



Film Capacitors

Metallized Polypropylene Film Capacitors (MFP)

Series/Type: B32686A
Date: August 2004

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High pulse (wound)
Typical applications

- Smoothing
- Snubbing
- High-frequency AC loads

Climatic

- Max. operating temperature: 100 °C
- Climatic category (IEC 60068-1): 55/100/56

Construction

- Dielectric: polypropylene (PP)
- Film metallized on one side and metal foils internally connected in series
- Plastic case (UL 94 V-0)
- Epoxy resin sealing (UL 94 V-0)

Features

- Very high pulse strength
- Highest possible contact reliability
- Self-healing properties

Terminals

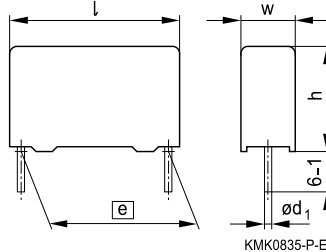
- Parallel wire leads, lead-free tinned
- Special lead lengths available on request

Marking

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

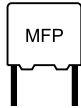
Delivery mode

Bulk (untaped)

Dimensional drawing


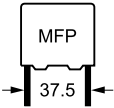
Dimensions in mm

Lead spacing	Lead diameter	Type
$e \pm 0.4$	d_1	
37.5	1.0	B32686A



Overview of available types

Lead spacing	37.5 mm			
Type	B32686A			
V_R (VDC)	1000	1250	1600	2000
V_{rms} (VAC)	400	450	450	500
C_R (nF)				
22				
33				
47				
68				
100				
150				
220				
330				
470				


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High pulse (wound)
Ordering codes and packing units (lead spacing 37.5 mm)

V_R VDC	V_{rms} $f \leq 1$ kHz VAC	C_R nF	Max. dimensions $w \times h \times l$ mm	Ordering code (composition see below)	Untaped pcs./unit
1000	400	68	12.0 × 22.5 × 42.0	B32686A0683+000	72
		100	12.0 × 22.5 × 42.0	B32686A0104+000	72
		150	14.0 × 25.0 × 42.0	B32686A0154+000	56
		220	16.0 × 28.5 × 42.0	B32686A0224+000	48
		330	20.0 × 39.5 × 42.0	B32686A0334+000	32
		470	20.0 × 39.5 × 42.0	B32686A0474+000	32
1250	450	68	12.0 × 22.5 × 42.0	B32686A7683+000	72
		100	14.0 × 25.0 × 42.0	B32686A7104+000	56
		150	16.0 × 28.5 × 42.0	B32686A7154+000	48
		220	18.0 × 32.5 × 42.0	B32686A7224+000	48
		330	20.0 × 39.5 × 42.0	B32686A7334+000	32
1600	450	47	12.0 × 22.5 × 42.0	B32686A1473+000	72
		68	14.0 × 25.0 × 42.0	B32686A1683+000	56
		100	18.0 × 32.5 × 42.0	B32686A1104+000	48
		150	20.0 × 39.5 × 42.0	B32686A1154+000	32
		2000	500	22	12.0 × 22.5 × 42.0
33	14.0 × 25.0 × 42.0			B32686A2333+000	56
47	16.0 × 28.5 × 42.0			B32686A2473+000	48
68	18.0 × 32.5 × 42.0			B32686A2683+000	48
100	20.0 × 39.5 × 42.0			B32686A2104+000	32

Further E series and intermediate capacitance values on request.

Composition of ordering code

+ = Capacitance tolerance code:

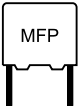
M = ±20%

K = ±10%

J = ±5%

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}		-55 °C
	Rated temperature T_R		+85 °C
Dissipation factor $\tan \delta$ (in 10^{-3}) at 20 °C (upper limit values)	at	$C_R \leq 0.1 \mu F$	$C_R > 0.1 \mu F$
	1 kHz	–	0.4
	10 kHz	0.4	0.5
	100 kHz	1.0	–
Insulation resistance R_{ins} or time constant $\tau = C_R \cdot R_{ins}$ at 20 °C, rel. humidity $\leq 65\%$ (minimum as-delivered values)	$C_R \leq 0.33 \mu F$	$C_R > 0.33 \mu F$	
	100 G Ω	30 000 s	
DC test voltage	2.0 · V_R , 2 s		
Category voltage V_C (continuous operation with V_{DC} or V_{AC} at $f \leq 1$ kHz)	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 $f \leq 1$ kHz)	T_A (°C)	DC voltage (max. hours)	AC voltage (max. hours)
	$T_A \leq 85$	$V_{op} = 1.25 \cdot V_C$ (2000 h)	$V_{op} = 1.0 \cdot V_{C,rms}$ (2000 h)
	$85 < T_A \leq 100$	$V_{op} = 1.25 \cdot V_C$ (1000 h)	$V_{op} = 1.0 \cdot V_{C,rms}$ (1000 h)
Damp heat test Limit values after damp heat test	56 days/40 °C/93% relative humidity		
	Capacitance change $ \Delta C/C $		$\leq 2\%$
	Dissipation factor change $\Delta \tan \delta$		$\leq 1.0 \cdot 10^{-3}$ (at 10 kHz)
	Insulation resistance R_{ins} or time constant $\tau = C_R \cdot R_{ins}$		$\geq 50\%$ of minimum as-delivered values
	Reliability: Failure rate λ Service life t_{SL}		
Failure criteria: Total failure Failure due to variation of parameters	1 fit ($\leq 1 \cdot 10^{-9}/h$) at 0.5 · V_R , 40 °C		
	200 000 h at 1.0 · V_R , 40 °C		
	For conversion to other operating conditions and temperatures, refer to chapter "Quality assurance", page .		
	Short circuit or open circuit		
	Capacitance change $ \Delta C/C $		> 10%
	Dissipation factor $\tan \delta$		4 · upper limit value
Insulation resistance R_{ins} or time constant $\tau = C_R \cdot R_{ins}$		< 1500 M Ω ($C_R \leq 0.33 \mu F$) < 500 s ($C_R > 0.33 \mu F$)	



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High pulse (wound)

Pulse handling capability

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

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

Note:

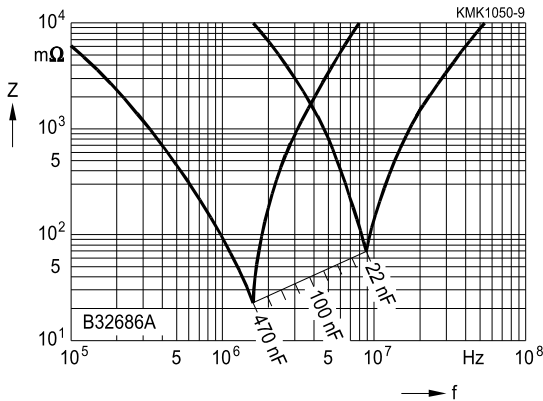
The values of dV/dt and k₀ provided below must not be exceeded in order to avoid damaging the capacitor.

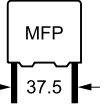
dV/dt and k₀ values

Lead spacing		37.5 mm	
V _R (VDC)	V _{rms} (VAC)	dV/dt in V/ μ s	k ₀ in V ² / μ s
1000	400	2 000	4 000 000
1250	450	2 800	7 000 000
1600	450	3 500	11 000 000
2000	500	4 500	18 000 000

Impedance Z versus frequency f

(typical values)

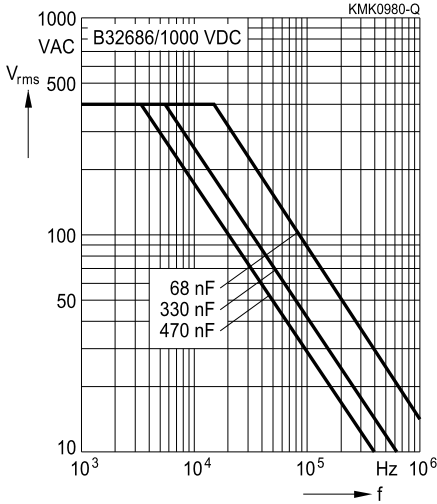




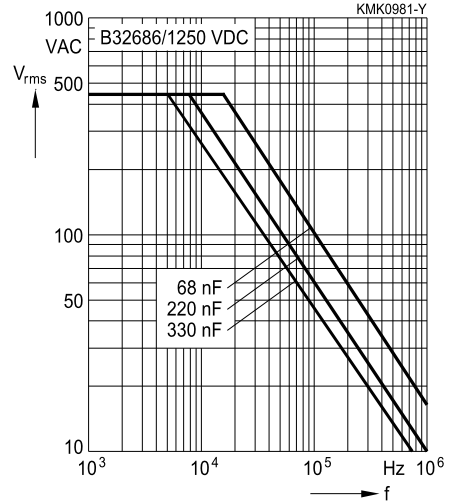
Permissible AC voltage V_{rms} versus frequency f (for sinusoidal waveforms, $T_A \leq 90^\circ C$)
 For $T_A > 90^\circ C$, please refer to "General technical information", section 3.2.3.

Lead spacing 37.5 mm

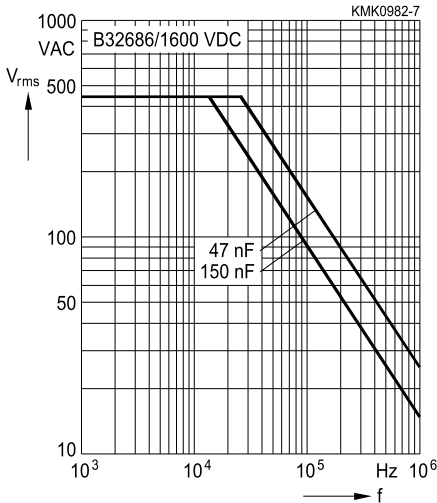
1000 VDC/400 VAC



1250 VDC/450 VAC



1600 VDC/450 VAC



2000 VDC/500 VAC

