



## Film Capacitors

### Metallized Polyester Film Capacitors (MKT)

**Series/Type:** B32237  
**Date:** August 2004

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### Typical applications

- Test and measurement equipment
- Laser, ultrasonic, X-ray, microwave

### Climatic

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

### Construction

- Dielectric: polyethylene terephthalate (polyester, PET)
- Cylindrical winding
- In tubular plastic case
- Face ends sealed with epoxy resin

### Terminals

- Central axial wire leads, lead-free tinned

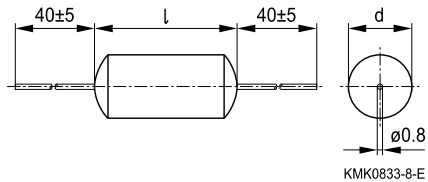
### Marking

Manufacturer's logo,  
style (MKT), series number,  
rated capacitance (coded),  
capacitance tolerance (code letter),  
rated DC voltage, date of manufacture (coded)

### Delivery mode

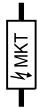
Bulk (untaped)

### Dimensional drawing



Dimensions in mm

When bending leads take care to leave a clearance of 1 mm to the capacitor body.



Overview of available types

| Type            | B32237 |      |      |      |      |      |       |       |
|-----------------|--------|------|------|------|------|------|-------|-------|
| $V_R$ (VDC)     | 1000   | 1600 | 2500 | 4000 | 6300 | 8000 | 10000 | 12500 |
| $V_{rms}$ (VAC) | 200    | 200  | 200  | 450  | 450  | 450  | 450   | 450   |
| $C_R$ (nF)      |        |      |      |      |      |      |       |       |
| 0.68            |        |      |      |      |      |      |       |       |
| 1.0             |        |      |      |      |      |      |       |       |
| 2.5             |        |      |      |      |      |      |       |       |
| 5.0             |        |      |      |      |      |      |       |       |
| 10              |        |      |      |      |      |      |       |       |
| 25              |        |      |      |      |      |      |       |       |


**B32237**
**High voltage (wound)**

### Ordering codes and packing units

| $V_R$<br>VDC | $V_{rms}$<br>$f \leq 60$ Hz<br>VAC | $C_R$<br>nF | Max. dimensions<br>$d \times l$<br>mm | Ordering code<br>(composition see<br>below) | Untaped<br>pcs./unit |
|--------------|------------------------------------|-------------|---------------------------------------|---------------------------------------------|----------------------|
| 1000         | 200                                | 25          | $11.5 \times 24.0$                    | B32237A0253M000                             | 50                   |
| 1600         | 200                                | 5.0         | $7.5 \times 24.0$                     | B32237A1502M000                             | 100                  |
|              |                                    | 10          | $10.5 \times 24.0$                    | B32237A1103M000                             | 100                  |
| 2500         | 200                                | 2.5         | $8.5 \times 33.0$                     | B32237J2252M000                             | 100                  |
|              |                                    | 5.0         | $9.5 \times 33.0$                     | B32237J2502M000                             | 100                  |
|              |                                    | 10          | $10.5 \times 33.0$                    | B32237B2103M000                             | 100                  |
|              |                                    | 25          | $16.5 \times 33.0$                    | B32237J2253M000                             | 50                   |
| 4000         | 450                                | 1.0         | $7.5 \times 33.0$                     | B32237A4102M000                             | 100                  |
|              |                                    | 2.5         | $8.5 \times 33.0$                     | B32237J4252M000                             | 100                  |
|              |                                    | 5.0         | $10.5 \times 33.0$                    | B32237J4502M000                             | 100                  |
|              |                                    | 10          | $12.5 \times 33.0$                    | B32237B4103M000                             | 50                   |
| 6300         | 450                                | 1.0         | $8.5 \times 33.0$                     | B32237B6102M000                             | 100                  |
|              |                                    | 2.5         | $10.5 \times 33.0$                    | B32237B6252M000                             | 100                  |
|              |                                    | 5.0         | $10.5 \times 45.0$                    | B32237B6502M000                             | 100                  |
|              |                                    | 10          | $13.5 \times 45.0$                    | B32237B6103M000                             | 50                   |
| 8000         | 450                                | 1.0         | $8.5 \times 45.0$                     | B32237A8102M000                             | 100                  |
|              |                                    | 2.5         | $10.5 \times 45.0$                    | B32237B8252M000                             | 100                  |
|              |                                    | 5.0         | $12.5 \times 45.0$                    | B32237A8502M000                             | 50                   |
|              |                                    | 10          | $16.5 \times 45.0$                    | B32237J8103M000                             | 50                   |
| 10000        | 450                                | 1.0         | $8.5 \times 56.0$                     | B32237A9102M000                             | 100                  |
|              |                                    | 2.5         | $11.5 \times 56.0$                    | B32237A9252M000                             | 50                   |
|              |                                    | 5.0         | $13.5 \times 56.0$                    | B32237A9502M000                             | 50                   |
| 12500        | 450                                | 0.68        | $9.5 \times 56.0$                     | B32237A3681M000                             | 100                  |
|              |                                    | 1.0         | $9.5 \times 56.0$                     | B32237A3102M000                             | 100                  |
|              |                                    | 2.5         | $12.5 \times 56.0$                    | B32237A3252M000                             | 50                   |

Further E series and intermediate capacitance values on request.

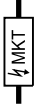
### Composition of ordering code

Capacitance tolerance code: M =  $\pm 20\%$



## Technical data

|                                                                                                         |                                                                                                                                                                                                                                                                                                |                                       |                                                           |
|---------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------|
| Operating temperature range                                                                             | Max. operating temperature $T_{op,max}$ +85 °C<br>Upper category temperature $T_{max}$ +85 °C<br>Lower category temperature $T_{min}$ -40 °C<br>Rated temperature $T_R$ +85 °C                                                                                                                 |                                       |                                                           |
| Dissipation factor $\tan \delta$ (in $10^{-3}$ )<br>at 20 °C<br>(upper limit values)                    | at 1 kHz: $8 \cdot 10^{-3}$<br>at 10 kHz: $15 \cdot 10^{-3}$                                                                                                                                                                                                                                   |                                       |                                                           |
| Insulation resistance $R_{ins}$<br>at 20 °C, rel. humidity $\leq 65\%$<br>(minimum as-delivered values) | 30 000 M $\Omega$                                                                                                                                                                                                                                                                              |                                       |                                                           |
| DC test voltage                                                                                         | $1.2 \cdot V_R$ , 2 s                                                                                                                                                                                                                                                                          |                                       |                                                           |
| Category voltage $V_C$<br>(continuous operation with $V_{DC}$<br>or $V_{AC}$ at $f \leq 60$ Hz)         | $T_A$ (°C)                                                                                                                                                                                                                                                                                     | DC voltage derating                   | AC voltage derating                                       |
|                                                                                                         | $T_A \leq 70$<br>$70 < T_A \leq 85$                                                                                                                                                                                                                                                            | $V_C = V_R$<br>$V_C = V_R \cdot 0.55$ | $V_{C,rms} = V_{rms}$<br>$V_{C,rms} = V_{rms} \cdot 0.70$ |
| Damp heat test<br>Limit values after damp<br>heat test                                                  | 21 days/40 °C/93% relative humidity<br>Capacitance change $ \Delta C/C $ $\leq 5\%$<br>Dissipation factor change $\Delta \tan \delta$ $\leq 3 \cdot 10^{-3}$ (at 1 kHz)<br>$\leq 5 \cdot 10^{-3}$ (at 10 kHz)<br>Insulation resistance $R_{ins}$ $\geq 20\%$ of minimum<br>as-delivered values |                                       |                                                           |
| Reliability:<br>Failure rate $\lambda$<br>Service life $t_{SL}$                                         | 10 fit ( $\leq 10 \cdot 10^{-9}/h$ ) at $0.5 \cdot V_R$ , 40 °C<br>200 000 h at $1.0 \cdot V_R$ , 40 °C<br>For conversion to other operating conditions and temperatures,<br>refer to chapter "Quality assurance", page .                                                                      |                                       |                                                           |
| Failure criteria:<br>Total failure<br>Failure due to variation<br>of parameters                         | Short circuit or open circuit<br>Capacitance change $ \Delta C/C $ $> 10\%$<br>Dissipation factor $\tan \delta$ $> 2 \cdot$ upper limit value<br>Insulation resistance $R_{ins}$ $< 150$ M $\Omega$                                                                                            |                                       |                                                           |



B32237

High voltage (wound)

### 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:

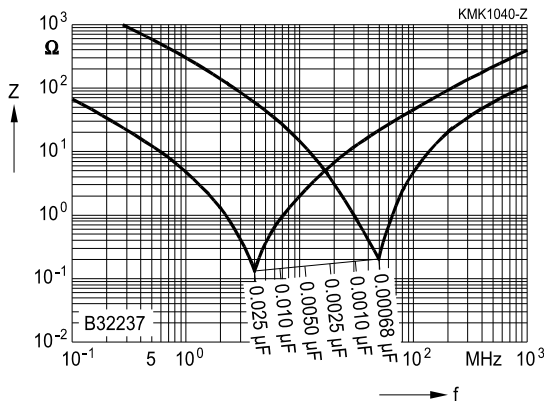
The values of dV/dt and k<sub>0</sub> provided below must not be exceeded in order to avoid damaging the capacitor.

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

| V <sub>R</sub> (VDC) | V <sub>rms</sub> (VAC) | dV/dt in V/ $\mu$ s | k <sub>0</sub> in V <sup>2</sup> / $\mu$ s |
|----------------------|------------------------|---------------------|--------------------------------------------|
| 1 000                | 200                    | 15                  | 30 000                                     |
| 1 600                | 200                    | 25                  | 80 000                                     |
| 2 500                | 200                    | 25                  | 125 000                                    |
| 4 000                | 450                    | 40                  | 320 000                                    |
| 6 300                | 450                    | 50                  | 630 000                                    |
| 8 000                | 450                    | 50                  | 800 000                                    |
| 10 000               | 450                    | 370                 | 7 500 000                                  |
| 12 500               | 450                    | 1000                | 25 000 000                                 |

### Impedance Z versus frequency f

(typical values)



### Permissible AC voltage V<sub>rms</sub> versus frequency f

Values can be obtained on request. In specific cases please provide a scaled voltage/ time graph and state operating conditions.