



Film Capacitors – AC Capacitors

General purpose MKP AC capacitor

Series/Type:	CBB65A-1
Ordering code:	B33331V series
Date:	2023-02-06
Version:	2

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

Film Capacitors – AC Capacitors
B33331V series
General purpose MKP AC capacitor
CBB65A-1

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

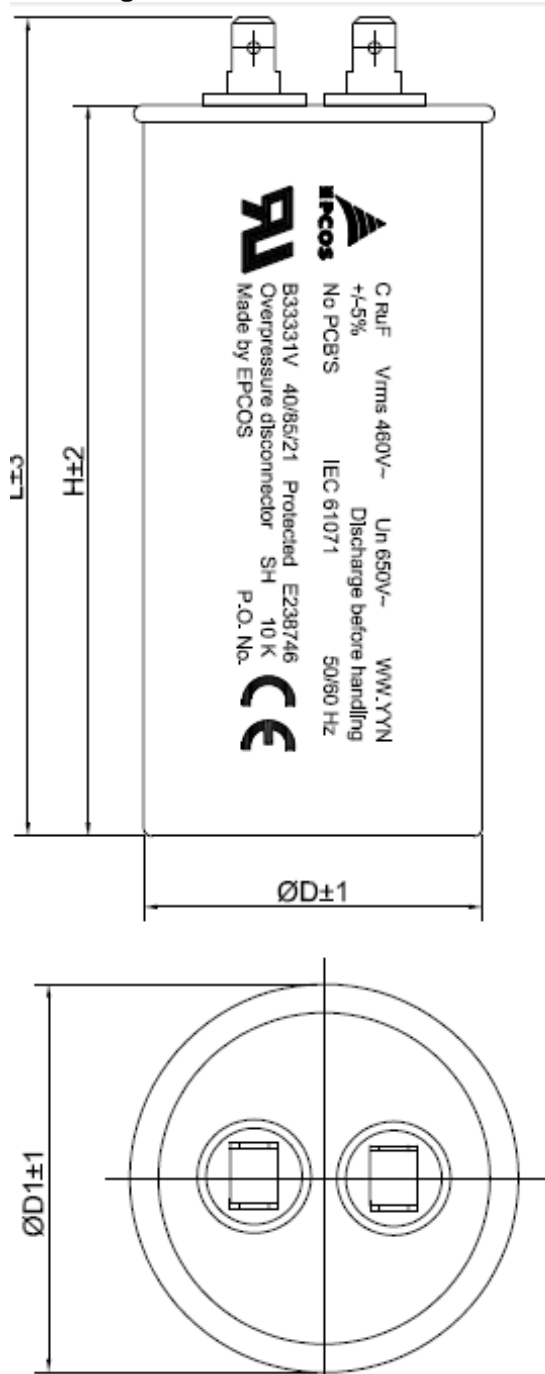
Dimensional drawings and marking

Note- Check the table before marking UL .

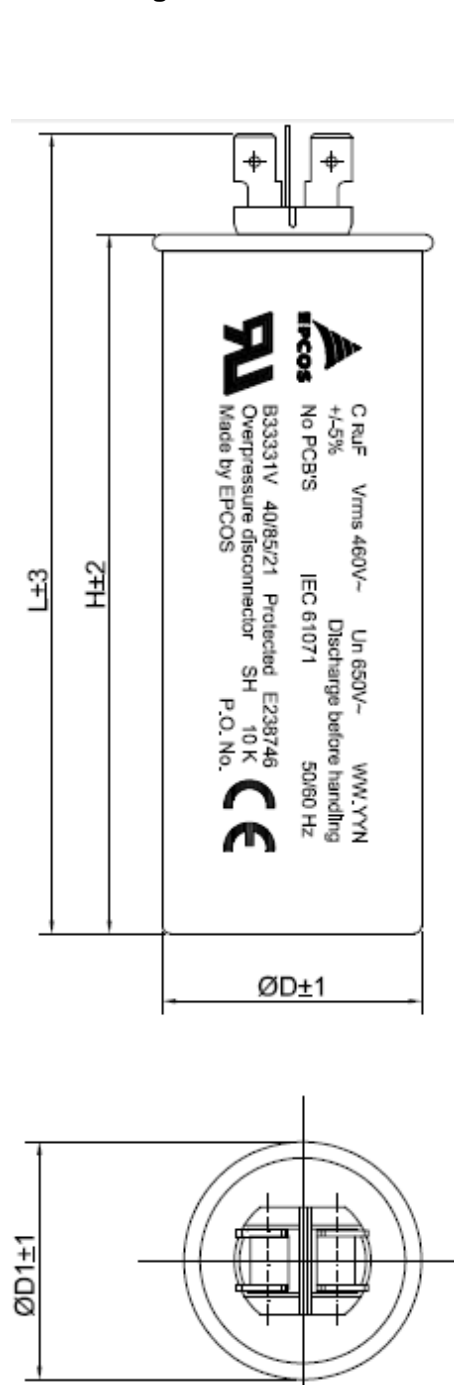
UL to be marked only for rating between 25uF to 50uF.

Don't mark UL for rating between 2uF to 20uF. In the blank space the marking can be shifted left

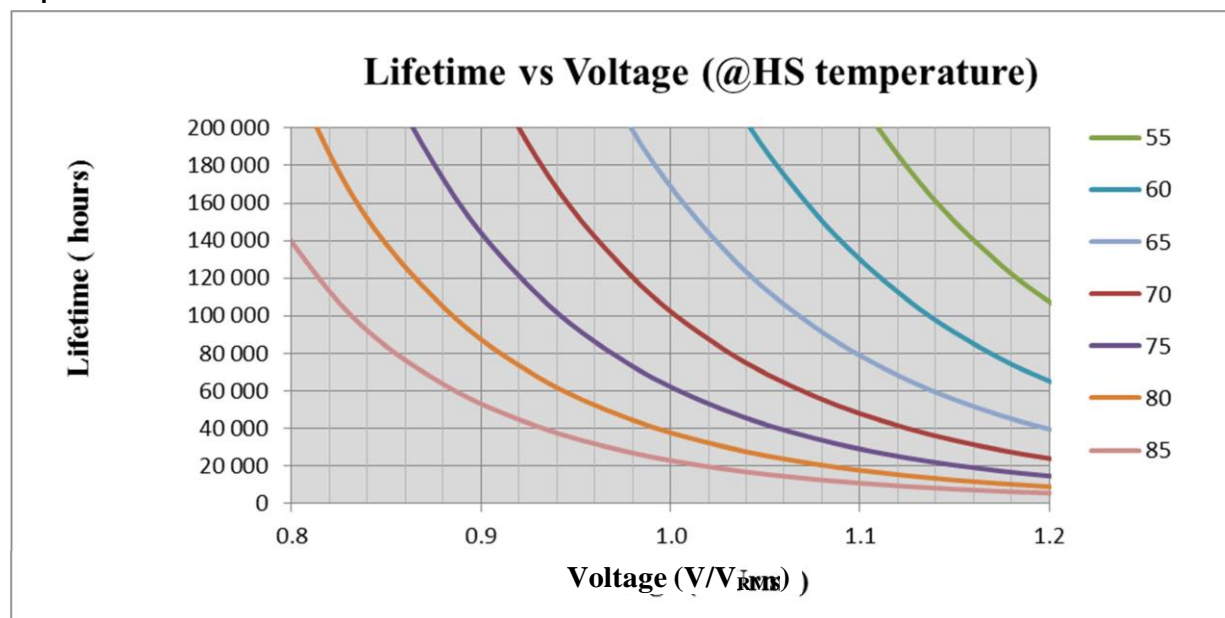
Drawing 1



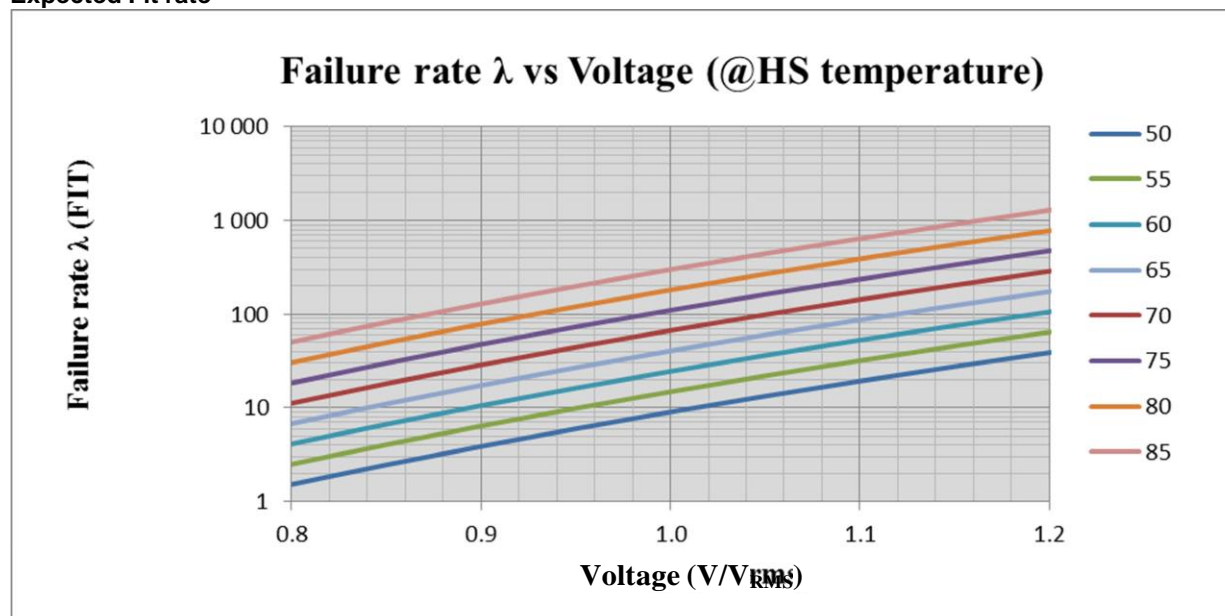
Drawing 2



Expected lifetime



Expected Fit rate



Ordering codes and packing unit

V_R V_{RMS} V	C_R μF	$I_{max}^{1)}$ A	\hat{i} A	ESR ²⁾ mΩ	Case (D x H) mm	D_1 mm	L mm	Drawing	Ordering code	Packing unit	Approval
650 V_R 460 V_{RMS}	2	6	55	35	30 x 55	33	73	2	B33331V7205-J0#X	100	
	4	7	75	23	30 x 65	33	83	2	B33331V7405-J0#X	100	
	6	8	100	21	30 x 65	33	83	2	B33331V7605-J0#X	100	
	8	9	140	17	30 x 65	33	83	2	B33331V7805-J0#X	100	
	10	10	130	19	30 x 75	33	93	2	B33331V7106-J0#X	100	
	12	12	210	13	40.5 x 65	43.5	78	1	B33331V7126-J0#X	49	
	14	12	200	11	40.5 x 65	43.5	78	1	B33331V7146-J0#X	49	
	16	12	210	12	40.5 x 75	43.5	88	1	B33331V7166-J0#X	49	
	20	15	260	11	40.5 x 85	43.5	98	1	B33331V7206-J0#X	49	
	25	16	260	12	45 x 85	48	98	1	B33331V7256-J0#X	49	UL
	30	16	340	10	50 x 85	53	98	1	B33331V7306-J0#X	36	UL
	40	16	350	11	50 x 100	53	113	1	B33331V7406-J0#X	36	UL
	50	16	410	14	50 x 100	53	113	1	B33331V7506-J0#X	36	UL

¹⁾ 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.

²⁾ ESR – Equivalent Series resistance at 1KHz

Composition of ordering code

#:construction

6 Aluminium Can Flat type

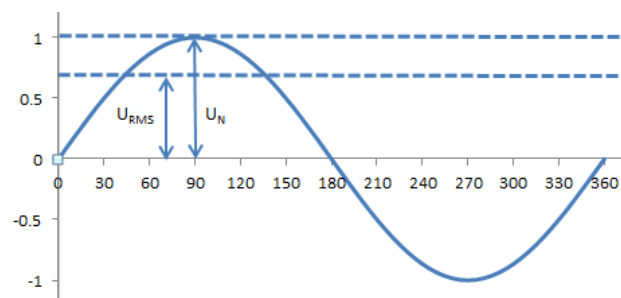
8 Aluminium Can with M8 bolt

X: 0 as per this dimension and properties

1-9 special dimension and properties

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

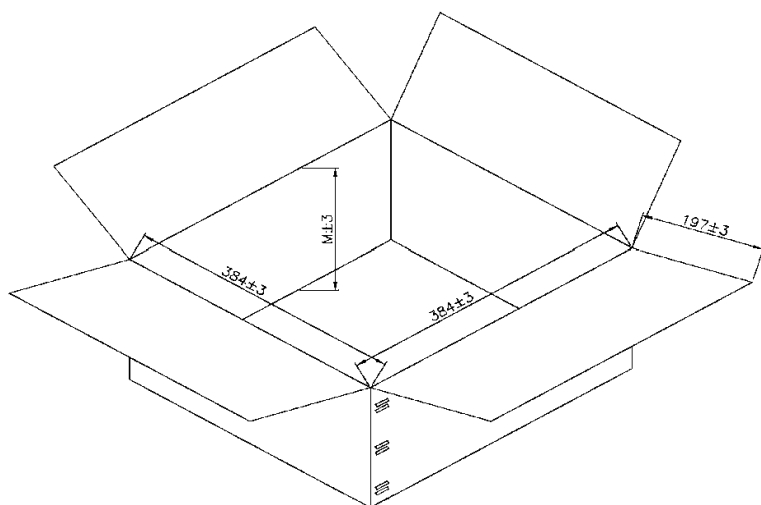
Self-inductance L_{self}

The series inductance of the terminals and the winding.

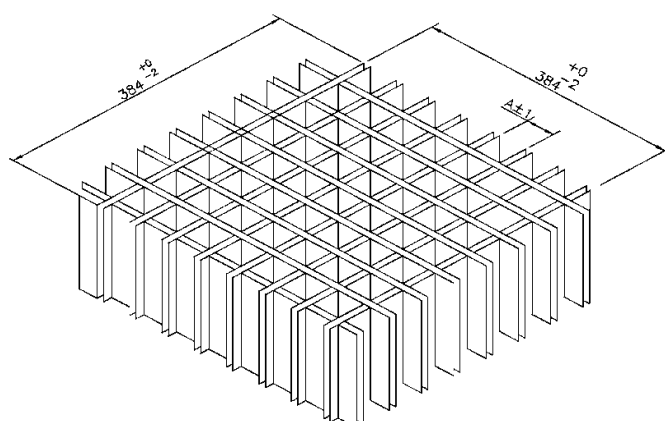
With self-inductance, it is possible to determine the resonance frequency.

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

Packing box



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



Cautions and warnings

⚠ Please read “Applications warning, installation and maintenance instructions” and the “General Safety Data Sheet for Power Capacitors” issued by ZVEI, which are available on the internet at www.tdk-electronics.tdk.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. You are kindly requested to approve our product specifications or request our approval for our specification before ordering.

Product for sales in India only

The ordering code for one and the same product can be represented differently in data sheets, data books, other publications, on the company 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.tdk-electronics.tdk.com/orderingcodes

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 we are 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 a 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.tdk-electronics.tdk.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 our General Terms and Conditions of Supply.**
7. **Our manufacturing sites serving the automotive business apply the IATF 16949 standard.** The IATF certifications confirm our compliance with requirements regarding the quality management system in the automotive industry. Referring to customer requirements and customer specific requirements ("CSR") TDK always has and will continue to have the policy of respecting individual agreements. Even if IATF 16949 may appear to support the acceptance of unilateral requirements, we hereby like to emphasize that **only requirements mutually agreed upon can and will be implemented in our Quality Management System**. For clarification purposes we like to point out that obligations from IATF 16949 shall only become legally binding if individually agreed upon.

8. The trade names EPCOS, CarXield, CeraCharge, CeraDiode, CeraLink, CeraPad, CeraPlas, CSMP, CTVS, DeltaCap, DigiSiMic, ExoCore, FilterCap, FormFit, InsuGate, LeaXield, MiniBlue, MiniCell, MKD, MKK, ModCap, MotorCap, PCC, PhaseCap, PhaseCube, PhaseMod, PhiCap, PowerHap, PQSine, PQvar, SIFERRIT, SIFI, SIKOREL, SilverCap, SIMDAD, SiMic, SIMID, SineFormer, SIOV, ThermoFuse, WindCap, XieldCap are **trademarks registered or pending** in Europe and in other countries. Further information will be found on the Internet at www.tdk-electronics.tdk.com/trademarks

Release 2023-02
