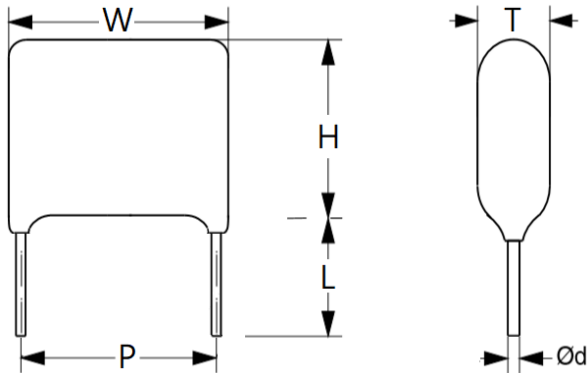


SMTE series (Segmented design)

■ Outline Drawing



■ Typical Applications

As intermediate circuit capacitors for SMPS, Electronic ballast, Inverter (i.e. DC-Link, DC-filter and P.F.C)

■ Features

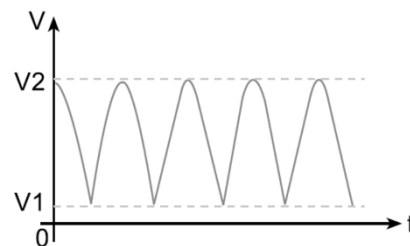
- Metalized polyester film, Segmented design
- Non-inductive wound construction
- Small size and excellent self-healing property
- Flame retardant epoxy resin coating (UL94V-0)

■ Specifications

Reference Standard	GB/T 7332 (IEC 60384-2)			
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 ~ 10μF			
Rated (DC) Voltage	250Vdc	450Vdc	520Vdc	630Vdc
Capacitance Tolerance	±5%(J) 、 ±10%(K) 、 ±20%(M)			
Voltage Proof	1.5U _R (60s)			
Dissipation Factor	≤ 1.0% (25°C, 1kHz)			
Insulation Resistance	U _R ≤ 100V	C _R ≤ 0.33μF	IR ≥ 15,000MΩ	
		C _R > 0.33μF	IR ≥ 5,000s	

■ Note

The SMTE series is only recommended to use in DC-Filter or DC blocking circuits, It means the voltage applied to the capacitors must be unidirectional ripple voltage. The typical voltage curve is as following reference.



$$V1 \geq 0, V2 \leq UR, V_{rms} = (V2 - V1) \div \sqrt{2}, I_{rms} = 2\pi f \times C \times (V2 - V1) \div \sqrt{2}$$

SMTE series (Segmented design)

■ Product code system

SMTE	E	105	K	0450	D	B	15	23
Type	Internal use	Capacitance	Tolerance	Rated Voltage	Voltage	Lead forming	Lead Pitch	Lead Length
SMTE= Metallized Polyester Capacitor (Dipped)	--	105 =1000nF =1.0μF	J=±5% K=±10% M=±20%	0250=250V 0450=450V 0520=520V 0630=630V	D=DC	Shown as Table I	08=7.5mm 10=10mm 15=15mm 23=22.5mm	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			

SMTE series (Segmented design)

■ Dimensions (mm)

250Vdc						
Cap. μF	W	H	T	P	d	Part number
0.10	10	7.7	4.0	7.5	0.6	SMTE_104+0250D*08**
0.15	10	8.3	4.5	7.5	0.6	SMTE_154+0250D*08**
0.22	10	9.9	4.9	7.5	0.6	SMTE_224+0250D*08**
0.33	10	10.4	5.7	7.5	0.6	SMTE_334+0250D*08**
0.47	10	11.8	6.3	7.5	0.6	SMTE_474+0250D*08**
0.68	10	13.9	6.9	7.5	0.6	SMTE_684+0250D*08**
1.0	10	15.3	8.4	7.5	0.6	SMTE_105+0250D*08**
0.33	12.5	9	5.2	10	0.6	SMTE_334+0250D*10**
0.47	12.5	10.8	5.4	10	0.6	SMTE_474+0250D*10**
0.68	12.5	11.7	6.3	10	0.6	SMTE_684+0250D*10**
1.0	12.5	14.4	7.4	10	0.6	SMTE_105+0250D*10**
1.5	12.5	16.9	8.4	10	0.6	SMTE_155+0250D*10**
2.2	12.5	19.7	9.5	10	0.6	SMTE_225+0250D*10**
0.47	17.5	9.3	4.7	15	0.8	SMTE_474+0250D*15**
0.68	17.5	10	5.4	15	0.8	SMTE_684+0250D*15**
1.0	17.5	12	6.5	15	0.8	SMTE_105+0250D*15**
1.5	17.5	14.2	7.2	15	0.8	SMTE_155+0250D*15**
2.2	17.5	16.6	8	15	0.8	SMTE_225+0250D*15**
3.3	17.5	19.3	9.2	15	0.8	SMTE_335+0250D*15**
4.7	17.5	21.2	11	15	0.8	SMTE_475+0250D*15**
1.0	25.5	10.9	5.5	22.5	0.8	SMTE_105+0250D*23**
1.5	25.5	12.9	5.9	22.5	0.8	SMTE_155+0250D*23**
2.2	25.5	13.9	6.9	22.5	0.8	SMTE_225+0250D*23**
3.3	25.5	16.4	7.8	22.5	0.8	SMTE_335+0250D*23**
4.7	25.5	18.8	8.7	22.5	0.8	SMTE_475+0250D*23**
6.8	25.5	20.6	10.5	22.5	0.8	SMTE_685+0250D*23**
10	25.5	23	12.9	22.5	0.8	SMTE_106+0250D*23**

450Vdc						
Cap. μF	W	H	T	P	d	Part number
0.033	10	7.1	4	7.5	0.6	SMTE_333+0450D*08**
0.047	10	7.1	4	7.5	0.6	SMTE_473+0450D*08**
0.068	10	8	4.4	7.5	0.6	SMTE_683+0450D*08**
0.10	10	9.7	5.1	7.5	0.6	SMTE_104+0450D*08**
0.15	10	10.6	6	7.5	0.6	SMTE_154+0450D*08**
0.22	10	12.1	6.7	7.5	0.6	SMTE_224+0450D*08**
0.10	12.5	9.1	4.4	10	0.6	SMTE_104+0450D*10**
0.15	12.5	9.7	5.1	10	0.6	SMTE_154+0450D*10**
0.22	12.5	11.1	5.7	10	0.6	SMTE_224+0450D*10**
0.33	12.5	13.2	6.2	10	0.6	SMTE_334+0450D*10**
0.47	12.5	15.4	6.8	10	0.6	SMTE_474+0450D*10**
0.68	12.5	16.8	8.2	10	0.8	SMTE_684+0450D*10**
1.0	12.5	19.6	9.4	10	0.8	SMTE_105+0450D*10**
0.22	17.5	10.3	4.9	15	0.8	SMTE_224+0450D*15**
0.33	17.5	11.1	5.7	15	0.8	SMTE_334+0450D*15**
0.47	17.5	13.1	6.1	15	0.8	SMTE_474+0450D*15**
0.68	17.5	15.3	6.8	15	0.8	SMTE_684+0450D*15**
1.0	17.5	17.2	8.7	15	0.8	SMTE_105+0450D*15**
1.5	17.5	20.1	10	15	0.8	SMTE_155+0450D*15**
2.2	17.5	22.3	12.2	15	0.8	SMTE_225+0450D*15**
0.47	25.5	11.3	5.9	22.5	0.8	SMTE_474+0450D*23**
0.68	25.5	13.3	6.3	22.5	0.8	SMTE_684+0450D*23**
1.0	25.5	14.4	7.4	22.5	0.8	SMTE_105+0450D*23**
1.5	25.5	16.9	8.3	22.5	0.8	SMTE_155+0450D*23**
2.2	25.5	19.6	9.5	22.5	0.8	SMTE_225+0450D*23**
3.3	25.5	21.8	11.7	22.5	0.8	SMTE_335+0450D*23**

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

* = Lead forming

** = Lead length

SMTE series (Segmented design)

■ Dimensions (mm)

520Vdc						
Cap. μF	W	H	T	P	d	Part number
0.022	10	7.5	4	7.5	0.6	SMTE_223+0520D*08**
0.033	10	8.5	4.4	7.5	0.6	SMTE_333+0520D*08**
0.047	10	9.6	4.7	7.5	0.6	SMTE_473+0520D*08**
0.068	10	10.4	5.4	7.5	0.6	SMTE_683+0520D*08**
0.068	12.5	9.6	4.7	10	0.6	SMTE_683+0520D*10**
0.10	12.5	10.9	5.5	10	0.6	SMTE_104+0520D*10**
0.15	12.5	11.9	6.5	10	0.6	SMTE_154+0520D*10**
0.22	12.5	14.1	7.1	10	0.6	SMTE_224+0520D*10**
0.33	12.5	15.6	8.6	10	0.6	SMTE_334+0520D*10**
0.10	17.8	9.4	4.7	15	0.8	SMTE_104+0520D*15**
0.15	17.8	10.2	5.5	15	0.8	SMTE_154+0520D*15**
0.22	17.8	11.6	6.1	15	0.8	SMTE_224+0520D*15**
0.33	17.8	13.7	6.7	15	0.8	SMTE_334+0520D*15**
0.47	17.8	14.9	7.9	15	0.8	SMTE_474+0520D*15**
0.68	17.8	17.5	8.9	15	0.8	SMTE_684+0520D*15**
1.0	17.8	20.9	10.7	15	0.8	SMTE_105+0520D*15**
1.5	17.8	23.4	13.2	15	0.8	SMTE_155+0520D*15**
0.33	25.5	12.4	5.4	22.5	0.8	SMTE_334+0520D*23**
0.47	25.5	13.3	6.3	22.5	0.8	SMTE_474+0520D*23**
0.68	25.5	15.5	7.0	22.5	0.8	SMTE_684+0520D*23**
1.0	25.5	18.5	8.4	22.5	0.8	SMTE_105+0520D*23**
1.5	25.5	20.4	10.3	22.5	0.8	SMTE_155+0520D*23**
2.2	25.5	22.6	12.5	22.5	0.8	SMTE_225+0520D*23**

630Vdc						
Cap. μF	W	H	T	P	d	Part number
0.010	10	7.6	4.1	7.5	0.6	SMTE_103+0630D*08**
0.015	10	7.6	4.1	7.5	0.6	SMTE_153+0630D*08**
0.022	10	8.1	4.6	7.5	0.6	SMTE_223+0630D*08**
0.033	10	9.2	5.1	7.5	0.6	SMTE_333+0630D*08**
0.047	10	10.5	5.5	7.5	0.6	SMTE_473+0630D*08**
0.068	10	11.9	6.2	7.5	0.6	SMTE_683+0630D*08**
0.10	10	13.1	7.7	7.5	0.6	SMTE_104+0630D*08**
0.047	12.5	9.6	4.6	10	0.6	SMTE_473+0630D*10**
0.068	12.5	10.3	5.3	10	0.6	SMTE_683+0630D*10**
0.10	12.5	11.2	6.5	10	0.6	SMTE_104+0630D*10**
0.15	12.5	13.9	6.9	10	0.6	SMTE_154+0630D*10**
0.22	12.5	15.3	8.3	10	0.6	SMTE_224+0630D*10**
0.10	17.8	10.6	5.1	15	0.8	SMTE_104+0630D*15**
0.15	17.8	12.5	5.5	15	0.8	SMTE_154+0630D*15**
0.22	17.8	13.5	6.5	15	0.8	SMTE_224+0630D*15**
0.33	17.8	14.8	7.8	15	0.8	SMTE_334+0630D*15**
0.47	17.8	16.3	9.2	15	0.8	SMTE_474+0630D*15**
0.68	17.8	19.1	10.4	15	0.8	SMTE_684+0630D*15**
1.0	17.8	22.8	12.6	15	0.8	SMTE_105+0630D*15**
1.5	17.8	25.8	15.6	15	0.8	SMTE_155+0630D*15**
0.22	25.5	11.2	5.7	22.5	0.8	SMTE_224+0630D*23**
0.33	25.5	12.2	6.7	22.5	0.8	SMTE_334+0630D*23**
0.47	25.5	14.3	7.3	22.5	0.8	SMTE_474+0630D*23**
0.68	25.5	15.7	8.7	22.5	0.8	SMTE_684+0630D*23**
1.0	25.5	20	9.8	22.5	0.8	SMTE_105+0630D*23**
1.5	25.5	22.2	12.1	22.5	0.8	SMTE_155+0630D*23**
2.2	25.5	24.9	14.8	22.5	0.8	SMTE_225+0630D*23**

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

* = Lead forming

** = Lead length

SMTE series (Segmented design)

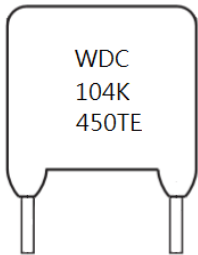
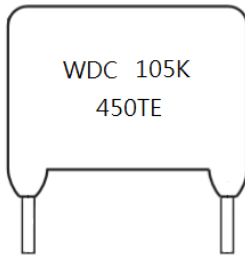
■ Specifications

Test items	Performance	Test Method
Withstand voltage (Between Terminals)	Shall be no abnormality	150% of rated voltage, 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	0.01 (1.0%) 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 ± 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 ± 0.5 sec
Heat Shock test	(1) Appearance : No visible damage (2) $\Delta C/C$: $\leq 3\%$ of the initial value (3) DF (tan δ) : Growth less than ≤ 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 ± 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 δ) : Growth less than ≤ 0.005 (4) IR : $\geq 50\%$ of clause shall be satisfied	a. Test Temperature: $85^\circ C$ b. Test Times: 16Hrs

SMTE series (Segmented design)

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 δ) : Growth less than ≤ 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: 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 δ) : Growth less than ≤ 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 δ) : Growth less than ≤ 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

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: 450Vdc, Indicates 450
5. TE for Segmented design Metallized polyester film	

SMTE series (Segmented design)

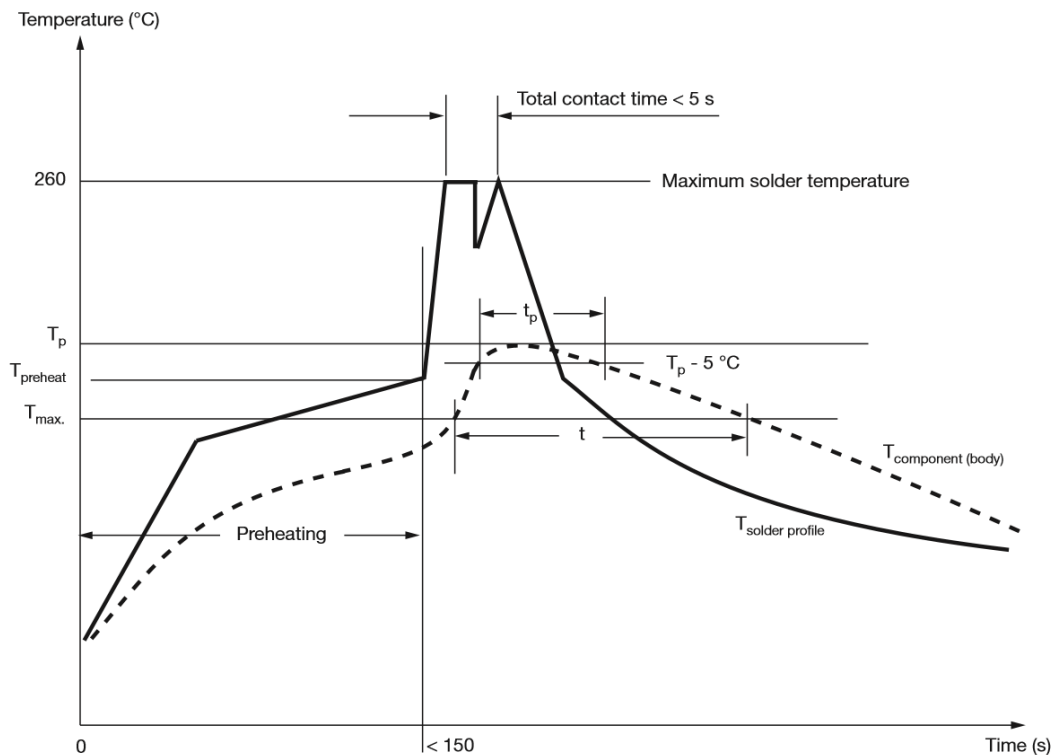
■ Soldering Guidelines for Film Capacitors

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	22.5 mm	27.5 mm	31.5 mm	37.5 mm
SMTE	--	(2),(4)	(1),(3)	(1),(3)	(1),(3)	--	--	--

(1) No risk

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

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

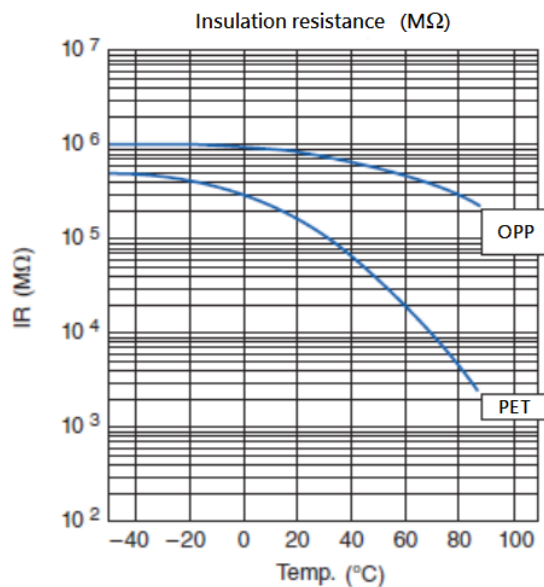
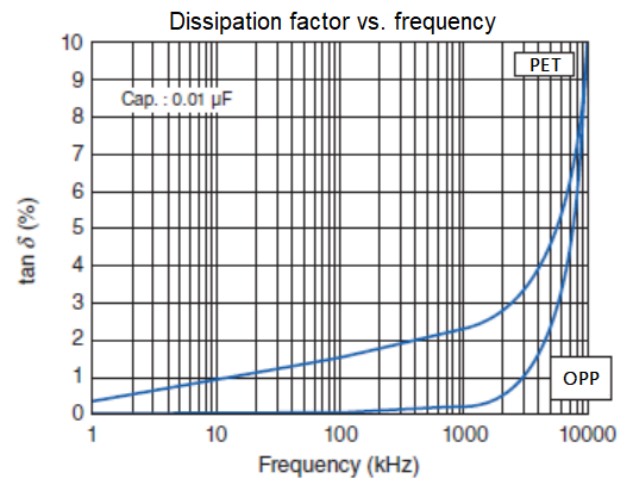
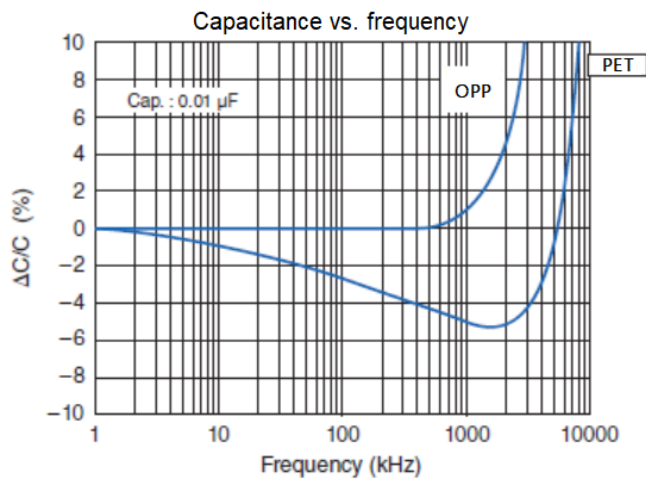
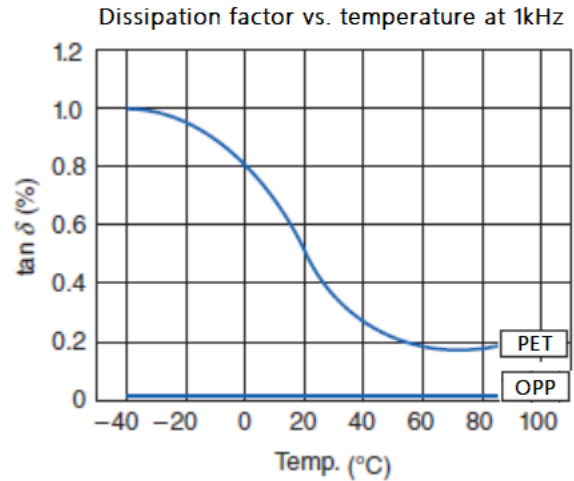
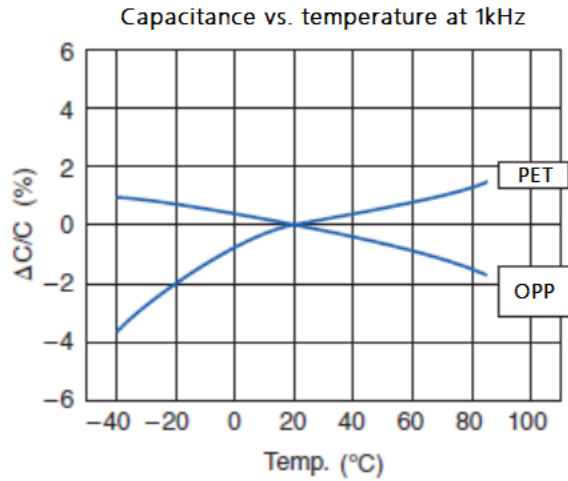
(4) Temperature is measured at the body top and must be kept as follows:

During preheating: $T_{max.} \leq 125^\circ C$

During soldering: $T_p \leq 135^\circ C$, $t_p \leq 30\ s$, $t \leq 50\ s$

SMTE series (Segmented design)

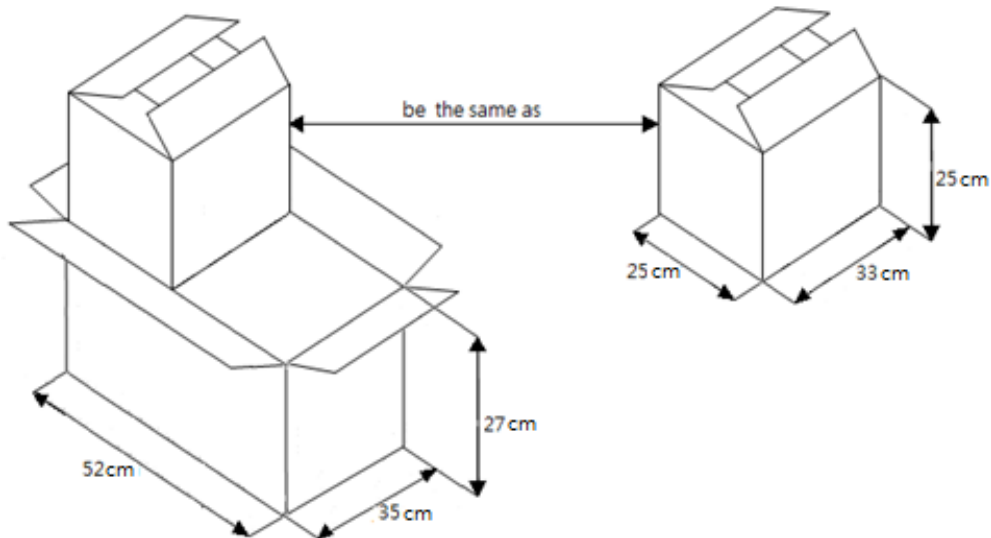
■ Typical graphs



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

SMTE series (Segmented design)

■ 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	500	5000	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.