

Diode Modules

PSKD 220

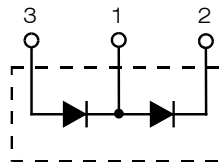
$$I_{FRMS} = 2x 450 A$$

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

$$V_{RRM} = 800-1600 V$$

Preliminary Data Sheet

V_{RSM} V	V_{RRM} V	Type
900	800	PSKD 220/08
1300	1200	PSKD 220/12
1500	1400	PSKD 220/14
1700	1600	PSKD 220/16



Symbol	Test Conditions	Maximum Ratings	
I_{FRMS}	$T_{VJ} = T_{VJM}$	450 A	
I_{FAVM}	$T_C = 100^\circ C$; 180° sine	270 A	
I_{FSM}	$T_{VJ} = 45^\circ C$; $V_R = 0$	t = 10 ms (50 Hz), sine	8500 A
		t = 8.3 ms (60 Hz), sine	9000 A
	$T_{VJ} = T_{VJM}$; $V_R = 0$	t = 10 ms (50 Hz), sine	7500 A
		t = 8.3 ms (60 Hz), sine	8000 A
i^2dt	$T_{VJ} = 45^\circ C$; $V_R = 0$	t = 10 ms (50 Hz), sine	360 000 A ² s
		t = 8.3 ms (60 Hz), sine	340 000 A ² s
	$T_{VJ} = T_{VJM}$; $V_R = 0$	t = 10 ms (50 Hz), sine	280 000 A ² s
		t = 8.3 ms (60 Hz), sine	260 000 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~
	$I_{ISOL} \leq 1 mA$	t = 1 s	3600 V~
M_d	Mounting torque (M5)		2.5-5/22-44 Nm/lb.in.
	Terminal connection torque (M8)		12-15/106-132 Nm/lb.in.
Weight	Typical including screws		320 g

Features

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

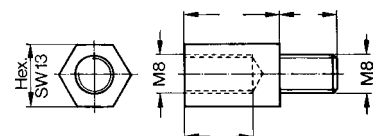
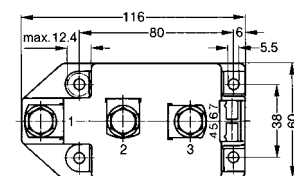
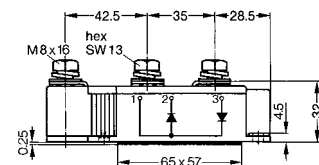
Applications

- 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}	$T_{VJ} = T_{VJM}$; $V_R = V_{RRM}$	40 mA
V_F	$I_F = 600 A$; $T_{VJ} = 25^\circ C$	1.4 V
V_{TO}	For power-loss calculations only	0.75 V
r_T	$T_{VJ} = T_{VJM}$	0.9 mΩ
R_{thJC}	per diode; DC current per module other values see Fig. 6/7	0.129 K/W
		0.065 K/W
		0.169 K/W
R_{thJK}	per diode; DC current per module	0.0845 K/W
Q_s	$T_{VJ} = 125^\circ C$, $I_F = 400 A$; $-di/dt = 50 A/\mu s$	760 μC
I_{RM}		275 A
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.

Threaded spacer for higher Anode/Cathode construction: Type ZY 250, material brass

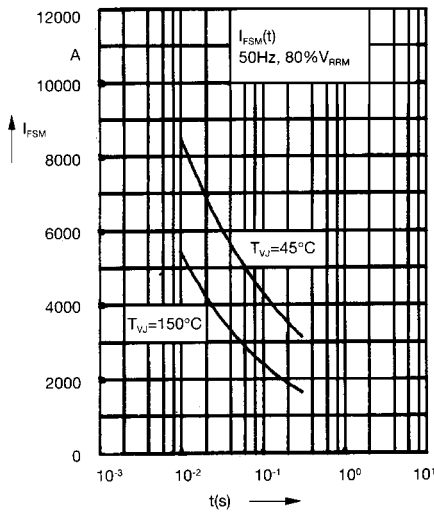


Fig. 1 Surge overload current
 I_{FSM} : Crest value, t : duration

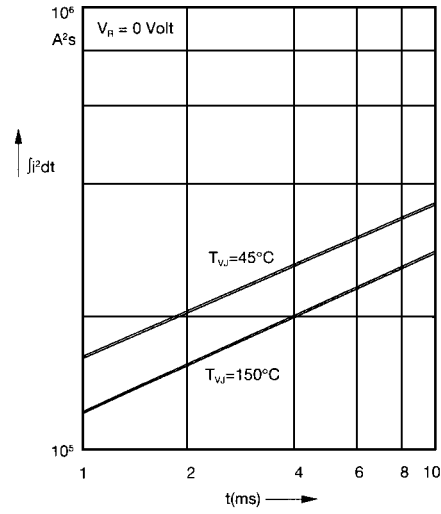


Fig. 2 j^2dt versus time (1-10 ms)

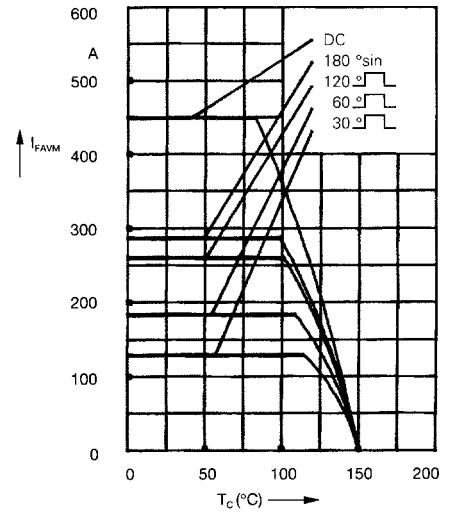


Fig. 2a Maximum forward current at case temperature

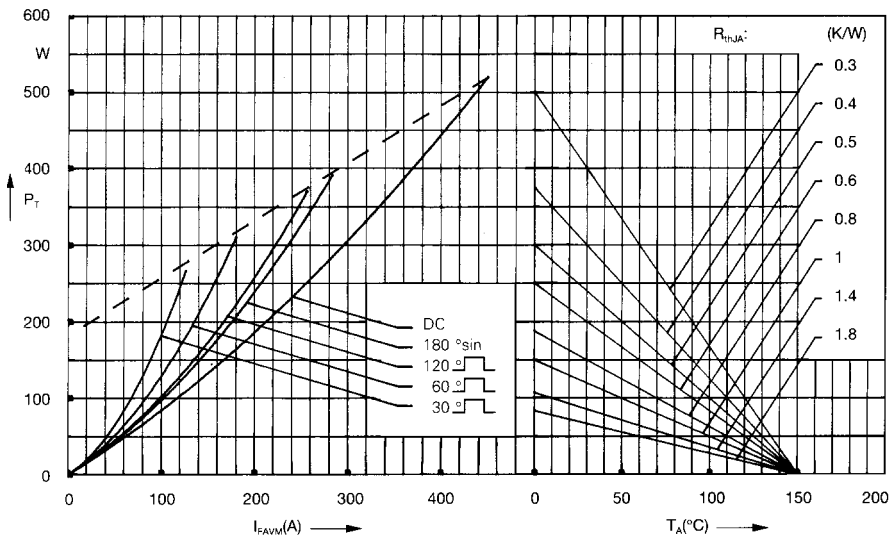


Fig. 3 Power dissipation versus forward current and ambient temperature (per diode)

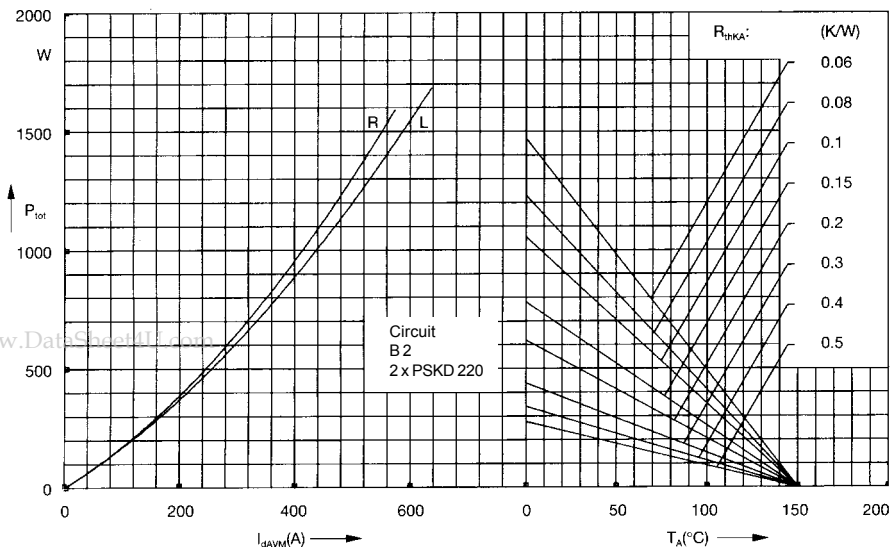


Fig. 4 Single phase rectifier bridge:
 Power dissipation versus direct output current and ambient temperature
 R = resistive load
 L = inductive load

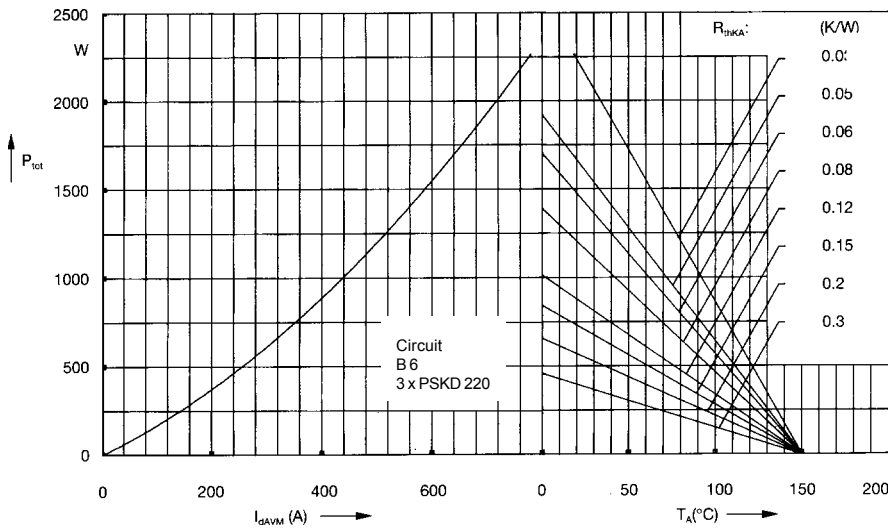


Fig. 5 Three phase rectifier bridge:
Power dissipation versus direct
output current and ambient
temperature

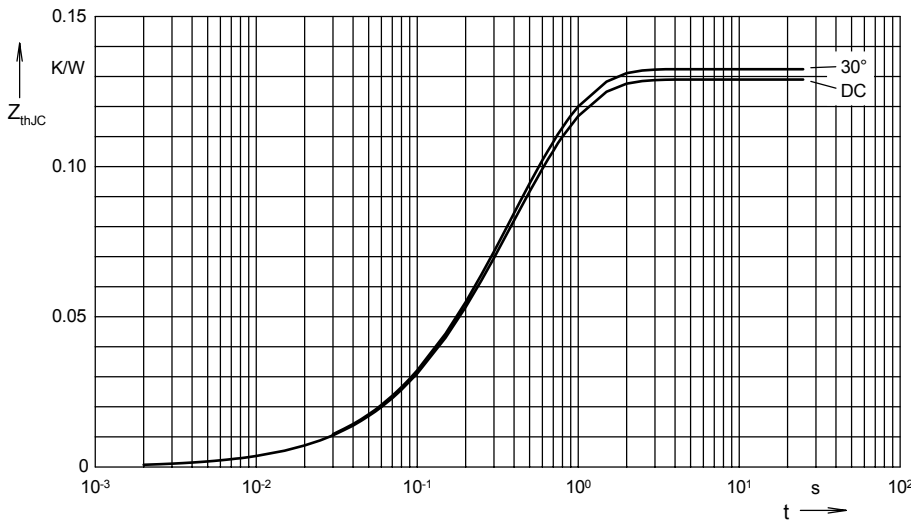


Fig. 6 Transient thermal impedance
junction to case (per diode)

R_{thJC} for various conduction angles d :

d	R_{thJC} (K/W)
DC	0.129
180°	0.131
120°	0.132
60°	0.132
30°	0.133

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.0035	0.0099
2	0.0165	0.168
3	0.1091	0.456

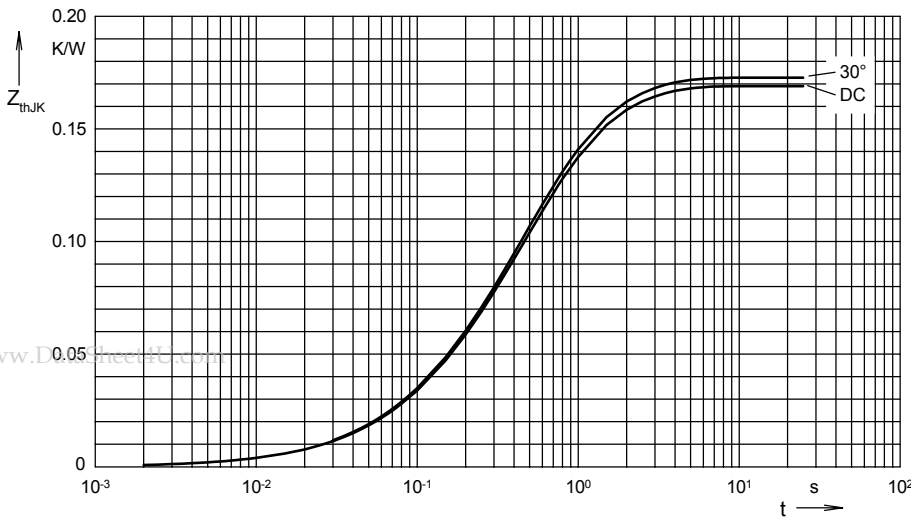


Fig. 7 Transient thermal impedance
junction to heatsink (per diode)

R_{thJK} for various conduction angles d :

d	R_{thJK} (K/W)
DC	0.169
180°	0.171
120°	0.172
60°	0.172
30°	0.173

Constants for Z_{thJK} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.0035	0.0099
2	0.0165	0.168
3	0.1091	0.456
4	0.04	1.36