



Film Capacitors

Metallized Polypropylene Film Capacitors (MKP)

Series/Type: B32656C
Date: August 2004

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4 pins (wound)
Typical applications

- Snubbing
- Filtering

Climatic

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

Construction

- Dielectric: polypropylene (PP)
- Wound capacitor technology with internal series connection
- Plastic case (UL 94 V-0)
- Epoxy resin sealing (UL 94 V-0)

Features

- High pulse strength
- High contact reliability
- Very low inductance

Terminals

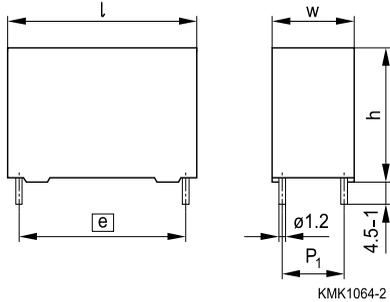
- 4 pins
- Parallel wire leads, lead-free tinned
- Special lead lengths available on request

Marking

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

Delivery mode

Bulk

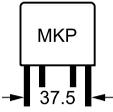
Dimensional drawing


Dimensions in mm

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


Overview of available types

Lead spacing	37.5 mm				
Type	B32656C				
Page	4				
V_R (VDC)	850	1000	1250	1600	2000
V_{rms} (VAC)	450	480	500	750	800
C_R (nF)					
270					
330					
390					
470					
560					
680					
750					
820					
1000					
1200					
1400					
1500					
1800					
2000					
2200					
2500					


B32656C
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
850	450	1500	31.0 × 26.5 × 43.6	13	5.0	B32656C8155+580	16.0	32
		1500	31.0 × 26.5 × 43.6	13	5.0	B32656C8155+590	20.3	32
		1800	28.0 × 37.0 × 42.0	15	4.5	B32656C8185+580	16.0	27
		1800	28.0 × 37.0 × 42.0	15	4.5	B32656C8185+590	20.3	27
		2000	28.0 × 37.0 × 42.0	16	4.0	B32656C8205+580	16.0	27
		2000	28.0 × 37.0 × 42.0	16	4.0	B32656C8205+590	20.3	27
		2200	30.0 × 45.0 × 42.0	17	3.5	B32656C8225+580	16.0	27
		2200	30.0 × 45.0 × 42.0	17	3.5	B32656C8225+590	20.3	27
		2500	30.0 × 45.0 × 42.0	18	3.0	B32656C8255+580	16.0	27
		2500	30.0 × 45.0 × 42.0	18	3.0	B32656C8255+590	20.3	27
1000	480	1400	28.0 × 37.0 × 42.0	13	5.0	B32656C0145+580	16.0	27
		1400	28.0 × 37.0 × 42.0	13	5.0	B32656C0145+590	20.3	27
		1500	30.0 × 45.0 × 42.0	15	5.0	B32656C0155+580	16.0	27
		1500	30.0 × 45.0 × 42.0	15	5.0	B32656C0155+590	20.3	27
		1800	30.0 × 45.0 × 42.0	16	4.5	B32656C0185+580	16.0	27
		1800	30.0 × 45.0 × 42.0	16	4.5	B32656C0185+590	20.3	27
		2000	30.0 × 45.0 × 42.0	17	3.5	B32656C0205+580	16.0	27
		2000	30.0 × 45.0 × 42.0	17	3.5	B32656C0205+590	20.3	27
1250	500	750	28.0 × 37.0 × 42.0	10	6.0	B32656C7754+580	16.0	27
		750	28.0 × 37.0 × 42.0	10	6.0	B32656C7754+590	20.3	27
		820	28.0 × 37.0 × 42.0	11	6.0	B32656C7824+580	16.0	27
		820	28.0 × 37.0 × 42.0	11	6.0	B32656C7824+590	20.3	27
		1000	28.0 × 37.0 × 42.0	13	6.0	B32656C7105+580	16.0	27
		1000	28.0 × 37.0 × 42.0	13	6.0	B32656C7105+590	20.3	27
		1200	30.0 × 45.0 × 42.0	14	5.0	B32656C7125+580	16.0	27
		1200	30.0 × 45.0 × 42.0	14	5.0	B32656C7125+590	20.3	27
		1400	30.0 × 45.0 × 42.0	14	5.0	B32656C7145+580	16.0	27
		1400	30.0 × 45.0 × 42.0	14	5.0	B32656C7145+590	20.3	27

Further E series and intermediate capacitance values on request.

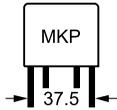
Composition of ordering code

+ = Capacitance tolerance code:

 M = $\pm 20\%$

 K = $\pm 10\%$

 J = $\pm 5\%$


Electrical specifications, ordering codes and packing units

V_R	V_{rms} $f \leq 1 \text{ kHz}$	C_R	Max. dimensions $w \times h \times l$ mm	I_{rms} 100 kHz A	ESR 100 kHz $m\Omega$	Ordering code (composition see below)	Pin spacing P_1	pcs./ unit
VDC	VAC	nF						
1600	750	390	$28.0 \times 37.0 \times 42.0$	11	8.0	B32656C1394+580	16.0	27
		390	$28.0 \times 37.0 \times 42.0$	11	8.0	B32656C1394+590	20.3	27
		470	$28.0 \times 37.0 \times 42.0$	12	8.0	B32656C1474+580	16.0	27
		470	$28.0 \times 37.0 \times 42.0$	12	8.0	B32656C1474+590	20.3	27
		560	$30.0 \times 45.0 \times 42.0$	13	7.0	B32656C1564+580	16.0	27
		560	$30.0 \times 45.0 \times 42.0$	13	7.0	B32656C1564+590	20.3	27
		680	$30.0 \times 45.0 \times 42.0$	14	6.0	B32656C1684+580	16.0	27
		680	$30.0 \times 45.0 \times 42.0$	14	6.0	B32656C1684+590	20.3	27
2000	800	270	$28.0 \times 37.0 \times 42.0$	11	9.0	B32656C2274+580	16.0	27
		270	$28.0 \times 37.0 \times 42.0$	11	9.0	B32656C2274+590	20.3	27
		330	$28.0 \times 37.0 \times 42.0$	12	9.0	B32656C2334+580	16.0	27
		330	$28.0 \times 37.0 \times 42.0$	12	9.0	B32656C2334+590	20.3	27
		390	$30.0 \times 45.0 \times 42.0$	13	8.0	B32656C2394+580	16.0	27
		390	$30.0 \times 45.0 \times 42.0$	13	8.0	B32656C2394+590	20.3	27
		470	$30.0 \times 45.0 \times 42.0$	15	8.0	B32656C2474+580	16.0	27
		470	$30.0 \times 45.0 \times 42.0$	15	8.0	B32656C2474+590	20.3	27

Further E series and intermediate capacitance values on request.

Composition of ordering code

+ = Capacitance tolerance code:

M = $\pm 20\%$

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J = $\pm 5\%$


B32656C
4 pins (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}		-55 °C	
	Rated temperature T_R		+85 °C	
Dissipation factor $\tan \delta$ (in 10^{-3}) at 20 °C (upper limit values)	at	$C_R \leq 0.1 \mu F$	$0.1 \mu F < C_R \leq 1 \mu F$	$C_R > 1 \mu F$
	1 kHz	—	0.5	0.5
	10 kHz	—	0.8	1.5
	100 kHz	5.0	—	—
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		30000 s	
DC test voltage	$1.6 \cdot V_R, 2 s$			
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	
	$T_A \leq 85$ $85 < T_A \leq 100$	$V_C = V_R$ $V_C = V_R \cdot (165 - T_A)/80$	$V_{C,rms} = V_{rms}$ $V_{C,rms} = V_{rms} \cdot (165 - T_A)/80$	
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)	
	$T_A \leq 85$ $85 < T_A \leq 100$	$V_{op} = 1.25 \cdot V_C$ (2000 h) $V_{op} = 1.25 \cdot V_C$ (1000 h)	$V_{op} = 1.0 \cdot V_{C,rms}$ (2000 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 $		$\leq 3\%$	
	Dissipation factor change $\Delta \tan \delta$		$\leq 0.5 \cdot 10^{-3}$ (at 1 kHz) $\leq 1.0 \cdot 10^{-3}$ (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}	1 fit ($\leq 1 \cdot 10^{-9}/h$) at $0.5 \cdot V_R, 40$ °C 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 Failure due to variation of parameters	Short circuit or open circuit			
	Capacitance change $ \Delta C/C $		$> 10\%$	
	Dissipation factor $\tan \delta$		$> 4 \cdot$ upper limit value	
	Insulation resistance R_{ins} or time constant $\tau = C_R \cdot R_{ins}$		$< 1500 M\Omega$ ($C_R \leq 0.33 \mu F$) $< 500 s$ ($C_R > 0.33 \mu F$)	



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:

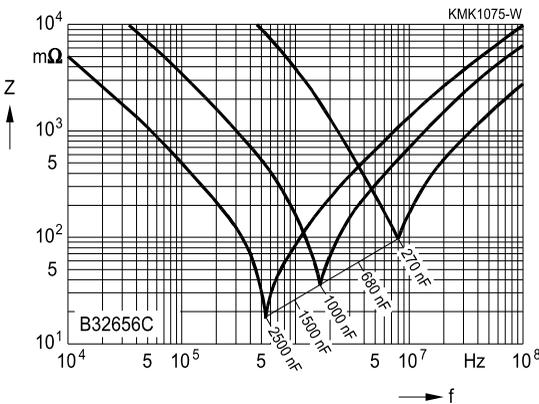
The values of dV/dt and k₀ provided below must not be exceeded in order to avoid damaging the capacitor.

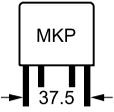
dV/dt and k₀ values

V _R (VDC)	V _{rms} (VAC)	dV/dt in V/μs	k ₀ in V ² /μs
850	450	90	153 000
1000	480	100	200 000
1250	500	140	350 000
1600	750	170	544 000
2000	800	200	800 000

Impedance Z versus frequency f

(typical values)





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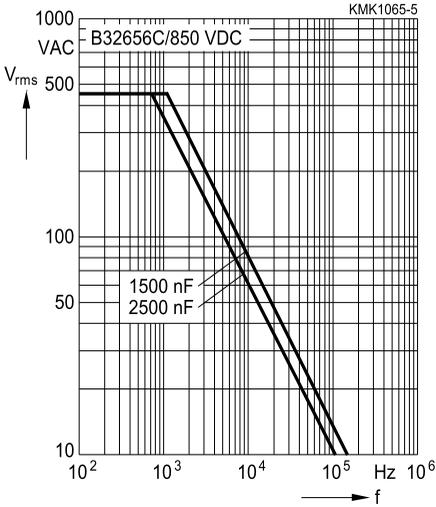
4 pins (wound)

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

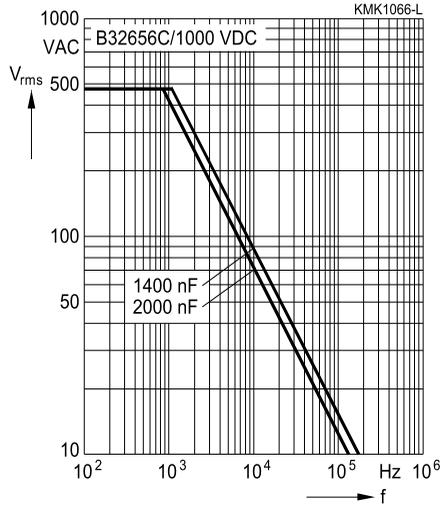
For $T_A > 90^\circ\text{C}$, please refer to "General technical information", section 3.2.3.

Lead spacing 37.5 mm

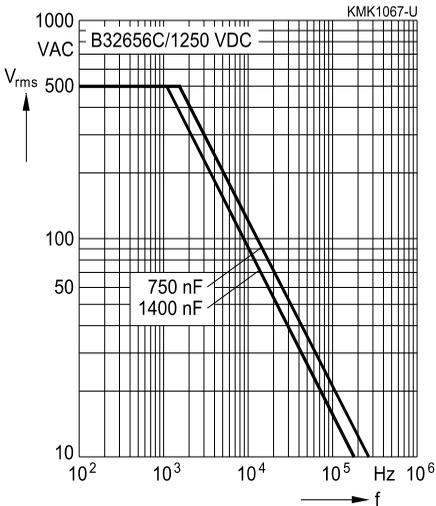
850 VDC/450 VAC



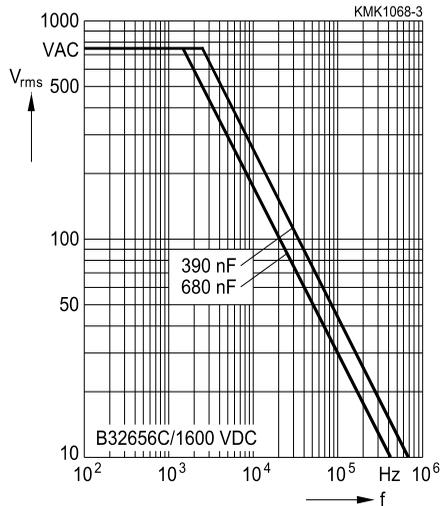
1000 VDC/480 VAC

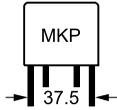


1250 VDC/500 VAC



1600 VDC/750 VAC





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

2000 VDC/800 VAC

