

Diode Modules

PSKD 56

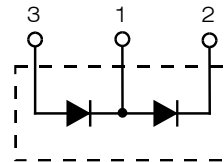
$$I_{FRMS} = 2 \times 150 \text{ A}$$

$$I_{FAVM} = 2 \times 95 \text{ A}$$

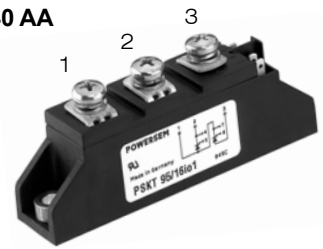
$$V_{RRM} = 800-1800 \text{ V}$$

Preliminary Data Sheet

V_{RSM} V	V_{RRM} V	Type
900	800	PSKD 56/08
1300	1200	PSKD 56/12
1500	1400	PSKD 56/14
1700	1600	PSKD 56/16
1900	1800	PSKD 56/18



TO-240 AA



Symbol	Test Conditions	Maximum Ratings	
I_{FRMS}	$T_{VJ} = T_{VJM}$	150 A	
I_{FAVM}	$T_C = 75^\circ\text{C}; 180^\circ \text{ sine}$	95 A	
	$T_C = 100^\circ\text{C}; 180^\circ \text{ sine}$	71 A	
I_{FSM}	$T_{VJ} = 45^\circ\text{C}; V_R = 0$	$t = 10 \text{ ms (50 Hz), sine}$ $t = 8.3 \text{ ms (60 Hz), sine}$	1400 A 1650 A
	$T_{VJ} = T_{VJM}; V_R = 0$	$t = 10 \text{ ms (50 Hz), sine}$ $t = 8.3 \text{ ms (60 Hz), sine}$	1200 A 1400 A
$\int i^2 dt$	$T_{VJ} = 45^\circ\text{C}; V_R = 0$	$t = 10 \text{ ms (50 Hz), sine}$ $t = 8.3 \text{ ms (60 Hz), sine}$	9800 A ² s 11300 A ² s
	$T_{VJ} = T_{VJM}; V_R = 0$	$t = 10 \text{ ms (50 Hz), sine}$ $t = 8.3 \text{ ms (60 Hz), sine}$	7200 A ² s 8100 A ² s
T_{VJ}		-40...+150 °C	
T_{VJM}		150 °C	
T_{stg}		-40...+125 °C	
V_{ISOL}	50/60 Hz, RMS	$t = 1 \text{ min}$	3000 V~
	$I_{ISOL} \leq 1 \text{ mA}$	$t = 1 \text{ s}$	3600 V~
M_d	Mounting torque (M5)		2.5-4/22-35 Nm/lb.in.
	Terminal connection torque (M5)		2.5-4/22-35 Nm/lb.in.
Weight	Typical including screws		90 g

Features

- International standard package JEDEC TO-240 AA
- Direct copper bonded Al_2O_3 -ceramic base plate
- Planar passivated chips
- Isolation voltage 3600 V~
- UL registered, E 148688

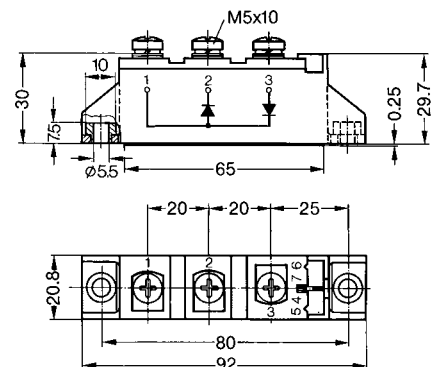
Applications

- 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_R	$T_{VJ} = T_{VJM}; V_R = V_{RRM}$	10 mA
V_F	$I_F = 200 \text{ A}; T_{VJ} = 25^\circ\text{C}$	1.48 V
V_{TO}	For power-loss calculations only	0.8 V
r_T	$T_{VJ} = T_{VJM}$	3 mΩ
Q_S	$T_{VJ} = 125^\circ\text{C}; I_F = 50 \text{ A}, -di/dt = 3 \text{ A}/\mu\text{s}$	100 μC
I_{RM}		24 A
R_{thJC}	per diode; DC current	0.51 K/W
	per module	0.255 K/W
R_{thJK}	per diode; DC current	0.71 K/W
	per module	0.355 K/W
d_S	Creepage distance on surface	12.7 mm
d_A	Strike distance through air	9.6 mm
a	Maximum allowable acceleration	50 m/s ²

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

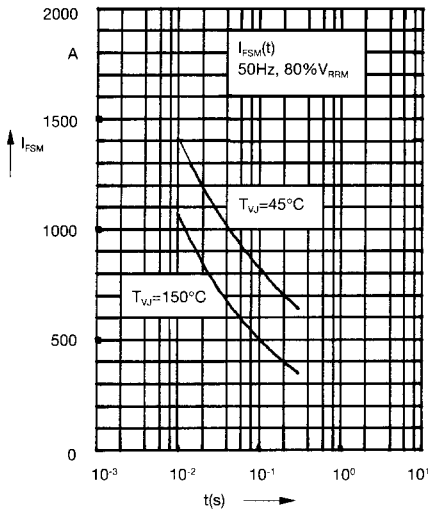


Fig. 1 Surge overload current
 I_{FSM} : Crest value, t: duration

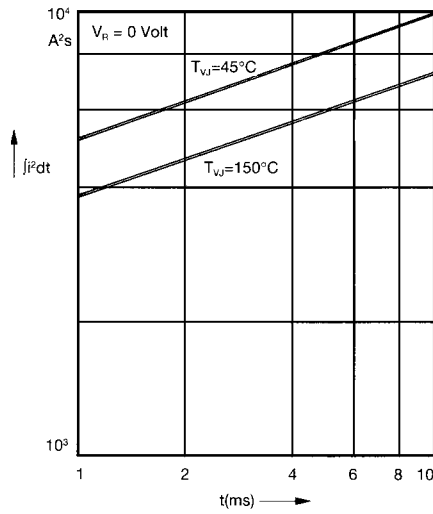


Fig. 2 j^2dt versus time (1-10 ms)

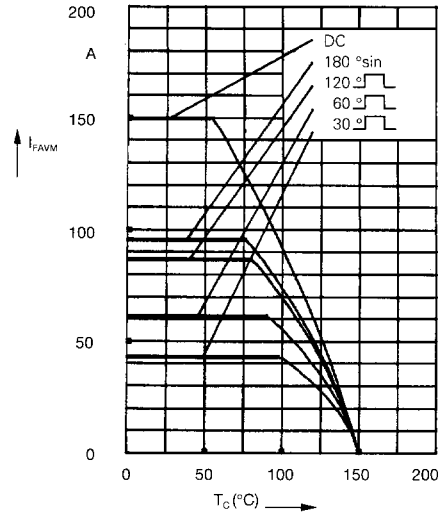


Fig. 2a Maximum forward current at case temperature

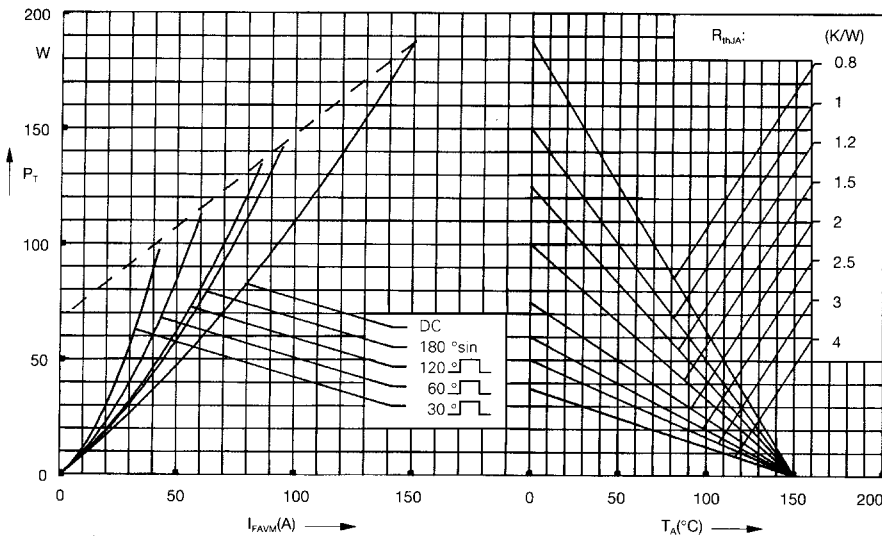


Fig. 3 Power dissipation versus forward current and ambient temperature (per diode)

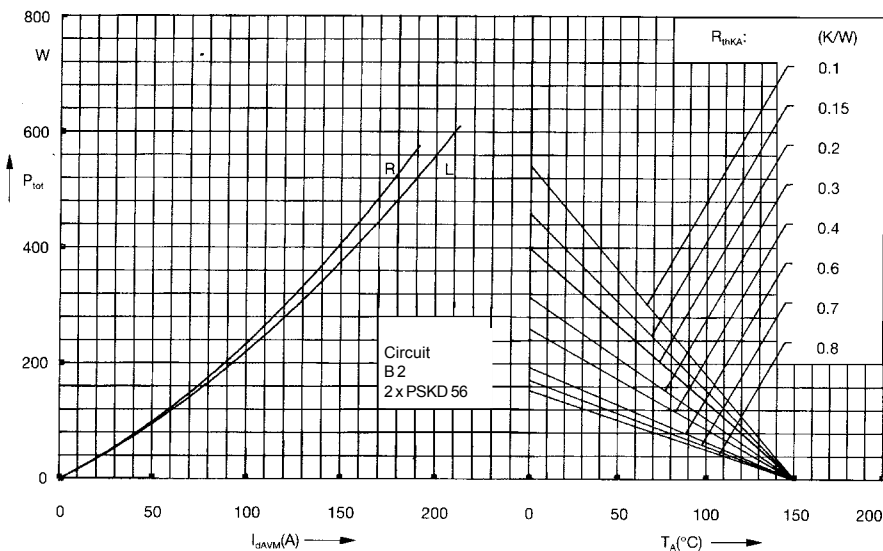


Fig. 4 Single phase rectifier bridge:
 Power dissipation versus direct output current and ambient temperature
 R = resistive load
 L = inductive load

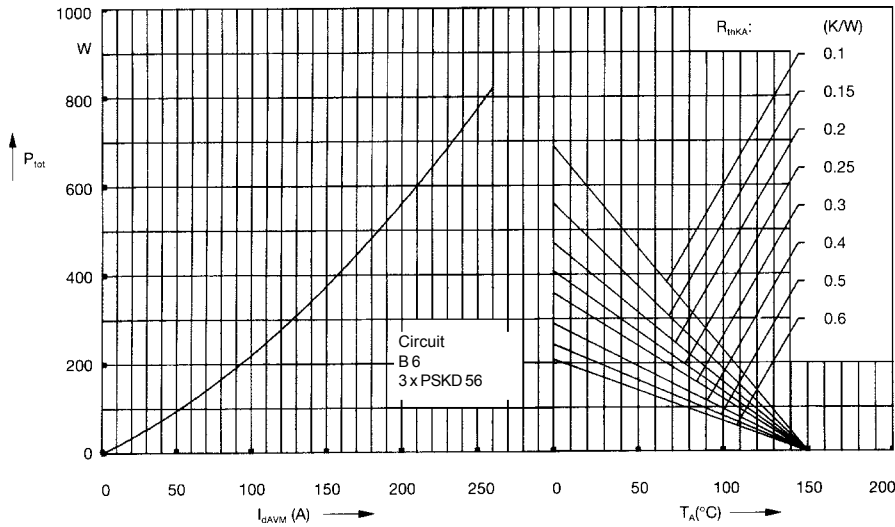


Fig. 5 Three phase rectifier bridge:
Power dissipation versus direct
output current and ambient
temperature

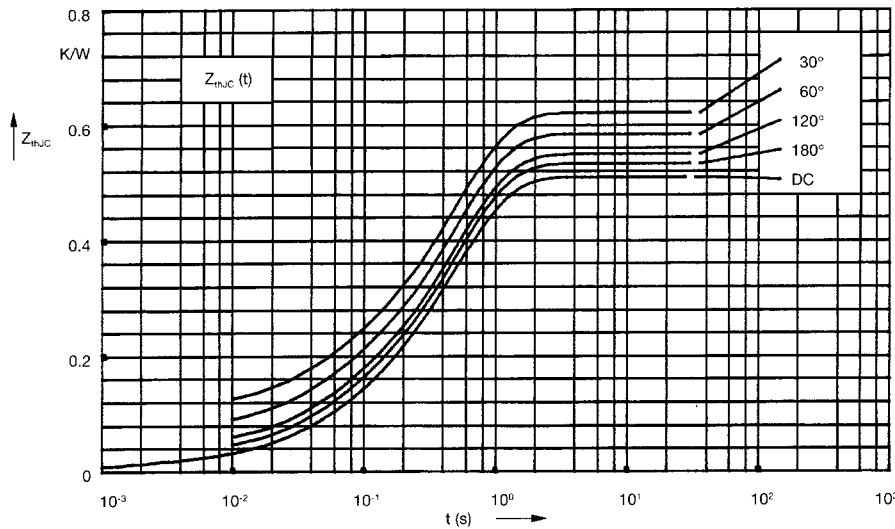


Fig. 6 Transient thermal impedance
junction to case (per diode)

R_{thJC} for various conduction angles d:

d	R_{thJC} (K/W)
DC	0.51
180°	0.53
120°	0.55
60°	0.58
30°	0.62

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.013	0.0015
2	0.055	0.045
3	0.442	0.485

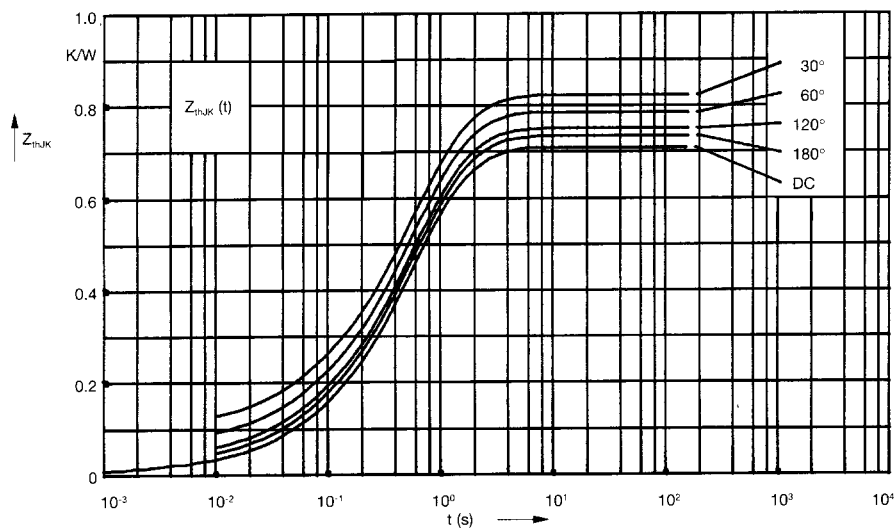


Fig. 7 Transient thermal impedance
junction to heatsink (per diode)

R_{thJK} for various conduction angles d:

d	R_{thJK} (K/W)
DC	0.71
180°	0.73
120°	0.75
60°	0.78
30°	0.82

Constants for Z_{thJK} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.013	0.0015
2	0.055	0.045
3	0.442	0.485
4	0.2	1.25