



Film Capacitors

Metallized Polypropylene Film Capacitors (MFP)

Series/Type: B32686C
Date: August 2004

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Typical applications

- Smoothing
- Snubbing
- Filtering

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, high current
- Highest possible contact reliability
- Self-healing properties

Terminals

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

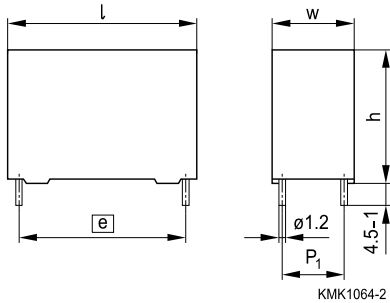
Marking

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

Delivery mode

Bulk (untaped)

Dimensional drawing



Dimensions in mm

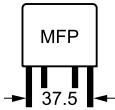
Lead spacing	Pin spacing P_1	Pin code
$e \pm 0.4$		
37.5	16.0	580
	20.3	590

B32686C			
4 pins (wound)			



Overview of available types

Lead spacing	37.5 mm			
Type	B32686C			
V_R (VDC)	1000	1250	1600	2000
V_{rms} (VAC)	400	450	450	500
C_R (nF)				
120				
150				
220				
270				
330				
390				
470				
560				
680				


B32686C
4 pins (wound)

Electrical specifications, ordering codes and packing units

V_R VDC	V_{rms} $f \leq 1\text{kHz}$ VAC	C_R nF	Max. dimensions $w \times h \times l$ mm	I_{rms} 100 kHz A	ESR 100 kHz m Ω	Ordering code (composition see below)	Pin spacing P_1	pcs./ unit
1000	400	470	$28.0 \times 37.0 \times 42.0$	10.0	5	B32686C0474+580	16.0	27
		470	$28.0 \times 37.0 \times 42.0$	10.0	5	B32686C0474+590	20.3	27
		560	$28.0 \times 37.0 \times 42.0$	11.0	3	B32686C0564+580	16.0	27
		560	$28.0 \times 37.0 \times 42.0$	11.0	3	B32686C0564+590	20.3	27
		680	$30.0 \times 45.0 \times 42.0$	12.0	3	B32686C0684+580	16.0	27
		680	$30.0 \times 45.0 \times 42.0$	12.0	3	B32686C0684+590	20.3	27
1250	450	330	$28.0 \times 37.0 \times 42.0$	10.0	5	B32686C7334+580	16.0	27
		330	$28.0 \times 37.0 \times 42.0$	10.0	5	B32686C7334+590	20.3	27
		390	$28.0 \times 37.0 \times 42.0$	11.0	5	B32686C7394+580	16.0	27
		390	$28.0 \times 37.0 \times 42.0$	11.0	5	B32686C7394+590	20.3	27
		470	$30.0 \times 45.0 \times 42.0$	12.0	5	B32686C7474+580	16.0	27
		470	$30.0 \times 45.0 \times 42.0$	12.0	5	B32686C7474+590	20.3	27
1600	450	220	$28.0 \times 37.0 \times 42.0$	10.5	7	B32686C1224+580	16.0	27
		220	$28.0 \times 37.0 \times 42.0$	10.5	7	B32686C1224+590	20.3	27
		270	$28.0 \times 37.0 \times 42.0$	11.5	7	B32686C1274+580	16.0	27
		270	$28.0 \times 37.0 \times 42.0$	11.5	7	B32686C1274+590	20.3	27
2000	500	120	$28.0 \times 37.0 \times 42.0$	9.0	13	B32686C2124+580	16.0	27
		120	$28.0 \times 37.0 \times 42.0$	9.0	13	B32686C2124+590	20.3	27
		150	$28.0 \times 37.0 \times 42.0$	10.0	10	B32686C2154+580	16.0	27
		150	$28.0 \times 37.0 \times 42.0$	10.0	10	B32686C2154+590	20.3	27

Further E series and intermediate capacitance values on request.

Composition of ordering code

+ = Capacitance tolerance code:

M = $\pm 20\%$

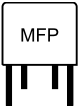
K = $\pm 10\%$

J = $\pm 5\%$



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 $\tan \delta$ at 20 °C (upper limit values)	1.0 · 10 ^{−3} (at 10 kHz) 3.0 · 10 ^{−3} (at 10 kHz)		
Insulation resistance R_{ins} or time constant $\tau = C_R \cdot R_{ins}$ at 20 °C, rel. humidity ≤ 65% (minimum as-delivered values)	$C_R \leq 0.33 \mu F$	$C_R > 0.33 \mu F$	
	100 GΩ	30000 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	56 days/40 °C/93% relative humidity		
Limit values after damp heat test	Capacitance change $ \Delta C/C $		≤ 2%
	Dissipation factor change $\Delta \tan \delta$		≤ 1.0 · 10 ^{−3} (at 10 kHz)
	Insulation resistance R_{ins} or time constant $\tau = C_R \cdot R_{ins}$		≥ 50% of minimum as-delivered values
Reliability:			
Failure rate λ	1 fit (≤ 1 · 10 ^{−9} /h) at 0.5 · V_R , 40 °C		
Service life t_{sL}	200 000 h at 1.0 · 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 $\tan \delta$		4 · upper limit value
	Insulation resistance R_{ins} or time constant $\tau = C_R \cdot R_{ins}$		< 1500 MΩ ($C_R \leq 0.33 \mu F$) < 500 s ($C_R > 0.33 \mu F$)



B32686C

4 pins (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:

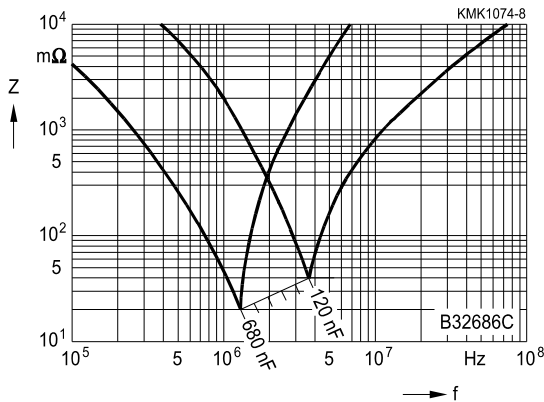
The values of dV/dt and k₀ provided below must not be exceeded in order to avoid damaging the capacitor.

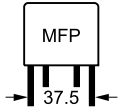
dV/dt and k₀ values

Lead spacing		37.5 mm	
V _R (VDC)	V _{rms} (VAC)	dV/dt in V/μs	k ₀ in V ² /μs
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)



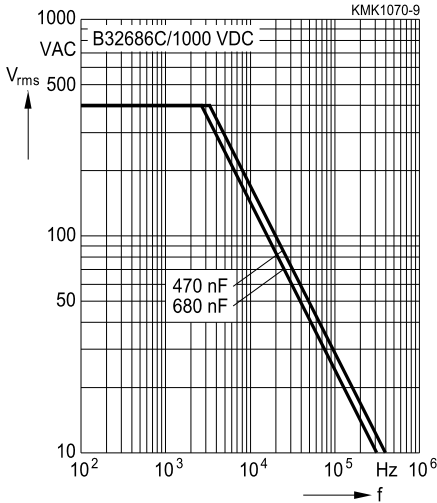


Permissible AC voltage V_{rms} versus frequency f (for sinusoidal waveforms, $T_A \leq 90^\circ\text{C}$)

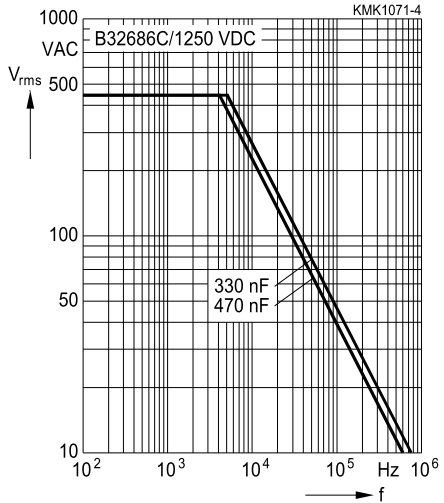
For $T_A > 90^\circ\text{C}$, please refer to "General technical information", section 3.2.3.

Lead spacing 37.5 mm

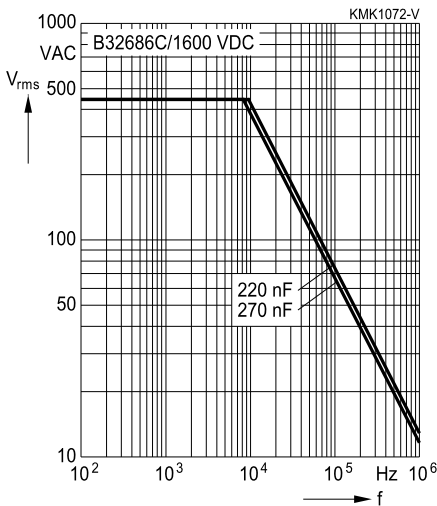
1000 VDC/400 VAC



1250 VDC/450 VAC



1600 VDC/450 VAC



2000 VDC/500 VAC

