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## Film Capacitors

### EMI Suppression Capacitors (MKP)

**Series/Type:** B81122  
**Date:** August 2004

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### Typical applications

- Y2 class for interference suppression
- "Line to ground" applications

### Climatic

- Max. operating temperature: 100 °C
- Climatic category (IEC 60068-1):  
40/100/21  $\square e = 10 \text{ mm}$
- 40/085/21  $\square e \geq 15 \text{ mm}$

### Construction

- Dielectric: polypropylene (MKP)
- Internal series connection (for  $\square e \geq 15 \text{ mm}$ )
- Plastic case (UL 94 V-0)
- Epoxy resin sealing (UL 94 V-0)

### Features

- Very small dimensions
- Self-healing properties

### Terminals

- Parallel wire leads, lead-free tinned
- Standard lead lengths: 6 – 1 mm
- Special lead lengths available on request

### Marking

Manufacturer's logo, lot number, date code, rated capacitance (coded), cap. tolerance (code letter), rated AC voltage, series number, sub-class (Y2), dielectric code (MKP), climatic category, passive flammability category, approvals.

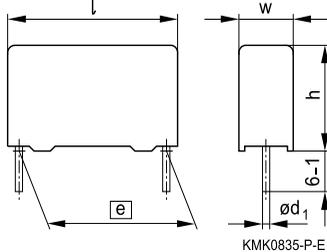
### Delivery mode

Bulk (untaped)  
Taped (Ammo pack or reel)  
For taping details, refer to chapter "Taping and packing".

### Approvals

Marks of conformity	Standards	Certificate
	EN 132400, IEC 60384-14	138600 ( $\square e = 10 \text{ mm}$ ) 138603 ( $\square e \geq 15 \text{ mm}$ )
	UL 1414 CSA C22.2 No.1	E97863 E97863

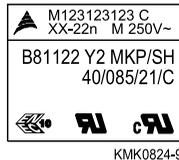
### Dimensional drawing

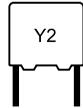


### Dimensions in mm

Lead spacing $\square e$	Lead diameter $d_1$
$\pm 0.4$	
10 mm	0.6
15 ... 27.5 mm	0.8

### Marking example





**Overview of available types**

Lead spacing	10 mm	15 mm	22.5 mm	27.5 mm
$C_R$ ( $\mu\text{F}$ )				
0.0010				
0.0015				
0.0022				
0.0033				
0.0047				
0.0056				
0.0068				
0.010				
0.015				
0.022				
0.027				
0.033				
0.047				
0.056				
0.068				
0.10				
0.15				
0.22				
0.33				



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Y2 / 250 VAC

### Ordering codes and packing units

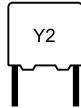
Lead spacing mm	C <sub>R</sub> μF	Max. dimensions w × h × l mm	Ordering code (composition see below)	Ammo pack pcs./unit	Reel pcs./unit	Untaped pcs./unit
10	0.0010	4.0 × 9.0 × 13.0	B81122C1102M***	1000	1700	1000
	0.0015	4.0 × 9.0 × 13.0	B81122C1152M***	1000	1700	1000
	0.0022	5.0 × 11.0 × 13.0	B81122C1222M***	830	1300	1000
	0.0033	5.0 × 11.0 × 13.0	B81122C1332M***	830	1300	1000
	0.0047	6.0 × 12.0 × 13.0	B81122C1472M***	680	1100	1000
	0.0056	6.0 × 12.0 × 13.0	B81122C1562M***	680	1100	1000
	0.0068	6.0 × 12.0 × 13.0	B81122C1682M***	680	1100	1000
15	0.010	6.0 × 11.0 × 18.0	B81122A1103M***	960	1100	1000
	0.015	7.0 × 12.5 × 18.0	B81122A1153M***	830	900	1000
	0.022	8.5 × 14.5 × 18.0	B81122A1223M***	680	700	500
	0.027	8.5 × 14.5 × 18.0	B81122A1273M***	680	700	500
	0.033	9.0 × 17.5 × 18.0	B81122A1333M***	640	700	500
22.5	0.047	7.0 × 16.0 × 26.5	B81122A1473M***	580	600	630
	0.056	8.5 × 16.5 × 26.5	B81122A1563M***	480	500	510
	0.068	10.5 × 16.5 × 26.5	B81122A1683M***	390	400	540
	0.10	10.5 × 20.5 × 26.5	B81122A1104M***	390	400	540
27.5	0.15	11.0 × 21.0 × 31.5	B81122A1154M***	–	350	320
	0.22	13.5 × 23.0 × 31.5	B81122A1224M***	–	250	260
	0.33	18.0 × 27.5 × 31.5	B81122A1334M***	–	–	200

Further E series and intermediate capacitance values on request.

### Composition of ordering code

+ = Capacitance tolerance code:  
M = ±20%

\*\*\* = Packaging code:  
289 = Ammo pack  
189 = Reel  
000 = Untaped (lead length 6 – 1 mm)


**Technical data**

Max. operating temperature $T_{op,max}$	+100 °C		
Dissipation factor $\tan \delta$ (in $10^{-3}$ ) at 20 °C (upper limit values)		$C_R \leq 0.1 \mu F$	$C_R > 0.1 \mu F$
	at 1 kHz	1.0	1.0
	100 kHz	5.0	–
Insulation resistance $R_{ins}$ or time constant $\tau = C_R \cdot R_{ins}$ at 20 °C, rel. humidity $\leq 65\%$ (minimum as-delivered values)	30 000 M $\Omega$		
DC test voltage	2700 V, 2 s ( $\square{e}$ $\geq 15$ mm) 2500 V, 2 s ( $\square{e}$ = 10 mm)		
Passive flammability category to IEC 40 (CO) 752	C		
Maximum continuous AC voltage ( $V_{AC}$ )	405 V (50/60 Hz) ( $\square{e}$ $\geq 15$ mm) 305 V (50/60 Hz) ( $\square{e}$ = 10 mm)		
Rated AC voltage (IEC 60384-14)	250 V (50/60 Hz)		
Maximum continuous DC voltage ( $V_{DC}$ )	1000 V ( $\square{e}$ $\geq 15$ mm) 1200 V ( $\square{e}$ = 10 mm)		
Operating AC voltage $V_{op}$ at high temperature	$T_A \leq 100$ °C	$V_{op} = V_{AC}$ (continuously)	
	$T_A \leq 100$ °C	$V_{op} = 1.25 \cdot V_{AC}$ (1000 h)	
Damp heat test Limit values after damp heat test	21 days / 40 °C / 93% relative humidity Capacitance change $ \Delta C/C  \leq 5\%$ Dissipation factor change $\Delta \tan \delta \leq 0.5 \cdot 10^{-3}$ (at 1 kHz) Insulation resistance $R_{ins} \leq 1.0 \cdot 10^{-3}$ (at 10 kHz) or time constant $\tau = C_R \cdot R_{ins} \geq 50\%$ of minimum as-delivered values		



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**Pulse handling capability**

"dV/dt" represents the maximum permissible voltage change per unit of time for non-sinusoidal voltages, expressed in V/μs.

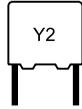
"k<sub>0</sub>" represents the maximum permissible pulse characteristic of the waveform applied to the capacitor, expressed in V<sup>2</sup>/μs.

*Note:*

*The values of dV/dt and k<sub>0</sub> provided below must not be exceeded in order to avoid damaging the capacitor.*

**dV/dt and k<sub>0</sub> values**

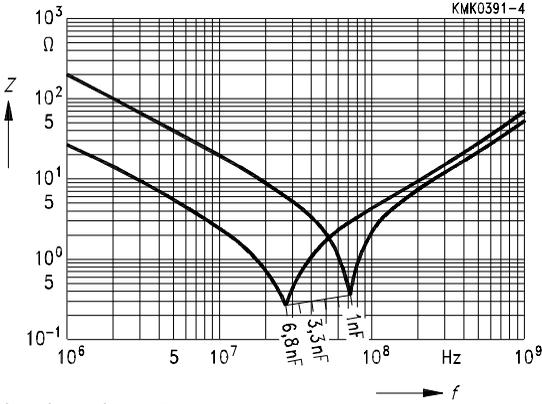
Lead spacing	10 mm	15 mm	22.5 mm	27.5 mm
dV/dt in V/μs	550	400	200	150
k <sub>0</sub> in V <sup>2</sup> /μs	388 000	282 000	141 000	106 000



**Impedance Z versus frequency f**

(typical values)

Lead spacing = 10 mm



Lead spacing  $\geq 15$  mm

