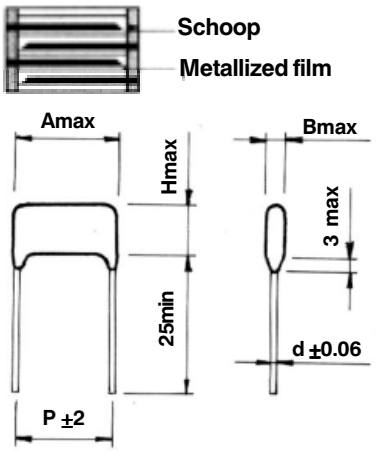
METALLIZED POLYESTER FILM CAPACITORS

SCHEMATIC CROSS SECTION



TYPICAL APPLICATIONS: blocking, coupling, decoupling, by-passing, interference suppression in low voltage applications.

GENERAL TECHNICAL DATA

Dielectric: Polyester film (polyethylene terephthalate)
Plates: aluminium layer deposited by evaporation under vacuum.
Protection: phenol-formaldechide resin
Climatic category: 40/85/21 IEC 68-1
Related documents: IEC 384-2

ELECTRICAL CHARACTERISTICS

Capacitance range:	**C_R = 4.7 nF to 5µF (E12)**
Capacitance tolerance:	**±5; ±10; ±20%**
Rated voltage:	**U_R = 63; 160; 250; 400; 630 VDC**
Category voltage:	**$U_C = 0.80\ U_R/100\ ^0C$**
Test voltage:	**$U_e = 1.4\ U_R/2$ s at 25 °C**
Dissipation factor:	**$tg\delta \leq 100 \times 10^{-4}$ at 1kHz**
Insulation resistance at 20 °C	

		$C_R \leq 0.33$ µF	$C_R > 0.33$ µF
Between terminals	**$U_R < 100$ V**	**$R_I \geq 3.75$ GΩ**	**$R_I \times C_R \geq 1250$ s**
	$U_R > 100$ V	**$R_I \geq 7.5$ GΩ**	**$R_I \times C_R \geq 2500$ s**
Between terminals and capacitor body		**$R_I \geq 30$ GΩ**	

Max pulse rise time (dv/dt)

U_R	Lead spacing „P“ (mm) 10	12.5	17.5	22.5	32.5	
63	3	3	1.5	1	1	dv/dt (V/µs)
160	8	5	5	3	2	dv/dt (V/µs)
250	11	7	4	3	3	dv/dt (V/µs)
400	20	10	5.5	5	5	dv/dt (V/µs)
630	30	30	15	8	7	dv/dt (V/µs)

TEST METHOD AND PERFORMANCE

Damp heat, steady state:

Test conditions
Temperature: + 40 °C ±2 °C
Relative humidity (RH): 93% ± 2%
Test duration: 21 days
Performance
Capacitance change $\triangle C/C$: ≤ ±5%
DF change $\triangle tg\delta$: ≤ 50 x 10^{-4} at 1 kHz
Insulation resistance: ≥ 50% of initial limit

Endurance:

Test conditions
Temperature: + 85 °C ±2 °C
Test duration: 1000 h
Voltage applied: 1.25 x U_R
Performance
Capacitance change $\triangle C/C$: ≤ ±5%
DF change $\triangle tg\delta$: ≤ 50 x 10^{-4} at 10 kHz for C ≤ 1µF
≤ 30 x 10^{-4} at 1 kHz for C > 1µF
Insulation resistance: ≥ 50% of initial limit

Resistance to soldering heat:

Test conditions
Solder bath temperature: + 260 °C ±5 °C
Dipping time (with heat screen): 10 ±1 s
Performance
Capacitance change $\triangle C/C$: ≤ ±2%
DF change $\triangle tg\delta$: ≤ 50 x 10^{-4} at 10 kHz for C ≤ 1µF
≤ 30 x 10^{-4} at 1 kHz for C > 1µF
Insulation resistance: ≥ initial limit

Ordering code

MPT 221 2 104 K C

Type
Class 2
Capacitance (pF) 100 000*
Tolerance 10%
Voltage (V) 63V

*** The last figure indicates the number of zeroes**

- Marking: Type
Rated capacitance in nF or µF
Capacitance tolerance J (5%); K (10%); M (20%)
DC rated voltage

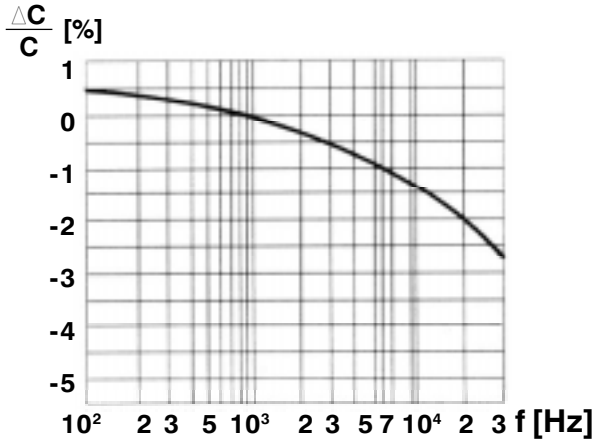
Example: 100 n K 63 100 nF ± 10% 63V
2µ2 M 250 2.2 µF ± 20% 250V

CAPACITANCE VALUE (C_R) RATED VOLTAGE (U_R) AND DIMENSIONS (mm)

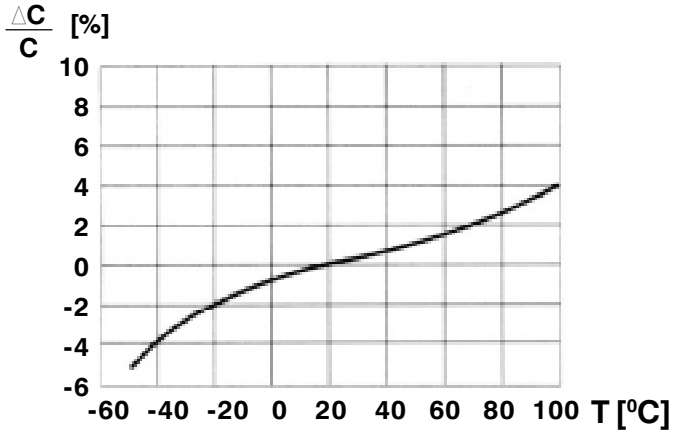
U_R(VDC)	63 and 160				250				400				630			
Letter code	C E				F				G				I			
C_R(mF)	Amax	Bmax	Hmax	P	Amax	Bmax	Hmax	P	Amax	Bmax	Hmax	P	Amax	Bmax	Hmax	P
0.0047					15.0	5.6	10.0	12.5	15.0	5.6	10.0	12.5	15.0	5.6	10.0	12.5
0.0051					15.0	5.8	10.2	12.5	15.0	5.8	10.2	12.5	15.0	5.8	10.2	12.5
0.0068					15.0	5.9	10.3	12.5	15.0	5.9	10.3	12.5	15.0	6.5	10.9	12.5
0,010	15,0	5,0	8,2	12,5	15,0	5,0	8,2	12,5	15,0	5,0	8,2	12,5	15,0	5,0	8,2	12,5
	13,0	5,2	8,6	10,0	13,0	5,2	6,6	10,0	13,0	5,2	8,6	10,0				
0,015	15.0	4.7	8.3	12.5	15.0	4.7	8.3	12.5	15.0	4.7	8.3	12.5	15.0	4.7	8.3	12.5
	13.0	5.2	8.6	10.0	13.0	5.2	8.6	10.0	13.0	5.2	8.6	10.0				
0.022	15.0	4.9	8.5	12.5	15.0	4.9	8.5	12.5	15.0	4.9	8.5	12.5	15.0	4.9	8.5	12.5
	13.0	5.2	8.6	10.0	13.0	5.4	8.8	10.0	13.0	5.4	8.8	10.0				
0.033	15.0	5.8	10.0	12.5	15.0	5.8	10.0	12.5	15.0	5.8	10.0	12.5	15.0	6.0	10.4	12.5
					13.0	5.0	10.6	10.0	13.0	6.0	10.6	10.0				
0.047	15.0	6.0	10.4	12.5	15.0	6.0	10.4	12.5	15.0	6.0	10.4	12.5	20.0	6.0	10.6	17.5
					13.0	6.4	10.6	10.0	13.0	6.4	10.6	10.0				
0.068	15.0	4.8	8.3	12.5	15.0	4.8	8.3	12.5	15.0	7.1	11.5	12.5	20.0	6.6	11.6	17.5
					13.0	5.4	8.4	10.0	13.0	6.4	11.9	10.0				
0.10	15.0	5.4	8.9	12.5	15.0	5.4	8.9	12.5	20.0	6.2	11.4	17.5	20.0	7.3	12.0	17.5
					13.0	5.6	9.2	10.0								
0.12	15.0	5.9	9.5	12.5	15.0	5.9	9.5	12.5	20.0	6.8	12.0	17.5	25.0	6.2	11.5	22.5
					13.0	6.2	9.8	10.0								
0.15	15.0	6.7	10.6	12.5	15.0	6.7	10.6	12.5	20.0	7.6	12.8	17.5	25.0	6.6	12.3	22.5
					13.0	6.9	11.4	10.0								
0.18	15.0	6.3	10.7	12.5	20.0	5.5	9.8	17.5	20.0	8.1	13.2	17.5	25.0	7.0	13.5	22.5
0.22	15.0	6.7	11.0	12.5	20.0	5.9	10.1	17.5	25.0	9.2	13.5	22.5	25.0	8.1	14.2	22.5
0.33	20.0	6.0	11.2	17.5	20.0	6.9	11.5	17.5	25.0	9.8	14.3	22.5				
0.39	20.0	6.5	11.7	17.5	20.0	7.3	12.4	17.5	25.0	10.2	15.2	22.5				
0.47	20.0	6.8	12.0	17.5	25.0	6.5	12.2	22.5	25.0	10.5	16.9	22.5				
0.56	20.0	7.4	12.6	17.5	25.0	7.0	12.8	22.5	25.0	11.8	17.9	22.5				
0.68	20.0	7.9	13.1	17.5	25.0	7.4	13.0	22.5	35.0	8.6	16.2	32.5				
0.82	20.0	8.3	13.5	17.5	25.0	8.1	13.7	22.5	35.0	9.7	17.0	32.5				
1.0	25.0	7.5	12.7	22.5	25.0	8.7	14.5	22.5	35.0	10.0	18.0	32.5				
1.2	25.0	8.6	13.8	22.5	25.0	9.5	15.3	22.5								
1.5	25.0	8.8	15.5	22.5	25.0	10.0	16.3	22.5								
2.2	25.0	10.2	17.1	22.5	35.0	9.0	19.0	32.5								
4.0	35.0	11.2	20.3	32.5	40.0	11.3	20.3	37.5								
5.0	35.0	11.3	21.2	32.5												

*** For P <22.5 mm d=0.6 mm**
*** For P ≥22.5 mm d=0.8 mm**

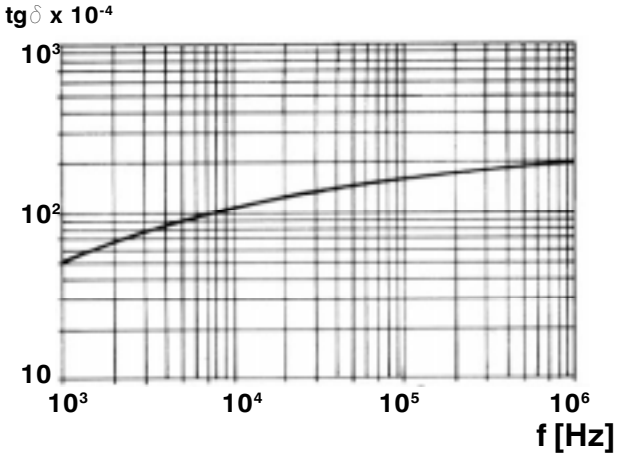
CHARACTERISTICS CURVES



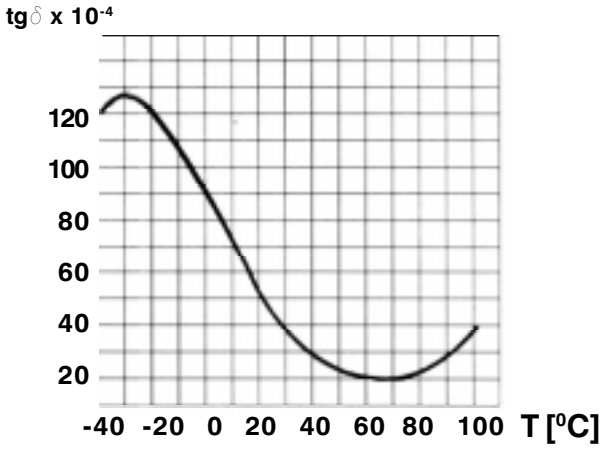
Capacitance vs. frequency



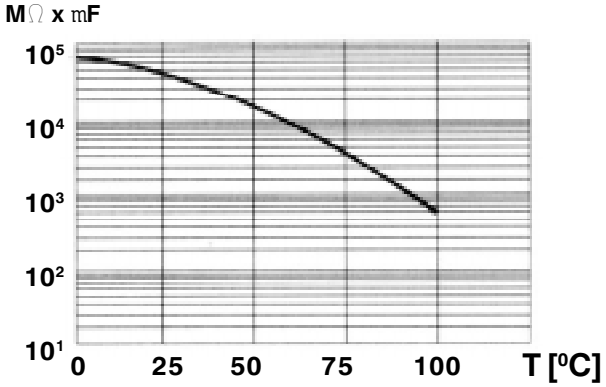
Capacitance vs. temperature at 1 kHz



Dissipation factor vs. frequency



Dissipation factor vs. temperature



Time constant vs. temperature