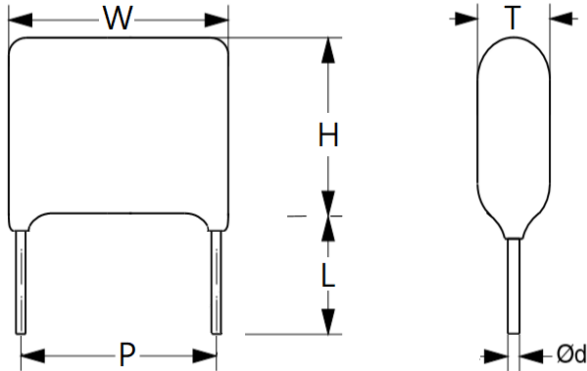


## SMPP series

### ■ Outline Drawing



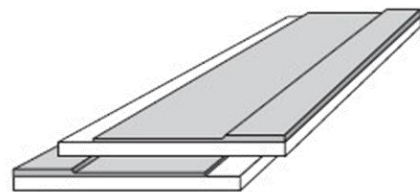
### ■ Typical Applications

Widely used in high frequency, DC, AC and pulse circuits  
 Electronic ballasts, Switch-mode power supplies  
 Suitable for the situation where applies high frequency and high current pulse

### ■ Features

Metalized polypropylene film,  
 non-inductive wound construction  
 Low loss at high frequency  
 Small inherent temperature rise  
 Flame retardant epoxy resin coating

### ■ Construction



### ■ Specifications

Reference Standard	GB/T 10190 (IEC 60384-16)				
Climatic Category	55/105/21				
Rated Temperature	85°C				
Operating Temperature Range	-40°C ~ +105°C (+85°C to +105°C: decreasing factor 1.25% per °C for UR)				
Capacitance Range	0.001μF ~ 3.3μF				
Rated (DC) Voltage	100Vdc	250Vdc	400/450Vdc	630Vdc	1000Vdc
Rated (AC) Voltage	63Vac	160Vac	200Vac	250Vac	400Vac
Capacitance Tolerance	±5%(J) 、 ±10%(K) 、 ±20%(M)				
Voltage Proof	1.5UR (60s)				
Dissipation Factor	≤ 0.1% (25°C, 1kHz)				
Insulation Resistance	UR	≤	C <sub>R</sub> ≤ 0.33μF IR ≥ 15,000MΩ		
	100V		C <sub>R</sub> > 0.33μF IR ≥ 5,000S		

SMPP series

■ Product code system

SMPP	J	103	K	0630	D	B	10	23
Type	Internal use	Capacitance	Tolerance	Rated Voltage	Voltage	Lead forming	Lead Pitch	Lead Length
SMPP= Metallized Polypropylene Capacitor (Dipped)	--	103 =10000pF =10nF =0.01μF	J=±5% K=±10% M=±20%	0063=63V 0100=100V 0250=250V 0400=400V 0630=630V 1000=1000V	D=DC A=AC	Shown as Table I	08=7.5mm 10=10mm 15=15mm 23=22.5mm 28=27.5mm	04=3.5mm 15=15mm 23=23mm

■ Table I

Code	B (Straight 23mm)	K (Short)	R (Inside Kink)
Lead Forming			
Code	U (Vertical Kink)	T (Taping)	--
Lead Forming			

## SMPP series

## ■ Dimensions (mm)

100Vdc (63Vac)						
Cap. μF	W	H	T	P	d	Part number
0.010	10	10	6	7.5	0.6	SMPP_103+0100D*08**
0.015	10	11	7	7.5	0.6	SMPP_153+0100D*08**
0.018	10	11	7.5	7.5	0.6	SMPP_183+0100D*08**
0.022	10	9	5.5	7.5	0.6	SMPP_223+0100D*08**
0.027	10	9.5	5.5	7.5	0.6	SMPP_273+0100D*08**
0.033	10	10	6	7.5	0.6	SMPP_333+0100D*08**
0.039	10	10	6.5	7.5	0.6	SMPP_393+0100D*08**
0.047	10	10.5	7	7.5	0.6	SMPP_473+0100D*08**
0.056	10	9	5.5	7.5	0.6	SMPP_563+0100D*08**
0.068	10	9.5	5.5	7.5	0.6	SMPP_683+0100D*08**
0.082	10	10.5	6	7.5	0.6	SMPP_823+0100D*08**
0.10	10	10.5	6.5	7.5	0.6	SMPP_104+0100D*08**
0.12	10	11	6.5	7.5	0.6	SMPP_124+0100D*08**
0.15	13	11	6.5	10	0.6	SMPP_154+0100D*10**
0.18	13	12	6.5	10	0.6	SMPP_184+0100D*10**
0.22	13	12.5	7	10	0.6	SMPP_224+0100D*10**
0.27	13	13	7.5	10	0.6	SMPP_274+0100D*10**
0.33	19	12	6.5	15	0.8	SMPP_334+0100D*15**
0.39	19	12.5	7	15	0.8	SMPP_394+0100D*15**
0.47	19	13	7.5	15	0.8	SMPP_474+0100D*15**
0.56	19	13.5	8	15	0.8	SMPP_564+0100D*15**
0.68	19	14	9	15	0.8	SMPP_684+0100D*15**
0.82	19	15	9.5	15	0.8	SMPP_824+0100D*15**
1.0	24	15.5	8.5	20	0.8	SMPP_105+0100D*20**
1.2	24	16	9.5	20	0.8	SMPP_125+0100D*20**
1.5	24	17	10.5	20	0.8	SMPP_155+0100D*20**
1.8	24	18	11.5	20	0.8	SMPP_185+0100D*20**
2.0	29	17.5	10.5	25	0.8	SMPP_205+0100D*25**
2.2	29	18	11	25	0.8	SMPP_225+0100D*25**
2.7	29	20	11.5	25	0.8	SMPP_275+0100D*25**
3.3	29	21	13	25	0.8	SMPP_335+0100D*25**

250Vdc (160Vac)						
Cap. μF	W	H	T	P	d	Part number
0.010	10	10	6	7.5	0.6	SMPP_103+0250D*08**
0.015	10	9.5	6	7.5	0.6	SMPP_153+0250D*08**
0.018	10	10	6	7.5	0.6	SMPP_183+0250D*08**
0.022	10	9	5.5	7.5	0.6	SMPP_223+0250D*08**
0.027	10	9.5	5.5	7.5	0.6	SMPP_273+0250D*08**
0.033	10	10	6	7.5	0.6	SMPP_333+0250D*08**
0.039	10	10	6.5	7.5	0.6	SMPP_393+0250D*08**
0.047	10	10.5	7	7.5	0.6	SMPP_473+0250D*08**
0.056	13	10	6.5	10	0.6	SMPP_563+0250D*10**
0.068	13	10.5	7	10	0.6	SMPP_683+0250D*10**
0.082	13	10.5	6	10	0.6	SMPP_823+0250D*10**
0.10	13	11	6.5	10	0.6	SMPP_104+0250D*10**
0.12	13	11.5	7	10	0.6	SMPP_124+0250D*10**
0.15	19	12	7	15	0.8	SMPP_154+0250D*15**
0.18	19	13.5	7	15	0.8	SMPP_184+0250D*15**
0.22	19	14	7.5	15	0.8	SMPP_224+0250D*15**
0.27	19	15	8	15	0.8	SMPP_274+0250D*15**
0.33	19	15.5	9	15	0.8	SMPP_334+0250D*15**
0.39	24	14.5	8.5	20	0.8	SMPP_394+0250D*20**
0.47	24	15	9	20	0.8	SMPP_474+0250D*20**
0.56	24	16	10	20	0.8	SMPP_564+0250D*20**
0.68	24	17.5	10.5	20	0.8	SMPP_684+0250D*20**
0.82	24	18.5	11.5	20	0.8	SMPP_824+0250D*20**
1.0	29	17.5	9	25	0.8	SMPP_105+0250D*25**
1.2	29	18	10	25	0.8	SMPP_125+0250D*25**
1.5	29	19.5	11	25	0.8	SMPP_155+0250D*25**
1.8	29	21.5	11.5	25	0.8	SMPP_185+0250D*25**
2.0	29	22	12	25	0.8	SMPP_205+0250D*25**
2.2	29	22.5	12.5	25	0.8	SMPP_225+0250D*25**
2.7	29	24	14	25	0.8	SMPP_275+0250D*25**
3.3	29	25.5	15.5	25	0.8	SMPP_335+0250D*25**

## SMPP series

## ■ Dimensions (mm)

400Vdc (200Vac)						
Cap. μF	W	H	T	P	d	Part number
0.010	10	10	6	7.5	0.6	SMPP_103+0400D*08**
0.015	10	11	7	7.5	0.6	SMPP_153+0400D*08**
0.018	10	11	7.5	7.5	0.6	SMPP_183+0400D*08**
0.022	10	12	8	7.5	0.6	SMPP_223+0400D*08**
0.027	13	12	6.5	10	0.6	SMPP_273+0400D*10**
0.033	13	12	7	10	0.6	SMPP_333+0400D*10**
0.039	13	12.5	7	10	0.6	SMPP_393+0400D*10**
0.047	13	13	8	10	0.6	SMPP_473+0400D*10**
0.056	13	14	8.5	10	0.6	SMPP_563+0400D*10**
0.068	19	13.5	6.5	15	0.8	SMPP_683+0400D*15**
0.082	19	13.5	7	15	0.8	SMPP_823+0400D*15**
0.10	19	14.5	7.5	15	0.8	SMPP_104+0400D*15**
0.12	19	15	8	15	0.8	SMPP_124+0400D*15**
0.15	19	15.5	9	15	0.8	SMPP_154+0400D*15**
0.18	24	15	8	20	0.8	SMPP_184+0400D*20**
0.22	24	16	8.5	20	0.8	SMPP_224+0400D*20**
0.27	24	16.5	9.5	20	0.8	SMPP_274+0400D*20**
0.33	24	17.5	10	20	0.8	SMPP_334+0400D*20**
0.39	29	17	9.5	25	0.8	SMPP_394+0400D*25**
0.47	29	18.5	10	25	0.8	SMPP_474+0400D*25**
0.56	29	19.5	11	25	0.8	SMPP_564+0400D*25**
0.68	29	19.5	12	25	0.8	SMPP_684+0400D*25**
0.82	34	20.5	12	30	0.8	SMPP_824+0400D*30**
1.0	34	21.5	13	30	0.8	SMPP_105+0400D*30**

630Vdc (250Vac)						
Cap. μF	W	H	T	P	d	Part number
0.0010	10	9	5.5	7.5	0.6	SMPP_102+0630D*08**
0.0015	10	9	5.5	7.5	0.6	SMPP_152+0630D*08**
0.0018	10	9	5.5	7.5	0.6	SMPP_182+0630D*08**
0.0022	10	9	6	7.5	0.6	SMPP_222+0630D*08**
0.0027	10	9	5	7.5	0.6	SMPP_272+0630D*08**
0.0033	10	9	5.5	7.5	0.6	SMPP_332+0630D*08**
0.0039	10	9	5.5	7.5	0.6	SMPP_392+0630D*08**
0.0047	10	9.5	6	7.5	0.6	SMPP_472+0630D*08**
0.0056	10	10	6.5	7.5	0.6	SMPP_562+0630D*08**
0.0068	13	9	5.5	10	0.6	SMPP_682+0630D*10**
0.0082	13	9	6	10	0.6	SMPP_822+0630D*10**
0.010	13	11	6	10	0.6	SMPP_103+0630D*10**
0.015	13	12	7	10	0.6	SMPP_153+0630D*10**
0.018	13	13	7.5	10	0.6	SMPP_183+0630D*10**
0.022	13	13.5	8	10	0.6	SMPP_223+0630D*10**
0.027	19	12	7	15	0.8	SMPP_273+0630D*15**
0.033	19	12.5	7.5	15	0.8	SMPP_333+0630D*15**
0.039	19	13	8	15	0.8	SMPP_393+0630D*15**
0.047	19	13.5	8.5	15	0.8	SMPP_473+0630D*15**
0.056	19	15	8.5	15	0.8	SMPP_563+0630D*15**
0.068	24	14.5	8	20	0.8	SMPP_683+0630D*20**
0.082	24	15	8.5	20	0.8	SMPP_823+0630D*20**
0.10	24	16	9	20	0.8	SMPP_104+0630D*20**
0.15	24	17.5	10.5	20	0.8	SMPP_154+0630D*20**
0.18	24	19.5	11	20	0.8	SMPP_184+0630D*20**
0.22	29	19.5	10	25	0.8	SMPP_224+0630D*25**
0.27	29	20.5	11.5	25	0.8	SMPP_274+0630D*25**
0.33	29	22	12	25	0.8	SMPP_334+0630D*25**
0.39	34	20.5	12.5	30	0.8	SMPP_394+0630D*30**
0.47	34	22	13.5	30	0.8	SMPP_474+0630D*30**
0.56	34	23	14.5	30	0.8	SMPP_564+0630D*30**

+ = Capacitance tolerance: K=±10%, J=±5%

\* = Lead forming

\*\* = Lead length &amp; Packaging

*SMPP series*

## ■ Dimensions (mm)

1000Vdc (400/440Vac)						
Cap. μF	W	H	T	P	d	Part number
0.0010	10	9	5.5	7.5	0.6	SMPP_102+1000D*08**
0.0015	10	9	5.5	7.5	0.6	SMPP_152+1000D*08**
0.0018	10	9	5.5	7.5	0.6	SMPP_182+1000D*08**
0.0022	10	9	6	7.5	0.6	SMPP_222+1000D*08**
0.0027	10	10	6	7.5	0.6	SMPP_272+1000D*08**
0.0033	10	10	6.5	7.5	0.6	SMPP_332+1000D*08**
0.0039	10	10.5	7	7.5	0.6	SMPP_392+1000D*08**
0.0047	10	11	7.5	7.5	0.6	SMPP_472+1000D*08**
0.0056	10	11.5	8	7.5	0.6	SMPP_562+1000D*08**
0.0068	12.5	10.5	7	10	0.8	SMPP_682+1000D*10**
0.0082	12.5	11	7.5	10	0.8	SMPP_822+1000D*10**

+ = Capacitance tolerance: K=±10%, J=±5%

\* = Lead forming

\*\* = Lead length & Packaging

SMPP series

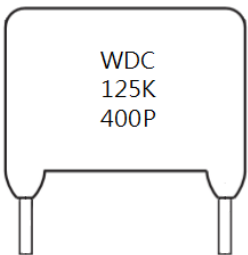
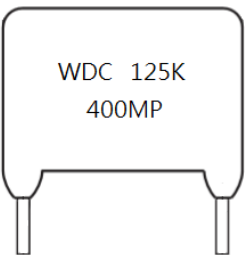
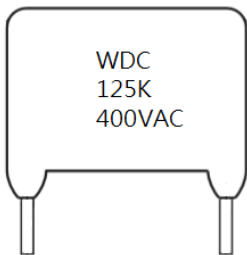
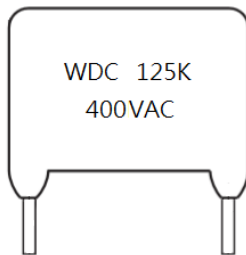
■ Specifications

Test items	Performance	Test Method
Withstand voltage (Between Terminals)	Shall be no abnormality	a. 150% of rated voltage, 60sec for DC voltage. b. (UR * 1.414) * 150% of rated voltage, 60sec for AC voltage.
Between terminal and Enclosure	Shall be no abnormality	UR×200%+1000Vac, 60sec.
Insulation resistance (Between Terminals)	$C_R \leq 0.33\mu F$ , IR $\geq 15000M\Omega$ $C_R > 0.33\mu F$ , IR $\geq 5000S$	Measured at 100±15Vdc, For 60sec / 25°C
Capacitance	Within the tolerance specified	1KHz, 1Vrms Max. at 25°C
Dissipation Factor	0.001 (0.1%) Max.	1Vrms Max. at 25°C
Tense Strength of Terminal	No wire breakage and no damage of capacitor	1. Load Force : 1.0 Kg 2. Holding Time : 10 ± 1sec
Bending Strength of Terminal	No wire breakage and no damage of capacitor	1. Load Force : 0.5 Kg 2. Bending Time : 4 x 90° in 5sec
Solderability	(1) Appearance : No visible damage (2) Covering an area of > solder 95%	1. Solder Temperature : 240±5°C 2. Solder Time : 3±0.5 sec
Heat Shock test	(1) Appearance : No visible damage (2) $\Delta C/C$ : $\leq 3\%$ of the initial value (3) DF (tg $\delta$ ) : Growth less than $\leq 0.004$	The terminal of capacitor shall be immersed in the melting solder. a. Solder Temperature: 260±5°C b. Solder Time: 10±1sec
Cold Resistance	(1) Appearance : No visible damage (2) $\Delta C/C$ : $\leq 5\%$ of the initial value	a. Test Temperature: -40°C b. Test Times: 2Hrs
Dry Heat Resistance	(3) DF (tg $\delta$ ) : Growth less than $\leq 0.005$ (4) IR : $\geq 50\%$ of clause shall be satisfied	a. Test Temperature: 85°C b. Test Times: 16Hrs

SMPP series

Test items	Performance	Test Method
Humidity Resistance	(1) Appearance : No visible damage (2) $\Delta C/C$ : $\leq 5\%$ of the initial value (3) DF (tg $\delta$ ) : Growth less than $\leq 0.002$ (4) IR : $\geq 50\%$ of clause shall be satisfied	a. Test Temperature: 40°C $\pm$ 2°C b. Relative Humidity: 90 ~ 95% c. Test Times: 500 $\pm$ 8Hrs d. Applied voltage: R.V Then recovery at ordinary condition at least 6Hrs
Charge & Discharge	(1) Appearance : No visible damage (2) $\Delta C/C$ : $\leq 5\%$ of the initial value (3) DF (tg $\delta$ ) : Growth less than $\leq 0.005$ (4) IR : $\geq 50\%$ of clause shall be satisfied	a. Test Voltage : Rated voltage charge for 0.5 sec. Discharge for 0.5 sec. b. Repeated for 10000 cycles
High Temp Loading test (Continuous)	(1) Appearance : No visible damage (2) DF (tg $\delta$ ) : Growth less than $\leq 0.004$ (3) $\Delta C/C$ : $\leq 5\%$ of the initial value (4) IR : $\geq 50\%$ of clause shall be satisfied	a. Test Temperature: 85°C $\pm$ 2°C b. Test Times: 1000 $\pm$ 24Hrs c. Apply 125% of the rated voltage Then recovery at ordinary condition at least 6Hrs

■ Mark

DC Marking		AC Marking	
Pitch 7.5mm	Pitch $\geq 10$ mm	Pitch 7.5mm	Pitch $\geq 10$ mm
			
1. WDC is a registered trademark of WINDAY		2. Capacitance: 125 indicates 1.2 $\mu$ F or 1200nF	
3. Capacitors Tolerance: K= $\pm 10\%$		4. Rated Voltage: 400Vdc, Indicates 400	
5. Rated Voltage: 400Vac, Indicates 400VAC		6. P or MP for Metallized polypropylene film capacitor	

## SMPP series

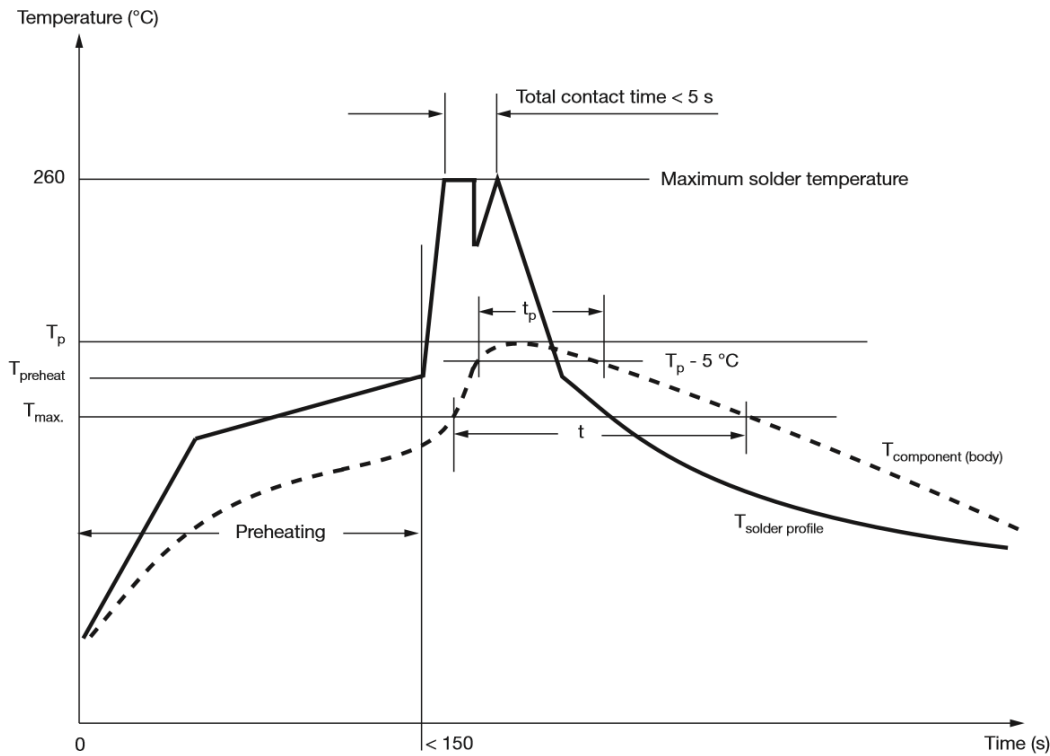
### ■ Soldering Guidelines for Film Capacitors

WDC recommends that users observe the following guidelines for soldering our film capacitors. Adherence to these recommendations will help to safeguard product specifications and reliability while preventing damage to the capacitors during soldering.

#### SOLDERING GUIDELINES AND RECOMMENDED WAVE SOLDERING PROFILE

With regard to the resistance to soldering heat and the solderability, our products comply with “IEC 60384-1” and the additional type specifications. The recommended wave soldering profile for our leaded components is defined as follows:

### ■ Wave Soldering Recommendations



$T_p$  : Peak temperature of the component body (top)

$T_{max}$  : Maximum application temperature of the component

The PSL (Process Sensitivity Level) is classified according JEDEC standard J-STD-075 “Classification of Non-IC Electronic Components for Assembly Processes” and summarized in following tables per product family and pitch size of the component:

SERIES	PRODUCT PITCH SIZE							
	5 mm	7.5 mm	10 mm	15 mm	20/22.5 mm	27.5 mm	31.5 mm	37.5 mm
SMPP	--	(3),(5)	(2),(5)	(1),(6)	(1),(6)	(1),(6)	(1),(6)	(1),(6)

(1) No risk

During soldering:  $T_p \leq 110^\circ C$ ,  $t_p \leq 20\ s$ ,  $t \leq 30\ s$

(2) Risk for parameter change if PSL is not strictly followed

(5) Temperature is measured at the body top and must be kept as follows:

(3) Risk for product damage if PSL is not strictly followed

During preheating:  $T_{max} \leq 110^\circ C$

(4) Temperature is measured at the body top and must be kept as follows:

During soldering:  $T_p \leq 120^\circ C$ ,  $t_p \leq 20\ s$ ,  $t \leq 30\ s$

During preheating:  $T_{max} \leq 100^\circ C$

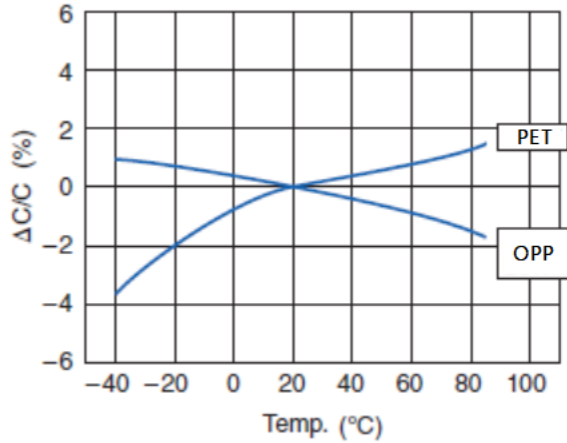
(6) The component has a preheat limitation of 150°C



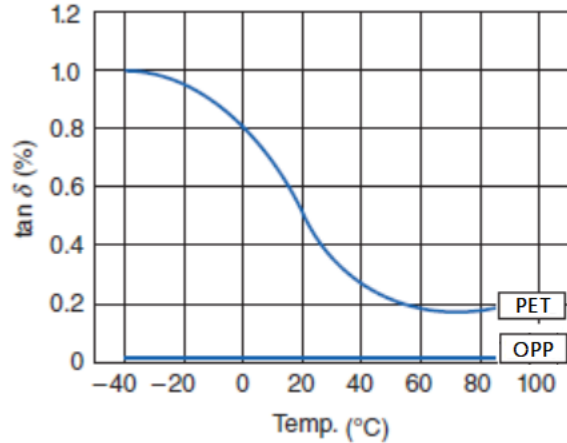
SMPP series

■ Typical graphs

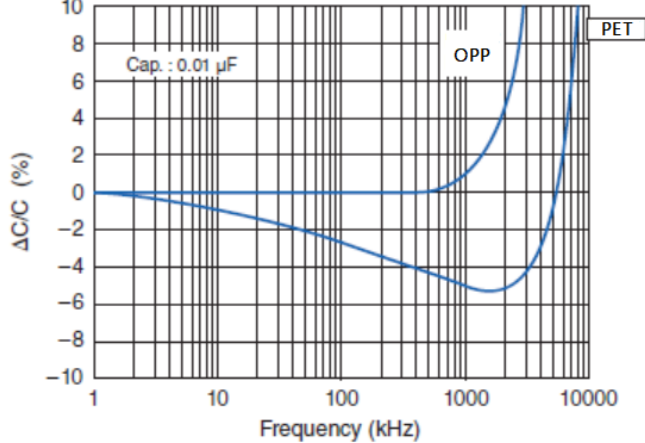
Capacitance vs. temperature at 1kHz



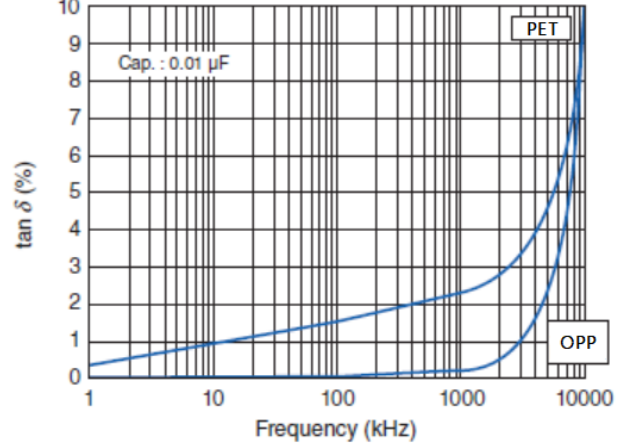
Dissipation factor vs. temperature at 1kHz



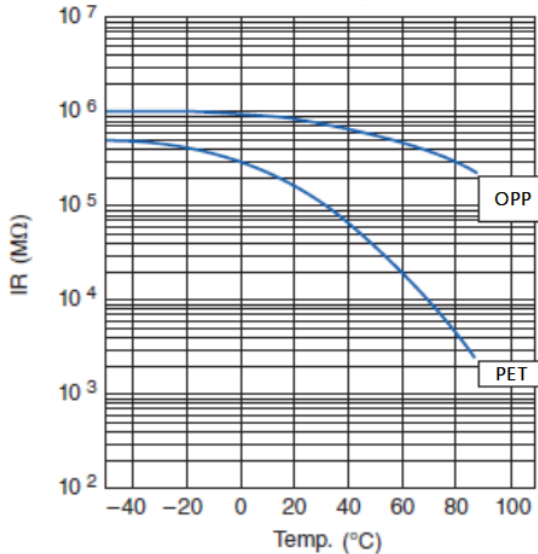
Capacitance vs. frequency



Dissipation factor vs. frequency



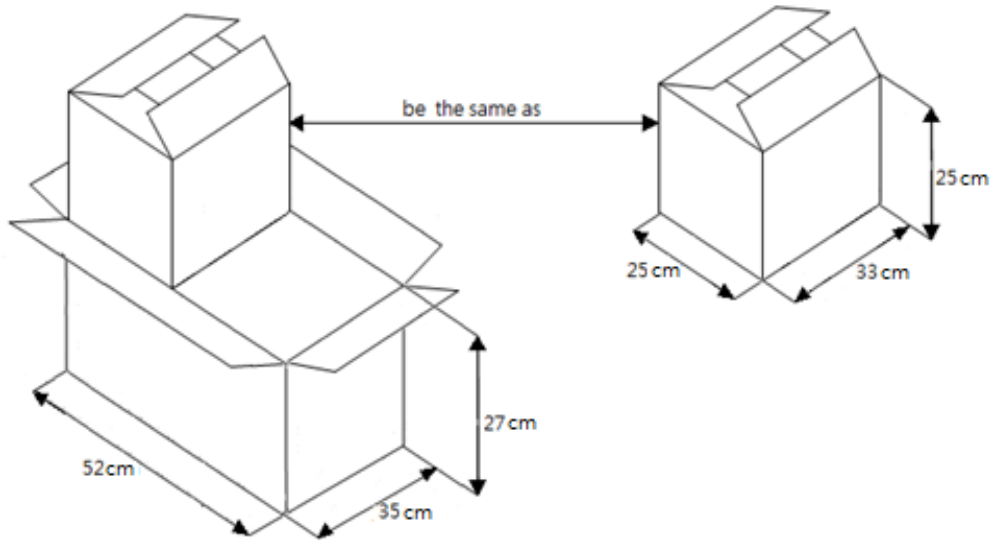
Insulation resistance (MΩ)



PET :	Metallized Polyester film capacitor
OPP :	Metallized Polypropylene film capacitor

SMPP series

■ Packaging



Pitch (mm)	Pcs / Bag	Pcs / Inner carton (L33:cm XH:25cm X T:25cm)	Pcs / Out box (L52:cm XH:27cm X T:35cm)
5~10	1000	10000	20000
15	500	5000	10000
20	300 or 500	3000 or 5000	6000 or 10000
22.5	300	3000	6000
27.5	200	2000	4000
≥27.5	100	1000	2000

■ Storage conditions and duration

Packaged capacitors should be kept in clean, ventilated, dry coffers, not near the heat source, not subject to direct sunlight, is strictly prohibited and chemical reagents, acid and harmful gas storage together.

Capacitor at a temperature within the range 20 ~ 25 °C, humidity less than 50% of the state of storage for one year.