

Diode Modules

PSKD 255

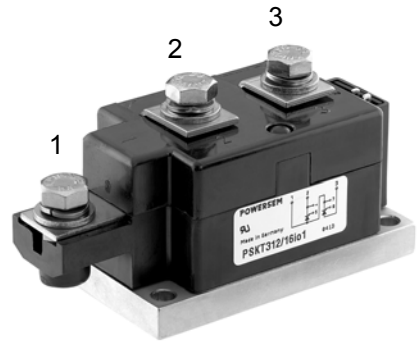
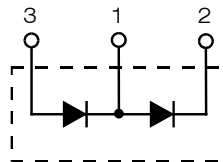
$$I_{FRMS} = 2x 450 A$$

$$I_{FAVM} = 2x 270 A$$

$$V_{RRM} = 800-1800 V$$

Preliminary Data Sheet

V_{RSM} V	V_{RRM} V	Type
900	800	PSKD 255/08
1300	1200	PSKD 255/12
1500	1400	PSKD 255/14
1700	1600	PSKD 255/16
1900	1800	PSKD 255/18



Symbol	Test Conditions	Maximum Ratings
I_{FRMS} I_{FAVM}	$T_{VJ} = T_{VJM}$ $T_C = 100^\circ C$; 180° sine	450 A 270 A
I_{FSM}	$T_{VJ} = 45^\circ C$; $V_R = 0$	t = 10 ms (50 Hz) 9500 A t = 8.3 ms (60 Hz) 10200 A
	$T_{VJ} = T_{VJM}$ $V_R = 0$	t = 10 ms (50 Hz) 8400 A t = 8.3 ms (60 Hz) 9000 A
$\int i^2 dt$	$T_{VJ} = 45^\circ C$ $V_R = 0$	t = 10 ms (50 Hz) 451 000 A ² s t = 8.3 ms (60 Hz) 437 000 A ² s
	$T_{VJ} = T_{VJM}$ $V_R = 0$	t = 10 ms (50 Hz) 353 000 A ² s t = 8.3 ms (60 Hz) 340 000 A ² s
T_{VJ} T_{VJM} T_{stg}		-40...+150 °C 150 °C -40...+125 °C
V_{ISOL}	50/60 Hz, RMS $I_{ISOL} \leq 1 mA$	t = 1 min 3000 V~ t = 1 s 3600 V~
M_d	Mounting torque (M6) Terminal connection torque (M8)	4.5-7/40-62 Nm/lb.in. 11-13/97-115 Nm/lb.in.
Weight	Typical including screws	750 g

Features

- Direct copper bonded Al₂O₃ -ceramic base plate
- Planar passivated chips
- Isolation voltage 3600 V~
- UL registered, E 148688

Applications

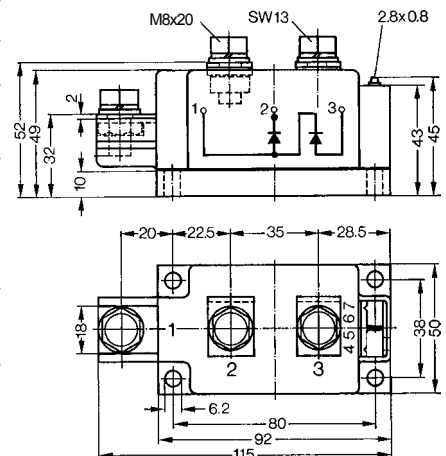
- Supplies for DC power equipment
- DC supply for PWM inverter
- Field supply for DC motors
- Battery DC power supplies

Advantages

- Space and weight savings
- Simple mounting
- Improved temperature and power cycling
- Reduced protection circuits

Dimensions in mm (1 mm = 0.0394")

Symbol	Test Conditions	Characteristic Values
I_{RRM}	$T_{VJ} = T_{VJM}$; $V_R = V_{RRM}$	30 mA
V_F	$I_F = 600 A$; $T_{VJ} = 25^\circ C$	1.4 V
V_{T0}	For power-loss calculations only	0.8 V
r_T	$T_{VJ} = T_{VJM}$	0.6 mΩ
R_{thJC}	per diode; DC current	0.140 K/W 0.07 K/W
	per module	
R_{thJK}	per diode; DC current	0.18 K/W 0.09 K/W
	per module	
Q_S	$T_{VJ} = 125^\circ C$; $I_F = 400 A$; $-di/dt = 50 A/\mu s$	700 μC
I_{RM}		260 A
d_s	Creeping distance on surface	12.7 mm
d_A	Creepage distance in air	9.6 mm
a	Maximum allowable acceleration	50 m/s ²



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Data according to IEC 60747 and refer to a single thyristor/diode unless otherwise stated.

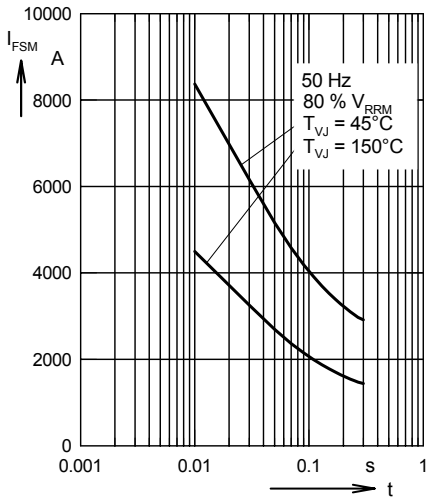


Fig. 1 Surge overload current
 I_{FSM} : Crest value, t: duration

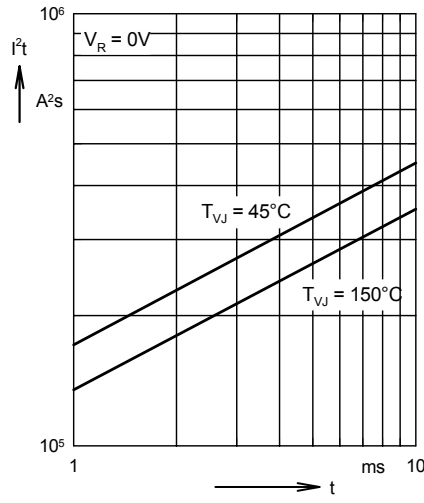


Fig. 2 I^2t versus time (1-10 ms)

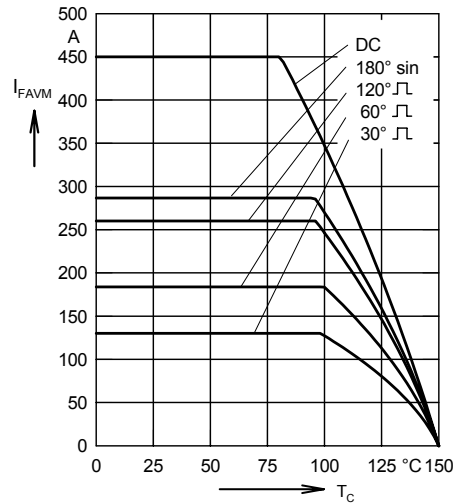


Fig. 3 Maximum forward current at case temperature

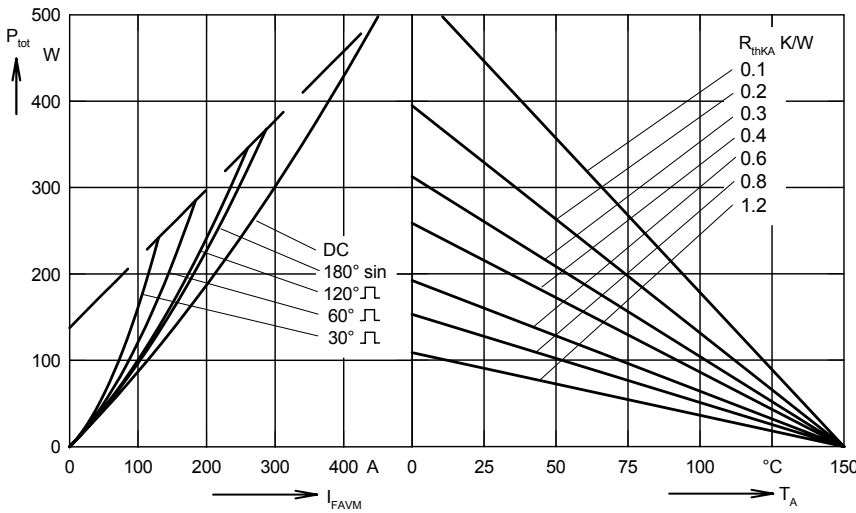


Fig. 4 Power dissipation versus forward current and ambient temperature (per diode)

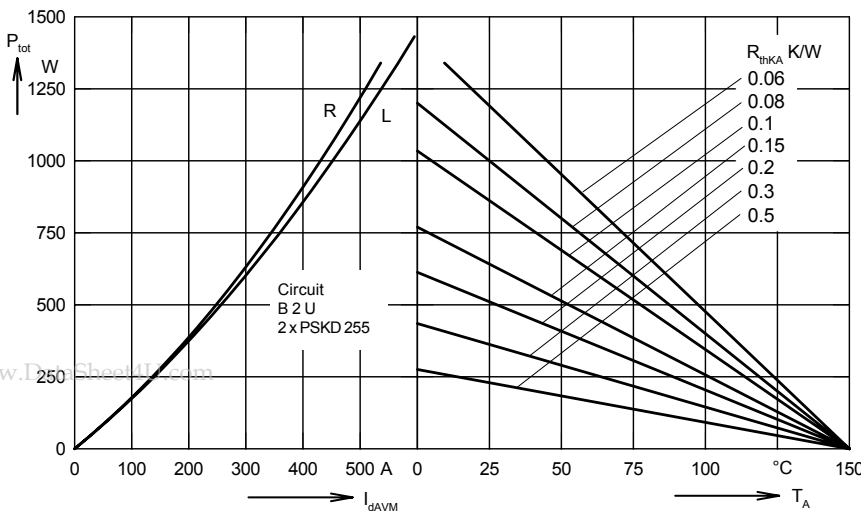


Fig. 5 Single phase rectifier bridge:
 Power dissipation versus direct output current and ambient temperature
 R = resistive load
 L = inductive load

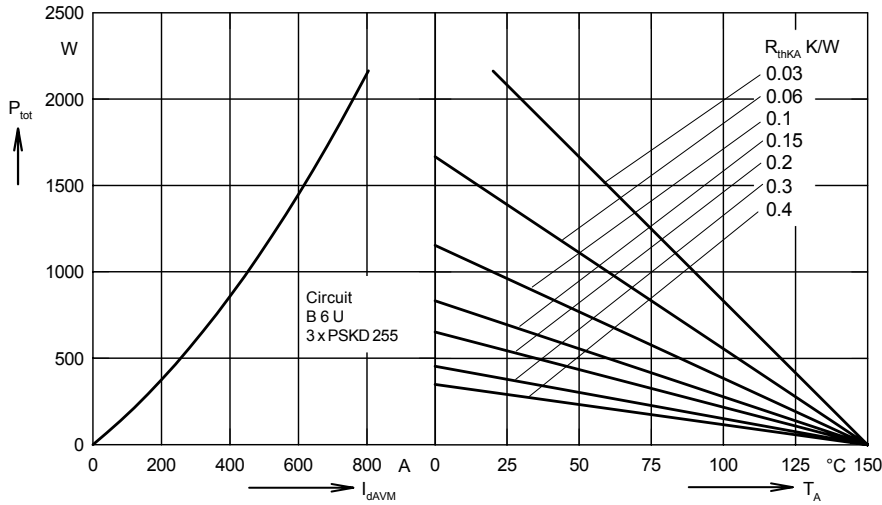


Fig. 6 Three phase rectifier bridge: Power dissipation versus direct output current and ambient temperature

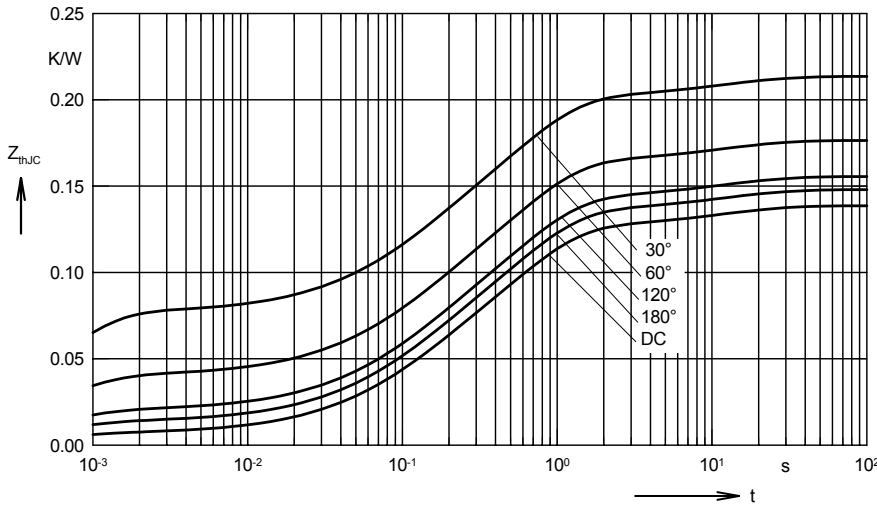


Fig. 7 Transient thermal impedance junction to case (per diode)

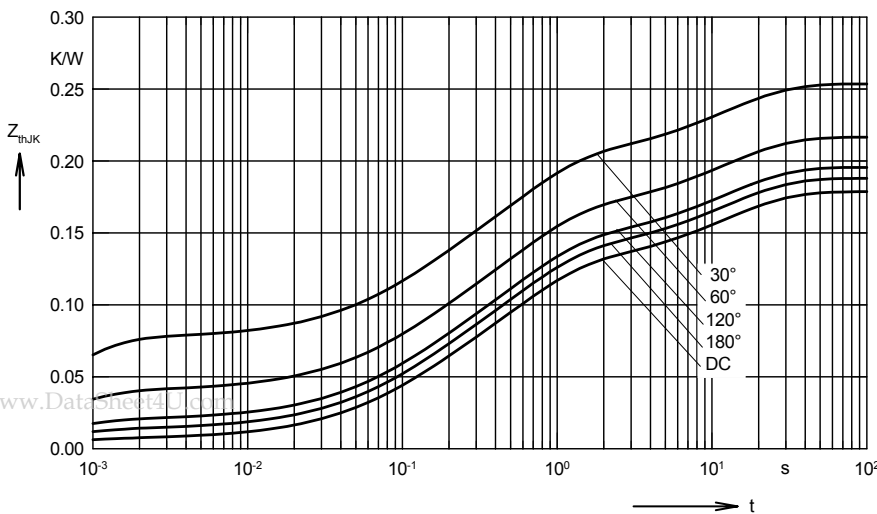
R_{thJC} for various conduction angles d:

d	R_{thJC} (K/W)
DC	0.139
180°	0.148
120°	0.156
60°	0.176
30°	0.214

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.0066	0.00054
2	0.0358	0.098
3	0.0831	0.54
4	0.0129	12

Fig. 8 Transient thermal impedance junction to heatsink (per diode)



R_{thJK} for various conduction angles d:

d	R_{thJK} (K/W)
DC	0.179
180°	0.188
120°	0.196
60°	0.216
30°	0.254

Constants for Z_{thJK} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.0066	0.00054
2	0.0358	0.098
3	0.0831	0.54
4	0.0129	12
5	0.04	12