Film Capacitors - Power Electronic Capacitors

PEC MKP DC LSI

Series/Type: **B2563*B***
Ordering code: **B25631B1107K200**

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Preliminary data

Applications

Capacitor for DC-link filtering in industrial applications such as UPS, SVG, APF, Energy storage, EV / HEV, locomotive traction, motor driver systems, frequency drives and wind/solar inverters among other power electronic converter devices

Construction

- Metallized polypropylene film
- Non-PCB, hard polyurethane resin
- Plastic case UL94 V0

Features

- Low ESR, low ESL, low dissipation factor
- High ripple current handling capabilities
- Self-healing property, high reliability, long lifetime
- Naturally air cooling or forced air cooling
- RoHS Compliance



Reference image

Preliminary data

General specification

Voltage between terminals (10s)	V_{TT}	1.5 $V_{R,DC}$	V_{DC}
Operation ambient temperature range	T_{op}	−40 ... +85	°C
Max. temperature allowed at the capacitors hot spot	T_{HS}	85	°C
Lifetime expectancy (at $V_{R,DC}$ & T_{HS}=70°C)	$t_{LD\ (co)}$	100 000	h
Expected failure rate (at $V_{R,DC}$ & T_{HS}=70°C)	$\alpha_{FQ\ (co)}$	100	Fit
Max. permissible altitude (above sea level)		2000	m
Climatic Category	40/85/56		
Reference standard	IEC 61071-2017		

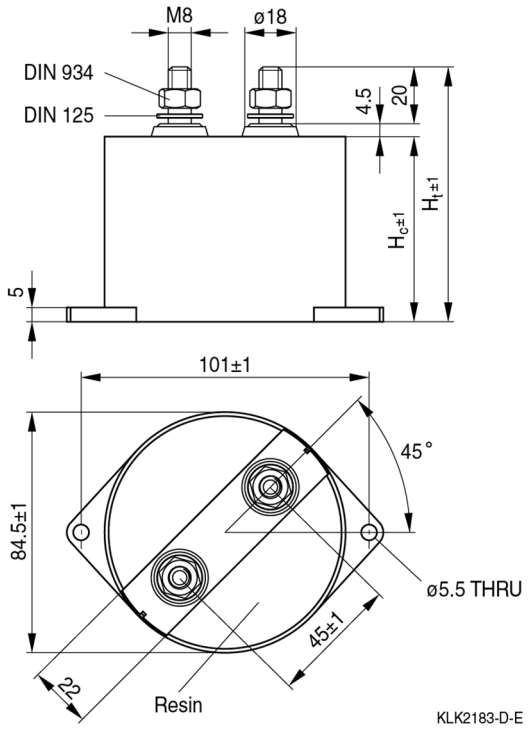
Specific Technical data

Rated capacitance	C_R	100	µF
Capacitance tolerance	Tol.	±10	%
Rated DC voltage	$V_{R,DC}$	1200	V_{DC}
Max. current [1)]	I_{max}	55	A_{rms}
Peak current	Î	2.2	kA
Self-inductance	$L_{self\ (typical)}$	35	nH
Thermal resistance	R_{TH}	4.5	K/W
Equivalent Series Resistance (ESR)	ESR (typical at 1kHz)	1.6	mΩ
Approx. Weight		0.49	kg

[1)]: For the details, please refer to ***Current derating according to maximum temperature*** section

Preliminary data

Dimensional and drawings

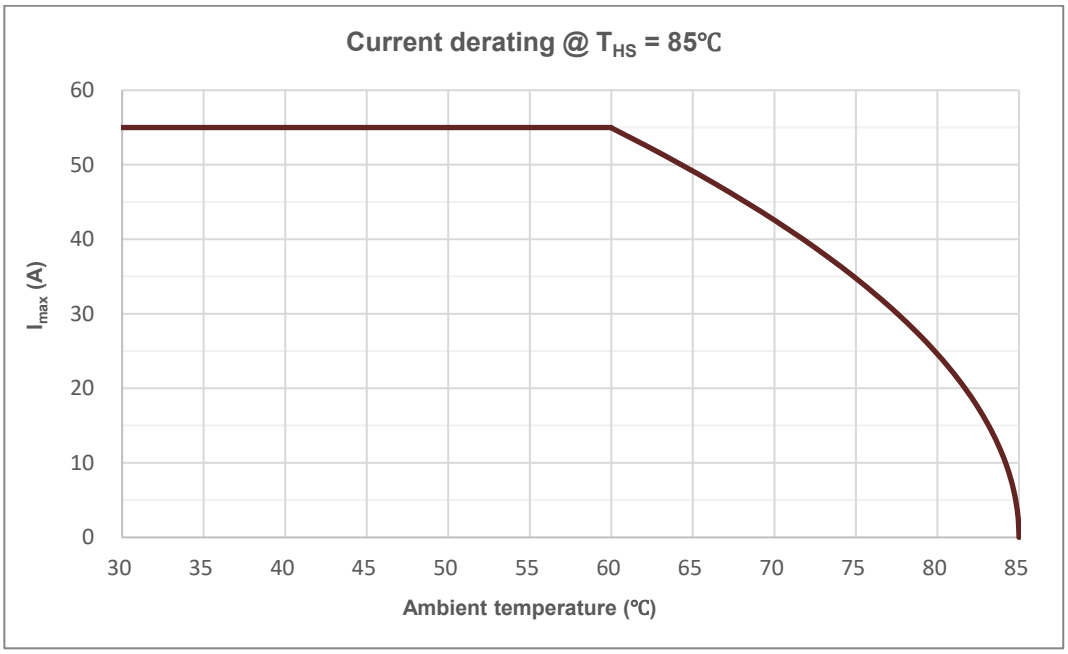


Item	Dimension	Unit
H_c	65 ±1	mm
H_t	89.5 ±1	mm
Max. terminal torque	8	Nm

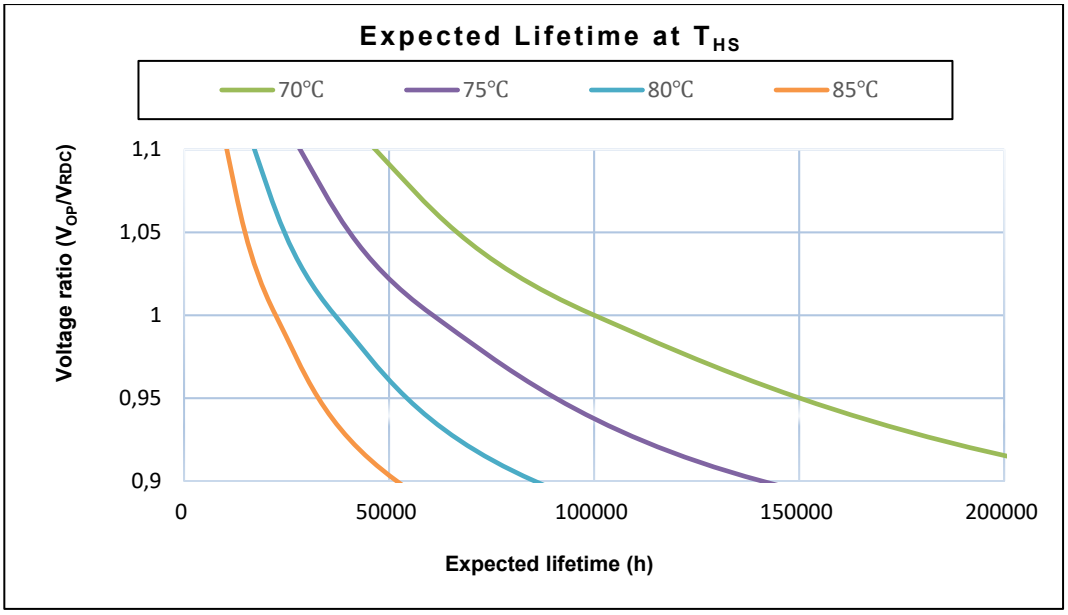
Preliminary data

Current derating according to maximum temperature

T_{HS} = + 85 °C (Altitude ≤ 2000m) / Natural convection



Lifetime expectancy



Failure criteria is capacitance drop higher than 3%.

Lifetime estimations are typical values derived from lifetime tests based on TDK internal standards or mutually agreed test methods and are intended for guidance purposes only. The useful life does not constitute a warranty of any kind or a prolongation of the agreed warranty period.

Preliminary data

Cautions and warnings

General

- 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, do not handle the capacitor before it is discharged.
- Failure to follow cautions may result, in premature failures, bursting and fire in the worst case.
- Protect the capacitor properly against over current and short circuit.
- TDK Electronics 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 if the capacitor should burst or from melted material expulsion due to a capacitor´s mechanical disruption.

- Ensure good, effective grounding for capacitor metal 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 capacitor´s terminals, connected bus bars and cables as well as other devices may also be energized.
- Follow good engineering practice.
- When power capacitors are used, suitable measures must always be taken to eliminate possible danger to humans, animals and property both during operation and when a failure occurs. This applies to capacitors both with and without protective devices. Regular inspection and maintenance by a competent person is therefore essential.

Thermal load

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

Installation

Capacitors must be installed in a cool and well ventilated place, and not close to objects that radiate heat, or in the direct sunlight. Within high-power inverter systems the capacitors usually produce the smallest portion of the total losses, and the permissible operating temperatures are low compared to power semiconductors, reactors and resistors. So, the distance between capacitor and heating sources must be large enough to avoid the capacitor overheating. In case of space constraint to make the best possible use of capacitors, technically and economically, it is advisable to supply forced cooling air.

Mechanical protection

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

Preliminary data

Connecting

Ensure firm fixing of terminals, fixing torque to be applied as per individual specification.

In any case, the maximum specified terminal current may not be exceeded. Please refer to the technical data of the specific series.

Grounding

The threaded bottom stud of the capacitor has to be used for grounding. In case grounding is done via metal chassis that the capacitor is mounted to, the layer of varnish beneath the washer and nut should be removed. In case, capacitor with plastic case, this is not applicable. Ensure the tightening torque does not exceed the limit.

Maintenance recommendation

Disregarding the following measures may result in severe operation failures, bursting and fire:

- Check tightness of the connections/terminals periodically.
- Clean the terminals/bushings periodically to avoid short circuits due dust or other contamination.
- Ensure the current does not exceed the limit.
- In case of a current above the nominal current check your application for modification.
- Check the temperature of energized capacitors. In case of excessive temperature of individual capacitors, it is recommended to replace this capacitor, as this could be an indication for loss factor increase, which is a sign for reaching end of life.

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.

- Capacitors should not be stored in high temperatures and/or high humidity for long time, we recommend the following storage conditions:
  - temperature between -40°C ~ 40°C
  - humidity <= 80% RH as average per year
- Storage should not exceed 2 years (from datecode printed on the capacitor). After 1 year of storage time, capacitors must be checked electrically.

Lifetime expectancy

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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.

Handling

Do not handle the capacitor before it is discharged! When handling the capacitor, do not take the capacitor from the terminal. This can cause accidents in case the capacitor is charged and additionally the terminal could break.

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Important notes

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