



Film Capacitors - Power Electronic Capacitors

General purpose applications

Series/Type: FilterCap MKD AC – Three phase
Ordering code: B3237X Series
Date: 2018-03-28
Version: 01

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Construction and general data

Dielectric	Metallized polypropylene film
Resin filling	Non PCB, soft polyurethane
Safety device	Overpressure disconnecter, self-healing technology
Mounting and grounding	Stud on bottom of aluminum can
Cooling	Naturally air-cooled (or forced air cooling)
Degree of protection	Indoor mounting IP20 (IP54 upon request)
Discharge resistor	Upon request
Reference standards	IEC 61071, GB/T17702, IEC60831, UL810 ed.05
Safety approval	For B32377 type A and B32377 type B: UL 810, CSA C22.2, No 190, max. 600 V RMS, 50/60 Hz, “Protected”, 10k AFC, max. 70 °C. File no.: E487229, CCN:CYWT2/8
Terminals	Clamp terminals – B32377 series with delta connection



Delta connection
Type A

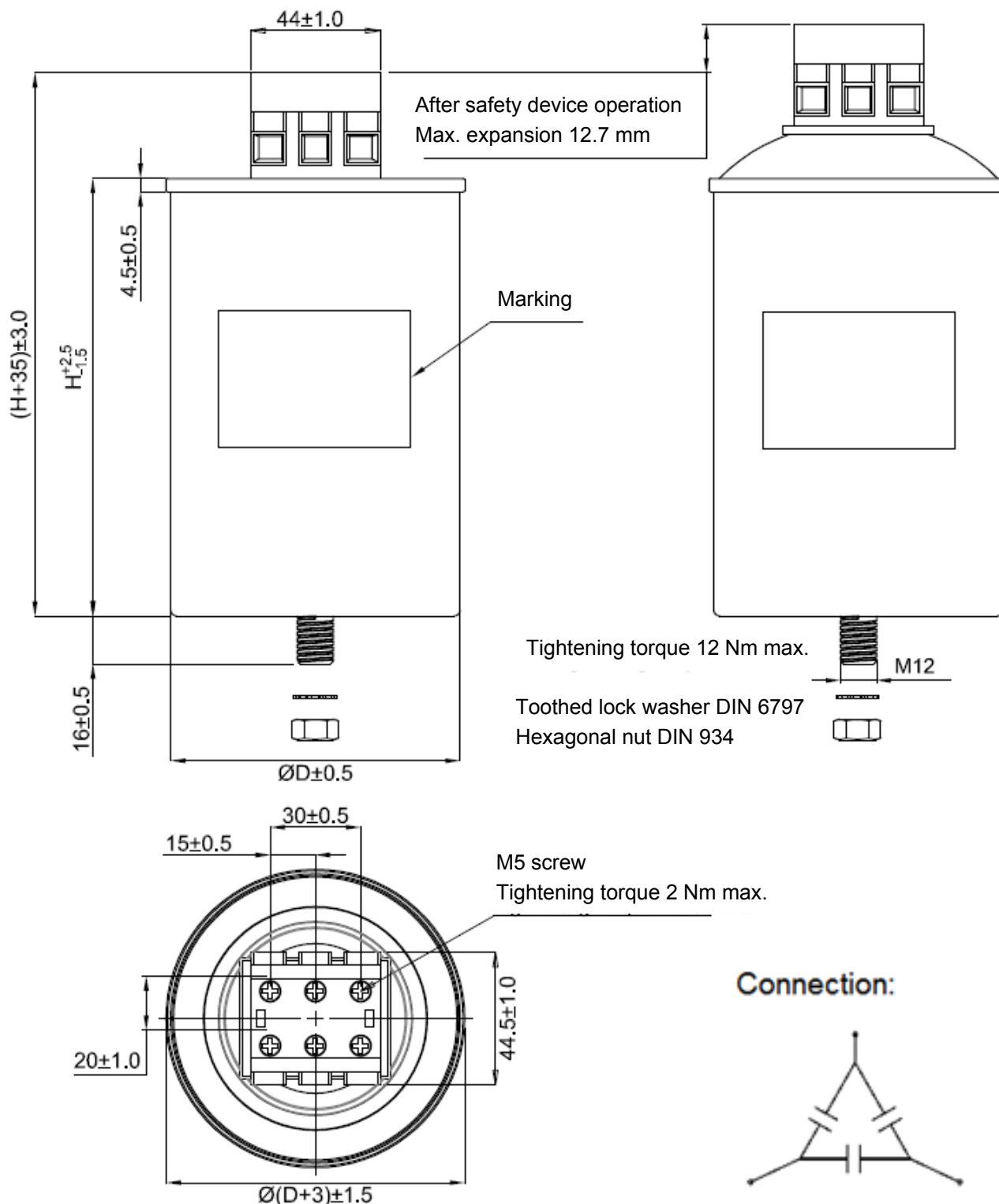


Delta connection
Type B

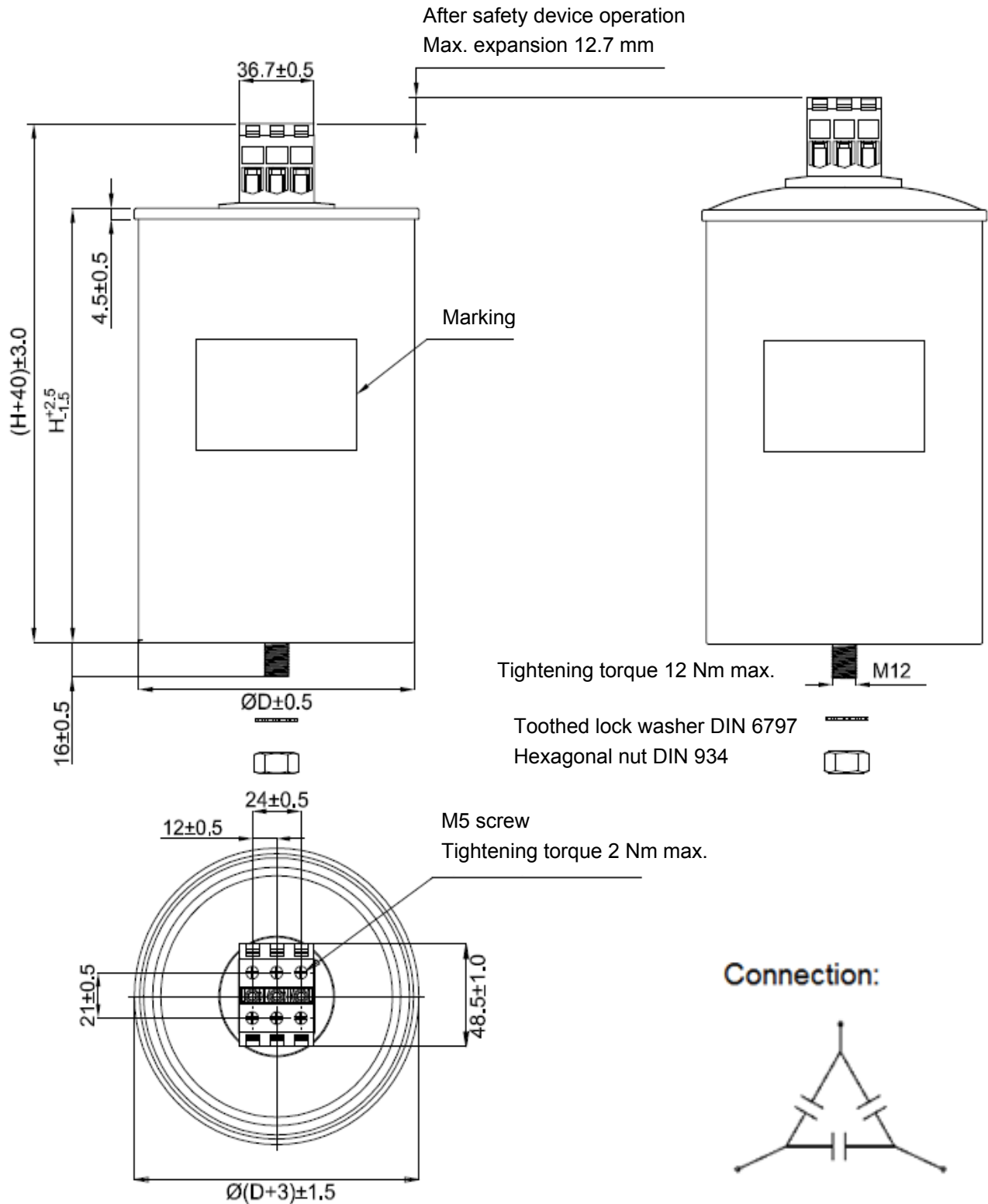


Delta connection
Type C

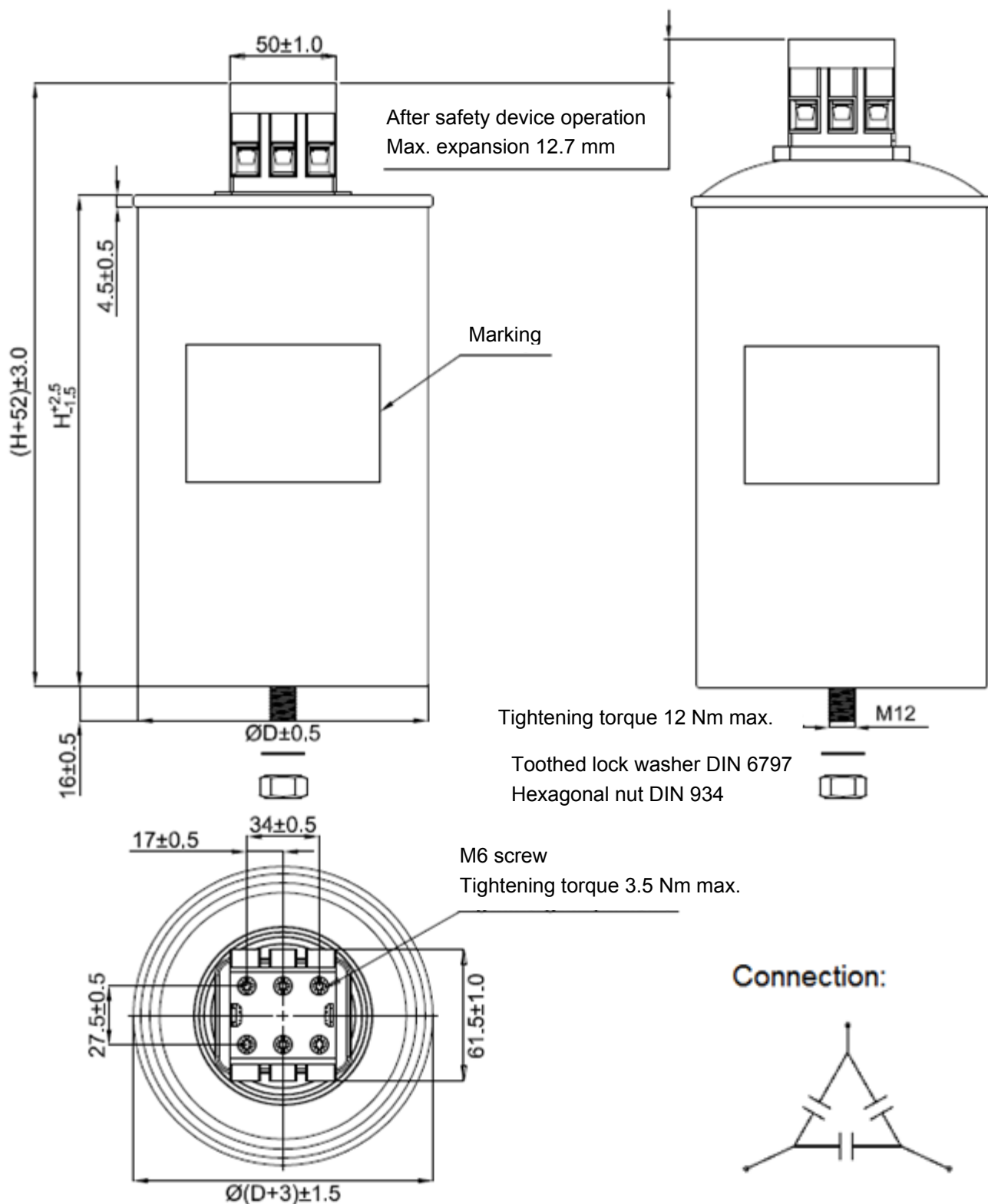
Dimensional drawings



B32377: Delta connection type A



B32377: Delta connection type B



B32377: Delta connection type C

Specifications and characteristics

 Rated capacitance C_R : 3x 10 ... 3x 400 μF

 Tolerance: $\pm 5\%$

Rate AC voltage V_{RMS}	Rate AC voltage V_{RAC}	Rate DC voltage V_{RDC}
250	350	675
330	460	900
420	590	1050
480	680	1200
530	750	1350
600	850	1500
660	960	1650
720	1020	1800
780	1100	1950
850	1200	2100

Test data

Voltage between terminals V_{TT}	$2.15 \cdot V_{\text{RMS}}, 2 \text{ s}$
Voltage between terminals and aluminium can V_{TC}	4000 V AC, 10 s
Dissipation factor $\tan \delta$ at 100Hz	$\leq 1.0 \cdot 10^{-3}$
Life test	IEC 61071
Life expectancy	100000 h for $V_{\text{RMS}} \mid \Delta C/C \mid \leq 3\%$

Climatic category 40/70/21

Θ_{stg}^*	- 40 ... +85°C
Θ_{min}	- 40°C
Θ_{max}^{**}	+70°C
Θ_{hs}^{***}	+85°C
Max. permissible humidity	95% (test = 21 days)
Max. permissible altitude	2000 m above sea level

Mechanical characteristics	
Terminal cross section	B32377 Type A and Type B: 25 mm ² B32377 Type C: 35 mm ²
Max. torque (case)	M12: 12 Nm
Max. torque (for screw terminal)	B32377 Type A and Type B: 2 Nm B32377 type C: 3.5 Nm

*: Θ_{stg} – Storage temperature.

** : Θ_{max} – Considering mounting position with terminals to the top. For other mounting position, please request evaluation.

***: Θ_{hs} – Maximum temperature allowed at the capacitors hot spot.

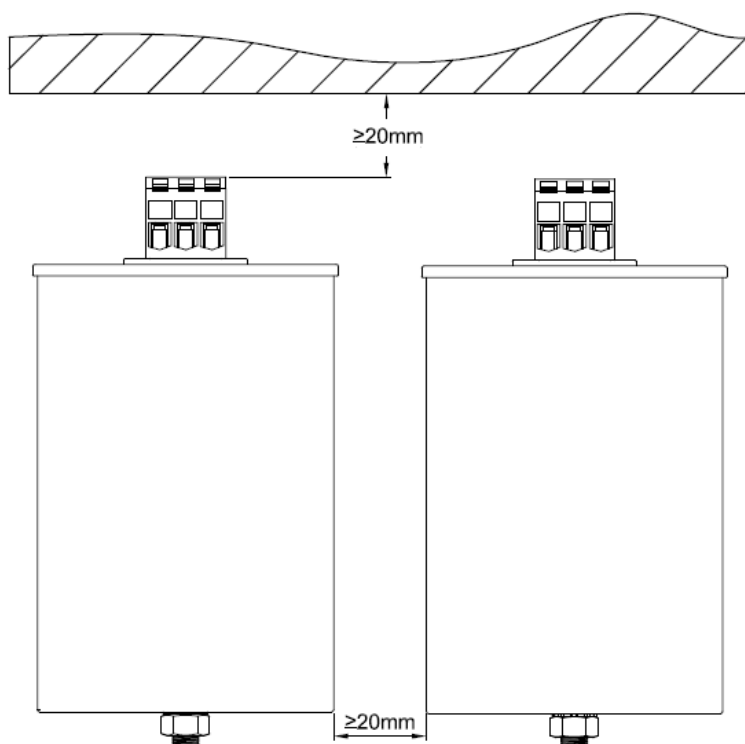
Design data	
Dimensions (D x H)	According to specification table
Weight approx.	According to specification table
Max. terminal current	Screw clamp terminal: 50 A (B32377 type A) 80 A (B32377 type B) 100 A (B32377 type C)

Electrical characteristics: Clearance and creepage distances

Series	Diameter mm	Terminal to terminal		Terminal to case	
		Min. clearance mm	Min. creepage mm	Min. clearance mm	Min. creepage mm
B32377 Type A	75/85/96/116/136	Not applicable	12.7	9.6	12.7
B32377 Type B	96/116/136	Not applicable	12.7	9.6	12.7
B32377 Type C	116/136	Not applicable	19.1	19.1	19.1

Installation space requirements

- 1) A minimum distance of 20 mm between the capacitors is necessary to maintain sufficient cooling.
- 2) Keep at least 20 mm space above the capacitor and do not attach any mounting components at the crimp or on top. This gap will allow a longitudinal extension of the can in order to ensure that the over-pressure disconnecter can fully extend.




EPCOS
B32377A5107J030
3×100μF Δ ±5%
 U_{RMS} 530V~
 U_N 750V~
 I_s 8.10kA
 IEC 61071 50/60Hz
 Overpressure disconnecter SH
 No PCB -40...+70°C
 Protected 10K AFC UL File E487229
 Discharge capacitor before handling
 Maximum torque of terminals: 2Nm 
 Made by EPCOS 42 Z 2017
 123456789001


Label information
Date code explanation
WW Z YYYY
WW Z YYYY: production weeks (ex.: 25)

WW Z YYYY: produced in Zhuhai (China)

WW Z YYYY: production year (ex.: 2015)

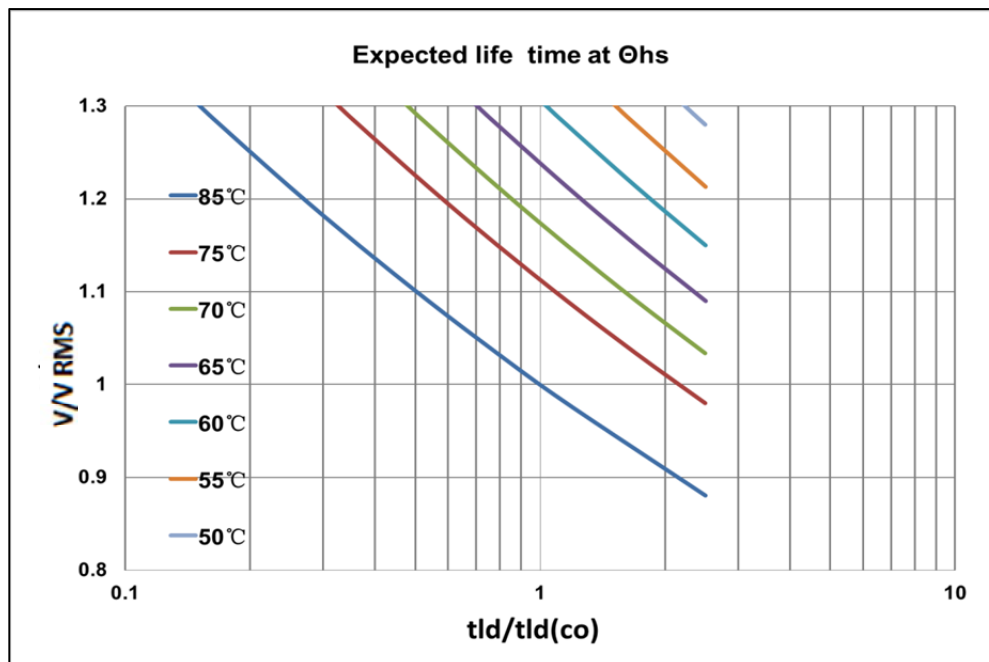
Bar code explanation

Bar code consists of batch number and serial number.

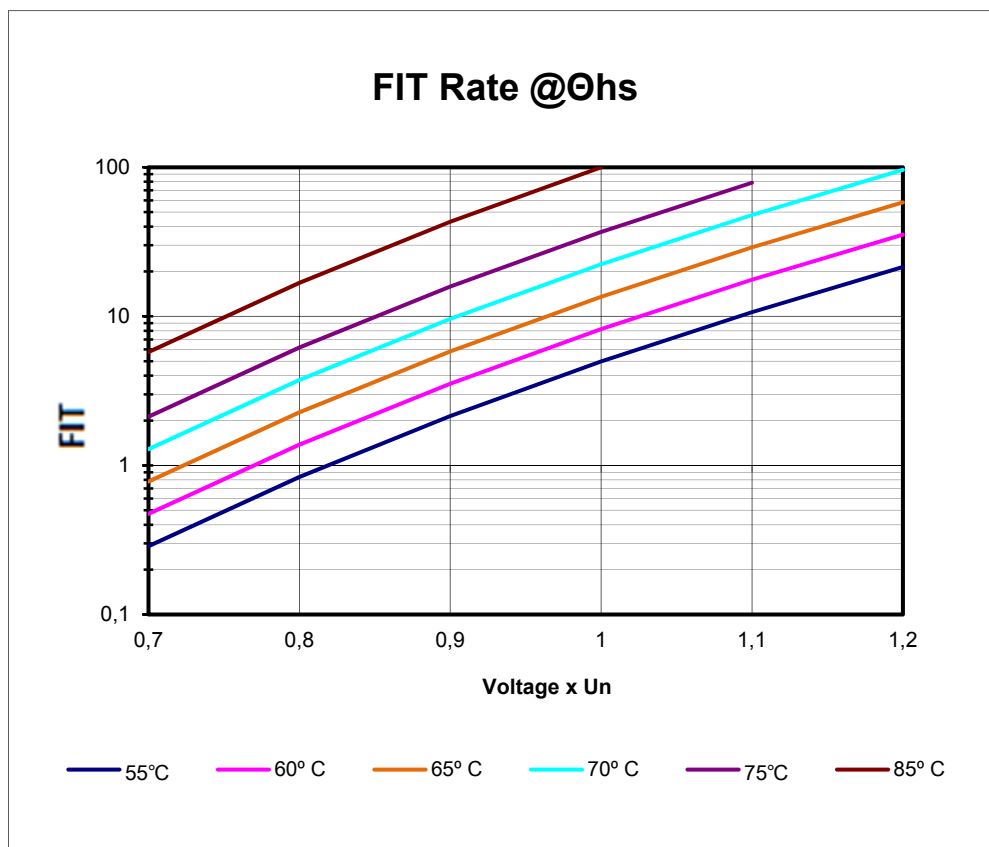
Batch number: 9 digits (ex.: 123456789)

Serial number: 3 digits (ex.: 001)

Expected lifetime

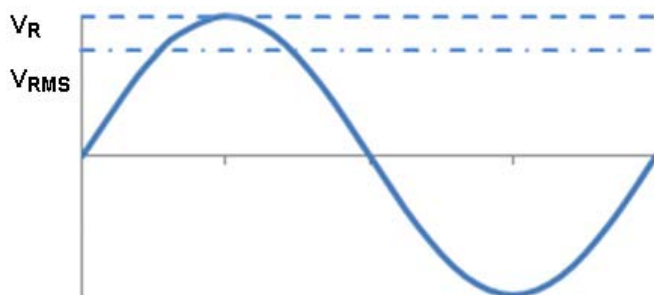


Expected fit rate



Rated AC voltage V_R

The maximum operating peak recurrent voltage of either polarity of a reversing type waveform for which the capacitor has been designed.

Rated AC voltage V_{RMS}


The root mean square of maximum permissible value of sinusoidal AC voltage in continuous operation.

Rated capacitance C_R

Capacitance of the capacitor at 20°C and 50 to 120Hz.

Maximum current I_{max}

The maximum RMS current for continuous operation with a self-heating $\Delta T \leq 15^\circ\text{C}$ @ $\Theta_{amb} = 70^\circ\text{C}$ frequency harmonics $\leq 20\text{kHz}$. A higher I_{max} will be possible on request at lower ambient temperature.

Maximum peak current \hat{I}

The maximum permitted repetitive peak current that can occur during continuous operation.

$$\hat{I} = C \times (dv/dt)_{max}$$

Where C is capacitance and dv/dt indicates rate of voltage rise, i.e. maximum permitted repetitive rate of rise of the operational voltage, usually using instead of \hat{I} .

Maximum surge current I_s

The peak non-repetitive current induced by switching or any other disturbance of the system permitted for a limited number of times, at durations shorter than the basic period.

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

Maximum duration: 50 ms/pulse

Maximum number of occurrences: 1000 (during load)

Series resistance R_s

The series resistance of a capacitor results of the resistive losses that occur in the electrodes, contacting and in the inner wiring.

The series resistance R_s generates the ohmic losses ($I^2 \times R_s$) in a capacitor, and is largely independent of frequency ($\leq 20\text{kHz}$).

Self-inductance L_{self}

The self-inductance is produced by the inductance of the terminals and the windings. It allows the resonance frequency to be determined:

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

Capacitor catalog number, type or series designation

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
B	3	2	3	7	7	A	3	4	0	7	J	0	3	0
FilterCap MKD AC series					A	B	C	D		E	F	G	H	I

A. Indicates termination type

7 = M5 (3x) Clamp terminals (type A and B, delta connection)

7 = M6 (3x) Clamp terminals (type C, delta connection)

8 = M5 (4x) Clamp terminals (star connection)

B. Indicates revision status (any letter)
C. Indicates first number of voltage value (any digit)
D. Indicates first and second figure of capacitance value (any two digits)
E. Indicates exponent used as multiplier (any digit)
F. Indicates capacitor tolerance for PEC AC capacitor

G = ±2%; J = ±5 %; K = ± 10 %; M = ±20%

G. Indicates coded capacitance value
H. Indicates second number of voltage value (any digit)
I. Indicates Accessories (any digit)

Technical data of standard products
B32377 series - UL certification up to 600 V RMS

V_R / V_{RMS} V_{AC}	C_R μF	Ordering code	I_{max} A	\hat{I} A	D mm	H mm	Terminal type	Weight kg	Packing Unit
350 / 250	3×50	B32377A2506J050	21	1300	75	163	A	0.9	6
	3×60	B32377A2606J050	24	1500	75	163	A	0.9	6
	3×70	B32377A2706J050	26	1800	75	163	A	0.9	6
	3×84	B32377A2846J050	28	1900	75	163	A	0.9	6
	3×100	B32377A2107J050	30	1800	75	200	A	1.1	6
	3×150	B32377A2157J050	35	2100	75	230	A	1.3	6
	3×160	B32377A2167J050	37	2200	75	230	A	1.3	6
	3×200	B32377A2207J050	42	3000	96	236	B	2.0	4
	3×250	B32377A2257J050	45	3000	96	281	B	2.5	4
	3×300	B32377A2307J050	54	4500	116	236	B	3.0	4
3×330	B32377A2337J050	56	5000	116	236	B	3.0	4	
3×400	B32377A2407J050	60	4800	116	281	B	3.5	4	
460 / 330	3×50	B32377A3506J030	23	1500	75	163	A	0.9	6
	3×60	B32377A3606J030	26	1400	75	200	A	1.1	6
	3×70	B32377A3706J030	29	1500	75	200	A	1.1	6
	3×80	B32377A3806J030	30	1500	75	230	A	1.3	6
	3×100	B32377A3107J030	33	1400	75	275	A	1.5	6
	3×120	B32377A3127J030	38	2000	85	245	A	1.8	4
	3×150	B32377A3157J030	42	2500	96	245	A	2.3	4
	3×200	B32377A3207J030	50	3600	116	236	B	3.0	4
	3×250	B32377A3257J030	54	4200	116	281	B	3.5	4
	3×300	B32377A3307J030	60	5500	136	236	B	4.0	4
3×330	B32377A3337J030	63	6000	136	236	B	4.0	4	
590 / 420	3×50	B32377A4506J020	25	1300	75	200	A	1.1	6
	3×60	B32377A4606J020	28	1300	75	230	A	1.3	6
	3×70	B32377A4706J020	30	1500	75	245	A	1.4	6
	3×80	B32377A4806J020	31	1300	75	275	A	1.5	6
	3×100	B32377A4107J020	36	1700	85	275	A	1.9	4
	3×150	B32377A4157J020	46	3200	116	236	B	3.0	4
	3×200	B32377A4207J020	52	3360	116	281	B	3.5	4
	3×250	B32377A4257J020	60	4880	136	251	B	4.4	4
680 / 480	3×30	B32377A4306J080	20	900	75	200	A	1.1	6
	3×40	B32377A4406J080	24	1200	75	200	A	1.1	6
	3×50	B32377A4506J080	27	1100	75	245	A	1.4	6
	3×60	B32377A4606J080	30	1200	75	275	A	1.5	6
	3×70	B32377A4706J080	33	1500	85	245	A	1.8	4
	3×74	B32377A4746J080	35	1600	96	230	A	2.0	4
	3×80	B32377A4806J080	35	2000	85	275	A	2.0	4
	3×100	B32377A4107J080	40	2000	96	275	A	2.5	4
	3×130	B32377A4137J080	47	3200	116	251	B	3.2	4

B32377 series - UL certification up to 600 V RMS

V_R / V_{RMS} V_{AC}	C_R μF	Ordering code	I_{max} A	\hat{I} A	D mm	H mm	Terminal type	Weight kg	Packing Unit
680 / 480	3×138	B32377B4137J880	49	3200	116	251	B	3.2	4
	3×150	B32377A4157J080	50	2900	116	281	B	3.5	4
	3×170	B32377A4177J080	54	4200	136	236	B	4.0	4
	3×200	B32377A4207J080	59	4465	136	251	B	4.4	4
750 / 530	3×20	B32377A5206J030	17	950	75	163	A	0.9	6
	3×25	B32377A5256J030	20	850	75	200	A	1.1	6
	3×30	B32377A5306J030	23	900	75	230	A	1.3	6
	3×40	B32377A5406J030	28	900	75	275	A	1.5	6
	3×45	B32377A5456J030	30	1000	75	275	A	1.5	6
	3×50	B32377A5506J030	32	1700	96	206	B	1.8	4
	3×62	B32377A5626J030	36	2800	116	206	B	2.5	4
	3×70	B32377A5706J030	40	2600	116	206	B	2.5	4
	3×75	B32377A5756J030	41	2550	116	206	B	2.5	4
	3×80	B32377A5806J030	44	3150	136	206	B	3.1	4
	3×100	B32377A5107J030	44	2700	116	236	B	2.8	4
	3×120	B32377A5127J030	52	3500	136	236	B	4.0	4
	3×133	B32377B5137J330	55	3500	136	251	B	4.4	4
3×150	B32377A5157J030	58	2840	136	281	B	4.9	4	
850 / 600	3×15	B32377A6156J000	14	780	75	163	A	1.1	6
	3×20	B32377A6206J000	18	1100	85	163	A	1.3	4
	3×25	B32377A6256J000	21	1300	85	163	A	1.3	4
	3×30	B32377A6306J000	24	1600	96	163	A	1.5	4
	3×38	B32377A6386J000	29	1440	96	200	A	1.8	4
	3×50	B32377A6506J000	34	1400	85	275	A	1.9	4
	3×50	B32377B6506J000	36	1700	96	230	A	2.0	4
	3×70	B32377A6706J000	40	1300	85	350	A	2.4	4
	3×83	B32377A6836J000	45	3600	136	206	B	3.6	4
	3×90	B32377A6906J000	48	3000	136	236	B	4.0	4
3x100	B32377A6107J000	52	2700	136	236	B	4.0	4	

B32377 series - UL certification pending

V_R / V_{RMS} V_{AC}	C_R μF	Ordering code	I_{max} A	\hat{I} A	D mm	H mm	Terminal type	Weight kg	Packing Unit
960 / 660	3×40	B32377A6406J060	32	1800	116	200	C	2.5	4
	3×50	B32377A6506J060	36	1900	116	230	C	3.0	4
	3×60	B32377A6606J060	36	2000	116	245	C	3.2	4
	3×70	B32377A6706J060	43	2300	116	275	C	3.5	4
	3×75	B32377A6756J060	43	2300	116	275	C	3.5	4
	3×80	B32377A6806J060	44	2400	116	275	C	3.5	4
	3×90	B32377A6906J060	50	3200	136	245	C	4.4	4
	3x100	B32377A6107J060	54	3400	136	245	C	4.4	4
	3x110	B32377A6117J060	55	3200	136	275	C	4.9	4

B32377 series - UL certification pending

V_R / V_{RMS} V_{AC}	C_R μF	Ordering code	I_{max} A	\hat{I} A	D mm	H mm	Terminal type	Weight kg	Packing Unit
1020 / 720	3×25	B32377A7256J020	25	1300	96	206	B	1.8	4
	3×30	B32377A7306J020	28	1400	96	206	B	1.8	4
	3×34	B32377A7346J020	33	1400	96	236	B	2.0	4
	3×38	B32377A7386J020	35	2000	116	200	C	2.5	4
	3×40	B32377A7406J020	36	2000	116	200	C	2.5	4
	3×50	B32377A7506J020	38	2100	116	230	C	3.0	4
	3×56	B32377A7566J020	40	2100	116	245	C	3.2	4
	3×60	B32377A7606J020	42	2200	116	275	C	3.5	4
	3×65	B32377A7656J020	44	2000	116	275	C	3.5	4
	3×75	B32377A7756J020	48	3000	136	230	C	4.0	4
3×100	B32377B7107J020	56	3200	136	275	C	4.9	4	
1100 / 780	3×25	B32377A7256J080	25	1100	96	236	B	2.0	4
	3×29	B32377A7296J080	28	1200	96	251	B	2.2	4
	3×30	B32377A7306J080	30	1400	116	200	C	2.5	4
	3×35	B32377A7356J080	31	1900	116	200	C	2.5	4
	3×40	B32377A7406J080	35	1800	116	230	C	2.7	4
	3×47	B32377A7476J080	38	1860	116	245	C	3.0	4
	3×50	B32377A7506J080	40	1740	116	275	C	3.5	4
	3×56	B32377A7566J080	42	1740	116	275	C	3.5	4
	3×60	B32377A7606J080	44	2000	136	230	C	4.0	4
	3×70	B32377A7706J080	48	2800	136	245	C	4.3	4
3×75	B32377A7756J080	50	2500	136	275	C	4.9	4	
1200 / 850	3×10	B32377A8106J050	17	750	96	169	B	1.5	4
	3×15	B32377A8156J050	21	900	96	206	B	1.8	4
	3×20	B32377A8206J050	23	1100	96	236	B	2.0	4
	3×25	B32377A8256J050	26	1400	116	200	C	2.5	4
	3×31	B32377A8316J050	30	1800	116	200	C	2.5	4
	3×35	B32377A8356J050	33	1600	116	230	C	2.7	4
	3×42	B32377B8426J050	37	2500	136	200	C	3.3	4
	3×50	B32377A8506J050	41	2400	136	230	C	3.9	4
	3×55.8	B32377A8566J050	43	2600	136	230	C	3.9	4
	3×60	B32377A8606J050	45	2200	136	245	C	4.3	4
3×70	B32377A8706J050	50	2500	136	275	C	4.9	4	

Further intermediate capacitance values on request.

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

Cautions and warnings

- In case of dents of more than 1 mm depth or any other mechanical damage, capacitor must not be used at all.
- Check tightness of the connections / terminals periodically.
- The energy stored in capacitors may be lethal. To prevent any chance of shock, discharge and short-circuit the capacitors before handling.
- Failure to follow cautions may result, worst case, in premature failures, bursting and fire.

Safety

- Electrical or mechanical misapplication of capacitors may be hazardous. Personal injury or property damage may result from bursting of the capacitor or from expulsion of melted material due to mechanical disruption of the capacitor.
- Ensure good, effective grounding for capacitor enclosures.
- Observe appropriate safety precautions during operation (self-recharging phenomena and the high energy stored in capacitors).
- Handle capacitors carefully, because they may still be charged even after disconnection.
- The terminals of capacitors, connected bus bars and cables as well as other devices may also be energized.
- Follow good engineering practice.
- The maximum allowed fault current (AFC) of 10kA in accordance with UL 810 standard must be assured by the application.

Thermal load

- After installation of the capacitor it is necessary to verify that maximum hot-spot temperature is not exceeded at extreme service conditions.

Mechanical protection

- The capacitor has to be installed in a way that mechanical damages and dents in the case are avoided.

Storage and operating conditions

- Do not use or store capacitors in corrosive atmosphere, especially where chloride gas, sulfide gas, acid, alkali, salt or the like are present. In dusty environments regular maintenance and cleaning especially of the terminals is required to avoid conductive path between phases and/or phases and ground.

Overpressure disconnect

- To ensure full functionality of an overpressure safety device disconnect, the following must be observed:
 1. The elastic elements must not be hindered, i.e.
 - Connecting lines must be flexible leads (cables)
 - There must be sufficient space (min.15mm) for expansion above the connections
 - Metal cover must not be retained by rigid parts, like: bus bars.
 2. Stress parameters of the capacitor must be within the IEC 61071 specification.

Service life expectancy

Electrical components do not have an unlimited service life expectancy; this applies to self-healing capacitors too. The maximum service life expectancy may vary depending on the application the capacitor is used in.

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). Should you have any more detailed questions, please contact our sales offices.
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