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## Film Capacitors

### EMI Suppression Capacitors (MKT)

**Series/Type:** B81141  
**Date:** August 2004

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## EMI suppression capacitors (MKT)

B81141

### X1 / 440 VAC

#### Typical applications

- X1 class for interference suppression
- "Across the line" applications

#### Climatic

- Max. operating temperature: 85 °C
- Climatic category (IEC 60068-1): 40/085/21

#### Construction

- Dielectric: polyester (MKT)
- Internal series connection
- Plastic case (UL 94 V-0)
- Epoxy resin sealing (UL 94 V-0)

#### Features

- Self-healing properties

#### Terminals

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

#### Marking

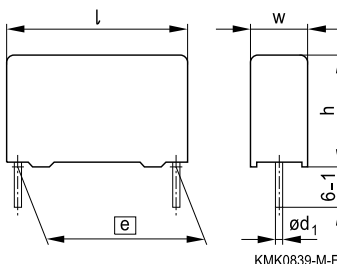
Manufacturer's logo, lot number, date code, rated capacitance (coded), cap. tolerance (code letter), rated AC voltage, series number, sub-class (X1), dielectric code (MKT), climatic category, passive flammability category, approvals.

#### Delivery mode

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

#### Approvals

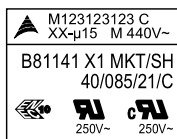
#### Dimensional drawing



Dimensions in mm

| Lead spacing   | Lead diameter |
|----------------|---------------|
| $e \pm 0.4$    | $d_1$         |
| 15 ... 27.5 mm | 0.8           |

#### Marking example

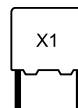


KMK0816-I

| Marks of conformity | Standards               | Certificate |
|---------------------|-------------------------|-------------|
|                     | EN 132400, IEC 60384-14 | 138583      |
|                     | UL 1414                 | E97863      |
|                     | CSA C22.2 No.1          | E97863      |



|  |              |
|--|--------------|
|  | B81141       |
|  | X1 / 440 VAC |



## Overview of available types

| Lead spacing        | 15 mm | 22.5 mm | 27.5 mm |
|---------------------|-------|---------|---------|
| C <sub>R</sub> (μF) |       |         |         |
| 0.010               |       |         |         |
| 0.022               |       |         |         |
| 0.033               |       |         |         |
| 0.047               |       |         |         |
| 0.068               |       |         |         |
| 0.10                |       |         |         |
| 0.15                |       |         |         |
| 0.22                |       |         |         |
| 0.33                |       |         |         |
| 0.47                |       |         |         |

## Ordering codes and packing units

| Lead spacing | C <sub>R</sub> | 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 |
|--------------|----------------|------------------------------------|---------------------------------------------|---------------------------|-------------------|----------------------|
| mm           | μF             |                                    |                                             |                           |                   |                      |
| 15           | 0.010          | 5.0 × 10.5 × 18.0                  | B81141C1103M***                             | 1170                      | 1300              | 1000                 |
|              | 0.022          | 7.0 × 12.5 × 18.0                  | B81141C1223M***                             | 830                       | 900               | 1000                 |
|              | 0.033          | 8.5 × 14.5 × 18.0                  | B81141C1333M***                             | 680                       | 700               | 500                  |
|              | 0.047          | 9.0 × 17.5 × 18.0                  | B81141C1473M***                             | 640                       | 700               | 500                  |
| 22.5         | 0.068          | 8.5 × 16.5 × 26.5                  | B81141C1683+***                             | 480                       | 500               | 510                  |
|              | 0.10           | 10.5 × 16.5 × 26.5                 | B81141C1104+***                             | 390                       | 400               | 540                  |
|              | 0.15           | 11.0 × 20.5 × 26.5                 | B81141C1154+***                             | 370                       | 350               | 510                  |
| 27.5         | 0.22           | 12.5 × 21.5 × 31.5                 | B81141C1224+***                             | —                         | 300               | 280                  |
|              | 0.33           | 14.0 × 24.5 × 31.5                 | B81141C1334+***                             | —                         | —                 | 260                  |
|              | 0.47           | 18.0 × 27.5 × 31.5                 | B81141C1474+***                             | —                         | —                 | 200                  |

Further E series and intermediate capacitance values on request.

### Composition of ordering code

+ = Capacitance tolerance code:

M = ±20%

K = ±10%

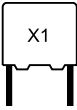
\*\*\* = Packaging code:

289 = Ammo pack

189 = Reel

000 = Untaped (lead length 6 – 1 mm)

(Closer tolerances on request)

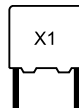


**B81141**

**X1 / 440 VAC**

## Technical data

|                                                                                                                                                        |                                                    |                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|---------------------------------------|
| Max. operating temperature $T_{op,max}$                                                                                                                | +85 °C                                             |                                       |
| Dissipation factor $\tan \delta$ (in $10^{-3}$ )<br>at 20 °C (upper limit values)                                                                      | at 1 kHz                                           | 8.0                                   |
|                                                                                                                                                        | 100 kHz                                            | 15.0                                  |
| Insulation resistance $R_{ins}$<br>or time constant $\tau = C_R \cdot R_{ins}$<br>at 20 °C, rel. humidity $\leq 65\%$<br>(minimum as-delivered values) | $C_R \leq 0.33 \mu F$                              | $C_R > 0.33 \mu F$                    |
|                                                                                                                                                        | 30 000 M $\Omega$                                  | 10 000 s                              |
| DC test voltage                                                                                                                                        | 2500 V, 2 s                                        |                                       |
| Passive flammability category<br>to IEC 40 (CO) 752                                                                                                    | C                                                  |                                       |
| Maximum continuous AC voltage ( $V_{AC}$ )                                                                                                             | 440 V (50/60 Hz)                                   |                                       |
| Rated AC voltage (IEC 60384-14)                                                                                                                        | 440 V (50/60 Hz)                                   |                                       |
| Maximum continuous DC voltage ( $V_{DC}$ )                                                                                                             | 1000 V                                             |                                       |
| Operating AC voltage $V_{op}$ at high<br>temperature                                                                                                   | $T_A \leq 85 \text{ °C}$                           | $V_{op} = V_{AC}$ (continuously)      |
|                                                                                                                                                        | $T_A \leq 85 \text{ °C}$                           | $V_{op} = 1.25 \cdot V_{AC}$ (1000 h) |
| Damp heat test                                                                                                                                         | 21 days / 40 °C / 93% relative humidity            |                                       |
| Limit values after damp heat test                                                                                                                      | Capacitance change $ \Delta C/C $                  | $\leq 5\%$                            |
|                                                                                                                                                        | Dissipation factor change ( $\Delta \tan \delta$ ) | $\leq 5 \cdot 10^{-3}$ (at 1 kHz)     |
|                                                                                                                                                        | Insulation resistance $R_{ins}$                    | $\geq 50\%$ of minimum                |
|                                                                                                                                                        | or time constant $\tau = C_R \cdot R_{ins}$        | as-delivered values                   |



### 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                               | 15 mm   | 22.5 mm | 27.5 mm |
|--------------------------------------------|---------|---------|---------|
| dV/dt in V/ $\mu$ s                        | 400     | 200     | 150     |
| k <sub>0</sub> in V <sup>2</sup> / $\mu$ s | 500 000 | 250 000 | 187 500 |

### Impedance Z versus frequency f

(typical values)

