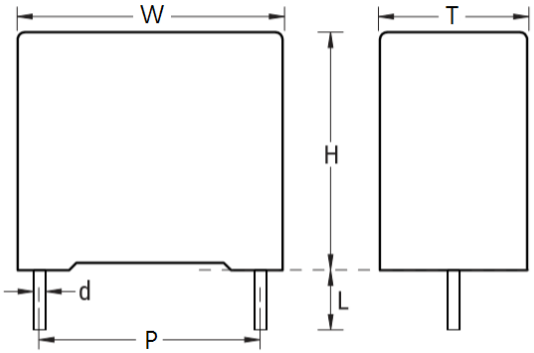
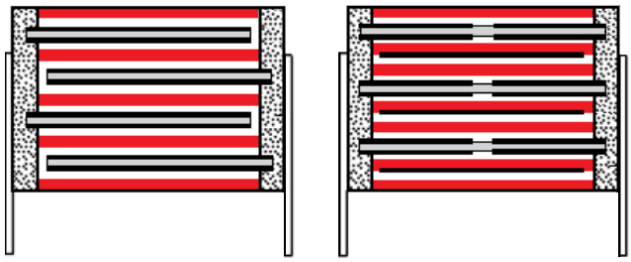
雙面金屬化聚丙烯膜電容器 (盒裝型) - SMMC series

Double Sided Metallized Polypropylene Film Capacitor (Boxed)

■ **外形圖 Outline Drawing**



■ **構造 Construction**



■ **典型應用 Typical Applications**

廣泛應用於高壓、高頻和脈衝電路	Widely used in high voltage, frequency and pulse circuit
電子鎮流器和緊湊型燈具	Electronic ballasts and compact lamps
緩衝器和可控硅整流電路	Snubber and SCR commutating circuits

■ **特徵 Features**

延長的雙面金屬化聚酯膜電極，	Extended double metallised polyester electrodes
帶金屬化聚丙烯電介質內部串聯連接	with metallised polypropylene dielectric internal
UL 94 V-0 塑料外殼，填充熱固性樹脂	series connection
	UL 94 V-0 plastic case with thermosetting resin-fill

■ **規格 Specifications**

參考標準 Reference Standard	GB/T 10190 (IEC 60384-16)					
氣候類別 Climatic Category	40/105/21					
額定溫度 Rated Temperature	85℃					
工作溫度範圍 Operating Temperature Range	-40℃~+105℃ (+85℃ to +105℃: decreasing factor 1.25% per ℃ for U_R)					
容值範圍 Capacitance Range	0.00022μF ~ 3.9μF					
額定直流電壓 Rated (DC) Voltage	250V	400V	630V	1000V	1600V	2000V
連續交流電壓 Maximum continuous AC voltage	180V	250V	400V	600V	650V	700V
容值公差 Capacitance Tolerance	±3%(H)、±5%(J)、±10%(K)					
耐電壓 Voltage Proof	U_R x 1.6, 5s (DC)					
損耗因素 Dissipation Factor	≤ 10 x 10^{-4} at 1kHz, (1Vrms Max. at 20℃)					
絕緣電阻 Insulation Resistance	U_R < 500V, 100Vdc U_R > 500V, 500Vdc			C_R ≤ 0.33μF, IR ≥ 25000MΩ C_R > 0.33μF, IR x C_R ≥ 7500s		

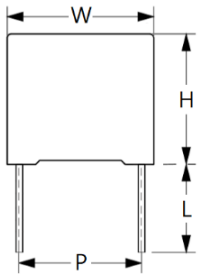
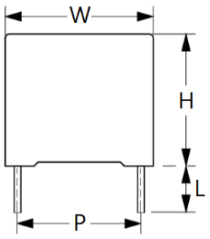
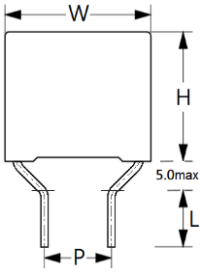
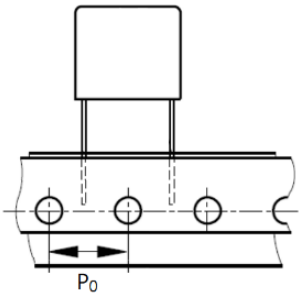
雙面金屬化聚丙烯膜電容器 (盒裝型) - SMMC series

Double Sided Metallized Polypropylene Film Capacitor (Boxed)

■ 產品代碼構成 Product code system (For Example)

SMMC	F	473	K	1000	D	B	15	15
型號 Type	內部使用 Internal use	容值 Capacitance	公差 Tolerance	額定電壓 Rated Voltage	交直流 AC/DC	引線成形 Lead forming	引線間距 Lead Pitch	引線長度 Lead Length
SMMC= Double Sided Metallized Polypropylene Capacitor (Boxed)	--	473 =47000pF =47nF =0.047μF	J=±5% K=±10% M=±20%	0250=250V 0400=400V 0630=630V 1000=1000V 1600=1600V 2000=2000V	D=DC A=AC	(表一) Shown as Table I	08=7.5mm 10=10mm 15=15mm 23=22.5mm 28=27.5mm	04=3.5mm 15=15mm 23=23mm

(表一) Table I

引線成形 Lead Forming			
B (Straight 15mm)	**K** (Short)	**U** (Vertical Kink)	**T** (Taping)
			

■ 標示 Marking (For Example)

Marking	
Pitch 7.5mm	Pitch ≥10mm
1. WDC is a registered trademark of WINDAY	2. Capacitance: 560pF and Tolerance is K=±10%
3. Rated Voltage: 2000Vdc, Indicates 2000	4. MC for Double sided Metallized polypropylene film

Double Sided Metallized Polypropylene Film Capacitor (Boxed)

■ Dimensions (mm)

250Vdc (180Vac)						
Cap. μF	W	H	T	P	d	Part number
0.0068	10	9	4	7.5	0.6	SMMC_682+0250D*08**
0.0082	10	9	4	7.5	0.6	SMMC_822+0250D*08**
0.010	10	9	4	7.5	0.6	SMMC_103+0250D*08**
0.012	10	9	4	7.5	0.6	SMMC_123+0250D*08**
0.015	10	9	4	7.5	0.6	SMMC_153+0250D*08**
0.018	10	9	4	7.5	0.6	SMMC_183+0250D*08**
0.022	10	9	4	7.5	0.6	SMMC_223+0250D*08**
0.027	10	11	5	7.5	0.6	SMMC_273+0250D*08**
0.033	10	11	5	7.5	0.6	SMMC_333+0250D*08**
0.039	10	12	6	7.5	0.6	SMMC_393+0250D*08**
0.047	10	12	6	7.5	0.6	SMMC_473+0250D*08**
0.027	13	9	4	10	0.6	SMMC_273+0250D*10**
0.033	13	9	4	10	0.6	SMMC_333+0250D*10**
0.039	13	9	4	10	0.6	SMMC_393+0250D*10**
0.047	13	11	5	10	0.6	SMMC_473+0250D*10**
0.056	13	11	5	10	0.6	SMMC_563+0250D*10**
0.068	13	12	6	10	0.6	SMMC_683+0250D*10**
0.082	13	12	6	10	0.6	SMMC_823+0250D*10**
0.068	18	11	5	15	0.8	SMMC_683+0250D*15**
0.082	18	11	5	15	0.8	SMMC_823+0250D*15**
0.10	18	11	5	15	0.8	SMMC_104+0250D*15**
0.12	18	12	6	15	0.8	SMMC_124+0250D*15**
0.15	18	12	6	15	0.8	SMMC_154+0250D*15**
0.18	18	13.5	7.5	15	0.8	SMMC_184+0250D*15**
0.22	18	13.5	7.5	15	0.8	SMMC_224+0250D*15**
0.27	18	14.5	8.5	15	0.8	SMMC_274+0250D*15**
0.33	18	15.5	9.5	15	0.8	SMMC_334+0250D*15**
0.39	18	15.5	9.5	15	0.8	SMMC_394+0250D*15**

250Vdc (180Vac)						
Cap. μF	W	H	T	P	d	Part number
0.22	26.5	15	6	22.5	0.8	SMMC_224+0250D*23**
0.27	26.5	15	6	22.5	0.8	SMMC_274+0250D*23**
0.33	26.5	15	6	22.5	0.8	SMMC_334+0250D*23**
0.39	26.5	16.5	7	22.5	0.8	SMMC_394+0250D*23**
0.47	26.5	16.5	7	22.5	0.8	SMMC_474+0250D*23**
0.56	26.5	17	8.5	22.5	0.8	SMMC_564+0250D*23**
0.68	26.5	19	10	22.5	0.8	SMMC_684+0250D*23**
0.82	26.5	19	10	22.5	0.8	SMMC_824+0250D*23**
1.0	26	21.5	12	22.5	0.8	SMMC_105+0250D*23**
0.82	31	18	9	27.5	0.8	SMMC_824+0250D*28**
1.0	31.5	19.5	10.8	27.5	0.8	SMMC_105+0250D*28**
1.2	31.5	19.5	10.8	27.5	0.8	SMMC_125+0250D*28**
1.5	31.5	21.6	13	27.5	0.8	SMMC_155+0250D*28**
1.8	31	25	14	27.5	0.8	SMMC_185+0250D*28**
2.2	31	25	14	27.5	0.8	SMMC_225+0250D*28**
2.7	32	28	18	27.5	0.8	SMMC_275+0250D*28**
3.3	32	28	18	27.5	0.8	SMMC_335+0250D*28**
3.9	32	28	18	27.5	0.8	SMMC_395+0250D*28**

(1) The symbol + means capacitance tolerance (J=±5%, K=±10%)

(2) The symbol * means style of lead forming

(3) The symbol ** means the lead length

Double Sided Metallized Polypropylene Film Capacitor (Boxed)

■ Dimensions (mm)

400Vdc (250Vac)						
Cap. μF	W	H	T	P	d	Part number
0.0027	10	9	4	7.5	0.6	SMMC_272+0400D*08**
0.0033	10	9	4	7.5	0.6	SMMC_332+0400D*08**
0.0039	10	9	4	7.5	0.6	SMMC_392+0400D*08**
0.0047	10	9	4	7.5	0.6	SMMC_472+0400D*08**
0.0056	10	9	4	7.5	0.6	SMMC_562+0400D*08**
0.0068	10	9	4	7.5	0.6	SMMC_682+0400D*08**
0.0082	10	9	4	7.5	0.6	SMMC_822+0400D*08**
0.010	10	9	4	7.5	0.6	SMMC_103+0400D*08**
0.012	10	9	4	7.5	0.6	SMMC_123+0400D*08**
0.015	10	11	5	7.5	0.6	SMMC_153+0400D*08**
0.018	10	11	5	7.5	0.6	SMMC_183+0400D*08**
0.022	10	12	6	7.5	0.6	SMMC_223+0400D*08**
0.027	10	12	6	7.5	0.6	SMMC_273+0400D*08**
0.010	13	9	4	10	0.6	SMMC_103+0400D*10**
0.012	13	9	4	10	0.6	SMMC_123+0400D*10**
0.015	13	9	4	10	0.6	SMMC_153+0400D*10**
0.018	13	9	4	10	0.6	SMMC_183+0400D*10**
0.022	13	9	4	10	0.6	SMMC_223+0400D*10**
0.027	13	11	5	10	0.6	SMMC_273+0400D*10**
0.033	13	11	5	10	0.6	SMMC_333+0400D*10**
0.039	13	12	6	10	0.6	SMMC_393+0400D*10**
0.047	13	12	6	10	0.6	SMMC_473+0400D*10**
0.033	18	11	5	15	0.8	SMMC_333+0400D*15**
0.039	18	11	5	15	0.8	SMMC_393+0400D*15**
0.047	18	11	5	15	0.8	SMMC_473+0400D*15**
0.056	18	11	5	15	0.8	SMMC_563+0400D*15**
0.068	18	12	6	15	0.8	SMMC_683+0400D*15**
0.082	18	12	6	15	0.8	SMMC_823+0400D*15**
0.10	18	13.5	7.5	15	0.8	SMMC_104+0400D*15**
0.12	18	13.5	7.5	15	0.8	SMMC_124+0400D*15**
0.15	18	14.5	8.5	15	0.8	SMMC_154+0400D*15**

400Vdc (250Vac)						
Cap. μF	W	H	T	P	d	Part number
0.18	18	15.5	9.5	15	0.8	SMMC_184+0400D*15**
0.22	18	15.5	9.5	15	0.8	SMMC_224+0400D*15**
0.27	18	19	10.8	15	0.8	SMMC_274+0400D*15**
0.12	26.5	15	6	22.5	0.8	SMMC_124+0400D*23**
0.15	26.5	15	6	22.5	0.8	SMMC_154+0400D*23**
0.18	26.5	15	6	22.5	0.8	SMMC_184+0400D*23**
0.22	26.5	16.5	7	22.5	0.8	SMMC_224+0400D*23**
0.27	26.5	17	8.5	22.5	0.8	SMMC_274+0400D*23**
0.33	26.5	17	8.5	22.5	0.8	SMMC_334+0400D*23**
0.39	26.5	19	10	22.5	0.8	SMMC_394+0400D*23**
0.47	26.5	19	10	22.5	0.8	SMMC_474+0400D*23**
0.56	26	21.5	12	22.5	0.8	SMMC_564+0400D*23**
0.68	26	21.5	12	22.5	0.8	SMMC_684+0400D*23**
0.39	31	18	9	27.5	0.8	SMMC_394+0400D*28**
0.47	31	18	9	27.5	0.8	SMMC_474+0400D*28**
0.56	31.5	19.5	10.8	27.5	0.8	SMMC_564+0400D*28**
0.68	31.5	19.5	10.8	27.5	0.8	SMMC_684+0400D*28**
0.82	31.5	21.6	13	27.5	0.8	SMMC_824+0400D*28**
1.0	31	25	14	27.5	0.8	SMMC_105+0400D*28**
1.2	31	25	14	27.5	0.8	SMMC_125+0400D*28**
1.5	32	28	18	27.5	0.8	SMMC_155+0400D*28**
1.8	32	28	18	27.5	0.8	SMMC_185+0400D*28**

(1) The symbol + means capacitance tolerance (J=±5%, K=±10%)

(2) The symbol * means style of lead forming

(3) The symbol ** means the lead length

Double Sided Metallized Polypropylene Film Capacitor (Boxed)

■ Dimensions (mm)

630Vdc (400Vac)						
Cap. μF	W	H	T	P	d	Part number
0.00068	10	9	4	7.5	0.6	SMMC_681+0630D*08**
0.00082	10	9	4	7.5	0.6	SMMC_821+0630D*08**
0.0010	10	9	4	7.5	0.6	SMMC_102+0630D*08**
0.0012	10	9	4	7.5	0.6	SMMC_122+0630D*08**
0.0015	10	9	4	7.5	0.6	SMMC_152+0630D*08**
0.0018	10	9	4	7.5	0.6	SMMC_182+0630D*08**
0.0022	10	9	4	7.5	0.6	SMMC_222+0630D*08**
0.0027	10	9	4	7.5	0.6	SMMC_272+0630D*08**
0.0033	10	9	4	7.5	0.6	SMMC_332+0630D*08**
0.0039	10	9	4	7.5	0.6	SMMC_392+0630D*08**
0.0047	10	9	4	7.5	0.6	SMMC_472+0630D*08**
0.0056	10	9	4	7.5	0.6	SMMC_562+0630D*08**
0.0068	10	11	5	7.5	0.6	SMMC_682+0630D*08**
0.0082	10	11	5	7.5	0.6	SMMC_822+0630D*08**
0.010	10	12	6	7.5	0.6	SMMC_103+0630D*08**
0.012	10	12	6	7.5	0.6	SMMC_123+0630D*08**
0.0039	13	9	4	10	0.6	SMMC_392+0630D*10**
0.0047	13	9	4	10	0.6	SMMC_472+0630D*10**
0.0056	13	9	4	10	0.6	SMMC_562+0630D*10**
0.0068	13	9	4	10	0.6	SMMC_682+0630D*10**
0.0082	13	9	4	10	0.6	SMMC_822+0630D*10**
0.010	13	11	5	10	0.6	SMMC_103+0630D*10**
0.012	13	11	5	10	0.6	SMMC_123+0630D*10**
0.015	13	12	6	10	0.6	SMMC_153+0630D*10**
0.018	13	12	6	10	0.6	SMMC_183+0630D*10**
0.010	18	11	5	15	0.8	SMMC_103+0630D*15**
0.012	18	11	5	15	0.8	SMMC_123+0630D*15**
0.015	18	11	5	15	0.8	SMMC_153+0630D*15**
0.018	18	11	5	15	0.8	SMMC_183+0630D*15**
0.022	18	11	5	15	0.8	SMMC_223+0630D*15**

630Vdc (400Vac)						
Cap. μF	W	H	T	P	d	Part number
0.027	18	11	5	15	0.8	SMMC_273+0630D*15**
0.033	18	12	6	15	0.8	SMMC_333+0630D*15**
0.039	18	12	6	15	0.8	SMMC_393+0630D*15**
0.047	18	12	6	15	0.8	SMMC_473+0630D*15**
0.056	18	13.5	7.5	15	0.8	SMMC_563+0630D*15**
0.068	18	14.5	8.5	15	0.8	SMMC_683+0630D*15**
0.082	18	14.5	8.5	15	0.8	SMMC_823+0630D*15**
0.10	18	15.5	9.5	15	0.8	SMMC_104+0630D*15**
0.12	18	19	10.8	15	0.8	SMMC_124+0630D*15**
0.047	26.5	15	6	22.5	0.8	SMMC_473+0630D*23**
0.068	26.5	15	6	22.5	0.8	SMMC_683+0630D*23**
0.10	26.5	15	6	22.5	0.8	SMMC_104+0630D*23**
0.12	26.5	16.5	7	22.5	0.8	SMMC_124+0630D*23**
0.15	26.5	17	8.5	22.5	0.8	SMMC_154+0630D*23**
0.18	26.5	17	8.5	22.5	0.8	SMMC_184+0630D*23**
0.22	26.5	19	10	22.5	0.8	SMMC_224+0630D*23**
0.27	26	21.5	12	22.5	0.8	SMMC_274+0630D*23**
0.33	26	21.5	12	22.5	0.8	SMMC_334+0630D*23**
0.39	26	21.5	12	22.5	0.8	SMMC_394+0630D*23**
0.15	31	18	9	27.5	0.8	SMMC_154+0630D*28**
0.22	31	18	9	27.5	0.8	SMMC_224+0630D*28**
0.27	31	18	9	27.5	0.8	SMMC_274+0630D*28**
0.33	31.5	19.5	10.8	27.5	0.8	SMMC_334+0630D*28**
0.39	31.5	19.5	10.8	27.5	0.8	SMMC_394+0630D*28**
0.47	31.5	21.6	13	27.5	0.8	SMMC_474+0630D*28**
0.56	31.5	21.6	13	27.5	0.8	SMMC_564+0630D*28**
0.68	31	25	14	27.5	0.8	SMMC_684+0630D*28**
0.82	31	29.5	15	27.5	0.8	SMMC_824+0630D*28**
1.0	32	28	18	27.5	0.8	SMMC_105+0630D*28**
1.2	32	28	18	27.5	0.8	SMMC_125+0630D*28**

雙面金屬化聚丙烯膜電容器 (盒裝型) SMMC series

Double Sided Metallized Polypropylene Film Capacitor (Boxed)

■ Dimensions (mm)

1000Vdc (600Vac)						
Cap. μF	W	H	T	P	d	Part number
0.00047	10	9	4	7.5	0.6	SMMC_471+1000D*08**
0.00056	10	9	4	7.5	0.6	SMMC_561+1000D*08**
0.00068	10	9	4	7.5	0.6	SMMC_681+1000D*08**
0.00082	10	9	4	7.5	0.6	SMMC_821+1000D*08**
0.001	10	9	4	7.5	0.6	SMMC_102+1000D*08**
0.0012	10	11	5	7.5	0.6	SMMC_122+1000D*08**
0.0015	10	11	5	7.5	0.6	SMMC_152+1000D*08**
0.0018	10	11	5	7.5	0.6	SMMC_182+1000D*08**
0.0022	10	11	5	7.5	0.6	SMMC_222+1000D*08**
0.0027	10	12	6	7.5	0.6	SMMC_272+1000D*08**
0.0033	10	12	6	7.5	0.6	SMMC_332+1000D*08**
0.001	13	9	4	10	0.6	SMMC_102+1000D*10**
0.0015	13	9	4	10	0.6	SMMC_152+1000D*10**
0.0018	13	9	4	10	0.6	SMMC_182+1000D*10**
0.0022	13	9	4	10	0.6	SMMC_222+1000D*10**
0.0027	13	9	4	10	0.6	SMMC_272+1000D*10**
0.0033	13	9	4	10	0.6	SMMC_332+1000D*10**
0.0039	13	11	5	10	0.6	SMMC_392+1000D*10**
0.0047	13	11	5	10	0.6	SMMC_472+1000D*10**
0.0056	13	12	6	10	0.6	SMMC_562+1000D*10**
0.0068	13	12	6	10	0.6	SMMC_682+1000D*10**
0.0082	18	11	5	15	0.8	SMMC_822+1000D*15**
0.01	18	11	5	15	0.8	SMMC_103+1000D*15**
0.012	18	11	5	15	0.8	SMMC_123+1000D*15**
0.015	18	11	5	15	0.8	SMMC_153+1000D*15**
0.018	18	13.5	7.5	15	0.8	SMMC_183+1000D*15**
0.022	18	13.5	7.5	15	0.8	SMMC_223+1000D*15**
0.027	18	14.5	8.5	15	0.8	SMMC_273+1000D*15**
0.033	18	14.5	8.5	15	0.8	SMMC_333+1000D*15**
0.039	18	15.5	9.5	15	0.8	SMMC_393+1000D*15**
0.047	18	19	10.8	15	0.8	SMMC_473+1000D*15**

1000Vdc (600Vac)						
Cap. μF	W	H	T	P	d	Part number
0.027	26.5	15	6	22.5	0.8	SMMC_273+1000D*23**
0.033	26.5	15	6	22.5	0.8	SMMC_333+1000D*23**
0.039	26.5	15	6	22.5	0.8	SMMC_393+1000D*23**
0.047	26.5	16.5	7	22.5	0.8	SMMC_473+1000D*23**
0.056	26.5	16.5	7	22.5	0.8	SMMC_563+1000D*23**
0.068	26.5	17	8.5	22.5	0.8	SMMC_683+1000D*23**
0.082	26.5	19	10	22.5	0.8	SMMC_823+1000D*23**
0.1	26.5	19	10	22.5	0.8	SMMC_104+1000D*23**
0.12	26	21.5	12	22.5	0.8	SMMC_124+1000D*23**
0.15	26	21.5	12	22.5	0.8	SMMC_154+1000D*23**
0.1	31	18	9	27.5	0.8	SMMC_104+1000D*28**
0.12	31.5	19.5	10.8	27.5	0.8	SMMC_124+1000D*28**
0.15	31.5	19.5	10.8	27.5	0.8	SMMC_154+1000D*28**
0.18	31.5	21.6	13	27.5	0.8	SMMC_184+1000D*28**
0.22	31.5	21.6	13	27.5	0.8	SMMC_224+1000D*28**
0.27	31	25	14	27.5	0.8	SMMC_274+1000D*28**
0.33	31	29.5	15	27.5	0.8	SMMC_334+1000D*28**
0.39	32	28	18	27.5	0.8	SMMC_394+1000D*28**
0.47	32	28	18	27.5	0.8	SMMC_474+1000D*28**

(1) The symbol + means capacitance tolerance (J=±5%, K=±10%)

(2) The symbol * means style of lead forming

(3) The symbol ** means the lead length

Double Sided Metallized Polypropylene Film Capacitor (Boxed)

■ Dimensions (mm)

1600Vdc (650Vac)						
Cap. μF	W	H	T	P	d	Part number
0.00068	18	11	5	15	0.8	SMMC_681+1600D*15**
0.00082	18	11	5	15	0.8	SMMC_821+1600D*15**
0.001	18	11	5	15	0.8	SMMC_102+1600D*15**
0.0012	18	11	5	15	0.8	SMMC_122+1600D*15**
0.0015	18	11	5	15	0.8	SMMC_152+1600D*15**
0.0018	18	11	5	15	0.8	SMMC_182+1600D*15**
0.0022	18	11	5	15	0.8	SMMC_222+1600D*15**
0.0027	18	11	5	15	0.8	SMMC_272+1600D*15**
0.0033	18	11	5	15	0.8	SMMC_332+1600D*15**
0.0039	18	11	5	15	0.8	SMMC_392+1600D*15**
0.0047	18	11	5	15	0.8	SMMC_472+1600D*15**
0.0056	18	11	5	15	0.8	SMMC_562+1600D*15**
0.0068	18	11	5	15	0.8	SMMC_682+1600D*15**
0.0082	18	12	6	15	0.8	SMMC_822+1600D*15**
0.01	18	12	6	15	0.8	SMMC_103+1600D*15**
0.012	18	13.5	7.5	15	0.8	SMMC_123+1600D*15**
0.015	18	13.5	7.5	15	0.8	SMMC_153+1600D*15**
0.018	18	14.5	8.5	15	0.8	SMMC_183+1600D*15**
0.022	18	14.5	8.5	15	0.8	SMMC_223+1600D*15**
0.027	18	15.5	9.5	15	0.8	SMMC_273+1600D*15**
0.033	18	19	10.8	15	0.8	SMMC_333+1600D*15**

1600Vdc (650Vac)						
Cap. μF	W	H	T	P	d	Part number
0.015	26.5	15	6	22.5	0.8	SMMC_153+1600D*23**
0.018	26.5	15	6	22.5	0.8	SMMC_183+1600D*23**
0.022	26.5	15	6	22.5	0.8	SMMC_223+1600D*23**
0.027	26.5	15	6	22.5	0.8	SMMC_273+1600D*23**
0.033	26.5	16.5	7	22.5	0.8	SMMC_333+1600D*23**
0.039	26.5	17	8.5	22.5	0.8	SMMC_393+1600D*23**
0.047	26.5	19	10	22.5	0.8	SMMC_473+1600D*23**
0.056	26.5	19	10	22.5	0.8	SMMC_563+1600D*23**
0.068	26	21.5	12	22.5	0.8	SMMC_683+1600D*23**
0.082	26	21.5	12	22.5	0.8	SMMC_823+1600D*23**
0.039	31	18	9	27.5	0.8	SMMC_393+1600D*28**
0.047	31	18	9	27.5	0.8	SMMC_473+1600D*28**
0.056	31	18	9	27.5	0.8	SMMC_563+1600D*28**
0.068	31	18	9	27.5	0.8	SMMC_683+1600D*28**
0.082	31.5	19.5	10.8	27.5	0.8	SMMC_823+1600D*28**
0.1	31.5	19.5	10.8	27.5	0.8	SMMC_104+1600D*28**
0.12	31.5	21.6	13	27.5	0.8	SMMC_124+1600D*28**
0.15	31	25	14	27.5	0.8	SMMC_154+1600D*28**
0.18	31	25	14	27.5	0.8	SMMC_184+1600D*28**
0.22	32	28	18	27.5	0.8	SMMC_224+1600D*28**
0.27	32	28	18	27.5	0.8	SMMC_274+1600D*28**
0.33	32	28	18	27.5	0.8	SMMC_334+1600D*28**

(1) The symbol + means capacitance tolerance (J=±5%, K=±10%)

(2) The symbol * means style of lead forming

(3) The symbol ** means the lead length

雙面金屬化聚丙烯膜電容器 (盒裝型) SMMC series

Double Sided Metallized Polypropylene Film Capacitor (Boxed)

■ Dimensions (mm)

2000Vdc (700Vac)						
Cap. μF	W	H	T	P	d	Part number
0.00022	18	11	5	15	0.8	SMMC_221+2000D*15**
0.00027	18	11	5	15	0.8	SMMC_271+2000D*15**
0.00033	18	11	5	15	0.8	SMMC_331+2000D*15**
0.00039	18	11	5	15	0.8	SMMC_391+2000D*15**
0.00047	18	11	5	15	0.8	SMMC_471+2000D*15**
0.00056	18	11	5	15	0.8	SMMC_561+2000D*15**
0.00068	18	11	5	15	0.8	SMMC_681+2000D*15**
0.00082	18	11	5	15	0.8	SMMC_821+2000D*15**
0.001	18	11	5	15	0.8	SMMC_102+2000D*15**
0.0012	18	11	5	15	0.8	SMMC_122+2000D*15**
0.0015	18	11	5	15	0.8	SMMC_152+2000D*15**
0.0018	18	11	5	15	0.8	SMMC_182+2000D*15**
0.0022	18	11	5	15	0.8	SMMC_222+2000D*15**
0.0027	18	11	5	15	0.8	SMMC_272+2000D*15**
0.0033	18	12	6	15	0.8	SMMC_332+2000D*15**
0.0039	18	12	6	15	0.8	SMMC_392+2000D*15**
0.0047	18	12	6	15	0.8	SMMC_472+2000D*15**
0.0056	18	13.5	7.5	15	0.8	SMMC_562+2000D*15**
0.0068	18	13.5	7.5	15	0.8	SMMC_682+2000D*15**
0.0082	18	14.5	8.5	15	0.8	SMMC_822+2000D*15**
0.01	18	15.5	9.5	15	0.8	SMMC_103+2000D*15**
0.012	18	15.5	9.5	15	0.8	SMMC_123+2000D*15**
0.015	18	19	10.8	15	0.8	SMMC_153+2000D*15**
0.001	26.5	15	6	22.5	0.8	SMMC_102+2000D*23**
0.0012	26.5	15	6	22.5	0.8	SMMC_122+2000D*23**
0.0015	26.5	15	6	22.5	0.8	SMMC_152+2000D*23**
0.0018	26.5	15	6	22.5	0.8	SMMC_182+2000D*23**
0.0022	26.5	15	6	22.5	0.8	SMMC_222+2000D*23**
0.0027	26.5	15	6	22.5	0.8	SMMC_272+2000D*23**
0.0033	26.5	15	6	22.5	0.8	SMMC_332+2000D*23**

2000Vdc (700Vac)						
Cap. μF	W	H	T	P	d	Part number
0.0039	26.5	15	6	22.5	0.8	SMMC_392+2000D*23**
0.0047	26.5	15	6	22.5	0.8	SMMC_472+2000D*23**
0.0056	26.5	15	6	22.5	0.8	SMMC_562+2000D*23**
0.0068	26.5	15	6	22.5	0.8	SMMC_682+2000D*23**
0.0082	26.5	15	6	22.5	0.8	SMMC_822+2000D*23**
0.01	26.5	15	6	22.5	0.8	SMMC_103+2000D*23**
0.012	26.5	15	6	22.5	0.8	SMMC_123+2000D*23**
0.015	26.5	16.5	7	22.5	0.8	SMMC_153+2000D*23**
0.018	26.5	16.5	7	22.5	0.8	SMMC_183+2000D*23**
0.022	26.5	17	8.5	22.5	0.8	SMMC_223+2000D*23**
0.027	26.5	19	10	22.5	0.8	SMMC_273+2000D*23**
0.033	26.5	19	10	22.5	0.8	SMMC_333+2000D*23**
0.039	26	21.5	12	22.5	0.8	SMMC_393+2000D*23**
0.047	26	21.5	12	22.5	0.8	SMMC_473+2000D*23**
0.022	31	18	9	27.5	0.8	SMMC_223+2000D*28**
0.027	31	18	9	27.5	0.8	SMMC_273+2000D*28**
0.033	31	18	9	27.5	0.8	SMMC_333+2000D*28**
0.039	31.5	19.5	10.8	27.5	0.8	SMMC_393+2000D*28**
0.047	31.5	19.5	10.8	27.5	0.8	SMMC_473+2000D*28**
0.056	31.5	21.6	13	27.5	0.8	SMMC_563+2000D*28**
0.068	31.5	21.6	13	27.5	0.8	SMMC_683+2000D*28**
0.082	31	25	14	27.5	0.8	SMMC_823+2000D*28**
0.1	31	29.5	15	27.5	0.8	SMMC_104+2000D*28**
0.12	32	28	18	27.5	0.8	SMMC_124+2000D*28**
0.15	32	28	18	27.5	0.8	SMMC_154+2000D*28**

(1) The symbol + means capacitance tolerance (J=±5%, K=±10%)

(2) The symbol * means style of lead forming

(3) The symbol ** means the lead length

■ 檢驗要求 Inspection requirements

試驗項目 Test items	性能要求 Performance requirements	試驗條件 Conditions of test
電容量 Capacitance	在規定偏差範圍內 Within the tolerance specified	1kHz, 1Vrms Max. at 20℃
損耗因素 Dissipation Factor	≤ 10 x 10^{-4} at 1kHz	1Vrms Max. at 20℃
耐電壓 Voltage proof	無擊穿或飛弧 Shall be no abnormality	引線間 Between terminals U_R x 1.6 (Vdc) Test of 5sec.
絕緣電阻 Insulation resistance	C_R ≤ 0.33μF, IR ≥ 25000MΩ C_R > 0.33μF, IR x C_R ≥ 7500s	U_R<500V at 100Vdc, U_R>500V at 500Vdc, For 60sec / 20℃
引出端強度 Robustness of terminations	無斷線，電容器無可見損壞 No wire breakage and no damage of capacitor	拉力 Tensile U_{a1} (Duration : 10s±1s) 線徑 Wire diameter / 負載 Load d ≤ 0.8mm / 10N (±10%) d ≤ 1.25mm / 20N (±10%) 彎曲 Bending U_b (4*90 ˚,duration : 2 times/bend) Wire diameter / Load d ≤ 0.8mm / 5N (±10%) d ≤ 1.25mm / 10N (±10%)
耐焊接熱 Resistance to soldering heat	(1) 無可見損壞 No visible damage (2) △C/C ≤ 3% of the initial value (3) tan δ ≤ 0.004 of increased value	焊接溫度 Solder temperature: 260±5℃ 焊接時間 Solder time: 5±0.5sec
可焊性 Solderability	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. 最後測量 Final inspection (1) △C/C ≤ 3% of the initial value (2) Increase of tan δ over the value ≤ 0.004 (3) IR ≥ 50% of the applicable limits	焊接溫度 Solder temperature: 235±5℃ 焊接時間 Solder time: 2±0.5sec
溫度快速變化 Rapid change of temperature		下限溫度 Lower category temperature: -40℃ 上限溫度 Upper category temperature: 85℃ 循環次數 Number of cycles: 5 times 持續時間 Duration t1 = 30 min
振動 Vibration		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
碰撞 Bump		加速度 Acceleration: 400m/s^2, 4000 times 脈沖持續時間 Pulse duration: 6ms

■ **檢驗要求 Inspection requirements**

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) No visible damage, Legible marking (2) △C/C ≤ 5% of the initial value (3) Increase of tan δ over the value ≤ 0.005 (4) IR ≥ 50% of the applicable limits (5) Voltage proof : No permanent breakdown	乾熱 Dry Heat 上限溫度 Upper Temperature: 85°C, 16Hrs 循環濕熱 Damp heat, cyclic, Test Db, first cycle
		寒冷 Cold 下限溫度 Lower Temperature: -40°C, 2Hrs 循環濕熱 Damp heat, cyclic, Test Db, remaining cycle
濕熱穩態 Damp Heat Steady State	(1) No visible damage, Legible marking (2) Voltage proof : U_R x 1.0 (3) △C/C ≤ 5% of the Initial value (4) Increase of tan δ over the value ≤ 0.002 (5) IR ≥ 50% of the applicable limits	溫度+40°C, 濕度 93%, 21 天 +40°C and 93% RH, 21 days
耐久性 Endurance	(1) No Visible Damage (2) △C/C ≤ 5% of the initial value (3) Increase of tan δ over the value ≤ 0.004 (4) IR ≥ 50% of the applicable limits	實驗電壓 U_R x 125%, 實驗溫度 Temperature: +85°C 實驗時間 Time: 1000Hrs
充電和放電 Charge and discharge	(1) △C/C ≤ 5% of the initial value (2) Increase of tan δ over the value ≤ 0.005 (3) IR ≥ 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

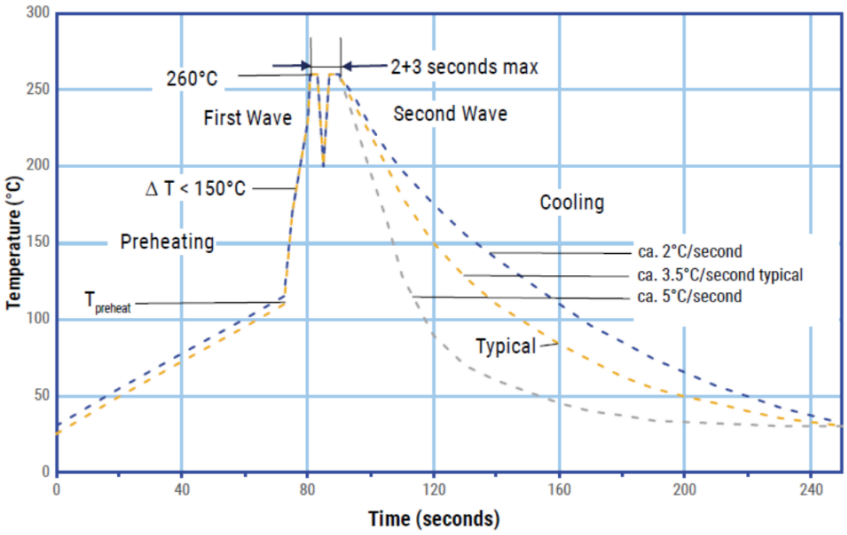
■ 薄膜电容器焊接指南 Soldering Guidelines for Film Capacitors

聚丙烯膜電容器對熱特別敏感 (聚丙烯膜的熔點為 160°C ~ 170°C)，波峰焊可能具有破壞性，尤其是對於小型聚丙烯膜電容器 (引線間距為 5 mm 至 15 mm)，焊接過程中必須非常小心。
一般來說，IEC 出版物 61760–1 第 2 版中的波峰焊接曲線可作為成功焊接的可靠指南。(請參見圖 1)
Polypropylene capacitors are especially sensitive to heat (the melting point of polypropylene is 160 – 170°C).
Wave soldering can be destructive, especially for mechanically small polypropylene capacitors (with lead spacing of 5 – 15 mm), and great care must be taken during soldering. In general, the wave soldering curve from IEC Publication 61760–1 Edition 2 serves as a solid guideline for successful soldering. See Figure 1.

通孔的薄膜电容器不建議採用回流焊。將電容器暴露在超過上述建議限值可能會導致電容器退化或永久性損壞。
Reflow soldering is not recommended for through-hole film capacitors. Exposing capacitors to a soldering profile in excess of the recommended limits may result in degradation or permanent damage to the capacitors.

請勿將聚丙烯膜電容器通過粘合劑固化爐來固化表面安裝部件的樹脂，須在表面安裝零件固化後插入通孔零件。
如果通孔部件必須通過粘合劑固化過程，請咨詢 WINDAY，討論烘箱中的實際溫度分布。
建議最多進行兩次焊接循環。在第二次焊接循環之前，請留出時間使電容器表面溫度恢復到正常溫度。
Do not place the polypropylene capacitor through an adhesive curing oven to cure resin for surface mount components. Insert through-hole parts after curing the surface mount parts. Contact WINDAY to discuss the actual temperature profile in the oven, if through-hole components must pass through the adhesive curing process.
A maximum two soldering cycles is recommended.
Allow time for the capacitor surface temperature to return to normal before the second soldering cycle.

■ 波峰焊建議 Wave Soldering Recommendations (Figure 1)



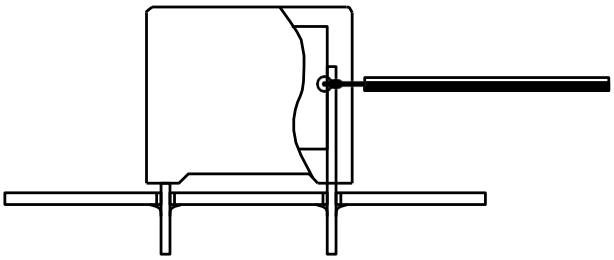
■ 波峰焊建議 Wave Soldering Recommendations (Continue)

1. 該表顯示了焊接過程的最高設置溫度 The tables indicates the maximum set-up temperature of the soldering process

介電薄膜材料 Dielectric Film Material	最高預熱溫度 Max. Preheat Temperature		最高峰值焊接溫度 Max. Peak Soldering Temperature	
	Pitch ≤ 15 mm	Pitch > 15 mm	Pitch ≤ 15 mm	Pitch > 15 mm
聚乙酯膜 Polyester	130°C	130°C	270°C	270°C
聚丙烯膜 Polypropylene	110°C	130°C	260°C	270°C

2. 電容器內部測得的最高溫度 The maximum temperature measured inside the capacitor

介電薄膜材料 Dielectric Film Material	元件內部測得的最高溫度 Maximum Temperature Measured Inside the Element
聚乙酯膜 Polyester	160°C
聚丙烯膜 Polypropylene	110°C



設置溫度，使元件內的最高溫度低於極限：

Set the temperature so that inside the element the maximum temperature is below the limit.

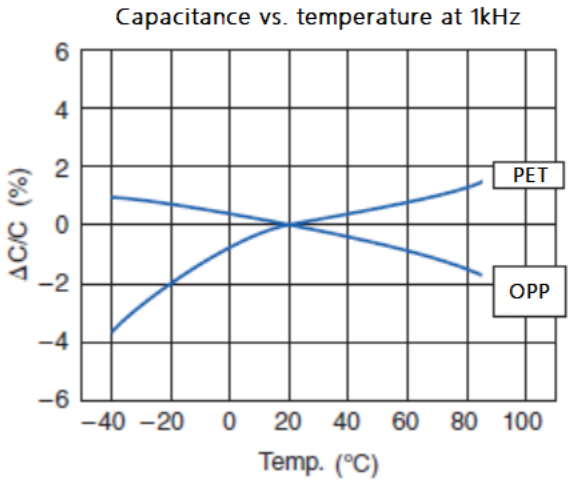
■ 儲存條件和期限 Storage conditions and duration

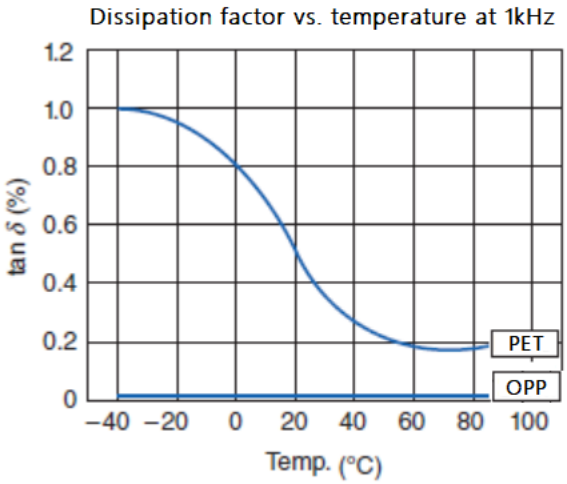
包裝好的電容器應存放在清潔、通風、乾燥的庫房內，不靠近熱源，不受陽光直射，嚴禁與化學試劑、酸和有害氣體一起儲存。T_{stg} = +5°C 至+35°C，最大相對濕度為 75%，無冷凝，儲存一年。

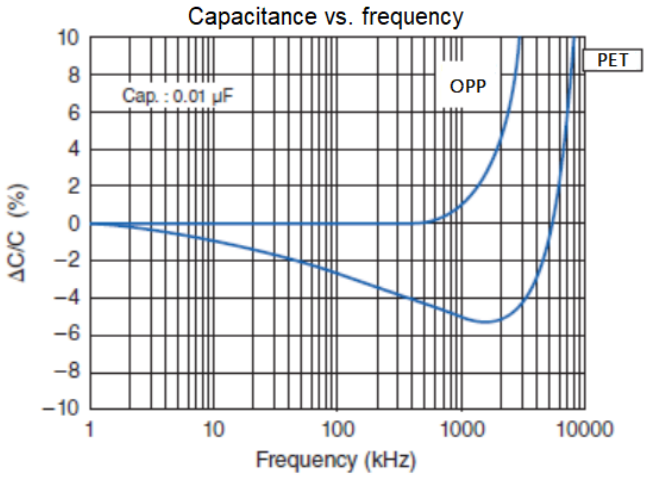
Packaged capacitors should be kept in clean, ventilated, dry coffers, not near the heat source, not subject to direct sunlight, is strictly prohibited and chemical reagents, acid and harmful gas storage together.

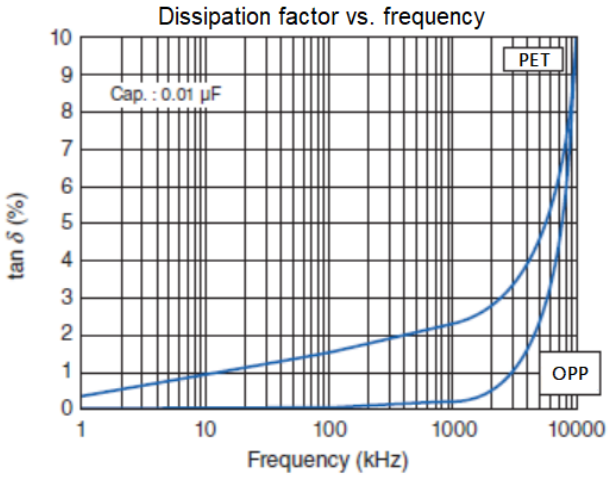
T_{stg} = +5°C to +35°C with relative humidity of maximum 75% without condensation, storage for one year.

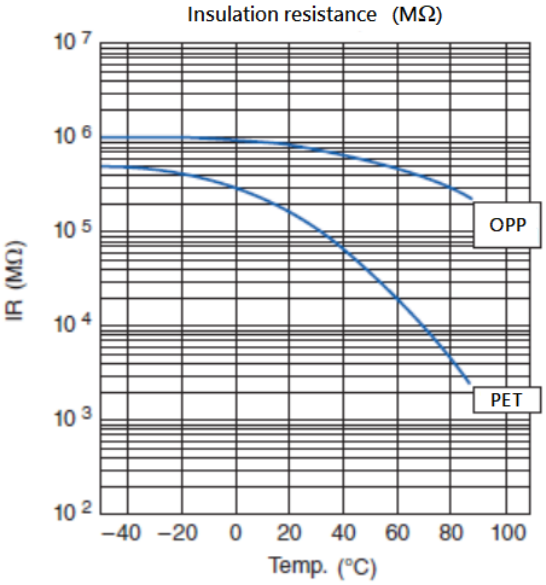
■ 典型圖 Typical graphs









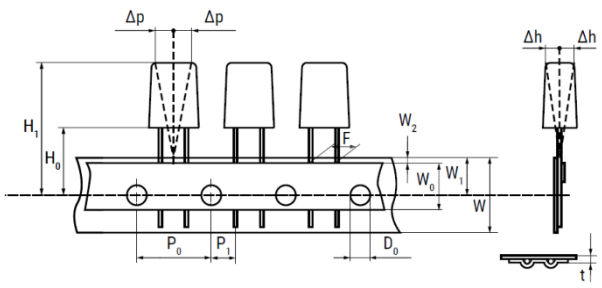
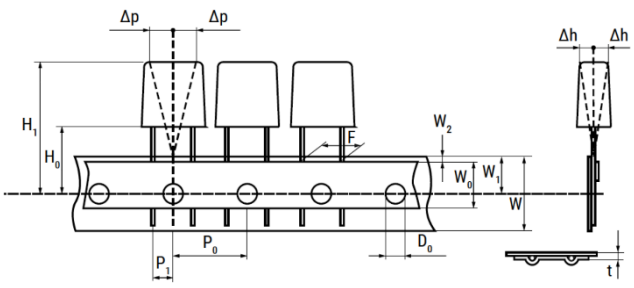
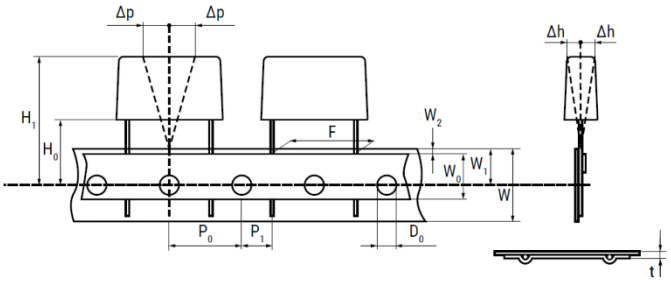
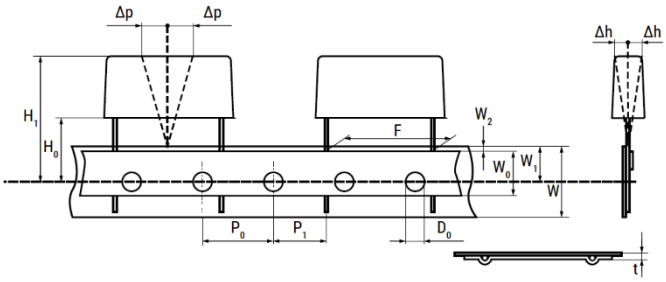


PET :	聚乙酯膜 Polyester film capacitor
OPP :	聚丙烯膜 Polypropylene film capacitor

雙面金屬化聚丙烯膜電容器 (盒裝型) - SMMC series

Double Sided Metallized Polypropylene Film Capacitor (Boxed)

■ **引線編帶 Lead Taping (IEC 60286-2)** Table II

間距 Lead Spacing 5 mm	間距 Lead Spacing 7.5 mm
	
間距 Lead Spacing 10 - 15 mm	**間距 Lead Spacing 22.5 - 27.5 mm**
	

■ **編帶規格 Taping Specification**

尺寸單位 Dimensions in mm								
引線間距 Lead Spacing	+0.8/-0.2	F	5	7.5	10	15	22.5	27.5
載帶寬度 Carrier Tape Width	+1/-0.5	W	18	18	18	18	18	18
膠帶寬度 Hold-down Tape Width	Minimum	W_0	9.5	9.5	9.5	9.5	9.5	9.5
鏈孔位置 Position of Sprocket Hole	±0.5	W_1	9	9	9	9	9	9
帶與帶距 Distance Between Tapes	Minimum	W_2	3	3	3	3	3	3
鏈孔直徑 Sprocket Hole Diameter	±0.2	D_0	4	4	4	4	4	4
進料孔距 Feed Hole Lead Spacing	±0.2(1)	P_0(3)	12.7	12.7	12.7	12.7	12.7	12.7
引線-鏈孔 Distance Lead-Feed Hole	±0.7	P_1	3.85	3.75	7.7	5.2	7.8	5.3
平面偏差 Deviation Tape - Plane	Minimum	Δp	1.3	1.3	1.3	1.3	1.3	1.3
橫向偏差 Lateral Deviation	±2	Δh	2	2	2	2	2	2
總厚度 Total Thickness	±0.2	T	0.7	0.7	0.7	0.7	0.7	0.7
鏈孔-本體 Sprocket Hole/Cap Body	±0.5	H_0(2)	18.5	18.5	18.5	18.5	18.5	18.5

(1) 最大累計進料孔誤差，每20個零件 1mm / Maximum cumulative feed hole error, 1 mm per 20 parts.

(2) 16.5 mm 可根據要求提供 / 16.5 mm available on request.

(3) 15.0 mm 可根據要求提供 / 15.0 mm available on request (F ≥ 10mm).