056	7.0	15.0	19	0.8	15.0	15.0	9500	1.5	18 562 +3D*^	900	1000
	0.0068	8.0	16.0	19	0.8	15.0	15.0	9500	1.5	18 682 +3D*^	900	1000
	0.0082	9.0	18.0	19	0.8	15.0	15.0	9500	2.0	18 822 +3D*^	900	1000
	0.01	10.0	17.0	19	0.8	15.0	15.0	9500	2.0	18 103 +3D*^	900	1000
	0.012	11.0	18.0	19	0.8	15.0	15.0	9500	2.4	18 123 +3D*^	700	1000
	0.015	9.0	15.0	19	0.8	15.0	15.0	9500	2.4	18 153 +3D*^	700	1000
	0.018	10.5	16.5	19	0.8	15.0	15.0	9500	2.4	18 183 +3D*^	700	1000
	0.022	10.5	19.0	19	0.8	15.0	15.0	9500	2.6	18 223 +3D*^	-	1000
	0.027	11.0	20.0	19	0.8	15.0	15.0	9500	2.6	18 273 +3D*^	-	1000
	0.0047	7.0	15.0	27	0.8	22.5	22.5	3500	2.6	18 472 +3D*^	650	400
	0.0056	6.5	15.5	27	0.8	22.5	22.5	3500	2.6	18 562 +3D*^	650	400
	0.0068	6.5	15.5	27	0.8	22.5	22.5	3500	2.6	18 682 +3D*^	650	400
	0.0082	6.5	15.5	27	0.8	22.5	22.5	3500	2.6	18 822 +3D*^	650	400
	0.01	6.5	15.5	27	0.8	22.5	22.5	3500	2.6	18 103 +3D*^	650	400
	0.012	6.5	15.5	27	0.8	22.5	22.5	3500	2.6	18 123 +3D*^	650	400
	0.015	6.5	15.5	27	0.8	22.5	22.5	3500	2.6	18 153 +3D*^	650	400
	0.018	6.5	15.5	27	0.8	22.5	22.5	3500	2.6	18 183 +3D*^	650	400
	0.022	6.5	15.5	27	0.8	22.5	22.5	3500	2.6	18 223 +3D*^	650	400
	0.027	7.5	16.5	27	0.8	22.5	22.5	3500	3.2	18 273 +3D*^	500	400
	0.033	9.0	17.5	27	0.8	22.5	22.5	3500	4.1	18 333 +3D*^	500	400
	0.039	10.5	19.0	27	0.8	22.5	22.5	3500	5.0	18 393 +3D*^	-	200
	0.047	10.5	19.0	27	0.8	22.5	22.5	3500	5.0	18 473 +3D*^	-	200

AC & PULSE METALLISED POLYPROPYLENE FILM CAPACITORS
MMPP (Double side metallised film capacitor) – DC Applications

MAIN APPLICATION: SMPS, Motor control circuits, deflection circuit in TV sets (fly back) and monitors, electronic ballast, snubber and SCR commutating circuits and applications with high voltage and high current

CONSTRUCTION: Series constructed, low inductive wound cell of metallised polypropylene film as electrodes coated with flame retardant epoxy resin or enclosed in a flame retardant box

CLIMATIC CATEGORY: 40/100/56

MAX OPERATING TEMPERATURE: 100° C

RATED TEMPERATURE: 85° C

APPLICABLE SPECIFICATION: IEC 384-16

CAPACITANCE VALUE RATED VOLTAGE (DC): Refer dimension chart.

CAPACITANCE TOLERANCE: ± 5%, ± 10%, ± 20%

VOLTAGE PROOF: Between terminals: 1.6 times the rated voltage for 2 seconds

LIFE TEST CONDITIONS:
(Loading at elevated temperature)
Loaded at 1.25 times of rated DC voltage at 85° C or 1.25 times of category voltage at 100° C for 1000 hours
Category voltage is 80% of the rated voltage at 100° C

Criteria after the test:
Δc/c: ≤ 5% of initial value
Increase of Tan δ: ≤ 0.0015
Insulation resistance: ≥ 50% of the initial value mentioned in IR chart

TAN δ (DISSIPATION FACTOR) AT 20° C

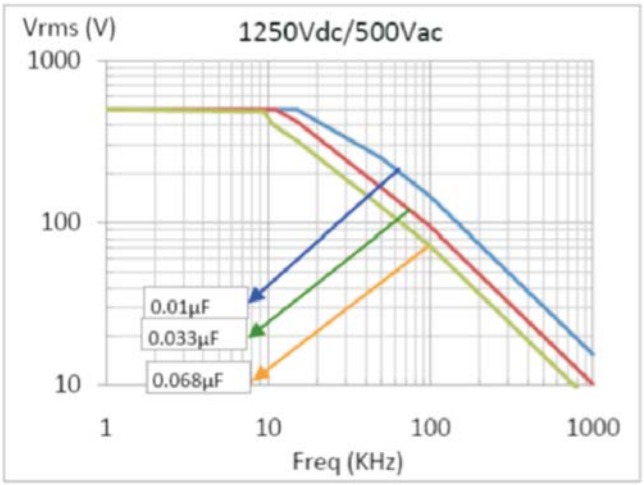
Frequency (kHz)	C_R < 0.1 µF	0.1 µF < C_R ≤ 1 µF	C_R > 1 µF
At 1	0. 03%	0.03%	0.03%
At 10	0. 04%	0. 05%	
At 100	0.15%		

INSULATION RESISTANCE

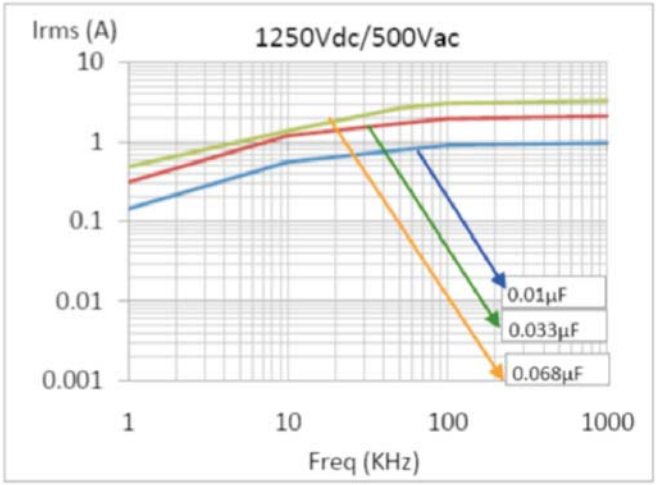
Minimum Insulation Resistance R_{IS}	C_R ≤ 0.33 F	C_R > 0.33 F
(or) time constant T = C_R × R_{IS} = 30000 s	> 100000 MΩ	> 30000 s

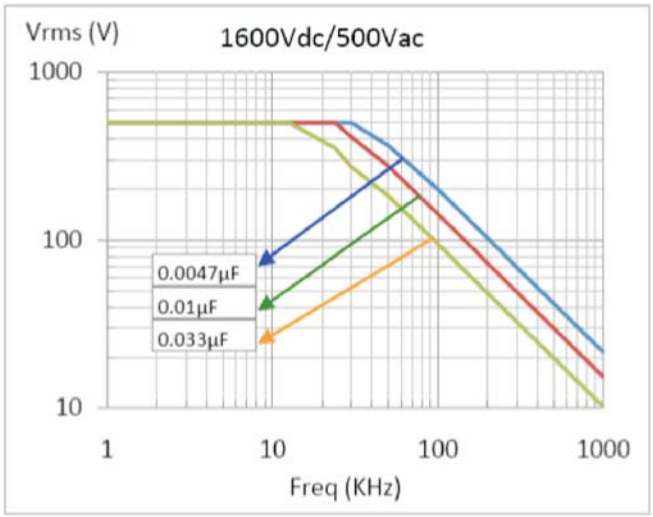
at 25° C, relative humidity ≤ 70%

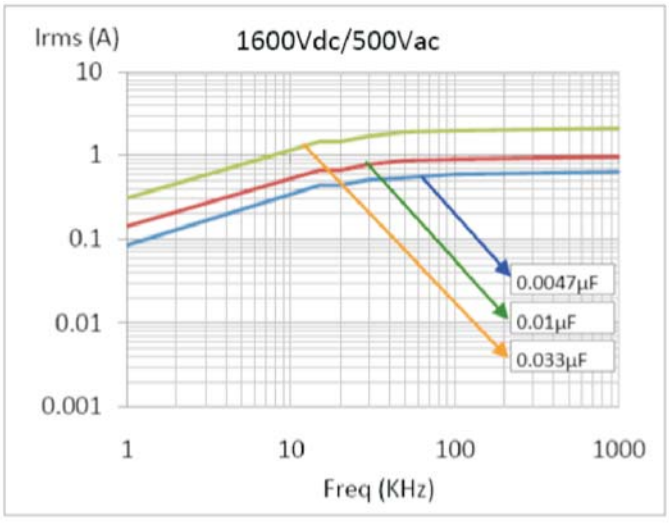
Max. Voltage (Vrms) vs. Frequency
(Sinusoidal Waveform at T ≤ 55° C)

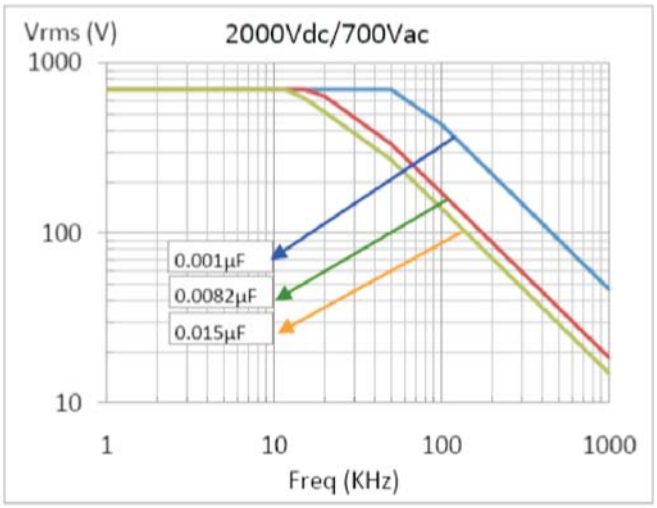


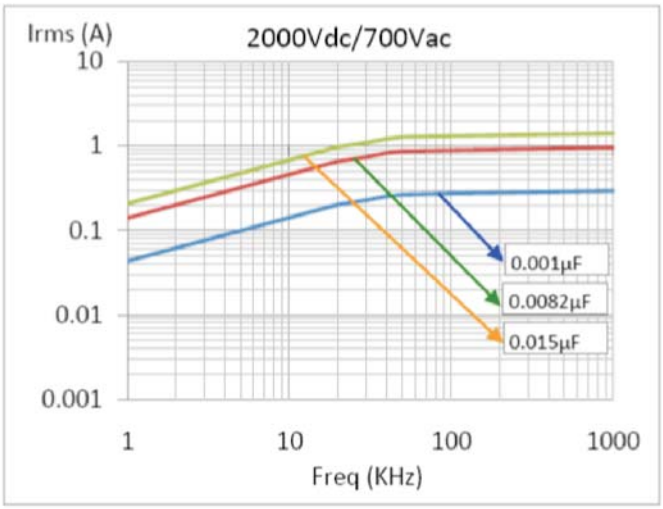
Max. Current (Irms) vs. Frequency
(Sinusoidal Waveform at T ≤ 55° C)





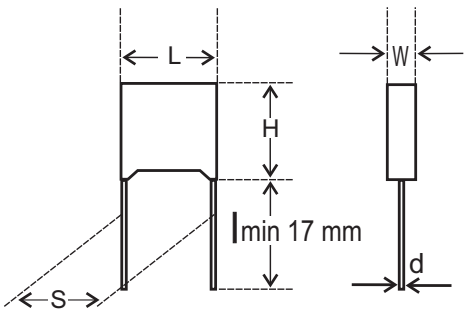




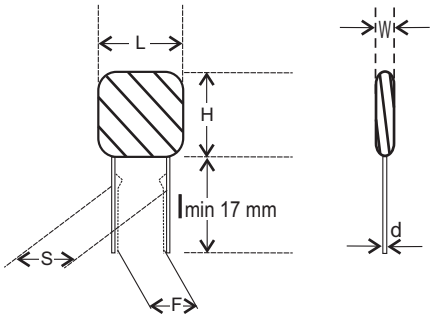


For Ordering Codes and Packing Units overleaf

Box Type



Dip Type



AC & PULSE METALLISED POLYPROPYLENE FILM CAPACITORS - MMPP

(Double side metallised film capacitor) – DC Applications - Ordering codes and packaging units

Rated Voltage	Rated Cap. (µF)	Dimensions (mm) W ±0.5	H ±0.5	L ±0.5	d ±0.05	S ±0.5	F .8/-.2	DV/DT V/µs	Wt. g	Ordering code	Packing units Ammo	Bulk
1250VDC	0.0082	6.0	11.9	18.0	0.8	15.0	15.0	3300	1.5	66 822 +3B*^	1100	1000
500VAC	0.01	6.0	11.9	18.0	0.8	15.0	15.0	3300	1.5	66 103 +3B*^	1100	1000
	0.012	7.5	13.5	18.0	0.8	15.0	15.0	3300	2.0	66 123 +3B*^	900	1000
	0.015	7.5	13.5	18.0	0.8	15.0	15.0	3300	2.0	66 153 +3B*^	900	1000
	0.018	7.5	13.5	18.0	0.8	15.0	15.0	3300	2.0	66 183 +3B*^	900	1000
	0.022	8.5	14.5	18.0	0.8	15.0	15.0	3300	2.6	66 223 +3B*^	700	1000
	0.027	10.0	16.0	18.0	0.8	15.0	15.0	3300	2.8	66 273 +3B*^	700	1000
	0.027	6.0	15.0	26.5	0.8	22.5	22.5	2100	2.8	66 273 +3B*^	650	400
	0.033	7.0	16.0	26.5	0.8	22.5	22.5	2100	3.5	66 333 +3B*^	650	400
	0.039	7.0	16.0	26.5	0.8	22.5	22.5	2100	3.5	66 393 +3B*^	650	400
	0.047	8.5	17.0	26.5	0.8	22.5	22.5	2100	4.5	66 473 +3B*^	500	400
	0.056	10.0	18.5	26.5	0.8	22.5	22.5	2100	5.4	66 563 +3B*^	-	200
	0.068	10.0	18.5	26.5	0.8	22.5	22.5	2100	5.4	66 683 +3B*^	-	200
1600VDC	0.0033	5.0	10.8	18.0	0.8	15.0	15.0	6000	1.1	66 332 +3C*^	1100	1000
500VAC	0.0039	5.0	10.8	18.0	0.8	15.0	15.0	6000	1.1	66 392 +3C*^	1100	1000
	0.0047	5.0	10.8	18.0	0.8	15.0	15.0	6000	1.1	66 472 +3C*^	1100	1000
	0.0056	5.0	10.8	18.0	0.8	15.0	15.0	6000	1.1	66 562 +3C*^	1100	1000
	0.0068	5.0	10.8	18.0	0.8	15.0	15.0	6000	1.1	66 682 +3C*^	1100	1000
	0.0082	6.0	11.9	18.0	0.8	15.0	15.0	6000	1.5	66 822 +3C*^	1100	1000
	0.01	6.0	11.9	18.0	0.8	15.0	15.0	6000	1.5	66 103 +3C*^	1100	1000
	0.012	7.5	13.5	18.0	0.8	15.0	15.0	6000	2.0	66 123 +3C*^	900	1000
	0.015	7.5	13.5	18.0	0.8	15.0	15.0	6000	2.0	66 153 +3C*^	900	1000
	0.018	8.5	14.5	18.0	0.8	15.0	15.0	6000	2.6	66 183 +3C*^	700	1000
	0.027	10.0	16.0	18.0	0.8	15.0	15.0	6000	2.8	66 273 +3C*^	700	1000
	0.015	6.0	15.0	26.5	0.8	22.5	22.5	3000	2.8	66 153 +3C*^	650	400
	0.018	6.0	15.0	26.5	0.8	22.5	22.5	3000	2.8	66 183 +3C*^	650	400
	0.022	6.0	15.0	26.5	0.8	22.5	22.5	3000	2.8	66 223 +3C*^	650	400
	0.027	6.0	15.0	26.5	0.8	22.5	22.5	3000	2.8	66 273 +3C*^	650	400
	0.033	7.0	16.0	26.5	0.8	22.5	22.5	3000	3.5	66 333 +3C*^	650	400
	0.039	8.5	17.0	26.5	0.8	22.5	22.5	3000	4.5	66 393 +3C*^	500	400
	0.047	10.0	18.5	26.5	0.8	22.5	22.5	3000	5.4	66 473 +3C*^	-	200
	0.056	10.0	18.5	26.5	0.8	22.5	22.5	3000	5.4	66 563 +3C*^	-	200
2000VDC	0.0002	5.0	10.8	18.0	0.8	15.0	15.0	9500	1.1	66 221 +3D*^	1100	1000
700VAC	0.0003	5.0	10.8	18.0	0.8	15.0	15.0	9500	1.1	66 271 +3D*^	1100	1000
	0.0003	5.0	10.8	18.0	0.8	15.0	15.0	9500	1.1	66 331 +3D*^	1100	1000
	0.0004	5.0	10.8	18.0	0.8	15.0	15.0	9500	1.1	66 391 +3D*^	1100	1000
	0.0005	5.0	10.8	18.0	0.8	15.0	15.0	9500	1.1	66 471 +3D*^	1100	1000
	0.0006	5.0	10.8	18.0	0.8	15.0	15.0	9500	1.1	66 561 +3D*^	1100	1000
	0.0007	5.0	10.8	18.0	0.8	15.0	15.0	9500	1.1	66 681 +3D*^	1100	1000
	0.0008	5.0	10.8	18.0	0.8	15.0	15.0	9500	1.1	66 821 +3D*^	1100	1000
	0.001	5.0	10.8	18.0	0.8	15.0	15.0	9500	1.1	66 102 +3D*^	1100	1000
	0.0012	5.0	10.8	18.0	0.8	15.0	15.0	9500	1.1	66 122 +3D*^	1100	1000
	0.0015	5.0	10.8	18.0	0.8	15.0	15.0	9500	1.1	66 152 +3D*^	1100	1000
	0.0018	5.0	10.8	18.0	0.8	15.0	15.0	9500	1.1	66 182 +3D*^	1100	1000
	0.0022	5.0	10.8	18.0	0.8	15.0	15.0	9500	1.1	66 222 +3D*^	1100	1000
	0.0027	5.0	10.8	18.0	0.8	15.0	15.0	9500	1.1	66 272 +3D*^	1100	1000
	0.0033	6.0	11.9	18.0	0.8	15.0	15.0	9500	1.5	66 332 +3D*^	1100	1000
	0.0039	6.0	11.9	18.0	0.8	15.0	15.0	9500	1.5	66 392 +3D*^	1100	1000
	0.0047	6.0	11.9	18.0	0.8	15.0	15.0	9500	1.5	66 472 +3D*^	1100	1000
	0.0056	7.5	13.5	18.0	0.8	15.0	15.0	9500	2.0	66 562 +3D*^	900	1000
	0.0068	7.5	13.5	18.0	0.8	15.0	15.0	9500	2.0	66 682 +3D*^	900	1000
	0.0082	8.5	14.5	18.0	0.8	15.0	15.0	9500	2.6	66 822 +3D*^	700	1000
	0.01	10.0	16.0	18.0	0.8	15.0	15.0	9500	2.8	66 132 +3D*^	700	1000
	0.001	6.0	15.0	26.5	0.8	22.5	22.5	3500	2.8	66 102 +3D*^	650	400
	0.0012	6.0	15.0	26.5	0.8	22.5	22.5	3500	2.8	66 122 +3D*^	650	400
	0.0015	6.0	15.0	26.5	0.8	22.5	22.5	3500	2.8	66 152 +3D*^	650	400
	0.0018	6.0	15.0	26.5	0.8	22.5	22.5	3500	2.8	66 182 +3D*^	650	400
	0.0022	6.0	15.0	26.5	0.8	22.5	22.5	3500	2.8	66 222 +3D*^	650	400
	0.0027	6.0	15.0	26.5	0.8	22.5	22.5	3500	2.8	66 272 +3D*^	650	400
	0.0033	6.0	15.0	26.5	0.8	22.5	22.5	3500	2.8	66 332 +3D*^	650	400
	0.0039	6.0	15.0	26.5	0.8	22.5	22.5	3500	2.8	66 392 +3D*^	650	400
	0.0047	6.0	15.0	26.5	0.8	22.5	22.5	3500	2.8	66 472 +3D*^	650	400
	0.0056	6.0	15.0	26.5	0.8	22.5	22.5	3500	2.8	66 562 +3D*^	650	400
	0.0068	6.0	15.0	26.5	0.8	22.5	22.5	3500	2.8	66 682 +3D*^	650	400
	0.0082	6.0	15.0	26.5	0.8	22.5	22.5	3500	2.8	66 822 +3D*^	650	400
	0.01	6.0	15.0	26.5	0.8	22.5	22.5	3500	2.8	66 103 +3D*^	650	400
	0.012	6.0	15.0	26.5	0.8	22.5	22.5	3500	2.8	66 123 +3D*^	650	400
	0.015	7.0	16.0	26.5	0.8	22.5	22.5	3500	3.5	66 153 +3D*^	650	400
	0.022	8.5	17.0	26.5	0.8	22.5	22.5	3500	4.5	66 223 +3D*^	500	400
	0.027	10.0	18.5	26.5	0.8	22.5	22.5	3500	5.4	66 273 +3D*^	-	200

The dv/dt test is carried out for 2 times above value

AC & PULSE METALLISED POLYPROPYLENE FILM CAPACITORS - MMPP

(Double side metallised film capacitor) – DC Applications - Ordering codes and packaging units

Rated Voltage	Rated Cap. (µF)	Dimensions (mm) W ±0.5	H ±0.5	L ±0.5	d ±0.05	S ±0.5	F .8/-.2	DV/DT V/µs	Wt. g	Ordering code	Packing units Ammo	Bulk
1250VDC	0.0082	6.5	12.5	19	0.8	15.0	15.0	3300	1.5	61 822 +3B*^	1100	1000
500VAC	0.01	7.0	12.5	19	0.8	15.0	15.0	3300	1.6	61 103 +3B*^	1100	1000
	0.012	8.0	14.0	19	0.8	15.0	15.0	3300	1.8	61 123 +3B*^	900	1000
	0.015	8.0	15.0	19	0.8	15.0	15.0	3300	1.8	61 153 +3B*^	900	1000
	0.018	8.0	15.0	19	0.8	15.0	15.0	3300	2.0	61 183 +3B*^	900	1000
	0.022	9.0	16.0	19	0.8	15.0	15.0	3300	2.0	61 223 +3B*^	700	1000
	0.027	10.0	17.0	19	0.8	15.0	15.0	3300	2.6	61 273 +3B*^	700	1000
	0.033	12.0	18.0	19	0.8	15.0	15.0	3300	2.8	61 333 +3B*^	650	1000
	0.039	12.0	18.0	19	0.8	15.0	15.0	3300	2.8	61 393 +3B*^	650	1000
	0.027	7.0	15.0	27	0.8	22.5	22.5	2100	4.5	61 273 +3B*^	650	400
	0.033	8.0	16.5	27	0.8	22.5	22.5	2100	4.5	61 333 +3B*^	650	400
	0.039	9.0	16.0	27	0.8	22.5	22.5	2100	4.5	61 393 +3B*^	650	400
	0.047	9.5	17.0	27	0.8	22.5	22.5	2100	4.5	61 473 +3B*^	500	400
	0.056	10.5	19.0	27	0.8	22.5	22.5	2100	4.5	61 563 +3B*^	-	200
	0.068	10.5	19.0	27	0.8	22.5	22.5	2100	4.5	61 683 +3B*^	-	200
	0.082	10.5	19.0	27	0.8	22.5	22.5	2100	4.5	61 823 +3B*^	-	200
1600VDC	0.0033	5.5	11.5	19	0.8	15.0	15.0	6000	1.1	61 332 +3C*^	1100	1000
500VAC	0.0039	5.5	11.5	19	0.8	15.0	15.0	6000	1.1	61 392 +3C*^	1100	1000
	0.0047	5.5	11.5	19	0.8	15.0	15.0	6000	1.1	61 472 +3C*^	1100	1000
	0.0056	5.5	11.5	19	0.8	15.0	15.0	6000	1.1	61 562 +3C*^	1100	1000
	0.0068	5.5	11.5	19	0.8	15.0	15.0	6000	1.1	61 682 +3C*^	1100	1000
	0.0082	6.5	12.5	19	0.8	15.0	15.0	6000	1.5	61 822 +3C*^	1100	1000
	0.01	6.5	12.5	19	0.8	15.0	15.0	6000	1.5	61 103 +3C*^	1100	1000
	0.012	8.0	14.0	19	0.8	15.0	15.0	6000	2.0	61 123 +3C*^	900	1000
	0.015	8.0	14.0	19	0.8	15.0	15.0	6000	2.0	61 153 +3C*^	900	1000
	0.018	9.0	15.0	19	0.8	15.0	15.0	6000	2.6	61 183 +3C*^	700	1000
	0.022	9.0	16.0	19	0.8	15.0	15.0	6000	2.8	6 223 +3C*^	700	1000
	0.027	10.5	17.0	19	0.8	15.0	15.0	6000	2.8	61 273 +3C*^	700	1000
	0.015	6.5	15.5	27	0.8	22.5	22.5	3000	2.8	61 153 +3C*^	650	400
	0.018	6.5	15.5	27	0.8	22.5	22.5	3000	2.8	61 183 +3C*^	650	400
	0.022	6.5	15.5	27	0.8	22.5	22.5	3000	2.8	61 223 +3C*^	650	400
	0.027	6.5	15.5	27	0.8	22.5	22.5	3000	2.8	61 273 +3C*^	650	400
	0.033	7.5	17.0	27	0.8	22.5	22.5	3000	3.5	61 333 +3C*^	650	400
	0.039	9.0	18.0	27	0.8	22.5	22.5	3000	4.5	61 393 +3C*^	500	400
	0.047	10.5	19.0	27	0.8	22.5	22.5	3000	5.4	61 473 +3C*^	-	200
	0.056	10.5	19.0	27	0.8	22.5	22.5	3000	5.4	61 563 +3C*^	-	200
2000VDC	0.00022	5.5	11.5	19	0.8	15.0	15.0	9500	1.1	61 221 +3D*^	1100	1000
700VAC	0.00027	5.5	11.5	19	0.8	15.0	15.0	9500	1.1	61 271 +3D*^	1100	1000
	0.00033	5.5	11.5	19	0.8	15.0	15.0	9500	1.1	61 331 +3D*^	1100	1000
	0.00039	5.5	11.5	19	0.8	15.0	15.0	9500	1.1	61 391 +3D*^	1100	1000
	0.00047	5.5	11.5	19	0.8	15.0	15.0	9500	1.1	61 471 +3D*^	1100	1000
	0.00056	5.5	11.5	19	0.8	15.0	15.0	9500	1.1	61 561 +3D*^	1100	1000
	0.00068	5.5	11.5	19	0.8	15.0	15.0	9500	1.1	61 681 +3D*^	1100	1000
	0.00082	5.5	11.5	19	0.8	15.0	15.0	9500	1.1	61 821 +3D*^	1100	1000
	0.001	5.5	11.5	19	0.8	15.0	15.0	9500	1.1	61 102 +3D*^	1100	1000
	0.0015	5.5	11.5	19	0.8	15.0	15.0	9500	1.1	61 152 +3D*^	1100	1000
	0.0018	5.5	11.5	19	0.8	15.0	15.0	9500	1.1	61 182 +3D*^	1100	1000
	0.0022	5.5	11.5	19	0.8	15.0	15.0	9500	1.1	61 222 +3D*^	1100	1000
	0.0027	5.5	11.5	19	0.8	15.0	15.0	9500	1.1	61 272 +3D*^	1100	1000
	0.0033	6.5	12.5	19	0.8	15.0	15.0	9500	1.5	61 332 +3D*^	1100	1000
	0.0039	6.5	12.5	19	0.8	15.0	15.0	9500	1.5	61 392 +3D*^	1100	1000
	0.0047	6.5	12.5	19	0.8	15.0	15.0	9500	1.5	61 472 +3D*^	1100	1000
	0.0056	8.0	14.0	19	0.8	15.0	15.0	9500	2.0	61 562 +3D*^	900	1000
	0.0068	8.0	14.0	19	0.8	15.0	15.0	9500	2.0	61 682 +3D*^	900	1000
	0.0082	9.0	15.0	19	0.8	15.0	15.0	9500	2.6	61 822 +3D*^	700	1000
	0.01	10.5	16.5	19	0.8	15.0	15.0	9500	2.8	61 103 +3D*^	700	1000
	0.001	6.5	15.5	27	0.8	22.5	22.5	3500	2.8	61 102 +3D*^	650	400
	0.0015	6.5	15.5	27	0.8	22.5	22.5	3500	2.8	61 152 +3D*^	650	400
	0.0018	6.5	15.5	27	0.8	22.5	22.5	3500	2.8	61 182 +3D*^	650	400
	0.0022	6.5	15.5	27	0.8	22.5	22.5	3500	2.8	61 222 +3D*^	650	400
	0.0027	6.5	15.5	27	0.8	22.5	22.5	3500	2.8	61 272 +3D*^	650	400
	0.0033	6.5	15.5	27	0.8	22.5	22.5	3500	2.8	61 332 +3D*^	650	400
	0.0039	6.5	15.5	27	0.8	22.5	22.5	3500	2.8	61 392 +3D*^	650	400
	0.0047	6.5	15.5	27	0.8	22.5	22.5	3500	2.8	61 472 +3D*^	650	400
	0.0056	6.5	15.5	27	0.8	22.5	22.5	3500	2.8	61 562 +3D*^	650	400
	0.0068	6.5	15.5	27	0.8	22.5	22.5	3500	2.8	61 682 +3D*^	650	400
	0.0082	6.5	15.5	27	0.8	22.5	22.5	3500	2.8	61 822 +3D*^	650	400
	0.01	6.5	15.5	27	0.8	22.5	22.5	3500	2.8	61 103 +3D*^	650	400
	0.015	7.5	16.5	27	0.8	22.5	22.5	3500	3.5	61 153 +3D*^	650	400
	0.018	8.5	17.5	27	0.8	22.5	22.5	3500	4.5	61 183 +3D*^	500	400
	0.022	9.0	17.5	27	0.8	22.5	22.5	3500	5.0	61 223 +3D*^	500	400
	0.027	10.5	18.5	27	0.8	22.5	22.5	3500	5.4	61 273 +3D*^	500	400
	0.033	11.5	20.0	27	0.8	22.5	22.5	3500	5.4	61 333 +3D*^	-	200

The dv/dt test is carried out for 2 times above value

INDUCTIVE SELF HEALING POLYPROPYLENE CAPACITOR
DPSH CAPACITORS

CONSTRUCTION: Film/foil inductive type internally series construction with aluminum foil as electrode and polypropylene (PP) film dielectric and MPP Film as connecting electrode, coated with flame retardant epoxy resin

CAPACITANCE RANGE: 0.001 µF to 0.01 µF

RATED VOLTAGES: 1250 V DC / 500 V AC, 1600 V DC / 500 V AC, 2000 V DC / 500 V AC

CAPACITANCE TOLERANCES: ±5%, ±10%

APPLICABLE SPECIFICATION: IEC 384-17

OPERATING TEMPERATURE RANGE: -40° C to +105°C

PITCH: 5 mm, 7.5 mm

VOLTAGE PROOF: 1.6 times the rated voltage for 2 sec

INSULATION RESISTANCE AT +20° C: > 100000 MΩ

TAN δ: 0.1% at 1 kHz and 0.4% at 100 kHz

VOLTAGE DERATING: For temperatures between +85° C and +100° C a decreasing factor of 1.25% per °C on the rated voltage Ur (DC and AC) has to be applied

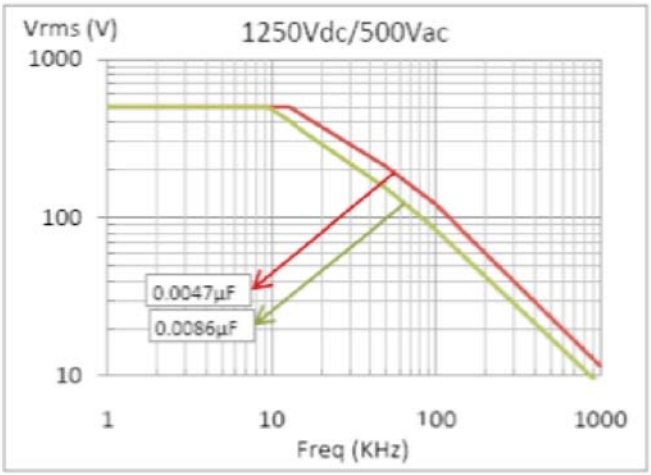
ENDURANCE TEST:
Test conditions (DC)
Temperature: +85°C ±2°C
Test duration: 1000 h
Voltage applied: 1.25 × UR (DC)

Performance
Capacitance change |ΔC/C|: ≤5%
DF change (Δtgδ): 1.4 times value measured before the test
Insulation resistance: ≥50% of initial limit

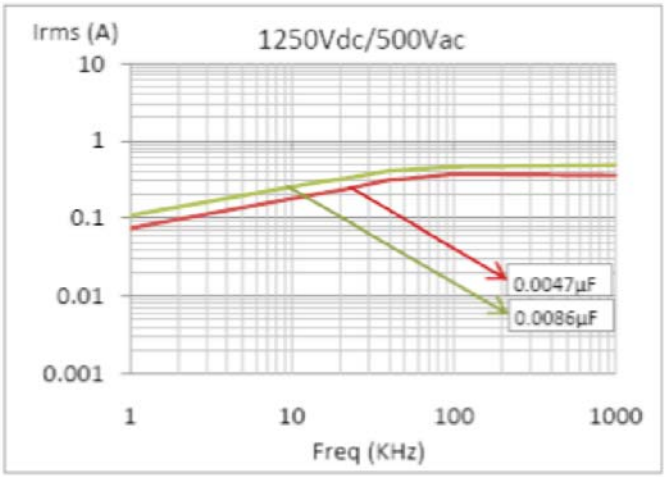
Test conditions (AC)
Temperature: +85°C ±2°C
Test duration: 1000 h
Voltage applied: 1.25 × UR (AC)

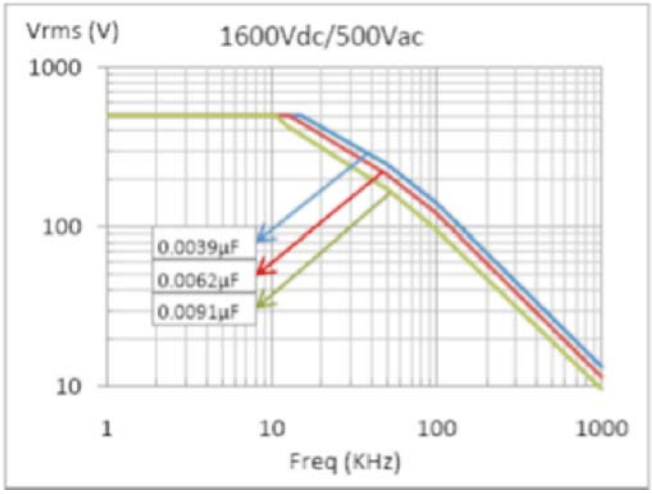
Performance
Capacitance change |ΔC/C|: ≤5%
DF change (Δtgδ): 1.4 times value measured before the test
Insulation resistance: ≥50% of initial limit

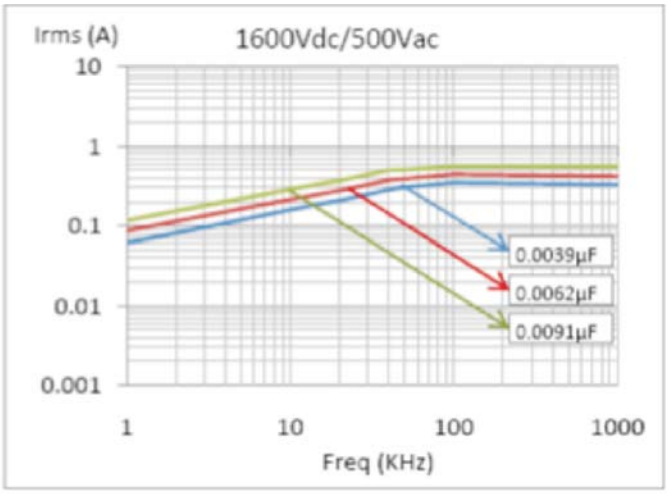
Max. Voltage (Vrms) vs. Frequency
(Sinusoidal Waveform at T ≤ 55° C)

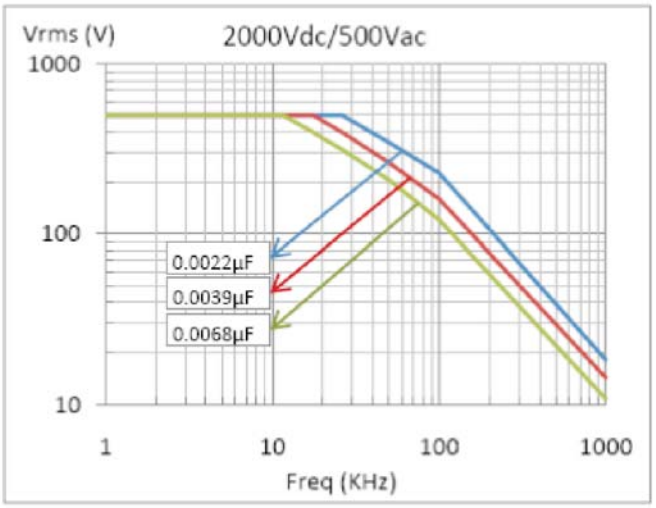


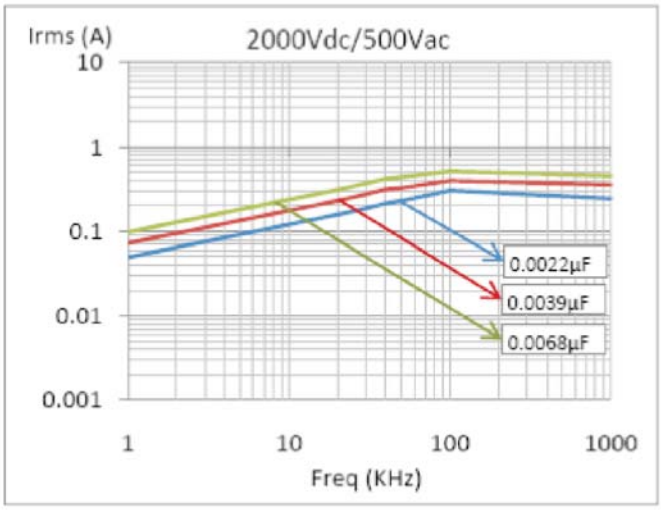
Max. Current (Irms) vs. Frequency
(Sinusoidal Waveform at T ≤ 55° C)





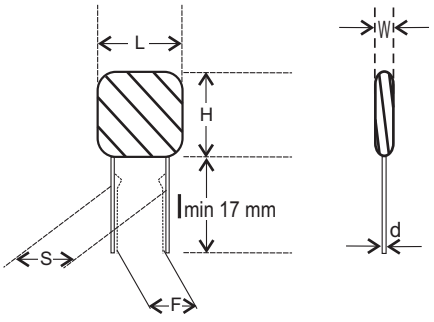






Ordering codes and packaging units

Rated Voltage	Rated Cap. (µF)	Dimensions(mm) W ±0.5	H ±0.5	L ±0.5	d ±0.05	S ±0.5	DV/DT V/µs	Wt. g	Ordering code	Packing units Bulk
1250 V DC	0.0027	5.00	17.50	8.00	0.5	5.0±0.5	10000	0.500	70 272 + 3B * ^	500
	0.0033	5.00	17.50	8.00	0.5	5.0±0.5	10000	0.570	70 332 + 3B * ^	500
	0.0039	5.50	17.50	8.50	0.5	5.0±0.5	10000	0.680	70 392 + 3B * ^	500
	0.0047	5.50	17.50	9.00	0.5	5.0±0.5	10000	0.770	70 472 + 3B * ^	500
	0.0056	5.50	17.50	9.50	0.5	5.0±0.5	10000	0.820	70 562 + 3B * ^	500
	0.0068	6.50	17.50	10.00	0.5	7.0±0.5	10000	0.910	70 682 + 3B * ^	500
	0.0086	6.50	17.50	10.00	0.5	7.0±0.5	10000	1.070	70 862 + 3B * ^	500
	0.01	7.00	17.50	10.50	0.5	7.5±0.5	10000	1.192	70 103 + 3B * ^	500
1600 V DC	0.0039	6.50	17.50	9.50	0.5	5.0±0.5	10000	0.860	70 392 + 3C * ^	500
	0.0047	5.17	15.97	8.72	0.5	5.0±0.5	10000	0.970	70 472 + 3C * ^	500
	0.0056	6.50	17.50	11.00	0.5	7.0±0.5	10000	1.070	70 562 + 3C * ^	500
	0.0062	6.50	17.50	11.00	0.5	7.5±0.5	10000	1.100	70 622 + 3C * ^	500
	0.0068	7.00	17.50	11.00	0.5	7.0±0.5	10000	1.140	70 682 + 3C * ^	500
	0.0082	7.50	17.50	11.00	0.5	7.0±0.5	10000	1.270	70 822 + 3C * ^	500
	0.0086	8.00	17.50	11.50	0.5	7.0±0.5	10000	1.340	70 862 + 3C * ^	500
	0.01	8.50	18.00	12.50	0.5	7.0±0.5	10000	1.490	70 103 + 3C * ^	500
2000 V DC	0.0015	5.50	18.00	8.50	0.5	5.0±0.5	10000	0.550	70 152 + 3D * ^	500
	0.0022	6.00	18.00	9.00	0.5	5.0±0.5	10000	0.640	70 222 + 3D * ^	500
	0.0033	6.50	18.00	10.00	0.5	5.0±0.5	10000	0.820	70 332 + 3D * ^	500
	0.0047	7.50	18.00	11.00	0.5	7.5±0.5	10000	1.130	70 472 + 3D * ^	500
	0.0056	8.50	18.00	11.50	0.5	7.5±0.5	10000	1.240	70 562 + 3D * ^	500
	0.0068	9.50	18.00	12.50	0.5	7.5±0.5	10000	1.330	70 682 + 3D * ^	500
	0.01	10.00	18.00	14.00	0.5	7.5±0.5	10000	1.740	70 103 + 3D * ^	500



INTERFERENCE SUPPRESSION CAPACITORS
(Safety Capacitors) Class X2

MAIN APPLICATION: Suitable for radio suppression in small household appliances, audio and TV circuits, general industrial applications

CONSTRUCTION: Low inductive cell of metallised polypropylene film encased in flame retardant grade UL 94 V-0 box potted with flame retardant UL 94 V-0 epoxy resin

CLIMATIC CATEGORY: 40/100/56/C

MAXIMUM OPERATING TEMPERATURE: 100° C

APPLICABLE SPECIFICATION: IEC 384-14

CAPACITANCE VALUE: Refer dimension chart

RATED VOLTAGE (AC): 275/305 V

CAPACITANCE TOLERANCE: ±10%, ±20%

VOLTAGE PROOF (V DC): 2100 V DC for 2 s

TAN δ: 0.1% (max.) at 1 kHz, 0.3% (max.) at 10 kHz

LIFE TEST CONDITIONS:
(Loading at elevated temperature)
Loaded at 1.25 times of rated voltage at 100 °C for 1000 hours.
Once per hour; 0.1s at 1000 V (RMS) via resistor of 47 Ω ± 5%

Criteria after the test:
Δ *c/c:* ≤ 10%
Increase of Tan δ: ≤ 0.008, C_R≤ 1µF; ≤ 0.005, CR>1µF at 1 kHz
Insulation resistance: > 50% of the initial value

INSULATION RESISTANCE

	C_R ≤ 0.33 µF	C_R > 0.33 µF
Minimum Insulation Resistance R_{IS}	> 30000 MΩ	> 10000 s
(or) time constant T = $C_R \times R_{IS}$		
at 25° C, relative humidity ≤ 65%		

INSULATION RESISTANCE

Safety Approval X2	Voltage	Value	Certificate Numbers
EN 60384-14:2005 (ENEC) (= IEC 60384-14:2005 ed-3)	275/305 V AC	0.01µf to 2.2 µf	2011031 A1
CB Test Certificate			STIEP-1956
The ENEC-approval together with the CB- Certificate replaces all national marks of the following countries (they have already signed the ENEC-Agreement): Austria; Belgium; Czech. Republic; Denmark; Finland; France; Germany; Greece; Hungary; Ireland; Italy; Luxembourg; Netherlands; Norway; Portugal; Slovenian; Spain; Sweden; Switzerland and United Kingdom			

Ordering codes and packaging units

Rated Voltage	Rated Cap. (µF)	Dimensions(mm) W ±0.5	H ±0.5	L ±0.5	d ±0.05	S ±0.5	DV/DT V/µs	Wt. g	Ordering code	Packing units Bulk	Remarks/ Approval
275/300 V AC	0.01	4.0	11.0	13.0	0.6	10.0	350	-	07 103 +03* ^	500	ENEC
	0.015	4.0	11.0	13.0	0.6	10.0	350	-	07 153 +03* ^	500	ENEC
	0.022	4.0	11.0	13.0	0.6	10.0	350	-	07 223 +03* ^	500	ENEC
	0.033	5.0	11.0	13.0	0.6	10.0	350	-	07 333 +03* ^	500	ENEC
	0.047	6.0	12.0	13.0	0.6	10.0	350	-	07 473 +03* ^	500	ENEC
	0.047	5.0	11.0	18.0	0.8	15.0	250	-	07 473 +03* ^	500	ENEC
	0.068	5.0	11.0	18.0	0.8	15.0	250	-	07 683 +03* ^	500	ENEC
	0.082	5.0	11.0	18.0	0.8	15.0	250	-	07 823 +03* ^	500	ENEC
	0.1	6.0	12.0	18.0	0.8	15.0	250	-	07 104 +03* ^	500	ENEC
	0.15	7.0	13.0	18.0	0.8	15.0	250	-	07 154 +03* ^	500	ENEC
	0.22	7.5	14.5	18.0	0.8	15.0	250	-	07 224 +03* ^	500	ENEC
	0.22	6.0	15.0	26.5	0.8	22.5	150	-	07 224 +03* ^	250	ENEC
	0.33	10.0	16.0	18.0	0.8	15.0	250	-	07 334 +03* ^	500	ENEC
	0.33	7.0	16.5	26.5	0.8	22.5	150	-	07 334 +03* ^	250	ENEC
	0.47	8.5	17.0	26.5	0.8	22.5	150	-	07 474 +03* ^	250	ENEC
	0.68	10.0	19.0	26.0	0.8	22.5	150	-	07 684 +03* ^	250	ENEC
	0.68	8.5	17.5	32.0	0.8	27.5	100	-	07 684 +03* ^	100	ENEC
	1.0	11.0	22.0	32.0	0.8	27.5	100	-	07 105 +03* ^	100	ENEC
	1.5	14.0	25.0	32.0	0.8	27.5	100	-	07 155 +03* ^	100	ENEC
	2.2	17.5	27.5	32.0	0.8	27.5	100	-	07 225 +03* ^	100	ENEC
	0.1	6.0	12.0	13.0	0.6	10.0	350	-	07 104 +03* ^	500	ENEC
	0.1	5.0	11.0	18.0	0.8	15.0	250	-	07 104 +03* ^	500	Miniature Size
	0.15	6.0	12.0	18.0	0.6	15.0	250	-	07 154 +03* ^	500	Miniature Size
	0.22	7.0	13.0	18.0	0.8	15.0	250	-	07 224 +03* ^	500	Miniature Size
	0.33	8.5	14.5	18.0	0.8	15.0	250	-	07 334 +03* ^	500	Miniature Size
	0.33	6.0	15.0	26.5	0.8	22.5	150	-	07 334 +03* ^	250	Miniature Size
	0.47	10.0	18.0	18.0	0.8	15.0	250	-	07 474 +03* ^	500	Miniature Size
	0.47	7.0	16.5	26.5	0.8	22.5	150	-	07 474 +03* ^	250	Miniature Size
	0.68	8.5	17.5	26.5	0.8	22.5	150	-	07 684 +03* ^	250	Miniature Size
	1.0	11.0	20.0	26.5	0.8	22.5	150	-	07 105 +03* ^	250	Miniature Size
	1.0	11.0	20.0	32.0	0.8	22.5	150	-	07 105 +03* ^	250	Miniature Size
	1.5	11.0	22.0	32.0	0.8	27.5	100	-	07 155 +03* ^	100	Miniature Size
	2.2	14.0	25.0	31.0	0.8	27.5	100	-	07 225 +03* ^	100	Miniature Size
	3.3	17.5	27.5	32.0	0.8	27.5	100	-	07 335 +03* ^	100	Miniature Size

INTERFERENCE SUPPRESSION CAPACITORS (Safety Capacitors) Class Y2

MAIN APPLICATION: Suitable for radio suppression in small household appliances, audio and TV circuits, general industrial applications

CONSTRUCTION: Low inductive cell of metallised polypropylene film encased in flame retardant UL 94 V-0 box potted with flame retardant UL 94 V-0 epoxy resin

CLIMATIC CATEGORY: 40/100/56/C

MAXIMUM OPERATING TEMPERATURE: 100° C

APPLICABLE SPECIFICATION: IEC 384-14

CAPACITANCE VALUE: Refer dimension chart

RATED VOLTAGE (AC): 250/275 V

INSULATION RESISTANCE

Minimum Insulation Resistance R_{IS}	$C_R \leq 0.33\ \mu F$
(or) time constant $T = C_R \times R_{IS}$	> 30000 MΩ

at 25° C, relative humidity ≤ 65%

CAPACITANCE TOLERANCE: ±10%, ±20%

VOLTAGE PROOF (V DC): 2100 V DC for 2 s

TAN δ: 0.1% (max.) at 1 kHz, 0.3% (max.) at 10 kHz

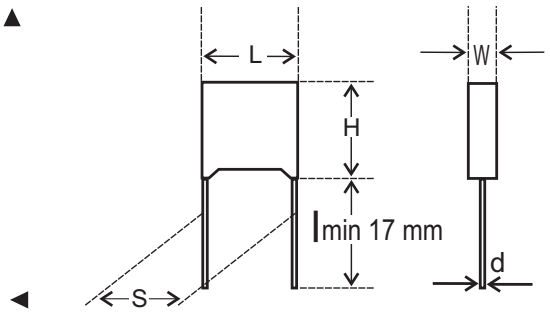
LIFE TEST CONDITIONS:
(Loading at elevated temperature)
Loaded at 1.25 times of rated voltage at 100 °C for 1000 hours.
Once per hour; 0.1s at 1000 V (RMS) via resistor of 47 Ω ± 5%

Criteria after the test:
Δ ***c/c:*** ≤ 10%
Increase of Tan δ: ≤ 0.008, $C_R \leq 1\mu F$
Insulation resistance: > 50% of specified value

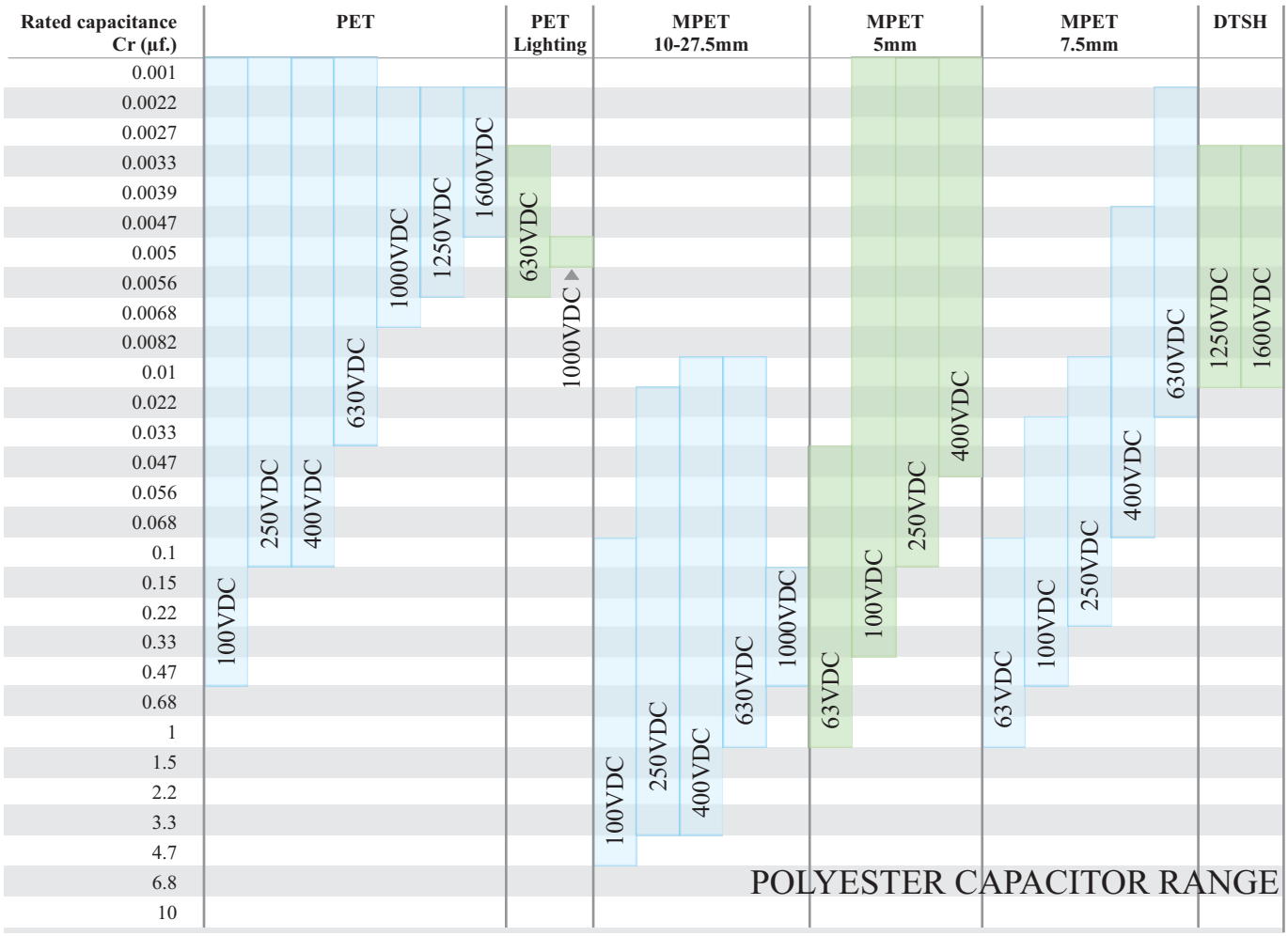
APPROVALS: Capacitors are tested at ERTL (North) as per IEC 384-14

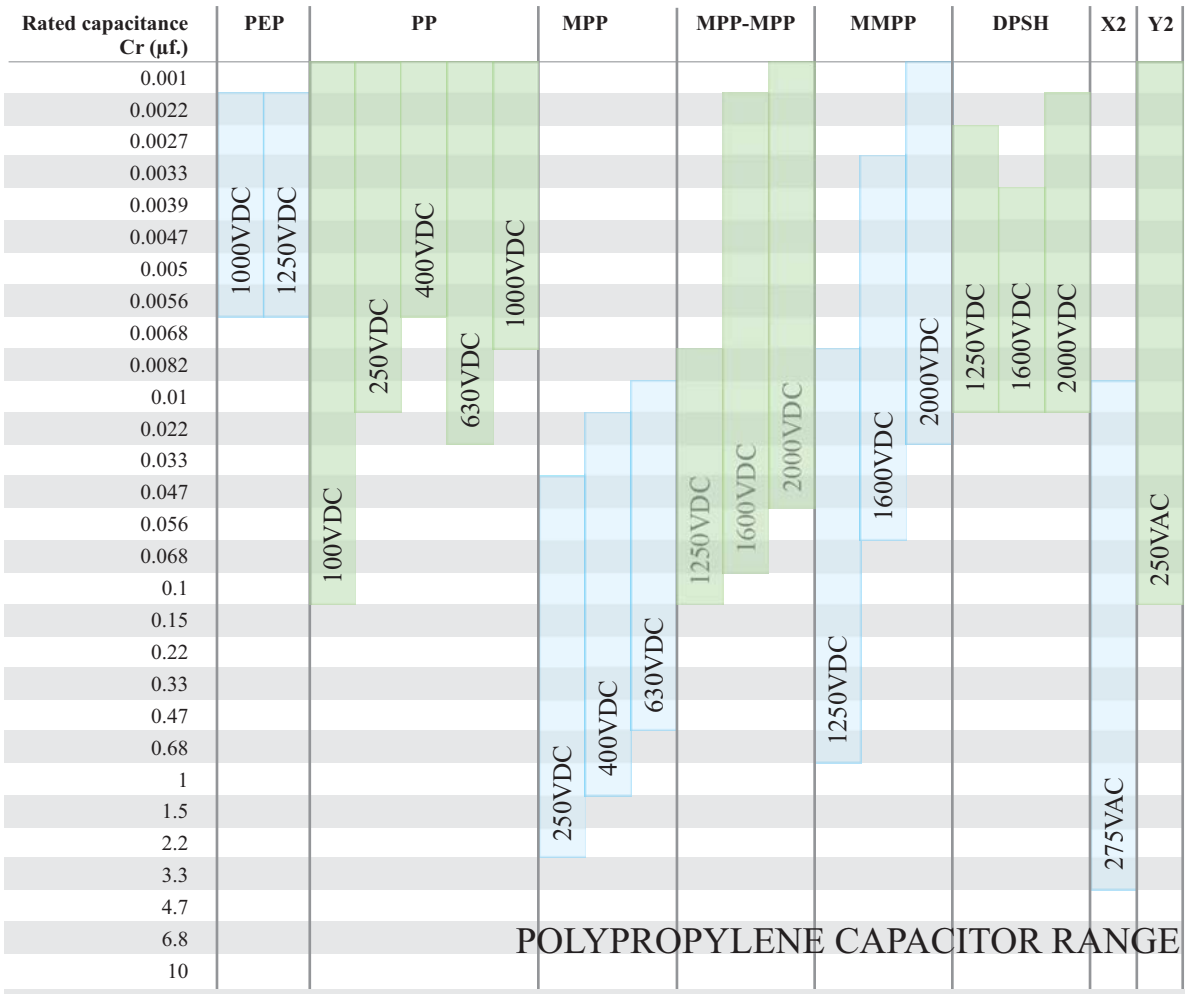
Ordering codes and packaging units

Rated Voltage	Rated Cap.(Mfd)	Dimensions(mm) W ±0.5	H ±0.5	L ±0.5	d ±0.05	S ±0.5	DV/DT V/µs	Wt. g	Ordering code	Packing units Bulk
250/275 V AC	0.001	4.0	9.0	13.0	0.6	10.0	1000	-	33 102 +02* ^	500
	0.0015	4.0	9.0	13.0	0.6	10.0	1000	-	33 152 +02* ^	500
	0.0022	4.0	9.0	13.0	0.6	10.0	1000	-	33 222 +02* ^	500
	0.0025	4.0	9.0	13.0	0.6	10.0	1000	-	33 252 +02* ^	500
	0.0033	4.0	11.0	13.0	0.6	10.0	1000	-	33 332 +02* ^	500
	0.0047	5.0	11.0	13.0	0.6	10.0	1000	-	33 472 +02* ^	500
	0.0056	5.0	11.0	13.0	0.6	10.0	1000	-	33 562 +02* ^	500
	0.0068	6.0	12.0	13.0	0.6	10.0	1000	-	33 682 +02* ^	500
	0.01	5.0	11.0	18.0	0.6	10.0	1000	-	33 103 +02* ^	500
	0.015	5.0	11.0	18.0	0.8	15.0	1000	-	33 153 +02* ^	500
	0.022	6.0	12.0	18.0	0.8	15.0	1000	-	33 223 +02* ^	500
	0.027	7.0	13.0	18.0	0.8	15.0	1000	-	33 273 +02* ^	500
	0.033	7.0	13.0	18.0	0.8	15.0	1000	-	33 333 +02* ^	500
	0.047	8.5	14.5	18.0	0.8	15.0	1000	-	33 473 +02* ^	500
	0.068	10.0	18.0	18.0	0.8	15.0	1000	-	33 683 +02* ^	500
	0.068	7.0	16.5	26.5	0.8	22.5	1000	-	33 683 +02* ^	250
	0.1	8.5	17.0	26.0	0.8	22.5	1000	-	33 104 +02* ^	250



Lighting Applications





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