MPX/X2-THB3 85℃/85%RH Metallized Polypropylene Film Interference Suppression Capacitors (Class X2)

Capacitor Box Type: PPS Shell Material RoHS

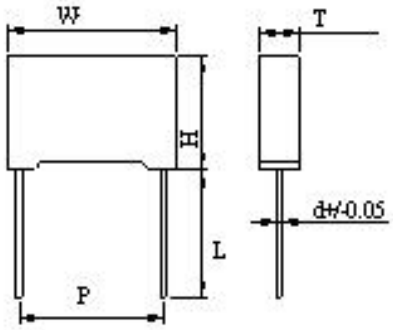
Electrical Characteristics

Climatic Category	40/110/56
Operating Temperature Range	-40℃～110℃
Rated Voltage	350VAC
Nominal Capacity	0.47uF
Tolerance	±10%（K）
Dissipation Factor(tanδ)	≤0.1%
Withstand Voltage	Between terminals to case: 2U_R+1500VAC Minimum of 2000VAC Hi-Pot Leakage current: 10mA
	Between terminals: 4.3U_R(DC)/5S Hi-Pot Leakage current: 10mA
Insulation Resistance (I.R.)	C_R≤0.33μF, IR≥15000MΩ C_R＞0.33μF, IR≥5000S Note: T[s]=I.R.[MΩ]*CN [μF]　20℃、100V、60S

How to order:

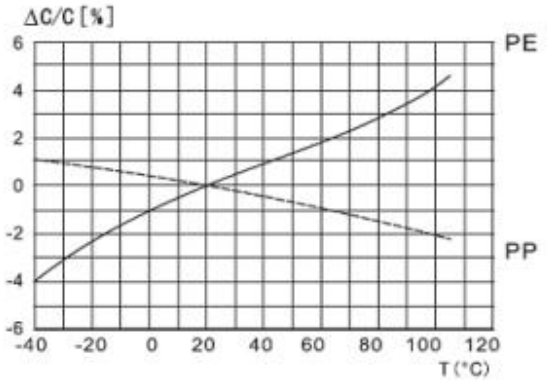
X2	F	474	K	A350	0150	B	000	B3
Type	Material Code	Capacitance Code	Tolerance	Rated Voltage	Size Code	Package Code	Suffix Indicate Special Requirement	THB 3
X2	F: Plastic Film Cap For X2	pF Code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow) 104 = 0.1uF 103 = 0.01uF 334 = 0.33uF 225 = 2.2uF	M: +/-20%	For AC Voltage: A275: 275VAC A300: 300VAC A305: 305VAC A310: 310VAC	Pitch Size for Standard Box 0100: pitch size 10mm 0150: pitch size 15mm 0200: pitch size 20mm 0225: pitch size 22.5mm 0275: pitch size 27.5mm	A: Ammo B: Bulk T: TRAY	000: Indicating Standard If for cut leads or long leg 000: mean standard LL 035: cut leads to 3.5mm 040: cut leads to 4mm 050: cut leads to 5mm 250: 25mm long leads	B3: PPS Sheel THB3

Dimensions and Approval

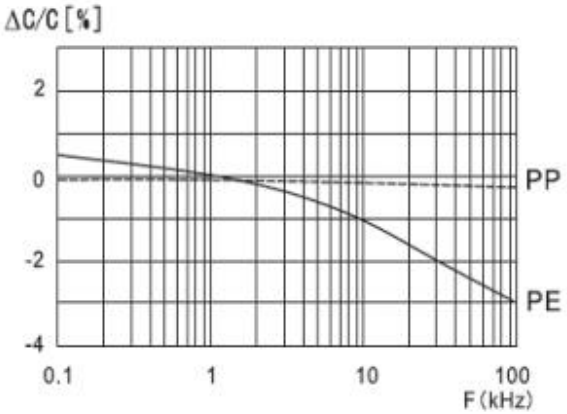


Specifications	L±0.5 (mm)	W±0.5 (mm)	H±0.5 (mm)	T±0.5 (mm)	P±0.5 (mm)	d±0.05 (mm)
X2F474KA3500150B000B3	16	19.0	18	11	15	0.8

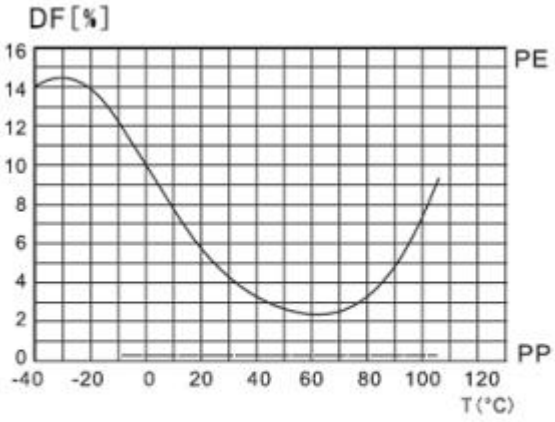
Graph Rated Value & Characteristic



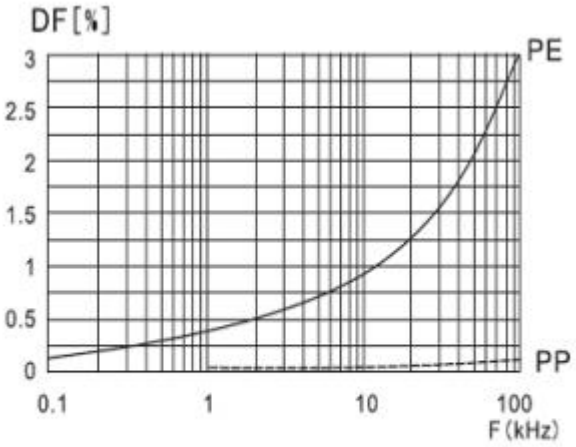
Capacitance vs. temperature at 1kHz



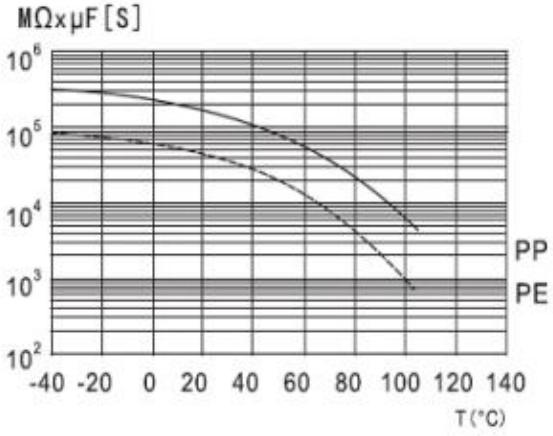
Capacitance vs. frequency (Room temperature)



Dissipation factor vs.temperature at 1KHz



Dissipation factor vs.frequency (Room temperature)



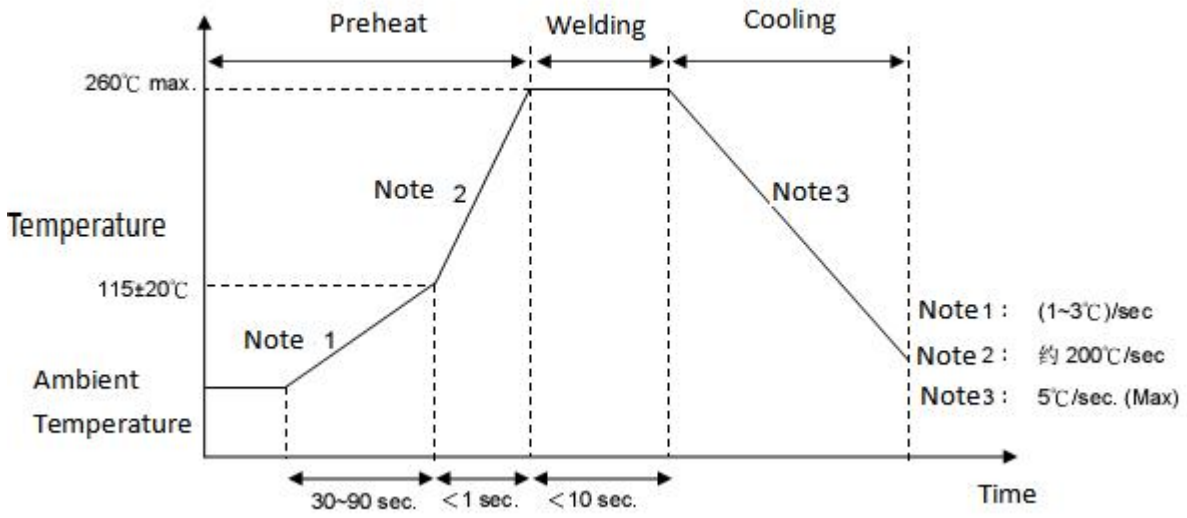
I.R. vs. temperature

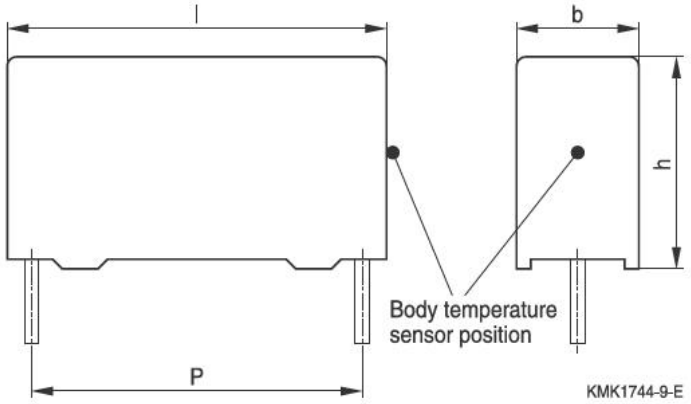
---------- 聚丙烯膜 (Polypropylene Film)

_____ 聚旨薄膜 (Polyester Film)

Soldering Condition

Wave Soldering Graph





PP:
During pre-heating: Tp ≤110℃
During soldering: Ts ≤120℃, ts ≤15 s
PE:
During pre-heating: Tp ≤125℃
During soldering: Ts ≤160℃, ts ≤15 s

Note: Film capacitor is not suitable for reflow soldering, because it will cause thermal contraction and affect electrical performance.

Iron Soldering Condition

Item	Condition
Temperature of soldering copper bit	360℃（max.）
Soldering duration	3sec（max.）
Space between soldering position and coating layer	2mm（min.）

Reliability Test Methods And Requirements

<table>
<tr><th>NO.</th><th>Item</th><th>Specifications</th><th>Test conditions / Methods</th></tr>
<tr><td>1</td><td>Creep Age Distance and Clearance</td><td>Creep age distance＞5.0mm
Clearance＞4.0mm</td><td>For the measurement between Terminals.</td></tr>
<tr><td>2</td><td>Robustness of Terminals</td><td>Pin No visible damage</td><td>Apply a specified weight to one lead of the sample, bent ±90°, 2 times.
<table>
<tr><th>Terminal diameter (mm)</th><th>Bending Test Apply force(N)</th></tr>
<tr><td>0.5＜D≤0.8</td><td>5±10%</td></tr>
</table>
Gradually apply the specified force and keep the unit fixed for 10±1sec.
<table>
<tr><th>Terminal diameter (mm)</th><th>Force (N)</th></tr>
<tr><td>0.5＜d≤0.8</td><td>10±10%</td></tr>
</table></td></tr>
<tr><td>3</td><td>Solderability</td><td>Lead wire shall be soldered with uniform coating on the axial direction over 95% of the circumferential direction.</td><td>245±3℃, 3±0.3s.
Solder composition:
Sn96.5Ag3.0Cu0.5</td></tr>
<tr><td>4</td><td>Resistance To Soldering Heat</td><td>Pin No visible damage.</td><td>260 ± 5℃;10 ± 0.5S</td></tr>
<tr><td>5</td><td>Marking Solvent</td><td>Clearly marked, no visible damage</td><td>Immersion for 5 ± 0.5 min. in a mixture of 70 ± 5% 1,1,2-trichlorotrifluoroethane and 30 ± 5% isopropanol at 23 ± 5 °C Wipe 10 times with absorbent cotton</td></tr>
</table>

<table>
<tr><th>NO.</th><th>Item</th><th>Specifications</th><th>Test conditions / Methods</th></tr>
<tr><td>6</td><td>Temperature Cycle</td><td>1) Appearance No visible damage
2) Change rate of capacitance: ≤±5%
3) Dissipation factor:
≤0.008 (C_R≤1.0μF)
≤0.005 (C_R＞1.0μF)
4) According to initial conditions test voltage no breakdown and fly arc
5) IR≥Initial value50%.</td><td>The capacitor shall be subjected to 5 temperature cycles
<table>
<tr><th>Step</th><th>Temperature (℃)</th><th>Time (min)</th></tr>
<tr><td>1</td><td>-40+0/-3</td><td>30</td></tr>
<tr><td>2</td><td>110+3/-0</td><td>30</td></tr>
</table></td></tr>
<tr><td>7</td><td>Vibration</td><td>Appearance No visible damage</td><td>10~55Hz, 0.75mm,
10Hz→55Hz→10Hz. 1min
Apply for a total of 6 hours, 2 hrs each in 3 mutually perpendicular directions.</td></tr>
<tr><td>8</td><td>Collision or Impact</td><td>1) Appearance No visible damage
2) Change rate of capacitance: ≤±5%
3) Dissipation factor:
≤0.008 (C_R≤1.0μF)
≤0.005 (C_R＞1.0μF)
4) According to initial conditions test voltage no breakdown and fly arc.
5) IR≥Initial value50%.</td><td>1000 times or 4000 times,
acceleration 400m/s^2,
pulse duration 6ms.</td></tr>
<tr><td>9</td><td>Damp Heat, Humidity Steady State</td><td>1) Appearance No visible damage
2) Change rate of capacitance: ≤±5%
3) Dissipation factor：
≤0.008 (C_R≤1.0μF)
≤0.005 (C_R>1.0μF)
4) According to initial conditions test voltage no breakdown and fly arc.
5) IR≥Initial value50%.</td><td>No voltage applied:
40±2℃, 90~95%RH,56 days.</td></tr>
<tr><td>10</td><td>Pulse Voltage</td><td>Test of capacitor shall be no permanent breakdown and arcing.</td><td>Applied voltage:
C_R≤1.0μF, 2.5KVDC
C_R＞1.0μF, 2.5/$\sqrt{C_R}$
Pulse frequency: 24 times
Time period:
Charging 9S, 2s discharge</td></tr>
<tr><td>11</td><td>Life Test</td><td>1) Appearance No visible damage
2) Change rate of capacitance:
≤ ±10%
3) Dissipation factor：
≤0.008 (C_R≤1.0μF)
≤0.005 (C_R＞1.0μF)
4) According to initial conditions test voltage no breakdown and fly arc.
5) IR ≥ Initial value50%.</td><td>110±3℃,1.25U_R,1000 hours,
the interval not less than the capacitor 25mm,
Voltage shall be increased every 1 hour to
1000VAC, duration is 0.1s, the voltage across a
47Ω ± 5% resistor applied to each capacitor.</td></tr>
</table>

<table>
<tr><th>NO.</th><th>Item</th><th>Specifications</th><th>Test conditions / Methods</th></tr>
<tr><td>12</td><td>Passive Flammability</td><td>The burning time shall not be exceeded the standard. The tissue paper shall not ignite.</td><td>The capacitor under test shall be held in the flame in the position which best promotes burning. Each specimen shall be exposed once in the flame. Specifically as follows: Level B requirements:
<table>
<tr><th rowspan="2">Class</th><th colspan="4">Capacitor volume (mm³) Apply flame time
250＜ (S) 500＜</th><th rowspan="2">Maximum burning time (S)</th></tr>
<tr><th>Volume ＜250</th><th>Volume ≤500</th><th>Volume ≤1750</th><th>Volume ＞1750</th></tr>
<tr><td>A</td><td>15</td><td>30</td><td>60</td><td>120</td><td>3</td></tr>
<tr><td>B</td><td>10</td><td>20</td><td>30</td><td>60</td><td>10</td></tr>
<tr><td>C</td><td>5</td><td>10</td><td>20</td><td>30</td><td>30</td></tr>
</table></td></tr>
<tr><td>13</td><td>Active Flammability</td><td>The cheese-cloth shall not be on fire.</td><td>U=U_R,U1=2.5KV
Each sample shall be subjected to an energy storage capacitor 20 times, each interval between two discharge 5S.</td></tr>
<tr><td>14</td><td>Charge and Discharge Test</td><td>1) Capacity change rate: ≤±10%
2)Dissipation factor:
≤0.008 (CR≤1.0μF)
≤0.005(CR＞1.0μF)
3)IR insulation resistance: ≥ initial value of 50%.</td><td>Applied Voltage: $\sqrt{2}\,U_R$.
Charge and discharge for 10,000 cycles
(one charge and one discharge for one cycle).
Its rate is about 1 time / s.</td></tr>
<tr><td>15</td><td>High Temperature and high Humidity Test</td><td>1) No visible scratches on the app earance
2)Capacitance change rate ≤10%;
3)loss tangent change:
≤0.008 (CR≤1.0μF)
≤0.005(CR<1.0μF)
4)Test voltage without breakdown and arcing according to initial con ditions;
5)IR ≥ initial value 50%</td><td>Applied voltage:240VAC
Temperature: 85 ± 2 ° C;
Humidity: 85±2%;
Test period: 1000 hours</td></tr>
</table>