

Product Brief 2010



MotorCap

AC Film Capacitors for Motor Run Applications

EPCOS MotorCaps™ are metalized polypropylene film capacitors specially designed for use in motor run applications, although they are equally suitable for AC power supplies and general purpose applications.

Applications

- Asynchronous motors
- Refrigerators/freezers
- Dishwashers
- Washing machines/tumble dryers
- Air conditioning
- Compressors, pumps
- Awning drives, garage door openers, etc.

Features

- Rated voltage: 250 ... 480 V
- Capacitance range: 1 ... 60 μF
- Temperature rating up to 85 °C
- RoHS compatible
- Versions compatible to EN 60335 optional

Customer benefits – economy

- Ultra compact and economic design
- Various terminal options
- Various mounting options
- Maintenance-free

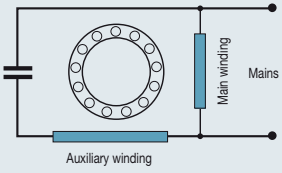
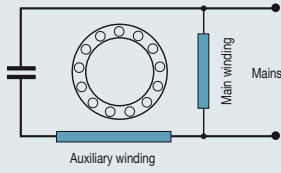
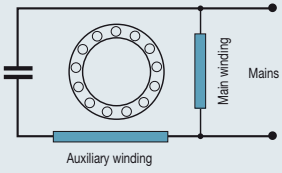
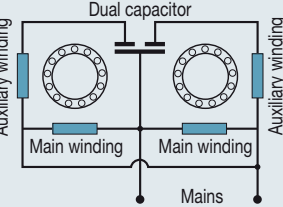
Customer benefits – technology

- Self-healing properties
- Highest safety level P2 to IEC 60252 available
- Very low losses thanks to innovative film technology
- High insulation resistance
- Self-extinguishing plastic material
- UL 810, VDE, CQC and TÜV approvals
- Fault-current-proof versions available up to 10 000 A
- Fully IEC 60252 compliant

MotorCap: AC Capacitors for Motor Run Applications


EPCOS supplies specially designed AC film capacitors for general purpose applications (e.g. AC filters with harmonic frequencies exceeding 60 Hz), as well as for lighting and motor run applications. For the latter, AC capacitors are used in conjunction with single-phase asynchronous motors on single-phase mains supplies. These capacitors are permanently connected to auxiliary windings, allowing

its starting and helps to keep the motor running constantly and smoothly with highest efficiency (e.g. increasing the torque during work, improved power factor, low noise). Such MotorCap are designed for 50 or 60 Hz systems. For higher frequencies – as well as in applications where higher frequencies are present – consult EPCOS to assure correct selection of the capacitor.

MotorCap Plastic can Single capacitance B3232* series	MotorCap P2 Compact Plastic can Single capacitance B3235* series	Super MotorCap Aluminum can Single capacitance B32330/B32332/B32333 series	Dual MotorCap Aluminum can Dual capacitance B32335 series
Terminals			
<ul style="list-style-type: none"> Single / double fast-on Insulated wires (flexible or solid) Twin core cable Various wire end options 	<ul style="list-style-type: none"> Single / double fast-on Insulated wires (flexible or solid) Twin core cable Various wire end options 	<ul style="list-style-type: none"> Single fast-on Double fast-on Twin core cable Various wire end options 	<ul style="list-style-type: none"> Single fast-on Double fast-on Quadruple fast-on (4 lugs)
Safety class			
<ul style="list-style-type: none"> P0 (IEC 60252) 	<ul style="list-style-type: none"> P2 (IEC 60252) 	<ul style="list-style-type: none"> P2 (IEC 60252) 	<ul style="list-style-type: none"> P2 (IEC 60252)
Features / Advantages			
<ul style="list-style-type: none"> Rated voltage V_R: 250, 400, 420, 470 and 480 V AC Capacitance range: 1 ... 60 μF Life expectancy: up to 10 000 h Dry type / no leakage risk Small size and limited weight Compliant to IEC 60335-1 on request 	<ul style="list-style-type: none"> Rated voltage V_R: 400, 450 V AC Capacitance range: 2 ... 20 μF Life expectancy: up to 30 000 h Fused film safety device Dry type / no leakage risk Small size and limited weight Compliant to IEC 60335-1 	<ul style="list-style-type: none"> Rated voltage V_R: 250, 420, 450 V AC Capacitance range: 1 ... 60 μF Life expectancy: up to 30 000 h Overpressure disconnection device Compliant to IEC 60335-1 on request 	<ul style="list-style-type: none"> Rated voltage V_R: 250, 450 V AC Capacitance range: 10 +1 ... 60 +10 μF Life expectancy: up to 10 000 h Overpressure disconnection device
Applications			
<p>Dishwashers, motors, electric tools, washer, tumble dryers, fans, garage door openers, pump motors</p> 	<p>Refrigerators, freezers, compressors, lawn mowers and pump motors</p> 	<p>Washing machines, refrigerators, air conditioners, heat pumps and general AC applications</p> 	<p>Air conditioning units and general sine-wave AC applications</p> 


MotorCap: B3232* Series

Single Capacitance, P0, Plastic Can

Technical data				
				
Type / series	B32320/B32322 B32321/B32323 UL type		B32327 B32329 UL type	B32328
Terminals	Single fast-on Double fast-on		Insulated wires flexible or solid	Twin core cable
Electrical ratings				
Rated voltage	V_R	250, 400, 420, 470, 480		V AC
Rated capacitance	C_R	1 ... 60		μF
Rated frequency	f_R	50 / 60		Hz
Capacitance tolerance		± 5		%
Max. permissible voltage	V_{max}	$1.1 \cdot V_R$		V
Max. permissible current	I_{max}	$1.3 \cdot I_R$		A
Dissipation factor (20 °C, 120 Hz)	$\tan \delta$	$\leq 1.0 \cdot 10^{-3}$		
Safety				
Safety class		P0 to IEC 60252-1		
Life expectancy to IEC 60252		250, 400, 420 V AC: 10 000 h (class B) 470, 480 V AC: 3 000 h (class C)		
Fire resistancy		Case and cover in self-extinguishing plastic material, grade V2 according UL 94 Glow wire tested to IEC 60335-1		
Climatic parameter to IEC 60068-1				
Temperature limit	$T_{\text{min}}/T_{\text{max}}$	-25/+85		°C
Test duration (damp heat test)	t_{test}	21		days
Construction				
Reference standards		IEC 60252-1 2001-02 UL 810	IEC 60252-1 2001-02 UL 810	IEC 60252-1 2001-02
Plastic can		Plastic can top material UL 94 V2 tested to IEC 60695-2 / IEC 60309-1		
Dimensions		\varnothing 25 ... 50 mm H: 48 ... 121 mm		
Approvals				
VDE		VDE-131508 250, 400, 420 V AC: class B, 85 °C 470, 480 V AC: class C, 85 °C		
UL		UL-E 183224: construction only		
Terminal options				
See figures page 6		1 or 2	6 or 5 with option 7, 8, 9	4 with option 7, 8, 9
Mounting options				
See figures page 6		A, B, C	A, B, C	A, B, C

MotorCap Compact: B3235* Series

Single Capacitance, P2, Plastic Can




Technical data				
				
Type / series		B32350/B32352	B32355	B32356
Terminals		Single fast-on Double fast-on	Insulated wires flexible or solid	Twin core cable
Electrical ratings				
Rated voltage	V_R	400, 450		V AC
Rated capacitance	C_R	2 ... 20		μF
Rated frequency	f_R	50 / 60		Hz
Capacitance tolerance		± 5		%
Max. permissible voltage	V_{max}	$1.1 \cdot V_R$		V
Max. permissible current	I_{max}	$1.3 \cdot I_R$		A
Dissipation factor (20 °C, 120 Hz)	$\tan \delta$	$\leq 1.0 \cdot 10^{-3}$		
Safety				
Safety class		P2 to IEC 60252-1		
Life expectancy to IEC 60252		400 V AC: 30 000 h (class A) 450 V AC: 10 000 h (class B)		
Fire resistancy		Case and cover in self-extinguishing plastic material, grade V2 according UL 94 V2/V0 IEC 60695: ball pressure test; glow wire test, IEC 60335-1		
Climatic parameter to IEC 60068-1				
Temperature limits	$T_{\text{min}}/T_{\text{max}}$	-25/+85		
Test duration (damp heat test)	t_{test}	21		
Construction				
Reference standards		IEC 60252-1 2001-02, EN 60252 2001, UL 810		
Plastic can		Top material UL 94 V2: tested to IEC 60695-2 and IEC 60309-1		
Dimensions		\varnothing 25 ... 40 mm H: 58 ... 120 mm		
Approvals				
VDE		VDE-4018876 400 V AC: class A, 85 °C 450 V AC: class B, 85 °C		
UL		UL-E 106388		
CQC		on request		
Terminal options				
See figures page 6		1 or 2	6 or 5 with option 7, 8, 9	4 with option 7, 8, 9
Mounting options				
See figures page 6		A, B, C	A, B, C	A, B, C

B3235*

MotorCap: B3233* Series

Single/Dual Capacitance, P2, Aluminum Can

B3233*

Technical data					
					
					
Type / series		B32330/B32332 Super MotorCap	B32333 Super MotorCap	B32335 Dual MotorCap	
Terminals		Single fast-on Double fast-on	Double insulated twin core cable	Single / double fast-on Quadruple fast-on (4 lugs)	
Electrical ratings					
Rated voltage	V_R	250, 420, 450	250, 420, 450	250, 450	V AC
Rated capacitance	C_R	250 V AC: 4 ... 60 420, 450 V AC: 1 ... 60	250 V AC: 4 ... 50 420, 450 V AC: 1 ... 50	250 V AC: 15 +2 ... 50 +8 450 V AC: 10 +1 ... 60 +10	μF
Rated frequency	f_R	50 / 60			Hz
Capacitance tolerance		± 5			%
Max. permissible voltage	V_{max}	$1.1 \cdot V_R$			V
Max. permissible current	I_{max}	$1.3 \cdot I_R$			A
Dissipation factor (20 °C, 120 Hz)	$\tan \delta$	$\leq 1.0 \cdot 10^{-3}$			
Safety					
Safety class		P2 to IEC 60252-1			
Life expectancy to IEC 60252		250, 450 V AC: 10 000 h (class B) 420 V AC: 30 000 h (class A)	250, 450 V AC: 10 000 h (class B) 420 V AC: 30 000 h (class A)	250, 450 V AC: 10 000 h (class B)	
Climatic parameter to IEC 60068-1					
Temperature limits	$T_{\text{min}}/T_{\text{max}}$	-25/+85			°C
Test duration (damp heat test)	t_{test}	21			days
Construction					
Reference standards		IEC 60252-1 2001-02, EN 60252 2001, UL 810			
Aluminum can		With overpressure disconnection device			
Terminal top		UL 94 V2/V0 compatible; compatible to IEC 60335-1 optional Glow wire test to IEC 60695-2-11			
Dimensions		\varnothing 30 ... 40 mm H: 52 ... 103 mm	\varnothing 30 ... 50 mm H: 74 ... 127 mm	\varnothing 40 ... 53 mm H: 70 ... 105 mm	
Approvals					
UL		UL-E 106388 approved component			
VDE		VDE-40019602 420 V AC: class A, 85 °C* 250, 450 V AC: class B, 85 °C	VDE-40019602 420 V AC: class A, 85 °C* 450 V AC: class B, 85 °C		
TÜV		TÜV R 50115020 420 V AC: class A, 85 °C* 450 V AC: class B, 85 °C	TÜV R 50115020 420 V AC: class A, 85 °C* 450 V AC: class B, 85 °C	TÜV R 50144063-1 450 V AC: class B, 85 °C	
CQC		450 V AC: class B, 85 °C			
Terminal options					
See figures page 6		1 or 2	4 with option 7, 8, 9	3	
Mounting options					
See figures page 6		A, B	A, B	A, B	

* in progress

MotorCap: Terminal and Mounting Options

Standard terminal options

Single fast-on

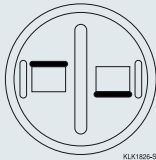


Figure 1

Twin core cable

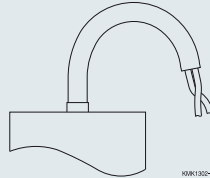


Figure 4

Stranded wire ends



Figure 7

Double fast-on

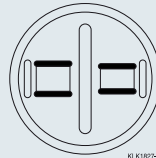


Figure 2

Flexible wires

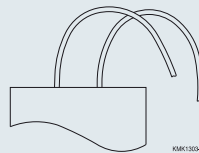


Figure 5

Crimped wire ends



Figure 8

Quadruple fast-on

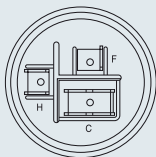


Figure 3

Solid wires

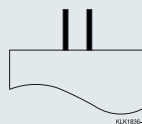


Figure 6

Connectors (on request)

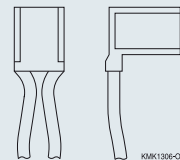


Figure 9

Standard mounting options

Flat bottom

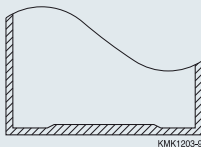


Figure A

M8 bolt

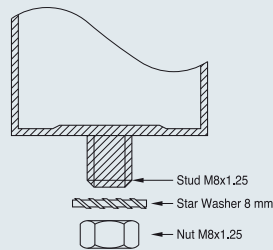


Figure B

Fast fixation clip

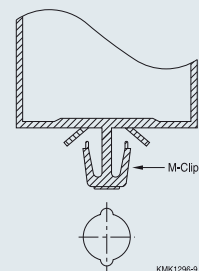


Figure C

Important information: Some parts of this publication contain statements about the suitability of our products for certain areas of application. These statements are based on our knowledge of typical requirements that are often placed on our products. We expressly point out that these statements cannot be regarded as binding statements about the suitability of our products for a particular customer application. It is incumbent on the customer to check and decide whether a product is suitable for use in a particular application. This publication is only a brief product survey which may be changed from time to time. Our products are described in detail in our data sheets. The Important Notes (www.epcos.com/ImportantNotes) and the product-specific warnings and cautions must be observed. All relevant information is available through our sales offices.