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Film Capacitors

Metallized Polyester Film Capacitors (MKT)

Series/Type: B32227
Date: August 2004

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High voltage (wound)
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)
- Flat winding
- Insulating sleeve
- Face ends sealed with epoxy resin

Terminals

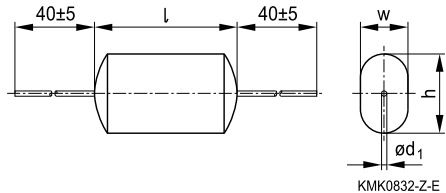
- Central axial wire leads, lead-free tinned

Marking

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

Delivery mode

Bulk (untaped)

Dimensional drawing


Dimensions in mm

Width w_{\max}	≤6.0	8 ... 10	≥10.5
Lead diameter d_1	0.6	0.8	1.0

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



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High voltage (wound)



Overview of available types

Type	B32227				
Page	4				
V_R (VDC)	1000	1600	2500	4000	6300
V_{rms} (VAC)	220	220	220	220	220
C_R (μF)					
0.010					
0.025					
0.05					
0.10					
0.25					



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High voltage (wound)

Ordering codes and packing units

V_R VDC	V_{rms} $f \leq 60$ Hz VAC	C_R μF	Max. dimensions $w \times h \times l$ mm	Ordering code (composition see below)	Untaped pcs./unit
1000	220	0.050	5.5 × 12.0 × 33.0	B32227J0503M000	100
		0.10	6.0 × 18.5 × 33.0	B32227J0104M000	50
		0.25	9.5 × 25.0 × 33.0	B32227J0254M000	20
1600	220	0.025	5.0 × 11.5 × 33.0	B32227J1253M000	100
		0.050	6.0 × 16.5 × 33.0	B32227J1503M000	100
		0.10	8.0 × 20.0 × 33.0	B32227J1104M000	50
		0.25	15.5 × 31.0 × 33.0	B32227J1254M000	20
2500	220	0.025	8.5 × 18.0 × 33.0	B32227J2253M000	50
		0.050	12.5 × 25.5 × 33.0	B32227J2503M000	50
		0.10	10.5 × 26.5 × 45.0	B32227J2104M000	20
		0.25	15.5 × 40.5 × 45.0	B32227J2254M000	20
4000	220	0.010	9.5 × 22.0 × 33.0	B32227J4103M000	20
		0.025	10.0 × 22.5 × 45.0	B32227J4253M000	20
		0.050	12.5 × 31.0 × 45.0	B32227J4503M000	20
		0.10	16.5 × 42.0 × 45.0	B32227J4104M000	20
6300	220	0.010	9.0 × 21.5 × 45.0	B32227J6103M000	20
		0.025	13.5 × 32.5 × 45.0	B32227J6253M000	20
		0.050	17.0 × 42.0 × 45.0	B32227J6503M000	20

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
	Upper category temperature T_{max}		+85 °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 1 kHz:		8
	at 10 kHz:		15
Insulation resistance R_{ins} at 20 °C, rel. humidity $\leq 65\%$ (minimum as-delivered values)	30 000 M Ω		
DC test voltage	$1.2 \cdot V_R$, 2 s		
Category voltage V_C (continuous operation with V_{DC} or V_{AC} at $f \leq 60$ Hz)	$T_A \leq 70$	DC voltage derating	AC voltage derating
	$70 < T_A \leq 85$	$V_C = V_R$ $V_C = V_R \cdot 0.55$	$V_{C,rms} = V_{rms}$ $V_{C,rms} = V_{rms} \cdot 0.70$
Damp heat test	21 days/40 °C/93% relative humidity		
Limit values after damp heat test	Capacitance change $ \Delta C/C $	$\leq 3\%$	(for $C_R > 0.1 \mu F$)
		$\leq 5\%$	(for $C_R \leq 0.1 \mu F$)
	Dissipation factor change $\Delta \tan \delta$	$\leq 3 \cdot 10^{-3}$	(at 1 kHz)
		$\leq 5 \cdot 10^{-3}$	(at 10 kHz)
	Insulation resistance R_{ins}	$\geq 20\%$ of minimum as-delivered values	
Reliability:			
Failure rate λ	10 fit ($\leq 10 \cdot 10^{-9}$ /h) at $0.5 \cdot V_R$, 40 °C		
Service life t_{SL}	200 000 h at $1.0 \cdot V_R$, 40 °C		
	For conversion to other operating conditions and temperatures, refer to chapter "Quality assurance", page .		
Failure criteria:			
Total failure	Short circuit or open circuit		
Failure due to variation of parameters	Capacitance change $ \Delta C/C $	$> 10\%$	
	Dissipation factor $\tan \delta$	$> 2 \cdot$ upper limit value	
	Insulation resistance R_{ins}	< 150 M Ω	



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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/μs.

"k₀" represents the maximum permissible pulse characteristic of the waveform applied to the capacitor, expressed in V²/μs.

Note:

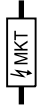
The values of dV/dt and k₀ provided below must not be exceeded in order to avoid damaging the capacitor.

dV/dt values

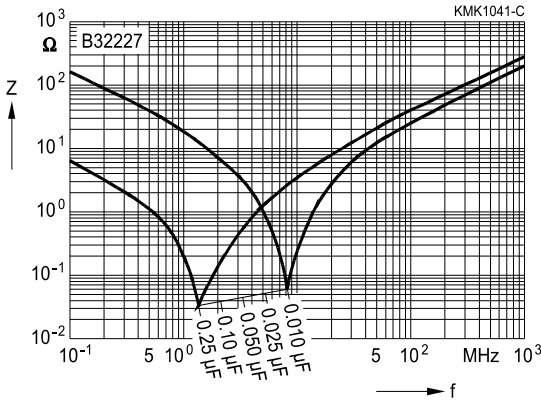
Length of capacitor		33 mm	45 mm
V _R VDC	V _{rms} VAC	dV/dt in V/μs	
1000	220	10	–
1600	220	15	–
2500	220	25	12.5
4000	220	40	20
6300	220	–	40

k₀ values

Length of capacitor		33 mm	45 mm
V _R VDC	V _{rms} VAC	k ₀ in V ² /μs	
1000	220	20 000	–
1600	220	48 000	–
2500	220	125 000	62 500
4000	220	320 000	160 000
6300	220	–	500 000



Impedance Z versus frequency f
(typical values)



Permissible AC voltage V_{rms} versus frequency f

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