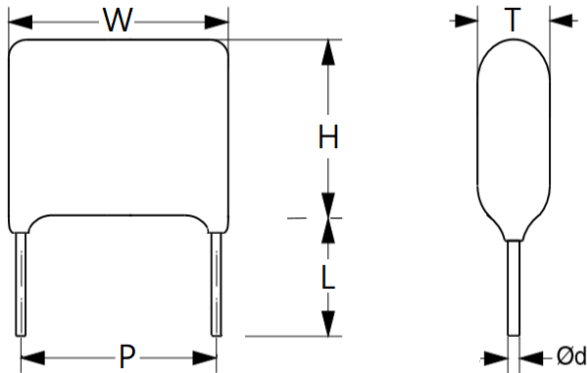


AC Capacitor For Capacitive Divider SMPJ series

■ Outline Drawing

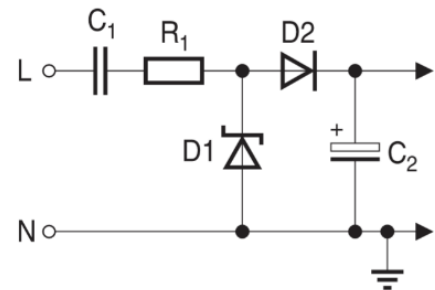


■ Typical Applications

This is specifically designed for applications in serial
With the 100~240Vac main, i.e., Capacitive divider,
For example : Energy meter, LED driver etc

■ Features

- Metalized polypropylene film, wound construction
- Good self-healing properties
- withstanding overvoltage stressing
- Long stability of capacitance
- Flame retardant epoxy resin powder coating (UL94V-0)



The capacitor C1 works as a voltage divider without thermal losses

■ Specifications

Reference Standard	GB/T 14579 (IEC 60384-17)			
Climatic Category	40/105/21			
Rated Temperature	85°C			
Operating Temperature Range	-40°C ~ +105°C (+85°C to +105°C: decreasing factor 1.25% per °C for U _R)			
Capacitance Range	0.01µF ~ 4.7µF			
Rated (AC) Voltage - 50/60Hz	160Vac	230Vac	250Vac	275V/300Vac
Maximum continuous DC voltage	250Vdc	400Vdc	560Vdc	630Vdc
Capacitance Tolerance	±5%(J) 、 ±10%(K) 、 ±20%(M)			
Voltage Proof	2.5U _R , 5s (DC)			
Dissipation Factor	≤ 0.1% (25°C, 1kHz)			
Insulation Resistance	U _R > 100V	C _R ≤ 0.33µF IR ≥ 25,000MΩ C _R > 0.33µF IR ≥ 7,500s (20°C, 100V, 1min)		

AC Capacitor For Capacitive Divider SMPJ series

■ Product code system

SMPJ	H	105	K	0250	A	B	28	23
Type	Internal use	Capacitance	Tolerance	Rated Voltage	Voltage	Lead forming	Lead Pitch	Lead Length
SMPJ= Metallized Polypropylene Capacitive Divider Capacitor (Dipped)	--	105 =1000nF =1.0μF	J=±5% K=±10% M=±20%	0160=160V 0230=230V 0250=250V 0300=300V	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			

AC Capacitor For Capacitive Divider

SMPJ series

■ Dimensions (mm)

160Vac (250Vdc)						
Cap. μF	W	H	T	P	d	Part number
0.22	12.5	11	6	10	0.6	SMPJ_224+0160A*10**
0.27	12.5	11.5	6.5	10	0.6	SMPJ_274+0160A*10**
0.33	12.5	12.5	7	10	0.6	SMPJ_334+0160A*10**
0.39	12.5	13	7.5	10	0.6	SMPJ_394+0160A*10**
0.47	12.5	13.5	8.5	10	0.6	SMPJ_474+0160A*10**
0.56	12.5	14	9	10	0.6	SMPJ_564+0160A*10**
0.47	17.5	12	7	15	0.8	SMPJ_474+0160A*15**
0.56	17.5	12.5	7.5	15	0.8	SMPJ_564+0160A*15**
0.68	17.5	13	8	15	0.8	SMPJ_684+0160A*15**
0.82	17.5	13.5	8.5	15	0.8	SMPJ_824+0160A*15**
1.0	17.5	14.5	9.5	15	0.8	SMPJ_105+0160A*15**
1.2	17.5	16.5	9.5	15	0.8	SMPJ_125+0160A*15**
1.5	17.5	17.5	10.5	15	0.8	SMPJ_155+0160A*15**
1.8	17.5	18.5	11.5	15	0.8	SMPJ_185+0160A*15**
2.0	17.5	19	12.5	15	0.8	SMPJ_205+0160A*15**
2.2	17.5	19.5	13	15	0.8	SMPJ_225+0160A*15**

230Vac (400Vdc)						
Cap. μF	W	H	T	P	d	Part number
0.10	17.5	10.5	5.5	15	0.8	SMPJ_104+0230A*15**
0.15	17.5	11	6.5	15	0.8	SMPJ_154+0230A*15**
0.22	17.5	12	7.5	15	0.8	SMPJ_224+0230A*15**
0.33	17.5	14.5	9	15	0.8	SMPJ_334+0230A*15**
0.39	17.5	14.5	9.5	15	0.8	SMPJ_394+0230A*15**
0.47	17.5	15	10.5	15	0.8	SMPJ_474+0230A*15**
0.22	23	11	6.5	20	0.8	SMPJ_224+0230A*20**
0.33	23	12.5	7.5	20	0.8	SMPJ_334+0230A*20**
0.39	23	13	8	20	0.8	SMPJ_394+0230A*20**
0.47	23	14.5	8	20	0.8	SMPJ_474+0230A*20**
0.56	23	15	9	20	0.8	SMPJ_564+0230A*20**
0.68	23	16	9.5	20	0.8	SMPJ_684+0230A*20**
1.0	23	19	11	20	0.8	SMPJ_105+0230A*20**
0.33	25	13	6.5	22.5	0.8	SMPJ_334+0230A*23**
0.39	25	13.5	7	22.5	0.8	SMPJ_394+0230A*23**
0.47	25	14	7.5	22.5	0.8	SMPJ_474+0230A*23**
0.56	25	15.5	8.5	22.5	0.8	SMPJ_564+0230A*23**
0.68	25	15.5	9	22.5	0.8	SMPJ_684+0230A*23**
1.0	25	18	10.5	22.5	0.8	SMPJ_105+0230A*23**
1.5	25	21.5	12.5	22.5	0.8	SMPJ_155+0230A*23**
0.47	30	14.5	6.6	27.5	0.8	SMPJ_474+0230A*28**
0.56	30	15	7	27.5	0.8	SMPJ_564+0230A*28**
0.68	30	16.5	7.5	27.5	0.8	SMPJ_684+0230A*28**
1.0	30	17	9	27.5	0.8	SMPJ_105+0230A*28**
1.5	30	20	10.5	27.5	0.8	SMPJ_155+0230A*28**
2.0	30	24.5	11	27.5	0.8	SMPJ_205+0230A*28**
2.2	30	25	11.5	27.5	0.8	SMPJ_225+0230A*28**
3.0	30	27.5	14	27.5	0.8	SMPJ_305+0230A*28**
3.3	30	27.5	14.5	27.5	0.8	SMPJ_335+0230A*28**
4.0	30	29	16.5	27.5	0.8	SMPJ_405+0230A*28**
4.7	30	31.5	18	27.5	0.8	SMPJ_475+0230A*28**

230Vac (400Vdc)						
Cap. μF	W	H	T	P	d	Part number
0.033	10	12	6	7.5	0.6	SMPJ_333+0230A*08**
0.047	10	12	6	7.5	0.6	SMPJ_473+0230A*08**
0.033	12.5	9	5	10	0.6	SMPJ_333+0230A*10**
0.047	12.5	10	5.5	10	0.6	SMPJ_473+0230A*10**
0.068	12.5	11	6	10	0.6	SMPJ_683+0230A*10**
0.10	12.5	12	7	10	0.6	SMPJ_104+0230A*10**

AC Capacitor For Capacitive Divider

SMPJ series

■ Dimensions (mm)

250Vac (560Vdc)						
Cap. μF	W	H	T	P	d	Part number
0.010	12.5	8	4	10	0.6	SMPJ_103+0250A*10**
0.015	12.5	8	5	10	0.6	SMPJ_153+0250A*10**
0.022	12.5	9	5	10	0.6	SMPJ_223+0250A*10**
0.033	12.5	10	5.5	10	0.6	SMPJ_333+0250A*10**
0.047	12.5	11.5	6	10	0.6	SMPJ_473+0250A*10**
0.068	12.5	12.5	7	10	0.6	SMPJ_683+0250A*10**
0.068	17.5	10	5.5	15	0.8	SMPJ_683+0250A*15**
0.10	17.5	11	6.5	15	0.8	SMPJ_104+0250A*15**
0.15	17.5	12	7.5	15	0.8	SMPJ_154+0250A*15**
0.22	17.5	13.5	8.5	15	0.8	SMPJ_224+0250A*15**
0.33	17.5	15	10.5	15	0.8	SMPJ_334+0250A*15**
0.15	23	11	6.5	20	0.8	SMPJ_154+0250A*20**
0.22	23	12	7.5	20	0.8	SMPJ_224+0250A*20**
0.33	23	14.5	8	20	0.8	SMPJ_334+0250A*20**
0.39	23	15	8	20	0.8	SMPJ_394+0250A*20**
0.47	23	16	9.5	20	0.8	SMPJ_474+0250A*20**
0.56	23	17.5	10.5	20	0.8	SMPJ_564+0250A*20**
0.68	23	19.5	10	20	0.8	SMPJ_684+0250A*20**
0.22	25	13.5	6.5	22.5	0.8	SMPJ_224+0250A*23**
0.33	25	14	7.5	22.5	0.8	SMPJ_334+0250A*23**
0.39	25	15.5	8	22.5	0.8	SMPJ_394+0250A*23**
0.47	25	16	9	22.5	0.8	SMPJ_474+0250A*23**
0.56	25	16	9.5	22.5	0.8	SMPJ_564+0250A*23**
0.68	25	18	10	22.5	0.8	SMPJ_684+0250A*23**
1.0	25	20	12	22.5	0.8	SMPJ_105+0250A*23**
0.47	30	15.5	7.5	27.5	0.8	SMPJ_474+0250A*28**
0.56	30	16	8	27.5	0.8	SMPJ_564+0250A*28**
0.68	30	17.5	9	27.5	0.8	SMPJ_684+0250A*28**
1.0	30	19.5	10.5	27.5	0.8	SMPJ_105+0250A*28**
1.5	30	24	11.5	27.5	0.8	SMPJ_155+0250A*28**
2.0	30	26	13.5	27.5	0.8	SMPJ_205+0250A*28**
2.2	30	27.5	14	27.5	0.8	SMPJ_225+0250A*28**

250Vac (560Vdc)						
Cap. μF	W	H	T	P	d	Part number
3.0	30	29.5	16.5	27.5	0.8	SMPJ_305+0250A*28**
3.3	30	30	17.5	27.5	0.8	SMPJ_335+0250A*28**
4.0	30	32	19.5	27.5	0.8	SMPJ_405+0250A*28**

275V/300Vac (630Vdc)						
Cap. μF	W	H	T	P	d	Part number
0.10	17.5	14.5	9	15	0.8	SMPJ_104+0300A*15**
0.15	17.5	15.5	10.5	15	0.8	SMPJ_154+0300A*15**
0.22	17.5	18.5	12	15	0.8	SMPJ_224+0300A*15**
0.10	23	12	7.5	20	0.8	SMPJ_104+0300A*20**
0.15	23	14.5	9	20	0.8	SMPJ_154+0300A*20**
0.22	23	16	10	20	0.8	SMPJ_224+0300A*20**
0.33	23	18	12	20	0.8	SMPJ_334+0300A*20**
0.10	25	12	7	22.5	0.8	SMPJ_104+0300A*23**
0.15	25	13	8.5	22.5	0.8	SMPJ_154+0300A*23**
0.22	25	16.5	9	22.5	0.8	SMPJ_224+0300A*23**
0.33	25	17.5	11	22.5	0.8	SMPJ_334+0300A*23**
0.39	25	19	11.5	22.5	0.8	SMPJ_394+0300A*23**
0.47	25	20.5	12.5	22.5	0.8	SMPJ_474+0300A*23**
0.22	28	15	8.5	25	0.8	SMPJ_224+0300A*25**
0.27	28	16	9.5	25	0.8	SMPJ_274+0300A*25**
0.33	28	17.5	10.5	25	0.8	SMPJ_334+0300A*25**
0.39	28	18.5	11	25	0.8	SMPJ_394+0300A*25**
0.47	28	20.5	11.5	25	0.8	SMPJ_474+0300A*25**
0.56	28	21.5	12.5	25	0.8	SMPJ_564+0300A*25**
0.68	28	22	14	25	0.8	SMPJ_684+0300A*25**
0.82	28	24	14.5	25	0.8	SMPJ_824+0300A*25**
1.0	28	26	16.5	25	0.8	SMPJ_105+0300A*25**

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

* = Lead forming

** = Lead length & Packaging

AC Capacitor For Capacitive Divider SMPJ series

■ Specifications (GB/T 14579)

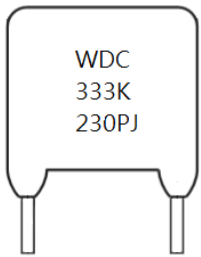
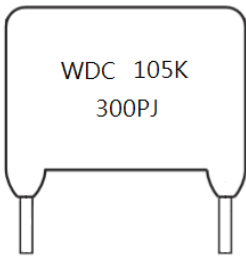
試驗項目 Test items	性能要求 Performance requirements	試驗條件 Conditions of test
電容量 Capacitance	在規定公差內 Within the tolerance specified	1KHz, 1Vrms Max. at 25°C
損耗因素 Dissipation Factor	0.001 (0.1%) Max.	1KHz, 1Vrms Max. at 25°C
耐電壓 Voltage proof	應無異常 Shall be no abnormality	引線間 Between terminals 2.5U _R (Vdc) Test of 5sec.
絕緣電阻 Insulation resistance	C _R ≤ 0.33μF IR ≥ 25,000MΩ, C _R > 0.33μF IR ≥ 7,500s	100Vdc, 60sec / 20°C
引出端強度試驗 Robustness of terminations	無斷線, 電容器無損壞 No wire breakage and no damage of capacitor	端子強度 Tense Strength of Terminal 負載重量 Load Force : 1.0 Kg 保持時間 Holding Time : 10 ± 1sec
		抗彎強度 Bending Strength of Terminal 負載重量 Load Force : 0.5 Kg 彎曲時間 Bending Time : 4 x 90 °
耐焊接熱 Resistance to soldering heat	(1) Appearance : No visible damage (2) ΔC/C : ≤ ±3% of the initial value (3) DF (tanδ) : ≤ 0.004 of increased value	焊接溫度 Solder temperature: 260±5°C 焊接時間 Solder time: 5±0.5sec
可焊性 Solderability	表面鍍錫 95% 95% of the surface tinning	焊接溫度 Solder temperature: 260±5°C 焊接時間 Solder time: 2±0.5sec
溫度快速變化 Rapid change of temperature	應目視檢查電容器, 並無可見損壞 The capacitors shall be visually examined and there shall be no visible damage.	下限溫度 Lower category temperature: -40°C 上限溫度 Upper category temperature: 85°C 循環次數 Number of cycles: 5 持續時間 Duration t1 = 30 min
振動 Vibration	應目視檢查電容器, 並無可見損壞 The capacitors shall be visually examined and there shall be no visible damage	頻率範圍 Frequency range: 10~55Hz 振幅軸向 Course: X、Y、Z (axis) 持續時間 2h / axis (6h in total) 位移振幅 Displacement amplitude: 0.75mm

AC Capacitor For Capacitive Divider SMPJ series

■ Specifications (GB/T 14579)

試驗項目 Test items	性能要求 Performance requirements	試驗條件 Conditions of test
氣候序列 Climatic sequence	(1) Appearance : No visible damage (2) $\Delta C/C : \leq \pm 5\%$ of the initial value (3) DF ($\tan\delta$) : ≤ 0.005 of increased value (4) IR : $\geq 50\%$ of the applicable limits (5) Voltage proof : Normal	乾熱 Dry Heat 上限溫度 Upper Temperature: 85°C 持續時間 Lower Duration: 16Hrs
		寒冷 Cold 下限溫度 Temperature: -40°C 持續時間 Duration: 2Hrs
濕熱穩態 Damp Heat Steady State	(1) Appearance : No visible damage (2) $\Delta C/C : \leq \pm 5\%$ of the Initial value (3) DF ($\tan\delta$) : ≤ 0.002 of increased value (4) IR : $\geq 50\%$ of the applicable limits (5) Voltage proof : Normal	溫度 +40°C, 濕度 93%, 21 天 +40°C and 93% RH, 21 days
耐久性 Endurance	(1) Appearance : No Visible Damage (2) $\Delta C/C : \leq \pm 10\%$ of the initial value (3) DF ($\tan\delta$) : ≤ 0.003 of increased value (4) IR : $\geq 50\%$ of the applicable limits	實驗電壓 1.25 x U _R VAC 50 Hz 實驗溫度 Temperature: +85°C 實驗時間 Time: 1000Hrs
充放電 Charge and discharge	(1) Appearance : No visible damage (2) $\Delta C/C : \leq \pm 5\%$ of the initial value (3) DF ($\tan\delta$) : ≤ 0.005 of increased value (4) IR : $\geq 50\%$ of the applicable limits	實驗電壓 Test voltage : Rated (DC) voltage 充放電 Charge and discharge: 0.5sec/time 重複次數 Repeated for 10000 cycles

■ Mark

Pitch 7.5mm	Pitch ≥ 10 mm
	
1. WDC is a registered trademark of WINDAY	2. Capacitance: 105 indicates 1.0 μ F or 100nF
3. Capacitors Tolerance: K= $\pm 10\%$	4. Rated Voltage: 300Vac, Indicates 300
5. PJ for Metallized polypropylene capacitor for capacitive divider	

AC Capacitor For Capacitive Divider SMPJ series

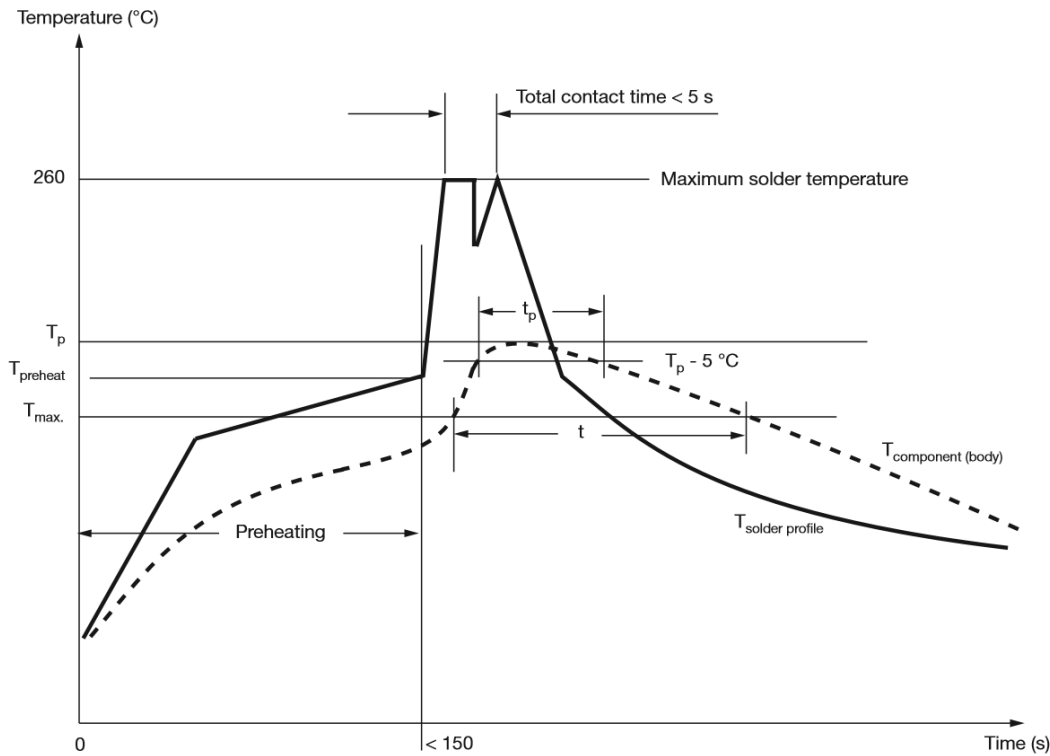
■ Soldering Guidelines for Film Capacitors

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 mm	22.5 mm	25 mm	27.5 mm
SMPJ	--	(3),(5)	(2),(5)	(1),(6)	(1),(6)	(1),(6)	(1),(6)	(1),(6)

(1) No risk

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

(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: $T_{max} \leq 110^\circ\text{C}$

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

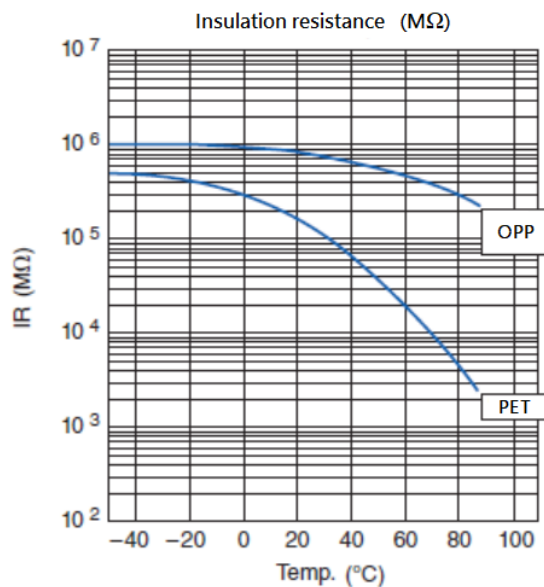
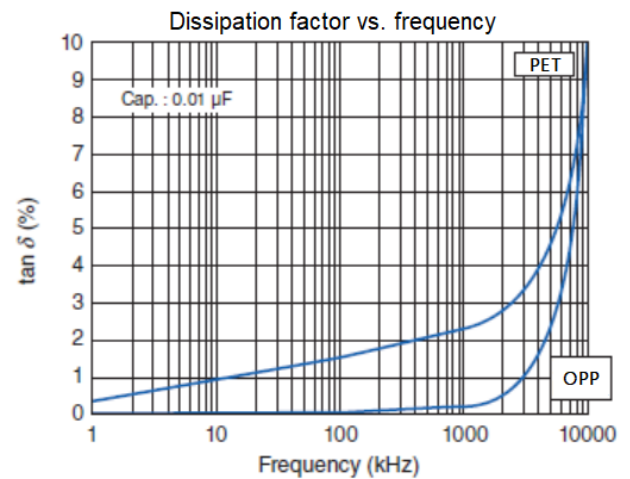
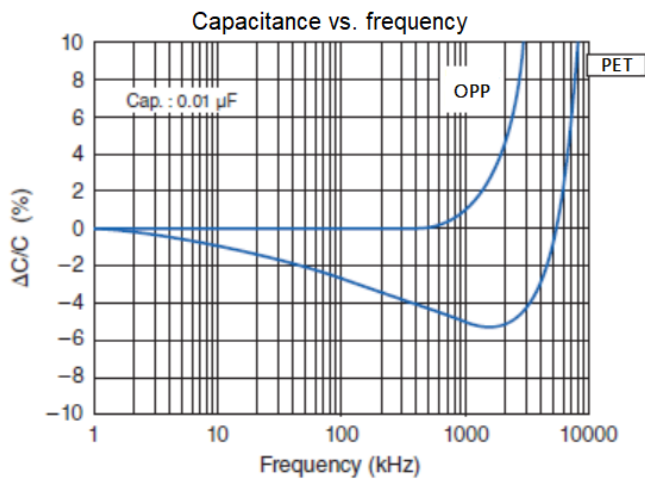
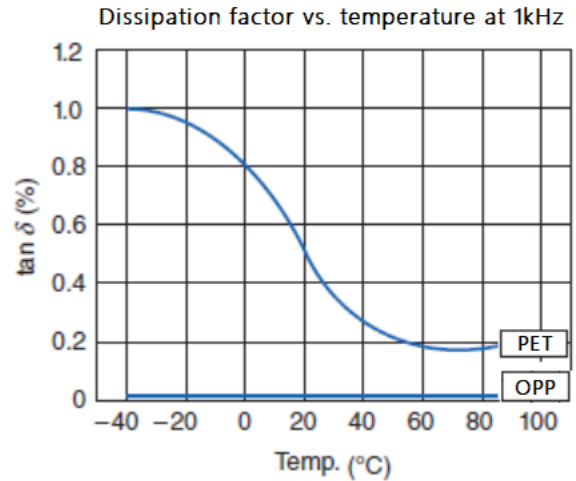
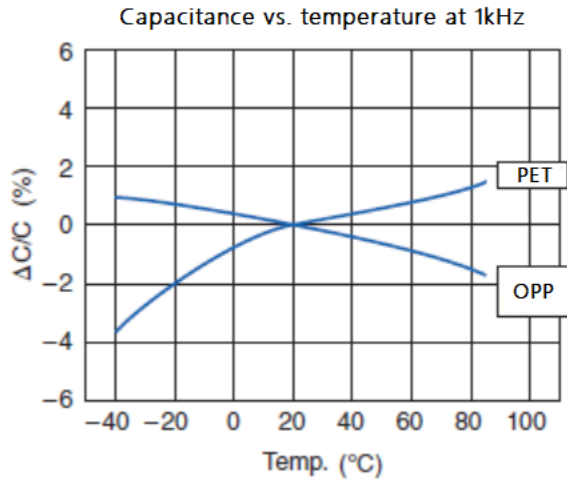
During soldering: $T_p \leq 120^\circ\text{C}$, $t_p \leq 20\text{ s}$, $t \leq 30\text{ s}$

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

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

AC Capacitor For Capacitive Divider SMPJ series

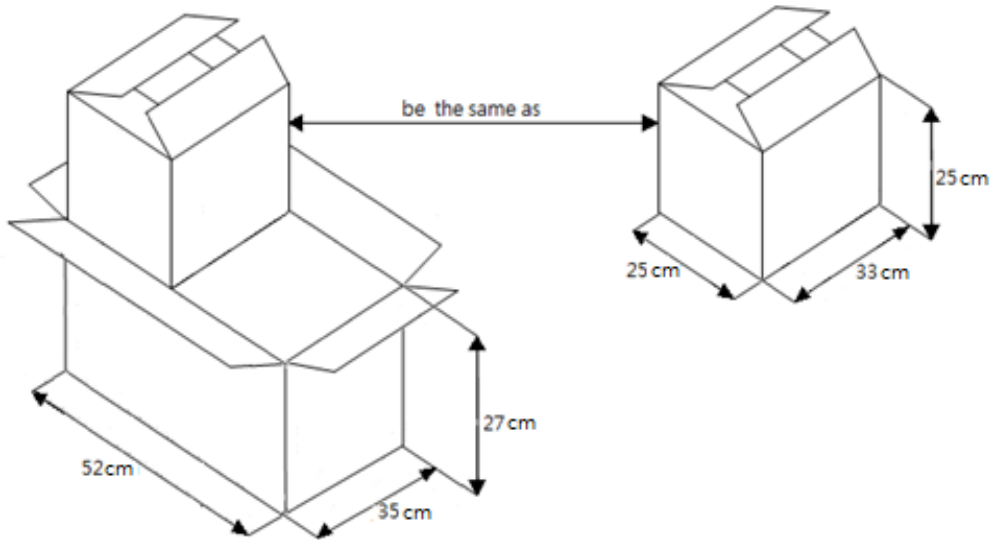
■ Typical graphs



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

AC Capacitor For Capacitive Divider SMPJ 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.