



Film capacitors – Power electronic capacitors

MKP PEC DC

Series/Type: **B2562***

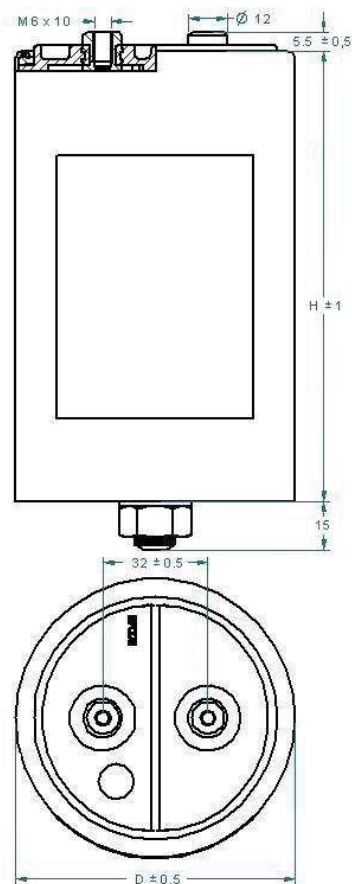
Date: June 2010

Version: 3.2

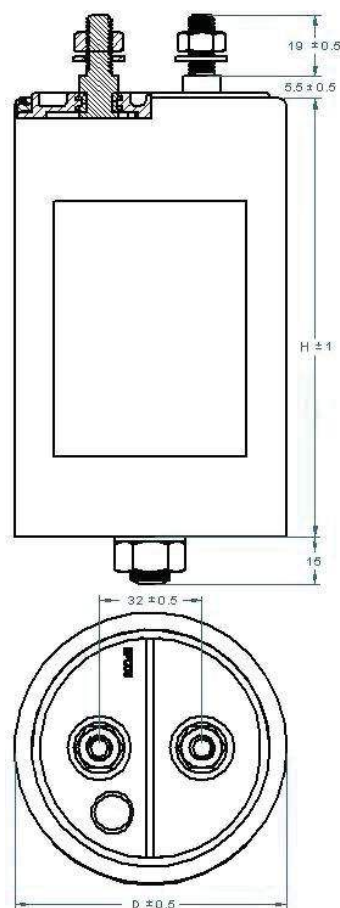
Preliminary data

- Metallized polypropylene film capacitors - aluminum case for general purpose applications

B2562*
Female terminals (M6, M8 or M10)



B2562*
Male terminals (M6, M8 or M10)



- M12 stud on bottom of the aluminum case, nut and washer for fixing are standard for all types.
- Others available distance between terminals: 35 and 50 mm.

Observation: distance between terminals of 50 mm is available only for capacitors with diameter 116 mm.

Preliminary data

General Technical Information

The following definitions apply to power capacitors according to IEC 61071.

Rated capacitance C_R

Nominal value of the capacitance at 20 °C and measuring frequency range of 50 to 120 Hz.

Rated DC voltage V_R

Maximum operating peak voltage of either polarity but of a non-reversing type wave form, for which the capacitor has been designed, for continuous operation.

Ripple voltage V_r

Peak-to-peak alternating component of the unidirectional voltage.

Maximum surge voltage V_s

Peak voltage induced by a switching or any other disturbance of the system which is allowed for a limited number of times and duration.

- Maximum duration: 50 ms / pulse
- Maximum number of occurrences: 1000 (during load)

Insulation voltage V_i

Rms rated value of the insulation voltage of capacitive elements and terminals to case or earth. When it is not specified in the product data sheet, the insulation voltage is at least:

$$V_i = \frac{V_R}{\sqrt{2}}$$

Maximum rate of voltage rise $(dV/dt)_{\max}$

Maximum permissible repetitive rate of voltage rise of the operational voltage.

Maximum current I_{\max}

Maximum rms current for continuous operation.

Maximum peak current \hat{I}

Maximum permissible repetitive current amplitude during continuous operation.

Maximum peak current (\hat{I}) and maximum rate of voltage rise $(dV/dt)_{\max}$ on a capacitor are related as follows:

$$\hat{I} = C \cdot (dV/dt)_{\max}$$

Maximum surge current \hat{I}_s

Admissible peak current induced by a switching or any other disturbance of the system which is allowed for a limited number of times (1000 times) and duration (50 ms / pulse).

$$\hat{I}_s = C \cdot (dV/dt)_s$$

Ambient temperature Θ_A

Temperature of the surrounding air, measured at 10 cm distance and 2/3 of the case height of the capacitor.

Preliminary data**Lowest operating temperature Θ_{\min}**

Lowest permitted ambient temperature at which a capacitor may be energized.

Maximum operating temperature Θ_{\max}

Highest permitted capacitor temperature during operation, i.e. temperature at the hottest point of the case.

Hot-spot temperature Θ_{hs}

Temperature zone inside of the capacitor at hottest spot.

Tangent of the loss angle of a capacitor $\tan \delta$

Ratio between the equivalent series resistance and the capacitive reactance of a capacitor at a specified sinusoidal alternating voltage, frequency and temperature.

Series resistance R_s

The sum of all Ohmic resistances occurring inside the capacitor.

Thermal resistance R_{th}

The thermal resistance indicates by how many degrees the capacitor temperature at the hot spot rises in relation to the dissipation losses.

Maximum power loss P_{\max}

Maximum permissible power dissipation for the capacitor's operation.

$$P_{\max} = \frac{\Theta_{\text{hs}} - \Theta_A}{R_{\text{th}}}$$

Self inductance L_{self}

The sum of all inductive elements which are contained in a capacitor.

Resonance frequency f_r

The lowest frequency at which the impedance of the capacitor becomes minimum.

$$f_r = \frac{1}{2\pi \cdot \sqrt{L_{\text{self}} \cdot C_R}}$$

Specifications and characteristics**Application:**

The MKP DC series is designed for DC-link applications. Some typical examples of DC-Link applications are as follows: converters, frequency drives, power conversion, uninterruptible power supplies, transportation, wind power, solar power, power distribution, etc.

Preliminary data
Test data

Voltage between terminals V_{TT} :	$1.5 \cdot V_{RDC}$, 10 s
Voltage between terminals and case V_{TC} :	$2 \cdot V_i + 1000$ V, 10 s
Dissipation factor $\tan \delta$ at 100 Hz:	$\leq 1.0 \cdot 10^{-3}$
Life test:	IEC 61071
Life expectancy t_{LD} :	100 000 hours

Climatic category
55/60/56

Θ_{stg} :	-55 °C ... +85 °C
Θ_{min} :	-55 °C
Θ_{max} :	+60 °C
Θ_{hs} :	+75 °C
Max. permissible humidity:	95% ($t_{test} = 56$ days)

Construction and general data

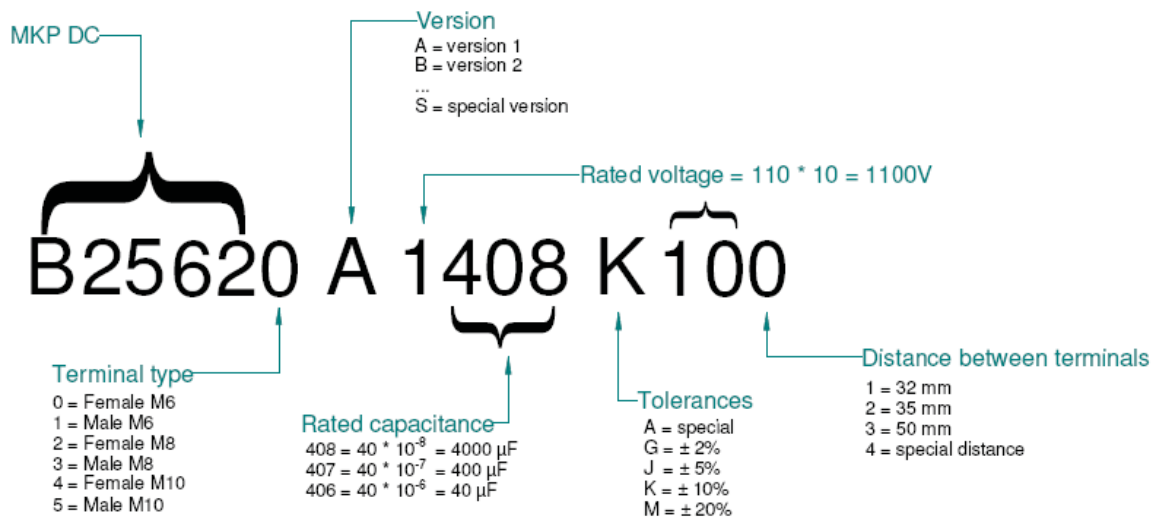
Resin filling:	Non PCB, hard polyurethane (Dry type).
Mounting and grounding:	M12 Stud on bottom of the aluminum case.
Cooling:	Naturally air-cooled (or forced air cooling)
Max. Permissible altitude:	2000 m above sea level
Degree of protection:	Indoor mounting
Reference standards:	IEC 61071 RoHS Compliance

Mechanical characteristics

Max. torque (case) M12 stud:	12 Nm
Max. torque (terminal):	8 Nm

Preliminary data

Structure of Part number



- Special versions not necessarily are following the part number structure.

Preliminary data
Technical data and ordering codes

Capacitance tolerance	±10%
$\tan \delta_o$	$2 \cdot 10^{-4}$
$\tan \delta_{(100 \text{ Hz})}$	$\leq 1 \cdot 10^{-3}$
Θ_{stg}	-55 ... +85 °C
t_{LD}	100 000 h

V_R	C_R	Ordering code	I_{max}	R_s	L_{self}	Θ_{max}	D	H
V DC	µF		A	mΩ	nH	°C	mm	mm
880	160	B25620B0167K881	40	2.2	≤ 80	50	75	70
	220	B25620B0227K881	50	1.9	≤ 60	50	85	70
	260	B25620B0267K881	45	2.8	≤ 80	50	75	95
	260	B25620S0267K881	45	2.8	≤ 80	50	85	95
	350	B25620B0357K881	50	2.4	≤ 60	50	85	95
	400	B25620B0407K881	45	3.8	≤ 80	50	75	132
	440	B25620B0447K882	65	1.5	≤ 60	50	116	70
	480	B25620B0487K881	55	2.8	≤ 60	50	85	120
	550	B25620B0557K881	50	3.0	≤ 60	50	85	132
	700	B25620B0707K882	70	1.7	≤ 60	50	116	95
	750	B25620B0757K881	55	3.7	≤ 60	50	85	173
	970	B25620B0977K882	75	1.9	≤ 60	50	116	120
	1100	B25620B0118K882	75	2.0	≤ 60	50	116	132
	1500	B25620B0158K882	80	2.4	≤ 60	50	116	173
1100	100	B25620B1107K101	35	2.5	≤ 80	50	75	70
	140	B25620B1147K101	45	2.1	≤ 60	50	85	70
	170	B25620B1177K101	40	3.2	≤ 80	50	75	95
	230	B25620B1237K101	40	4.1	≤ 80	50	75	120
	260	B25620B1267K101	40	4.4	≤ 80	50	75	132
	280	B25620B1287K102	60	1.6	≤ 60	50	116	70
	310	B25620B1317K101	50	3.2	≤ 60	50	85	120
	350	B25620B1357K101	40	5.6	≤ 80	50	75	173
	400	B25620B1407K101	55	2.4	≤ 60	50	85	132
	420	B25620S1427A101	55	2.2	≤ 60	50	85	138
	450	B25620B1457K102	65	1.9	≤ 60	50	116	95
	480	B25620B1487K101	50	4.3	≤ 60	50	85	173
	610	B25620B1617K102	70	2.2	≤ 60	50	116	120
	700	B25620B1707K102	70	2.3	≤ 60	50	116	132
	940	B25620B1947K102	70	1.6	≤ 60	50	116	173
	1100	B25620B1118K103	80	1.5	≤ 100	50	116	223
1100	B25620S1118K103	80	1.5	≤ 100	50	116	230	

Film capacitors – Power electronic capacitors
MKP PEC DC
B2562*
Preliminary data

V_R	C_R	Ordering code	I_{max}	R_s	L_{self}	Θ_{max}	D	H
V DC	μF		A	m Ω	nH	$^{\circ}C$	mm	mm
1320	70	B25620B1706K321	35	2.8	≤ 80	50	75	70
	110	B25620B1117K321	35	3.8	≤ 80	50	75	95
	160	B25620B1167K321	40	4.6	≤ 80	50	75	120
	180	B25620B1187K321	40	5.1	≤ 80	50	75	132
	220	B25620B1227K321	45	3.6	≤ 60	50	85	120
	260	B25620B1267K321	45	3.9	≤ 60	50	85	132
	310	B25620B1317K322	65	2.0	≤ 60	50	116	95
	340	B25620B1347K321	50	4.9	≤ 60	50	85	173
	420	B25620B1427K322	65	2.4	≤ 60	50	116	120
	480	B25620B1487K322	70	2.6	≤ 60	50	116	132
660	B25620B1667K322	70	3.1	≤ 60	50	116	173	
1980	30	B25620B1306K981	25	3.8	≤ 80	50	75	70
	40	B25620B1406K981	30	3.1	≤ 60	50	85	70
	50	B25620B1506K981	30	5.1	≤ 80	50	75	95
	70	B25620B1706K981	35	3.9	≤ 60	50	85	95
	80	B25620B1806K981	30	7.1	≤ 80	50	75	132
	110	B25620B1117K981	30	9.1	≤ 80	50	75	173
	145	B25620B1147K981	40	7.1	≤ 60	50	85	173
	190	B25620B1197K982	60	3.0	≤ 60	50	116	120
	215	B25620B1217K982	60	3.3	≤ 60	50	116	132
	295	B25620B1297K982	60	4.0	≤ 60	50	116	173

Other capacitances or voltage values are available upon request.

Preliminary data

Cautions and warnings

- In case of dents of more than 1 mm depth or any other mechanical damage, capacitors 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 capacitor before handling.
- Failure to follow cautions may result, worst case, in premature failures, bursting and fire.
- EPCOS AG is not responsible for any kind of possible damages to persons or things due to improper installation and application of capacitors for power electronics.

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 oil or 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 contained 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.

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 aluminum can 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.

The maximum storage temperature is 85 °C.

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.
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, BAOKE, Alu-X, CeraDiode, CSMP, CSSP, CTVS, DeltaCap, DigiSiMic, DSSP, FormFit, MiniBlue, MiniCell, MKD, MKK, MLSC, MotorCap, PCC, PhaseCap, PhaseCube, PhaseMod, PhiCap, SIFERRIT, SIFI, SIKOREL, SilverCap, SIMDAD, SiMic, SIMID, SineFormer, SIOV, SIP5D, SIP5K, 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.