

金屬化薄膜電容器特性與其他電介質的比較

Characteristics of Metallized Film Capacitors in Comparison with Other Dielectrics

參數 Parameter	電介質 Dielectric				單位 Unit
	PET	PP	PEN	PPS	
介電常數 Dielectric Constant 1 kHz	3.3	2.2	3.0	3.0	at 23 °C
工作溫度 Operating temp.	-55~+125	-55~+110	-55~+125	-55~+140	°C
介電吸收 Dielectric absorption	0.2~0.25	0.05~0.10	1.0	0.05	%
溫度對容量 $\Delta C/C$ versus temperature	± 5	± 2.5	± 5	± 1.5	%
電壓對容量 $\Delta C/C$ versus temperature	negligible	negligible	negligible	negligible	%
容量老化率 ΔC aging rate	negligible	negligible	negligible	negligible	%/h
損耗角正切值 Dissipation factor	--	--	--	--	%
1 kHz	0.8	0.05	0.8	0.2	
10 kHz	1.5	0.08	1.5	0.25	
100 kHz	3.0	0.25	3.0	0.5	
ESR	low	Very low	low	Very low	--
絕緣電阻 Insulation Resistance	--	--	--	--	$M\Omega \times \mu F$
25 °C	10 000	100 000	10 000	10 000	
85 °C	1 000	10 000	1 000	1 000	
介電強度 Dielectric Strength	400	600	300	250	V/ μm
容量範圍 Capacitance range	1000pF ~ 680 μF	1000pF ~ 400 μF	10,000pF ~ 1.0 μF	10,000pF ~ 2.2 μF	--
容量誤差 Capacitance tolerance	$\pm 5/\pm 10/\pm 20$	$\pm 2.5/\pm 5/\pm 10/\pm 20$	$\pm 5/\pm 10/\pm 20$	$\pm 2.5/\pm 5/\pm 10/\pm 20$	%
自愈性 Self-healing	yes	yes	yes	yes	--
典型失效模式 Typical failure mode	Open	open	open	open	--
可靠性 Reliability	high	high	high	high	--
壓電效應 Piezoelectric effect	no	no	no	no	--
極性 Polarity	no	no	no	no	--

(PET) 和 (PEN) 薄膜通常用於一般用途的電容器，在低頻下具有小偏置直流電壓和或是小交流電壓。

(PET) and (PEN) films are generally used in general purpose capacitors for applications typically with small bias DC voltages and/or small AC voltages at low frequencies

(PET) 有其最重要的部份，由於高介電常數和在較緊湊設備中的可用性，它具有同等體積高容量的特性。

(PET) has as its most important property, high capacitance per volume due to its high dielectric constant and availability in thin gauges.

(PEN) 用於需要比 (PET) 更高的耐溫性時。

(PEN) is used when a higher temperature resistance is required compared to (PET).

(PPS) 薄膜適用於需要高溫和低損耗因素的場合。

(PPS) film can be used in applications where high temperature is needed eventually in combination with low dissipation factor.

(PP) 薄膜用於高頻或高電壓應用，由於非常低的損耗因數和高介電強度。這些薄膜用於交流和脈衝電容器，以及用於電源干擾抑制電容器。

(PP) films are used in high frequency or high voltage applications due to their very low dissipation factor and high dielectric strength.

These films are used in AC and pulse capacitors and interference suppression capacitors for mains applications.