



## Film Capacitors

### Metallized Polyester Film Capacitors (MKT)

**Series/Type:** B32231  
**Date:** August 2004

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**General purpose (wound)**
**Typical applications**

- Smoothing
- Filtering

**Climatic**

- Max. operating temperature: 100 °C
- Climatic category (IEC 60068-1): 40/100/21

**Construction**

- Dielectric: polyethylene terephthalate (polyester, PET)
- Flat winding
- Insulating sleeve
- Face ends sealed with epoxy resin

**Terminals**

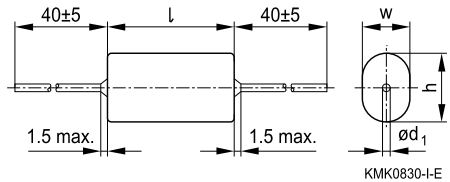
- Central axial wire leads, lead-free tinned

**Marking**

Manufacturer, 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

Width $w_{\max}$	$\leq 6.0$	$> 6.0 \dots 13.0$
Lead diameter $d_1$	0.6	0.8

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



**Overview of available types**

Type	B32231			
$V_R$ (VDC)	100	250	400	630
$V_{rms}$ (VAC)	63	160	200	200
$C_R$ ( $\mu F$ )				
0.10				
0.15				
0.22				
0.33				
0.47				
0.68				
1.0				
1.5				
2.2				
3.3				
4.7				
6.8				
10				


**B32231**
**General purpose (wound)**
**Ordering codes and packing units**

$V_R$	$V_{rms}$ $f \leq 60$ Hz	$C_R$	Max. dimensions $w \times h \times l$ mm	Ordering code (composition see below)	Untaped pcs./unit
VDC	VAC	$\mu F$			
100	63	0.15	5.5 × 8.5 × 14.0	B32231D1154+000	1500
		0.22	5.5 × 8.5 × 14.0	B32231D1224+000	1500
		0.33	5.5 × 8.5 × 14.0	B32231D1334+000	1500
		0.47	5.5 × 9.0 × 19.0	B32231D1474+000	1500
		0.68	5.5 × 9.0 × 19.0	B32231D1684+000	1500
		1.0	7.0 × 12.0 × 19.0	B32231D1105+000	1000
		1.5	8.0 × 13.0 × 19.0	B32231D1155+000	1000
		2.2	8.0 × 13.0 × 27.0	B32231D1225+000	1000
		3.3	8.0 × 15.0 × 27.0	B32231D1335+000	1000
		4.7	10.0 × 18.0 × 32.0	B32231D1475+000	500
		6.8	10.0 × 20.0 × 32.0	B32231D1685+000	500
		10	13.0 × 23.0 × 32.0	B32231D1106+000	250
250	160	0.10	5.5 × 8.5 × 14.0	B32231D3104+000	1500
		0.15	5.5 × 8.5 × 14.0	B32231D3154+000	1500
		0.22	5.5 × 9.0 × 19.0	B32231D3224+000	1500
		0.33	5.5 × 9.0 × 19.0	B32231D3334+000	1500
		0.47	6.0 × 12.0 × 19.0	B32231D3474+000	1000
		0.68	7.5 × 12.0 × 19.0	B32231D3684+000	1000
		1.0	7.5 × 12.0 × 27.0	B32231D3105+000	1000
		1.5	8.5 × 14.0 × 27.0	B32231D3155+000	1000
		2.2	8.5 × 16.0 × 27.0	B32231D3225+000	500
		3.3	10.0 × 18.0 × 32.0	B32231D3335+000	500
		4.7	13.0 × 20.0 × 32.0	B32231D3475+000	250

Further E series and intermediate capacitance values on request.

**Composition of ordering code**

+ = Capacitance tolerance code:

M = ±20%

K = ±10%

J = ±5% (on request)

**Ordering codes and packing units**

$V_R$	$V_{rms}$ $f \leq 60$ Hz	$C_R$	Max. dimensions $w \times h \times l$	Ordering code (composition see below)	Untaped
VDC	VAC	$\mu F$	mm		pcs./unit
400	200	0.10	$5.5 \times 8.5 \times 19.0$	B32231D6104+000	1500
		0.15	$5.5 \times 9.0 \times 19.0$	B32231D6154+000	1500
		0.22	$7.0 \times 12.0 \times 19.0$	B32231D6224+000	1000
		0.33	$7.0 \times 12.0 \times 19.0$	B32231D6334+000	1000
		0.47	$7.0 \times 12.0 \times 27.0$	B32231D6474+000	1000
		0.68	$8.0 \times 14.0 \times 27.0$	B32231D6684+000	1000
		1.0	$9.0 \times 16.0 \times 27.0$	B32231D6105+000	500
		1.5	$10.0 \times 18.0 \times 32.0$	B32231D6155+000	250
		2.2	$13.0 \times 22.0 \times 32.0$	B32231D6225+000	250
630	200	0.10	$6.0 \times 11.0 \times 19.0$	B32231D8104+000	1000
		0.15	$7.5 \times 12.0 \times 19.0$	B32231D8154+000	1000
		0.22	$8.0 \times 13.0 \times 19.0$	B32231D8224+000	1000
		0.33	$8.0 \times 13.0 \times 27.0$	B32231D8334+000	1000
		0.47	$8.0 \times 14.0 \times 27.0$	B32231D8474+000	500
		0.68	$10.0 \times 16.0 \times 32.0$	B32231D8684+000	500
		1.0	$13.0 \times 18.0 \times 32.0$	B32231D8105+000	250

Further E series and intermediate capacitance values on request.

**Composition of ordering code**

+ = Capacitance tolerance code:

M =  $\pm 20\%$

K =  $\pm 10\%$

J =  $\pm 5\%$  (on request)


**B32231**
**General purpose (wound)**
**Technical data**

Operating temperature range	Max. operating temperature $T_{op,max}$		+100 °C
	Upper category temperature $T_{max}$		+100 °C
	Lower category temperature $T_{min}$		-40 °C
	Rated temperature $T_R$		+85 °C
Dissipation factor $\tan \delta$ (in $10^{-3}$ ) at 20 °C (upper limit values)	at	$0.10 \mu F < C_R \leq 1 \mu F$	$C_R > 1 \mu F$
	1 kHz	10	10
	10 kHz	25	-
Insulation resistance $R_{ins}$ or time constant $\tau = C_R \cdot R_{ins}$ at 20 °C, rel. humidity $\leq 65\%$ (minimum as-delivered values)	$V_R$	$C_R \leq 0.33 \mu F$	$C_R > 0.33 \mu F$
	100 VDC	3750 M $\Omega$	1250 s
	$\geq 250$ VDC	7500 M $\Omega$	2500 s
DC test voltage	$1.4 \cdot V_R, 2$ s		
Category voltage $V_C$ (continuous operation with $V_{DC}$ or $V_{AC}$ at $f \leq 60$ Hz)	$T_A$ (°C)	DC voltage derating	AC voltage derating
	$T_A \leq 85$	$V_C = V_R$	$V_{C,rms} = V_{rms}$
	$85 < T_A \leq 100$	$V_C = V_R \cdot (165 - T_A)/80$	$V_{C,rms} = V_{rms} \cdot (165 - T_A)/80$
Operating voltage $V_{op}$ for short operating periods ( $V_{DC}$ or $V_{AC}$ at $f \leq 60$ Hz)	$T_A$ (°C)	DC voltage (max. hours)	AC voltage (max. hours)
	$T_A \leq 100$	$V_{op} = 1.25 \cdot V_C$ (2000 h)	$V_{op} = 1.0 \cdot V_{C,rms}$ (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 $\Delta \tan \delta$	$\leq 5 \cdot 10^{-3}$ (at 1 kHz) $\leq 7 \cdot 10^{-3}$ (at 10 kHz)	
	Insulation resistance $R_{ins}$ or time constant $\tau = C_R \cdot R_{ins}$	$\geq 20\%$ of minimum 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/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 values**

Length of capacitor		14 mm	19 mm	27 mm	32 mm
V <sub>R</sub> VDC	V <sub>rms</sub> VAC	dV/dt in V/μs			
100	63	6	3	2	1.5
250	160	10	5	3	2.5
400	200	–	7	4	3
630	200	–	10	7	5

**k<sub>0</sub> values**

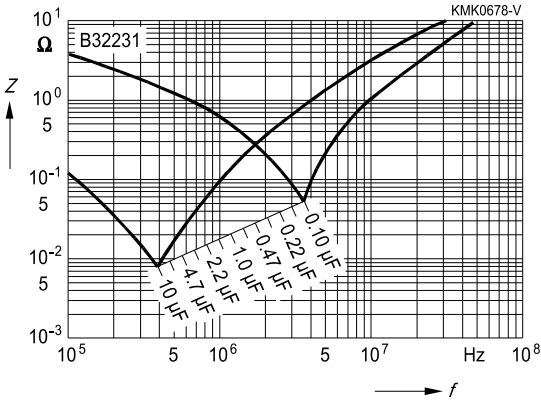
Length of capacitor		14 mm	19 mm	27 mm	32 mm
V <sub>R</sub> VDC	V <sub>rms</sub> VAC	k <sub>0</sub> in V <sup>2</sup> /μs			
100	63	1 200	600	400	300
250	160	5 000	2 500	1 500	1 250
400	200	–	5 600	3 200	2 400
630	200	–	12 500	8 800	6 300



**B32231**

**General purpose (wound)**

**Impedance  $Z$  versus frequency  $f$**   
(typical values)



**Permissible AC voltage  $V_{\text{rms}}$  versus frequency  $f$**

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