



## 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  $e = 10 \text{ mm}$   
40/085/21  $e \geq 15 \text{ mm}$

### Construction

- Dielectric: polypropylene (MKP)
- Internal series connection (for  $e \geq 15 \text{ mm}$ )
- 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.

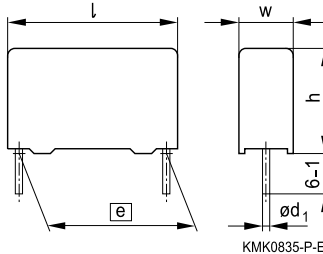
### Delivery mode

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 ( $e = 10 \text{ mm}$ )<br>138603 ( $e \geq 15 \text{ mm}$ ) |
|  | UL 1414<br>CSA C22.2 No.1 | E97863<br>E97863                                                    |

### Dimensional drawing



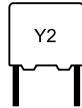
### Dimensions in mm

| Lead spacing<br>$e \pm 0.4$ | Lead diameter $d_1$ |
|-----------------------------|---------------------|
| 10 mm                       | 0.6                 |
| 15 ... 27.5 mm              | 0.8                 |

### Marking example

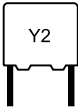


KMK0824-9



# Overview of available types

| Lead spacing        | 10 mm | 15 mm | 22.5 mm | 27.5 mm |
|---------------------|-------|-------|---------|---------|
| C <sub>R</sub> (μF) |       |       |         |         |
| 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                |       |       |         |         |


**B81122**
**Y2 / 250 VAC**

### Ordering codes and packing units

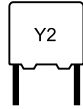
| Lead spacing<br>mm | C <sub>R</sub><br>μF | Max. dimensions<br>w × h × l<br>mm | Ordering code<br>(composition see<br>below) | Ammo<br>pack<br>pcs./unit | Reel<br>pcs./unit | Untaped<br>pcs./unit |
|--------------------|----------------------|------------------------------------|---------------------------------------------|---------------------------|-------------------|----------------------|
| 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

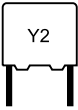
+ = Capacitance tolerance code:  
M = ±20%

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



## Technical data

|                                                                                                                                                                    |                                                                                                |                                          |                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------|
| Max. operating temperature T <sub>op,max</sub>                                                                                                                     | +100 °C                                                                                        |                                          |                         |
| Dissipation factor tan δ (in 10 <sup>-3</sup> )<br>at 20 °C (upper limit values)                                                                                   |                                                                                                | C <sub>R</sub> ≤ 0.1 μF                  | C <sub>R</sub> > 0.1 μF |
|                                                                                                                                                                    | at 1 kHz                                                                                       | 1.0                                      | 1.0                     |
|                                                                                                                                                                    | 100 kHz                                                                                        | 5.0                                      | —                       |
| Insulation resistance R <sub>ins</sub><br>or time constant τ = C <sub>R</sub> · R <sub>ins</sub><br>at 20 °C, rel. humidity ≤ 65%<br>(minimum as-delivered values) | 30 000 MΩ                                                                                      |                                          |                         |
| DC test voltage                                                                                                                                                    | 2700 V, 2 s ( $\varnothing \geq 15$ mm)<br>2500 V, 2 s ( $\varnothing = 10$ mm)                |                                          |                         |
| Passive flammability category<br>to IEC 40 (CO) 752                                                                                                                | C                                                                                              |                                          |                         |
| Maximum continuous AC voltage (V <sub>AC</sub> )                                                                                                                   | 405 V (50/60 Hz) ( $\varnothing \geq 15$ mm)<br>305 V (50/60 Hz) ( $\varnothing = 10$ mm)      |                                          |                         |
| Rated AC voltage (IEC 60384-14)                                                                                                                                    | 250 V (50/60 Hz)                                                                               |                                          |                         |
| Maximum continuous DC voltage (V <sub>DC</sub> )                                                                                                                   | 1000 V ( $\varnothing \geq 15$ mm)<br>1200 V ( $\varnothing = 10$ mm)                          |                                          |                         |
| Operating AC voltage V <sub>op</sub> at high<br>temperature                                                                                                        | T <sub>A</sub> ≤ 100 °C                                                                        | V <sub>op</sub> = V <sub>AC</sub>        | (continuously)          |
|                                                                                                                                                                    | T <sub>A</sub> ≤ 100 °C                                                                        | V <sub>op</sub> = 1.25 · V <sub>AC</sub> | (1000 h)                |
| Damp heat test                                                                                                                                                     | 21 days / 40 °C / 93% relative humidity                                                        |                                          |                         |
| Limit values after damp heat test                                                                                                                                  | Capacitance change  ΔC/C  ≤ 5%                                                                 |                                          |                         |
|                                                                                                                                                                    | Dissipation factor change Δ tan δ ≤ 0.5 · 10 <sup>-3</sup> (at 1 kHz)                          |                                          |                         |
|                                                                                                                                                                    | Insulation resistance R <sub>ins</sub> ≤ 1.0 · 10 <sup>-3</sup> (at 10 kHz)                    |                                          |                         |
|                                                                                                                                                                    | or time constant τ = C <sub>R</sub> · R <sub>ins</sub> ≥ 50% of minimum<br>as-delivered values |                                          |                         |



**B81122**

**Y2 / 250 VAC**

### Pulse handling capability

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

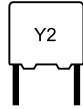
"k<sub>0</sub>" represents the maximum permissible pulse characteristic of the waveform applied to the capacitor, expressed in V<sup>2</sup>/ $\mu$ s.

*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

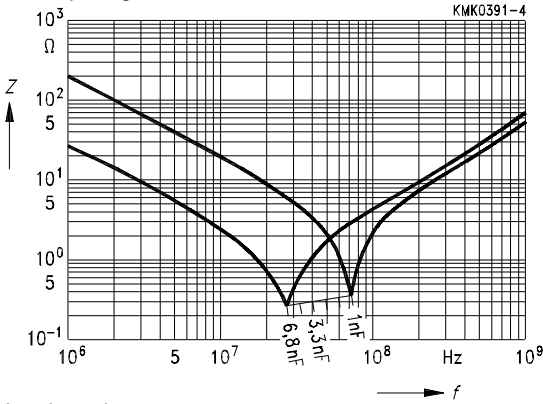
| Lead spacing                               | 10 mm   | 15 mm   | 22.5 mm | 27.5 mm |
|--------------------------------------------|---------|---------|---------|---------|
| dV/dt in V/ $\mu$ s                        | 550     | 400     | 200     | 150     |
| k <sub>0</sub> in V <sup>2</sup> / $\mu$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



# Impedance Z versus frequency f

(typical values)

Lead spacing = 10 mm



Lead spacing  $\geq 15$  mm

