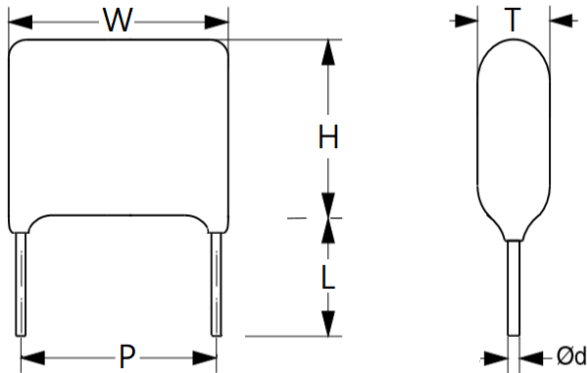


AC Capacitor For Capacitive Divider SMPJ series

■ Outline Drawing

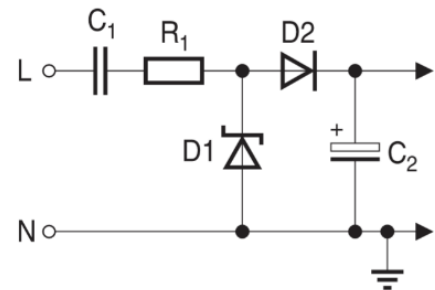


■ Typical Applications

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 <sub>R</sub> )			
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	1.5U <sub>R</sub> * 1.414 (Vdc) 60sec			
Dissipation Factor	≤ 0.1% (25°C, 1kHz)			
Insulation Resistance	U <sub>R</sub> ≤ 100V	C <sub>R</sub> ≤ 0.33µF IR ≥ 15,000MΩ C <sub>R</sub> > 0.33µF IR ≥ 5,000s		

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. $\mu\text{F}$	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. $\mu\text{F}$	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. $\mu\text{F}$	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 &amp; Packaging

AC Capacitor For Capacitive Divider SMPJ series

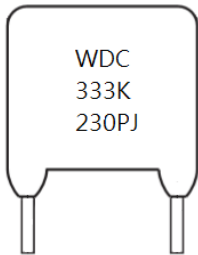
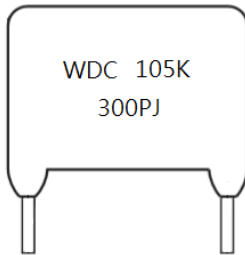
■ Specifications

Test items	Performance	Test Method
Withstand voltage (Between Terminals)	Shall be no abnormality	$1.5U_R * 1.414$ (Vdc) 60sec
Between terminal and Enclosure	Shall be no abnormality	$U_R \times 200\% + 1000V_{ac}$ , 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 $100 \pm 15V_{dc}$ , For 60sec / $25^\circ C$
Capacitance	Within the tolerance specified	1KHz, 1Vrms Max. at $25^\circ C$
Dissipation Factor	0.001 (0.1%) Max.	1Vrms Max. at $25^\circ C$
Tense Strength of Terminal	No wire breakage and no damage of capacitor	1. Load Force : 1.0 Kg 2. Holding Time : $10 \pm 1$ sec
Bending Strength of Terminal	No wire breakage and no damage of capacitor	1. Load Force : 0.5 Kg 2. Bending Time : $4 \times 90^\circ$ in 5sec
Solderability	(1) Appearance : No visible damage (2) Covering an area of > solder 95%	1. Solder Temperature : $240 \pm 5^\circ C$ 2. Solder Time : $3 \pm 0.5$ sec
Heat Shock test	(1) Appearance : No visible damage (2) $\Delta C/C$ : $\leq 3\%$ of the initial value (3) DF (tan $\delta$ ) : Growth less than $\leq 0.004$	The terminal of capacitor shall be immersed in the melting solder. a. Solder Temperature: $260 \pm 5^\circ C$ b. Solder Time: $10 \pm 1$ sec
Cold Resistance	(1) Appearance : No visible damage (2) $\Delta C/C$ : $\leq 5\%$ of the initial value	a. Test Temperature: $-40^\circ C$ b. Test Times: 2Hrs
Dry Heat Resistance	(3) DF (tan $\delta$ ) : Growth less than $\leq 0.005$ (4) IR : $\geq 50\%$ of clause shall be satisfied	a. Test Temperature: $85^\circ C$ b. Test Times: 16Hrs

AC Capacitor For Capacitive Divider SMPJ 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 (tan $\delta$ ) : Growth less than $\leq 0.002$ (4) IR : $\geq 50\%$ of clause shall be satisfied	a. Test Temperature: $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ b. Relative Humidity: 90 ~ 95% c. Test Times: $500 \pm 8\text{Hrs}$ d. Applied voltage: Rated voltage 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 (tan $\delta$ ) : 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 (tan $\delta$ ) : 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: $85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ b. Test Times: $1000 \pm 24\text{Hrs}$ c. Apply 125% of the rated voltage Then recovery at ordinary condition at least 6Hrs

■ Mark

Pitch 7.5mm	Pitch $\geq 10\text{mm}$
	
1. WDC is a registered trademark of WINDAY	2. Capacitance: 105 indicates $1.0\mu\text{F}$ or $1000\text{nF}$
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

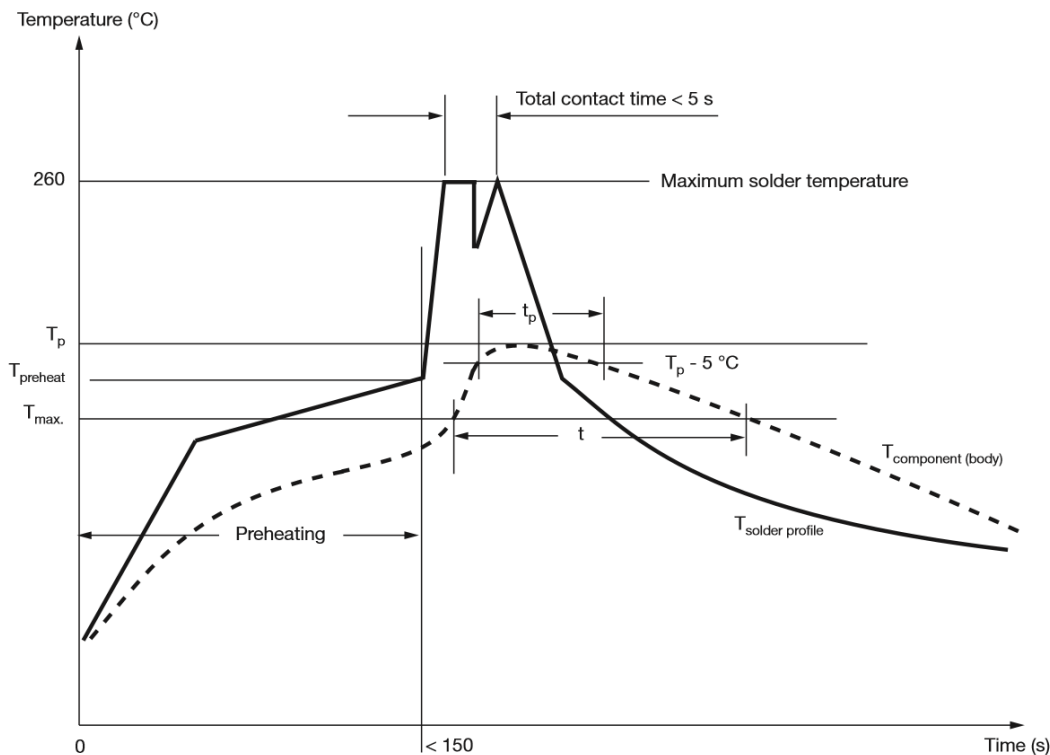
### ■ Soldering Guidelines for Film Capacitors

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

(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:

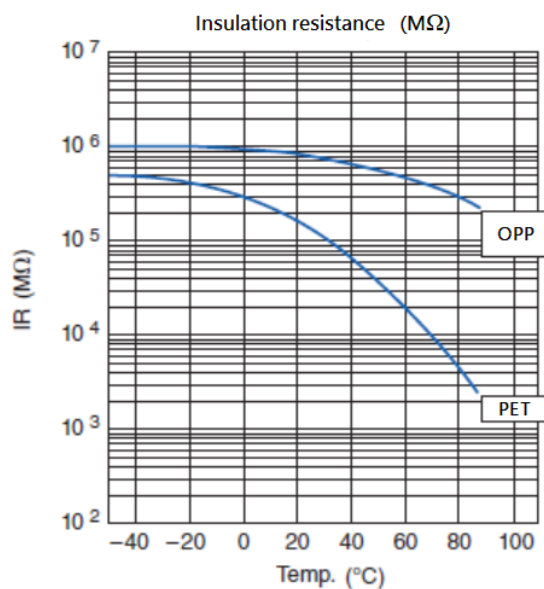
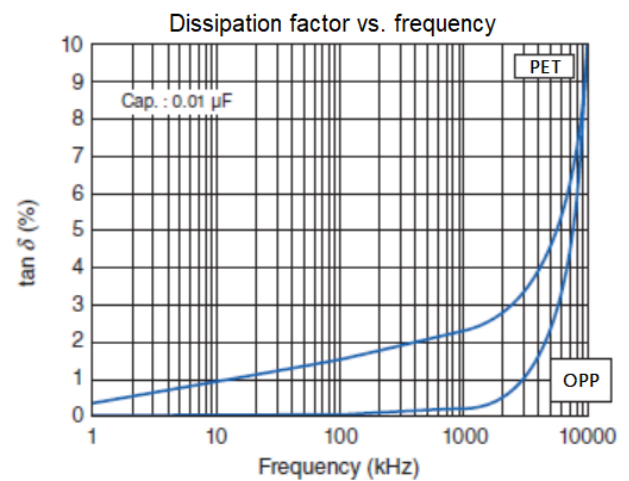
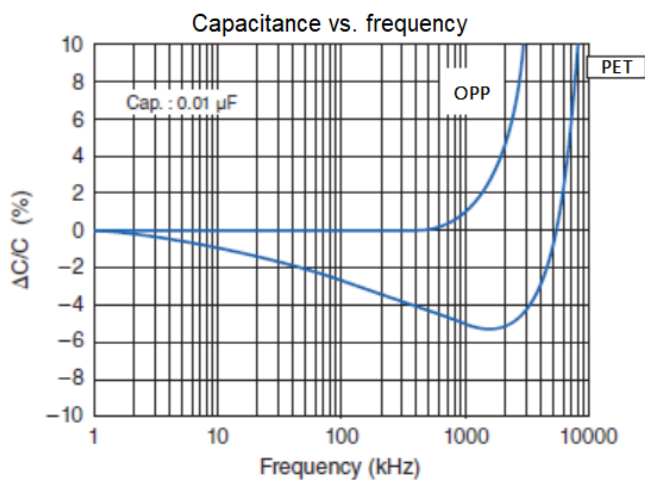
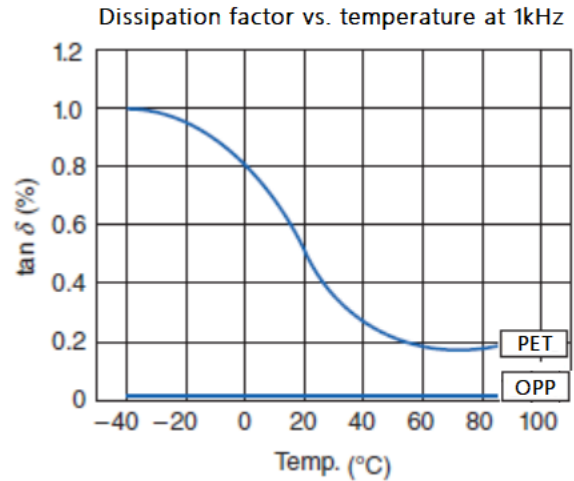
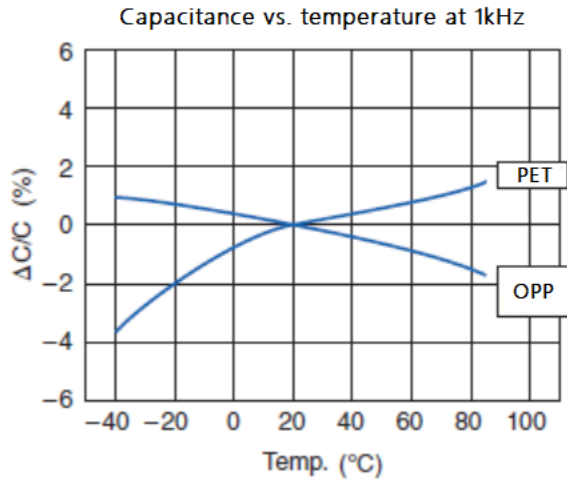
During soldering:  $T_p \leq 120^\circ C$ ,  $t_p \leq 20\ s$ ,  $t \leq 30\ s$

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

(6) The component has a preheat limitation of  $150^\circ C$

AC Capacitor For Capacitive Divider SMPJ series

■ Typical graphs

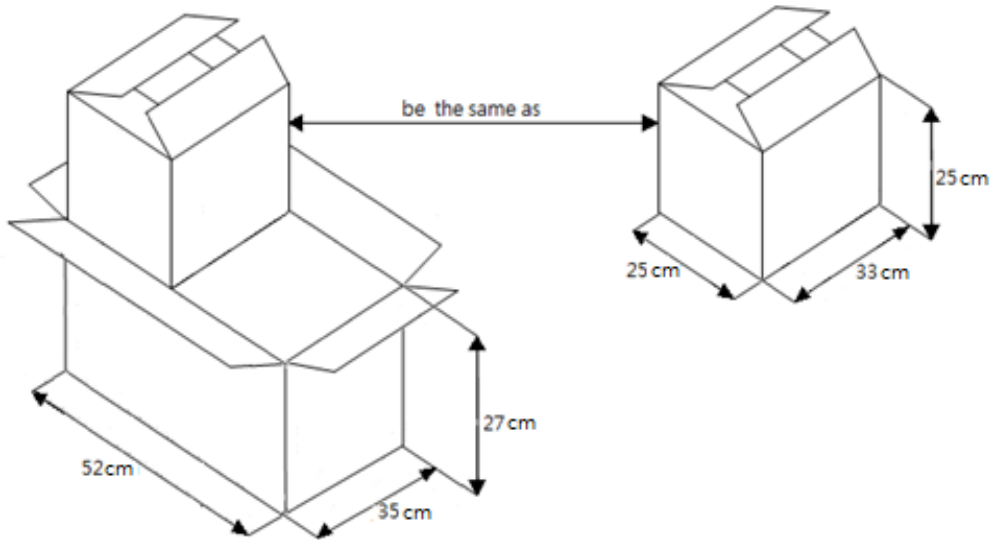


PET :	Metallized Polyester film capacitor
OPP :	Metallized Polypropylene film capacitor



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.