

EPCOS Product Brief 2016

Aluminum Electrolytic Capacitors

High Performance Industrial Series

Several new series of EPCOS aluminum electrolytic capacitors with either screw- or snap-in terminals combine reduced size with increased ripple current capabilities. The series are optimized to meet the demands of DC link applications in frequency converters and professional power supplies with very high ripple current loads.

The broad spectrum of types for 85 °C and 105 °C temperature ranges also includes versions that are designed specifically for heat sink mounting.

Benefits

- Very compact dimensions
- Outstanding ripple current capability at the specified operating conditions, and especially at high frequencies
- Low ESR
- Extremely low inner thermal resistance
- Higher ripple current capability per cost
- Optimized cost of capacitor banks based on the ripple current capability
- RoHS compatible



More Compact Designs and Increased Ripple Current Capability

Screw terminal capacitors, +85 °C

The three new B43703*, B43704* and B43705* high performance series have been developed to succeed the compact B43456* series.

- Capacitors of the new extremely compact series B43703* use up to 24 percent less space than comparable capacitors from the B43456* series, while featuring a similar ripple current capability. The series is designed for rated voltages from 350 V DC to 450 V DC and covers a capacitance range from 1500 μF to 22000 μF .
- Capacitors of the new B43704* high ripple current series offer a ripple current capability that is up to 34 percent higher than that of comparable B43456* capacitors with dimensions that are up to 14 percent smaller. They are designed for rated voltages from 350 V DC to 550 V DC and are available in a capacitance range from 820 μF to 22000 μF .
- The ripple current capability of the new B43705* ultra-high ripple current series is up to 48 percent higher than that of comparable B43456* capacitors and the capacitors are up to 9 percent more compact. This series is designed for rated voltages from 350 V DC to 450 V DC with a capacitance range from 1000 μF to 18000 μF .

All three new series of screw terminal capacitors feature a low ESR (equivalent series resistance). They are designed for a maximum operating temperature of 85 °C and attain a rated useful life of 12000 hours. Diameters are ranging from 51.6 mm to 90.0 mm and heights are ranging from 80.7 mm to 221.0 mm. The same capacitors are available with a threaded stud for easy mounting with the product designations B43723*, B43724* and B43725*.



Characterization of screw-terminal capacitors			
Operating temperature	Series	Key features	
85 °C	B43703* B43723*	Extremely compact	Low ESR
85 °C	B43704* B43724*	High ripple current $I_{AC,R}$	Low ESR
85 °C	B43705* B43725*	Ultra high ripple current $I_{AC,R}$	Low ESR

Main applications


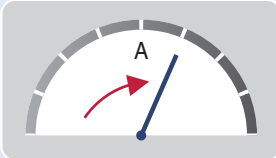

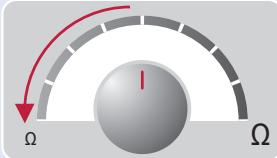
- Converters for the use in industrial electronics

More Compact Designs and Increased Ripple Current Capability

Snap-in capacitors, +105 °C

Capacitors of the new B43642* series are characterized by a ripple current capability that is up to 58 percent higher than that of comparable types from the B43508* predecessor series. At the same time they require up to 12 percent less space. These components are designed for rated voltages of 200 V DC to 450 V DC and cover a capacitance range from 82 μF to 3300 μF . Their highly compact dimensions range from diameters of 22 mm to 35 mm and heights of 25 mm to 55 mm. The capacitors have a low ESR and feature a rated useful life of 3000 hours under continuous operation at +105 °C.



Characterization of snap-in capacitors		
Operating temperature	Series	Key features
 105 °C	B43642*	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>High ripple current $I_{AC,R}$</p> </div> <div style="text-align: center;">  <p>Ultra compact</p> </div> <div style="text-align: center;">  <p>Low ESR</p> </div> </div>

Main applications

- Power supplies and converters for the use in industrial electronics

High Performance Industrial Series



Performance benchmark

Screw terminal series, +85 °C

	B43703*/B43723*		B43704*/B43724*		B43705*/B43725	
Features	Extremely compact		High ripple current capability		Ultra high ripple current capability	
	12000 h (+85 °C, I _R , V _R)		12000 h (+85 °C, I _R , V _R)		12000 h (+85 °C, I _R , V _R)	
Example	8200 µF / 400 V		8200 µF / 400 V		8200 µF / 400 V	
		vs. B43456*/ B43458* series		vs. B43456*/ B43458* series		vs. B43456*/ B43458* series
Dimensions d × l	76.9 × 130.7 mm	-23%	76.9 × 156.2 mm	-7%	76.9 × 168.7 mm	0%
Rated ripple current 100 Hz, +85 °C	20.8 A	-1%	25.5 A	+21%	30.1 A	+43%
ESR 300 Hz, +60 °C	4.8 mΩ	-4%	4.5 mΩ	-10%	3.1 mΩ	-38%



Performance benchmark

Snap-in series, +105 °C

	B43642*	
Features	Ultra compact, high ripple current capability	
	3000 h (+105 °C, I _R , V _R)	
Example	820 µF / 400 V	
		vs. B43508*
Dimensions d × l	35 × 45 mm	-10%
Rated ripple current 100 Hz, +105 °C	3.0 A	+29%
ESR 300 Hz, +60 °C	34 mΩ	-32%



Key specification ranges

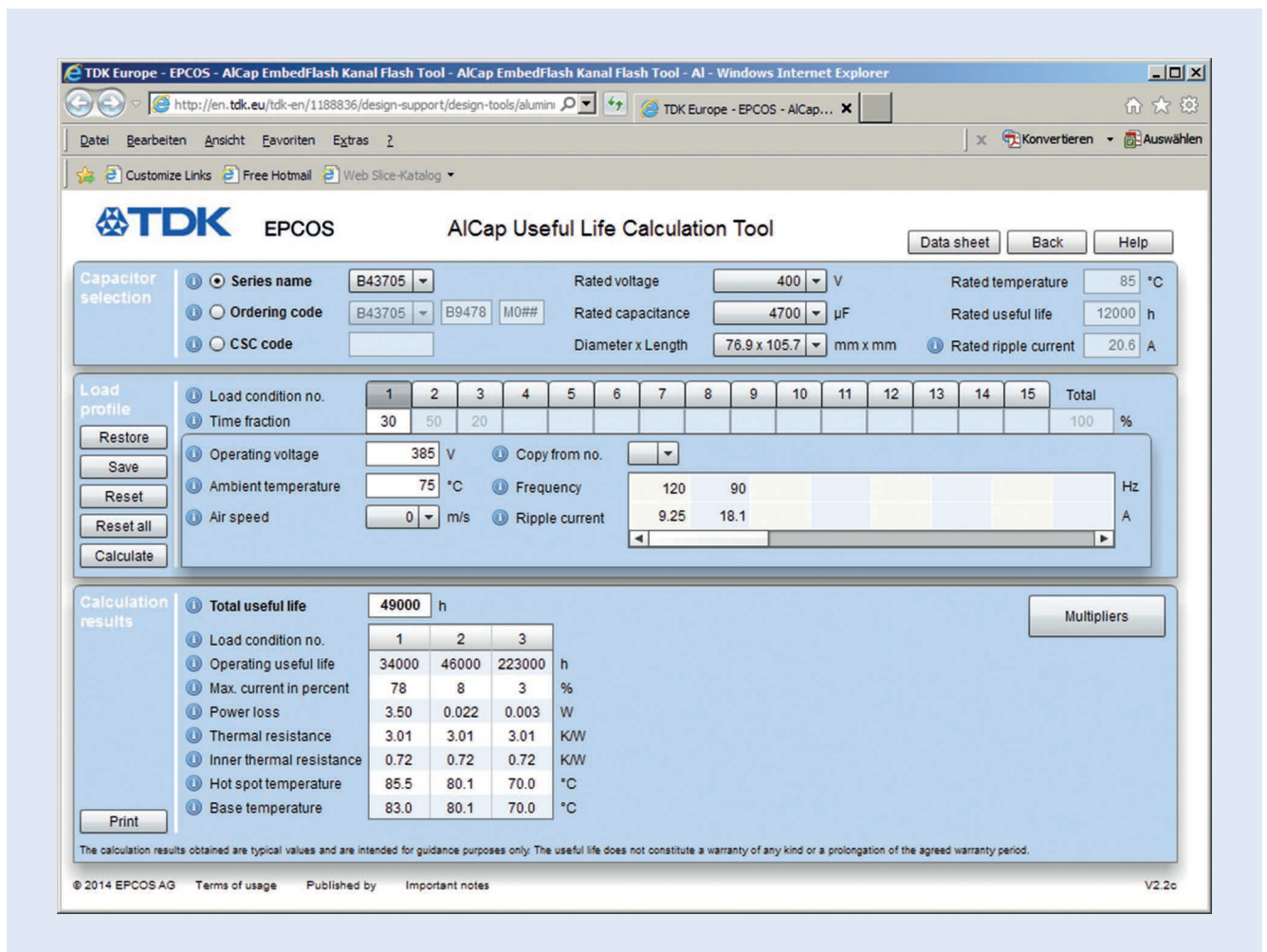
	Screw terminal series, +85 °C			Snap-in
	B43703*/B43723*	B43704*/B43724*	B43705*/B43725*	B43642*
Useful lifetime at rated conditions	12000 h (+85 °C, I _R , V _R)	12000 h (+85 °C, I _R , V _R)	12000 h (+85 °C, I _R , V _R)	3000 h (+105 °C, I _R , V _R)
Voltage V_R	350 ... 450 V DC	350 ... 550 V DC	450 ... 450 V DC	200 ... 450 V DC
Rated capacitance C_R	1500 ... 22000 µF	820 ... 22000 µF	47 ... 2700 µF	82 ... 3300 µF
Dimensions d × l	51.6 × 80.7 ... 90.0 × 197.0 mm	51.6 × 80.7 ... 90.0 × 221.0 mm	51.6 × 80.7 ... 90.0 × 221.0 mm	22.0 × 25.0 ... 35.0 × 55.0 mm

High Performance Industrial Series

New browser-based AlCap tool

The updated powerful browser-based design tool for EPCOS aluminum electrolytic capacitors enables users to calculate the useful life for selected capacitor types under assumed operating conditions. It covers all high-voltage (> 150 V) screw-terminal, snap-in and solder-pin capacitors of the latest data book. These DC link capacitors are especially recommended for new designs for industrial applications such as frequency converters, wind power converters, solar inverters, medical applications, professional power supplies and UPS. The tool allows designers to enter and calculate up to 15 load profiles simultaneously which, if desired, can be saved for later use. Each load profile can feature a different operating voltage and a different ambient temperature. As a special feature upon request, calculations for customer-specific capacitors can be performed.

Thanks to the update it is now even easier for design engineers to evaluate the performance of DC link capacitors under a wide range of conditions and to find the best solution for their application.



Links

AlCap useful life calculator www.epcos.com/alcap
Design tools www.epcos.com/tools

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