



## Film Capacitors – AC Capacitors

General purpose MKP AC capacitor

**Series/Type:** CBB65A-1  
**Ordering code:** B33331V series  
**Date:** October 2017  
**Version:** 1

© EPCOS AG 2017. Reproduction, publication and dissemination of this publication, enclosures hereto and the information contained therein without EPCOS' prior express consent is prohibited.

EPCOS AG is a TDK Group Company.

**Construction**

- Metallized polypropylene film
- Aluminum can and top
- Filling material: soft polyurethane resin

**Features**

- Self-healing properties
- Low dissipation factor
- Overpressure disconnection safety device
- Indoor mounting
- UL approved for diameter > 40 mm
- Humidity protected: 85°C 85% rel. Humidity (RH) at 460 V for 1000 h
- CE compatible


**Typical applications**

- For general AC filtering application




**Terminals**

- 2+2 fast-on terminal 6.3 x 0.8mm #250 style, others on request

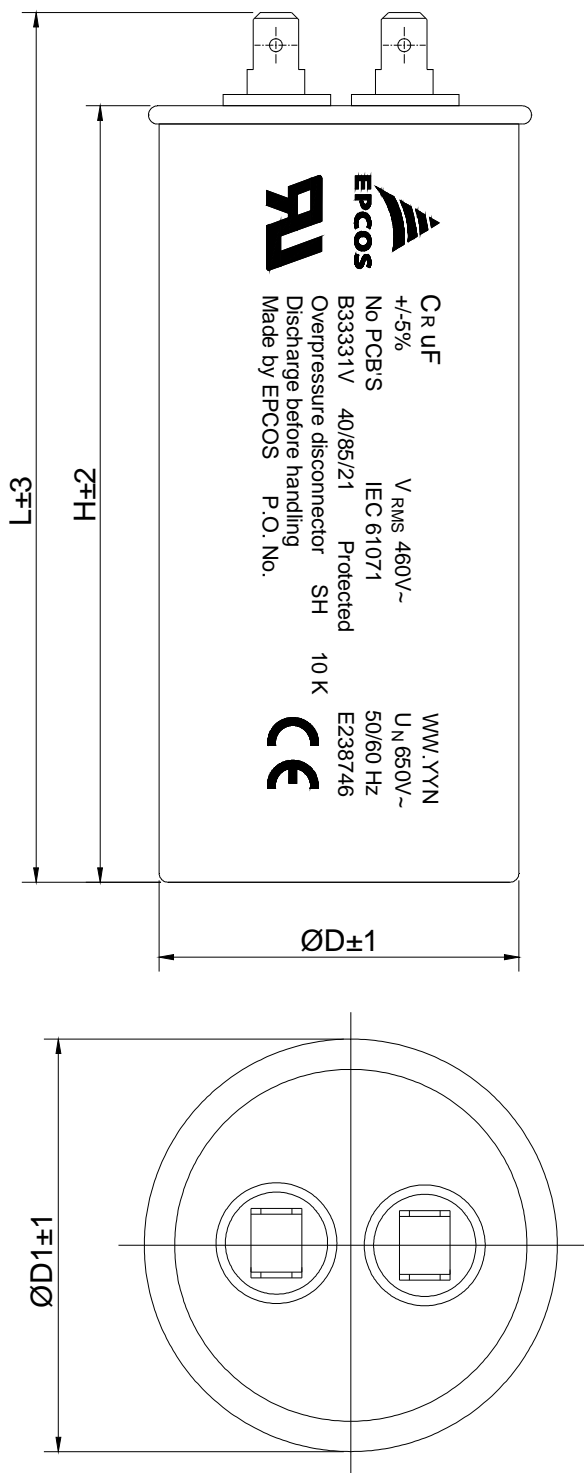
**Mounting Parts (Optional)**

- Threaded stud at bottom of can (M8, Max torque= 5 Nm for 50 mm diameter)

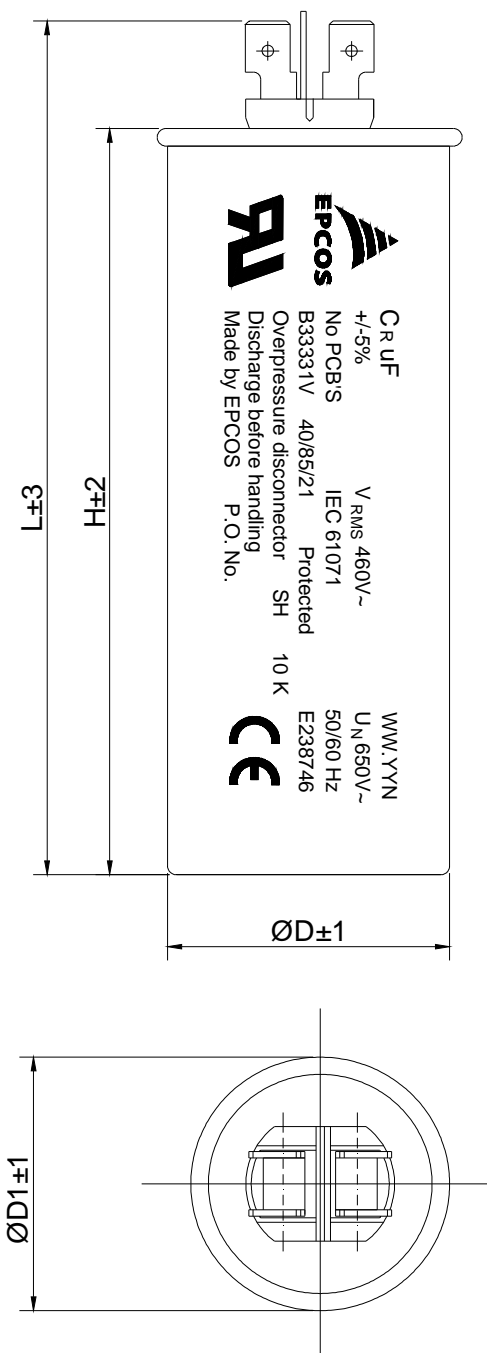
Technical data and specifications	
Reference standards	IEC 61071, UL 810
Rated voltage $V_R$	650 V
RMS voltage $V_{RMS}$	460 V
Rated capacitance $C_R$	See table
Tolerance	± 5%
Dielectric Dissipation factor $\tan \delta_0$ at +20 °C	$\leq 2 \cdot 10^{-4}$ (1 kHz)
Life test	IEC 61071
Life expectancy	100 000 h for $V_{RMS}$   $\Delta C/C$   $\leq 3\%$
Maximum ratings	
$I_{max}$	See table
$V_{max}$	1.1 • $V_{RMS}$ : 8 h/day 1.2 • $V_{RMS}$ : 5 min/day 1.3 • $V_{RMS}$ : 1 min/day

<b>Test data</b>	
AC test voltage terminal to terminal $V_{TT}$	975 V, 2 s
AC test voltage terminal to case $V_{TC}$	2200 V, 2 s
Dissipation factor $\tan \delta$ at +20 °C	$\leq 1.0 \cdot 10^{-3}$ (120 Hz)
<b>Climatic data</b>	
Climatic category	40/085/21 to IEC 60068-1
Lower category $\theta_{min}$	-40° C
Upper category $\theta_{max}$	+85° C
Maximum hot spot temperature $\theta_{HS}$	+85° C
Damp heat test $t_{test}$	21 days
<b>Enforced humidity protection</b>	
Temperature	+85° C
Relative humidity	85%
Duration	1000 h
Applied voltage	RMS voltage $V_{RMS}$
Criteria	Capacitance deviation < ±10% Dissipation factor variation $\Delta \tan \delta$ at +20 °C: <+0.005
<b>Mechanical and thermal properties of terminal insulator material</b>	
Terminal material ■ UL 94 V0 compatible	Self-extinguishing within 2 seconds of withdrawing glow wire without igniting wrapping tissue of GWT
<b>Compatibility to RoHS</b>	
Compliance to directive 2011/65/EU	
<b>Approvals</b>	
 US UL File E 238746	Approved component 10000 AFC. See table for approved ratings
	Compliance to LV directive 2014/35/EU

Dimensional drawings and marking

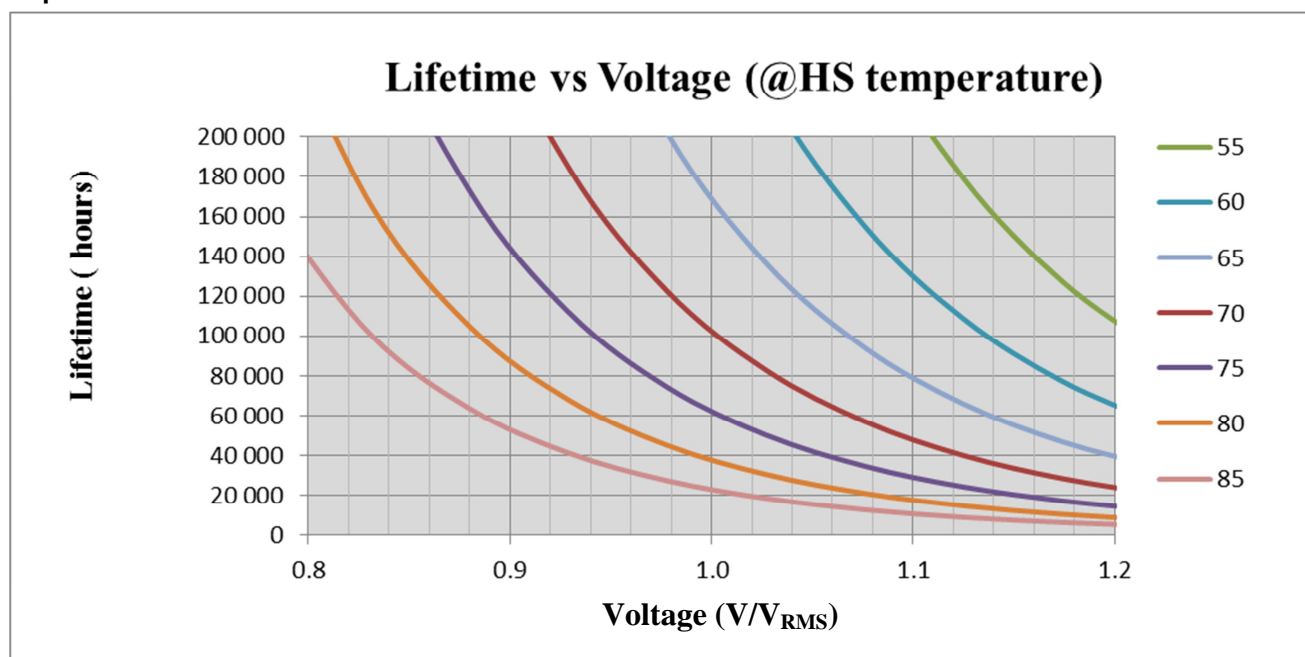


Drawing 1

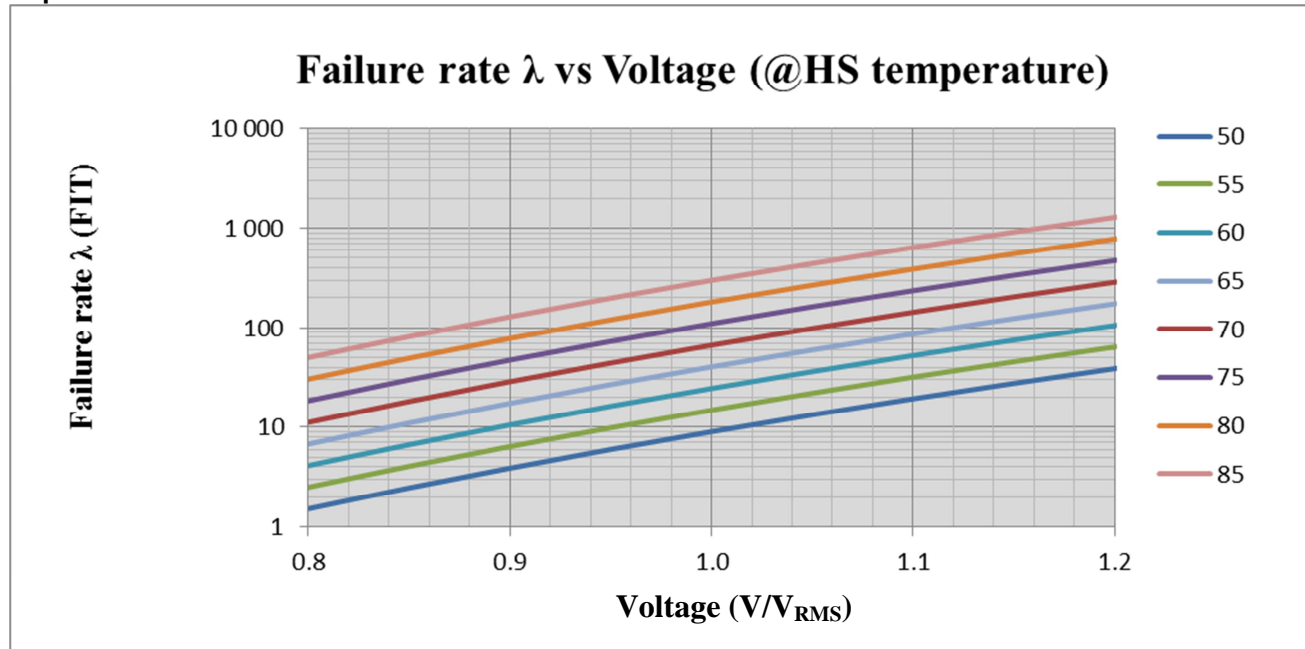


Drawing 2

Expected lifetime



Expected Fit rate



**Ordering codes and packing unit**

$V_R$ $V_{RMS}$ V	$C_R$ $\mu F$	$I_{max}^{1)}$ A	$\hat{i}$ A	ESR <sup>2)</sup> m $\Omega$	Case (D x H) mm	$D_1$ mm	L mm	Drawing	Ordering code	Packing unit	Approval
650 $V_R$	2	6	55	35	30 x 55	33	73	2	B33331V7205J0#X	100	
	4	7	75	23	30 x 65	38	68	2	B33331V7405J0#X	100	
460 $V_{RMS}$	6	8	100	21	30 x 65	33	83	2	B33331V7605J0#X	100	
	8	9	140	17	30 x 65	33	83	2	B33331V7805J0#X	64	
	10	10	130	19	30 x 75	33	93	2	B33331V7106J0#X	100	
	12	12	210	13	40.5 x 65	43.5	78	1	B33331V7126J0#X	49	
	14	12	200	11	40.5 x 65	43.5	78	1	B33331V7146J0#X	49	
	16	12	210	12	40.5 x 75	43.5	88	1	B33331V7166J0#X	49	
	20	15	260	11	40.5 x 85	43.5	98	1	B33331V7206J0#X	49	
	25	16	260	12	45 x 85	48	98	1	B33331V7256J0#X	49	UL
	30	16	340	10	50 x 85	53	98	1	B33331V7306J0#X	36	UL
	40	16	350	11	50 x 100	53	113	1	B33331V7406J0#X	36	UL
50	16	410	14	50 x 100	53	113	1	B33331V7506J0#X	36	UL	

<sup>1)</sup>  $I_{max}$  – Maximum RMS current for continuous operation defined for a hotspot of  $\leq 85^\circ C$ , case temperature of  $\leq 60^\circ C$ , including harmonics up to frequency of 20 kHz.

<sup>2)</sup> ESR – Equivalent Series resistance at 1KHz

**Composition of ordering code**

#:construction

6 Aluminium can Flat type

8 Aluminium can with M8 bolt

X: 0 as per this dimension and properties

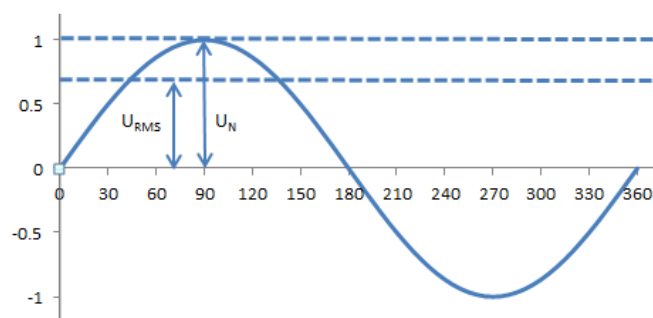
1-9 special dimension and properties

**Display of ordering codes for EPCOS products**

The ordering code for one and the same EPCOS product can be represented differently in data sheets, data books, other publications, on the EPCOS website, or in order-related documents such as shipping notes, order confirmations and product labels. **The varying representations of the ordering codes are due to different processes employed and do not affect the specifications of the respective products.** Detailed information can be found on the Internet under [www.epcos.com/orderingcodes](http://www.epcos.com/orderingcodes)

**Rated AC voltage  $V_R$** 

Maximum operating peak voltage of either polarity of reversing type waveform for which the capacitor is designed


**RMS voltage  $V_{RMS}$** 

Root mean square of the maximum permissible value of sinusoidal AC voltage in continuous operation

**Rated capacitance  $C_R$** 

Designed capacitance of the capacitor at 20 °C at 1 kHz

**Maximum continuous current  $I_{max}$** 

Maximum RMS current for continuous operation, including harmonics

**Maximum peak current  $\hat{I}$** 

Maximum repetitive peak current that can occur in continuous operation

**Maximum surge current  $I_s$** 

The admissible peak current induced by a switching or any other disturbance of the system which is allowed for a limited number of times.

$$I_s = C (dv/dt)_s$$

Maximum duration: 50 ms/pulse

Maximum number of occurrences: 1000 (during load)

**Equivalent Series resistance ESR**

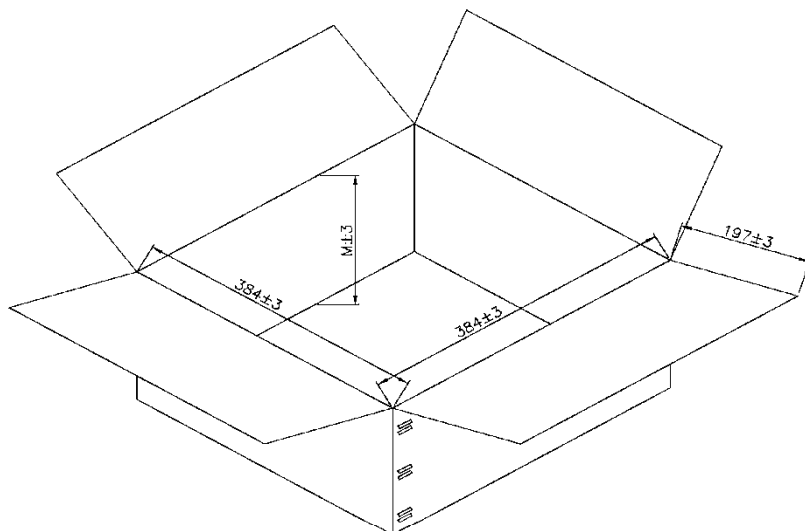
Effective resistance of the capacitor, it represents the resistance due to contacts and resistance of dielectric

**Self-inductance  $L_{self}$** 

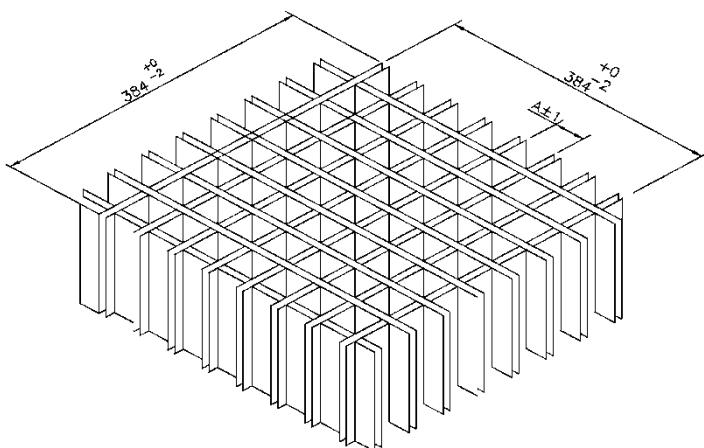
The series inductance of the terminals and the winding.

With self-inductance, it is possible to determine the resonance frequency.

$$f = \frac{1}{2\pi\sqrt{L_{self} \times C}}$$

**Packing box**


$$M = H(\text{Capacitor height}) + \text{Terminal height} + 10\text{mm min.}$$



**⚠** Please read “Applications warning, installation and maintenance instructions” and the “ZVEI - General safety recommendations for power capacitors”, which are available on the Internet at **[www.epcos.com/ac\\_capacitors](http://www.epcos.com/ac_capacitors)**, to ensure optimum performance and to prevent products from failing, and in worst case, bursting and fire. Information given in the data sheet reflects typical specifications.



## Important notes

The following applies to all products named in this publication:

1. 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 in the areas of application concerned. We nevertheless expressly point out **that such statements cannot be regarded as binding statements about the suitability of our products for a particular customer application**. As a rule, EPCOS is either unfamiliar with individual customer applications or less familiar with them than the customers themselves. For these reasons, it is always ultimately incumbent on the customer to check and decide whether an EPCOS product with the properties described in the product specification is suitable for use in a particular customer application.
2. We also point out that **in individual cases, a malfunction of electronic components or failure before the end of their usual service life cannot be completely ruled out in the current state of the art, even if they are operated as specified**. In customer applications requiring a very high level of operational safety and especially in customer applications in which the malfunction or failure of an electronic component could endanger human life or health (e.g. in accident prevention or life-saving systems), it must therefore be ensured by means of suitable design of the customer application or other action taken by the customer (e.g. installation of protective circuitry or redundancy) that no injury or damage is sustained by third parties in the event of malfunction or failure of an electronic component.
3. **The warnings, cautions and product-specific notes must be observed.**
4. In order to satisfy certain technical requirements, **some of the products described in this publication may contain substances subject to restrictions in certain jurisdictions (e.g. because they are classed as hazardous)**. Useful information on this will be found in our Material Data Sheets on the Internet ([www.epcos.com/material](http://www.epcos.com/material)). Should you have any more detailed questions, please contact our sales offices.
5. We constantly strive to improve our products. Consequently, **the products described in this publication may change from time to time**. The same is true of the corresponding product specifications. Please check therefore to what extent product descriptions and specifications contained in this publication are still applicable before or when you place an order. We also **reserve the right to discontinue production and delivery of products**. Consequently, we cannot guarantee that all products named in this publication will always be available. The aforementioned does not apply in the case of individual agreements deviating from the foregoing for customer-specific products.
6. Unless otherwise agreed in individual contracts, **all orders are subject to the current version of the "General Terms of Delivery for Products and Services in the Electrical Industry" published by the German Electrical and Electronics Industry Association (ZVEI)**.
7. The trade names EPCOS, CeraCharge, CeraDiode, CeraLink, CeraPlus, CSMP, CTVS, DeltaCap, DigiSiMic, ExoCore, FilterCap, FormFit, LeaXield, MiniBlue, MiniCell, MKD, MKK, MotorCap, PCC, PhaseCap, PhaseCube, PhaseMod, PhiCap, PowerHap, PQSine, PQvar, SIFERRIT, SIFI, SIKOREL, SilverCap, SIMDAD, SiMic, SIMID, SineFormer, SIOV, ThermoFuse, WindCap are **trademarks registered or pending** in Europe and in other countries. Further information will be found on the Internet at [www.epcos.com/trademarks](http://www.epcos.com/trademarks).