

Diode Modules

PSKD 56

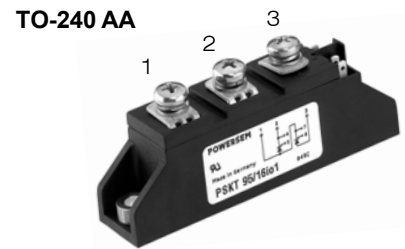
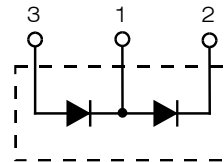
$$I_{FRMS} = 2x 150 A$$

$$I_{FAVM} = 2x 95 A$$

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

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



Symbol	Test Conditions	Maximum Ratings
I_{FRMS}	$T_{VJ} = T_{VJM}$	150 A
I_{FAVM}	$T_C = 75^{\circ}C; 180^{\circ}$ sine	95 A
	$T_C = 100^{\circ}C; 180^{\circ}$ sine	71 A
I_{FSM}	$T_{VJ} = 45^{\circ}C; V_R = 0$	t = 10 ms (50 Hz), sine: 1400 A t = 8.3 ms (60 Hz), sine: 1650 A
	$T_{VJ} = T_{VJM}; V_R = 0$	t = 10 ms (50 Hz), sine: 1200 A t = 8.3 ms (60 Hz), sine: 1400 A
$\int i^2 dt$	$T_{VJ} = 45^{\circ}C; V_R = 0$	t = 10 ms (50 Hz), sine: 9800 A ² s t = 8.3 ms (60 Hz), sine: 11300 A ² s
	$T_{VJ} = T_{VJM}; V_R = 0$	t = 10 ms (50 Hz), sine: 7200 A ² s t = 8.3 ms (60 Hz), sine: 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 min: 3000 V~ t = 1 s: 3600 V~
	$I_{ISOL} \leq 1 mA$	
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 Al₂O₃ -ceramic base plate
- Planar passivated chips
- Isolation voltage 3600 V~
- UL registered, E 148688

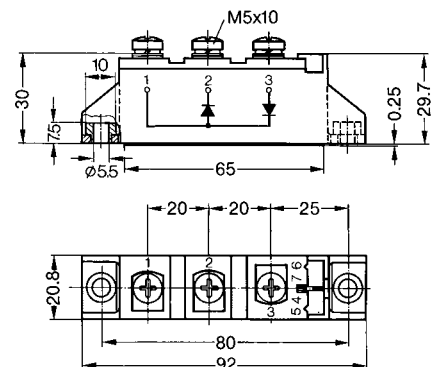
Applications

- 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_R	$T_{VJ} = T_{VJM}; V_R = V_{RRM}$	10 mA
V_F	$I_F = 200 A; T_{VJ} = 25^{\circ}C$	1.48 V
V_{TO}	For power-loss calculations only	0.8 V
r_T	$T_{VJ} = T_{VJM}$	3 mΩ
Q_S	$T_{VJ} = 125^{\circ}C; I_F = 50 A, -di/dt = 3 A/\mu s$	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.

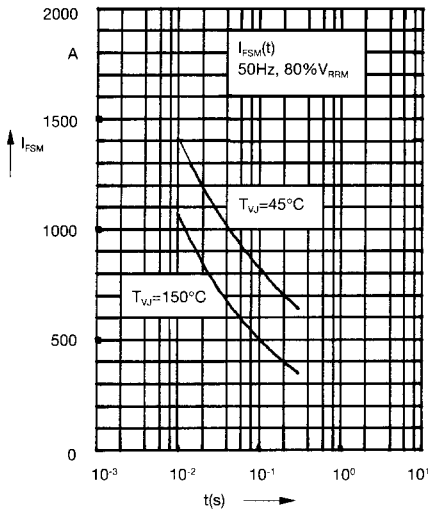


Fig. 1 Surge overload current
 I_{FSM} : Crest value, t: duration

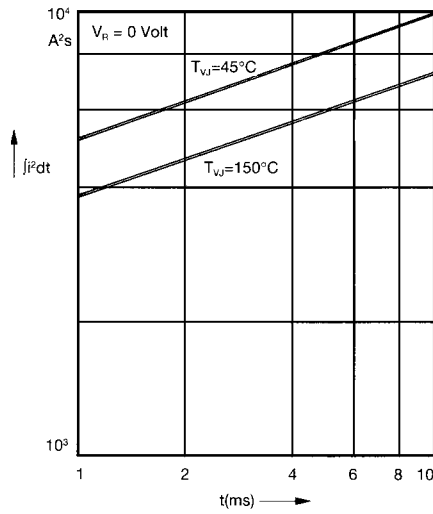


Fig. 2 j^2dt versus time (1-10 ms)

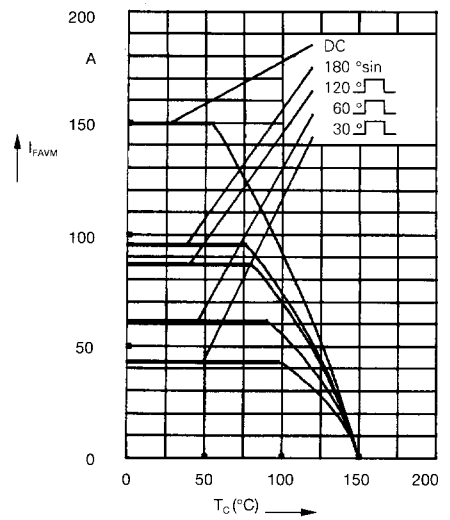


Fig. 2a Maximum forward current at case temperature

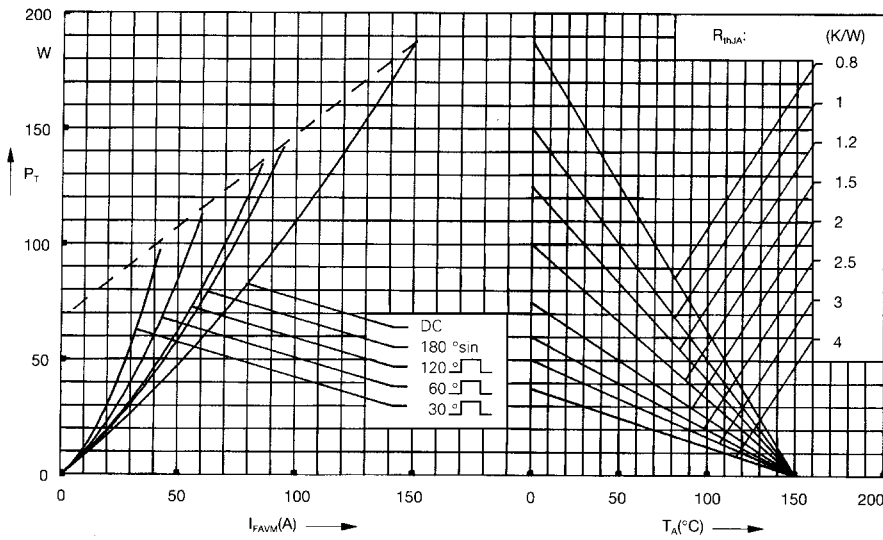


Fig. 3 Power dissipation versus forward current and ambient temperature (per diode)

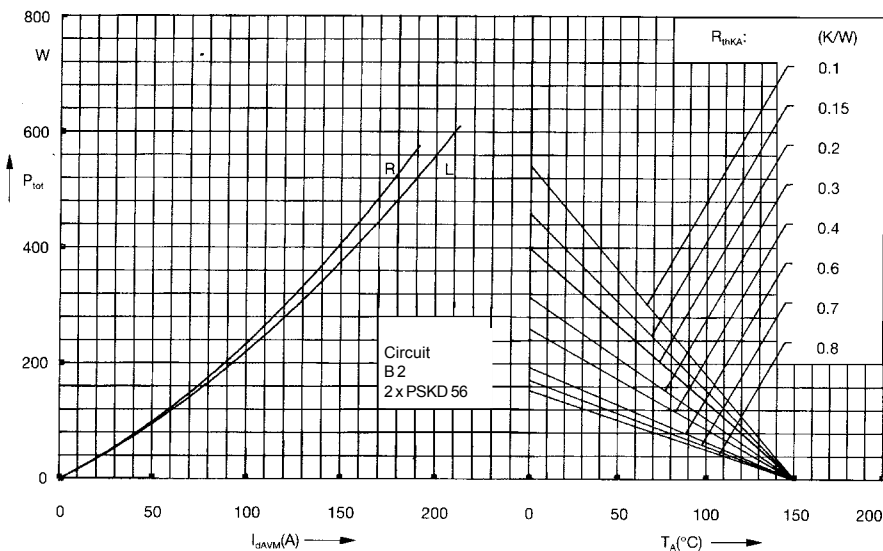


Fig. 4 Single phase rectifier bridge:
 Power dissipation versus direct output current and ambient temperature
 R = resistive load
 L = inductive load

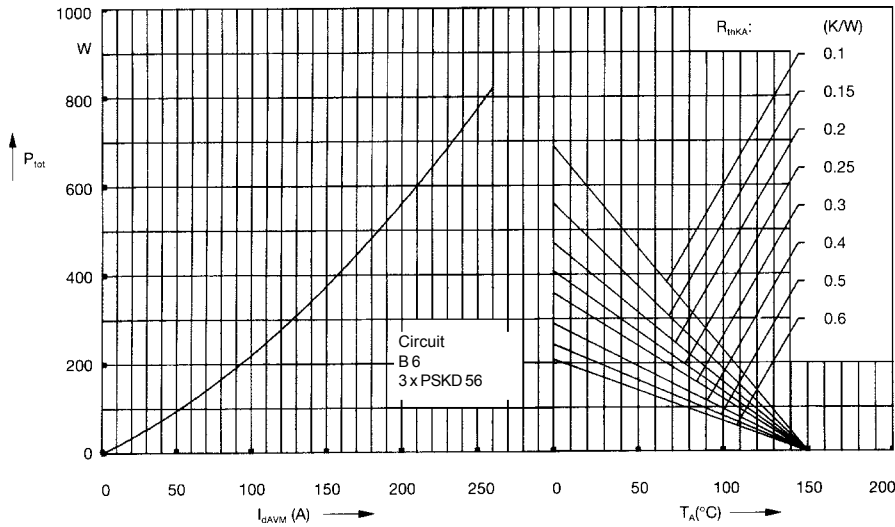


Fig. 5 Three phase rectifier bridge: Power dissipation versus direct output current and ambient temperature

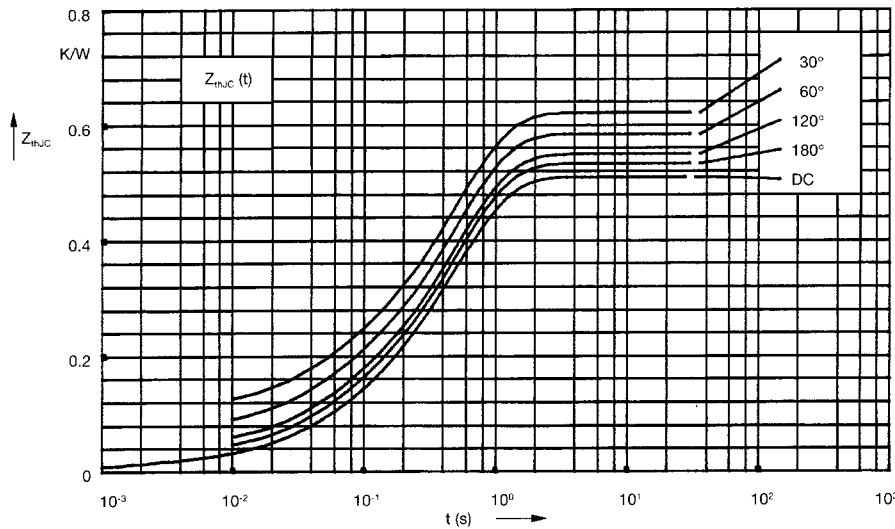


Fig. 6 Transient thermal impedance junction to case (per diode)

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

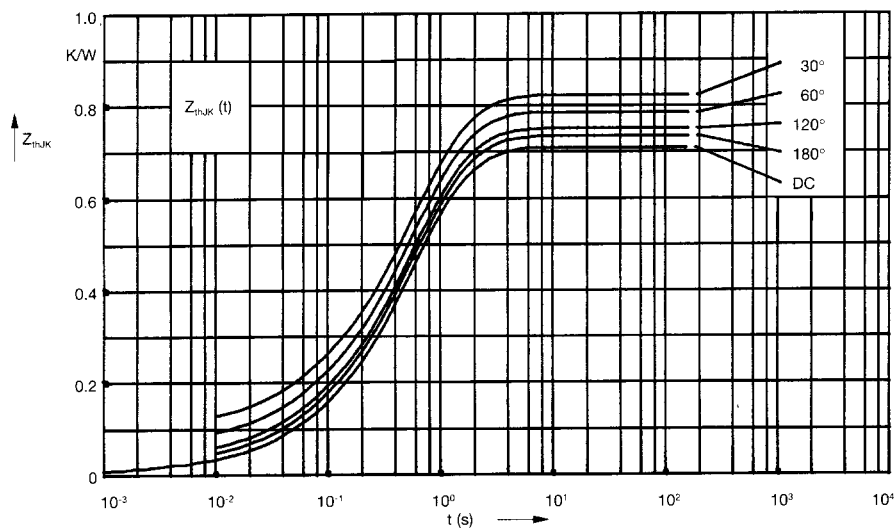


Fig. 7 Transient thermal impedance junction to heatsink (per diode)

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