

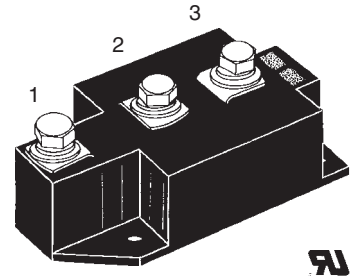
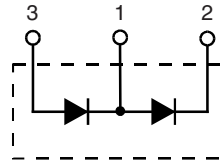
High Power Diode Modules

$$I_{FRMS} = 2 \times 450 \text{ A}$$

$$I_{FAVM} = 2 \times 270 \text{ A}$$

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

V_{RSM} V	V_{RRM} V	Type
900	800	MDD 220-08N1
1300	1200	MDD 220-12N1
1500	1400	MDD 220-14N1
1700	1600	MDD 220-16N1
1900	1800	MDD 220-18N1



Symbol	Conditions		Maximum Ratings	
I_{FRMS}	$T_{VJ} = T_{VJM}$		450	A
I_{FAVM}	$T_C = 100^{\circ}\text{C}; 180^{\circ}$ sine		270	A
I_{FSM}	$T_{VJ} = 45^{\circ}\text{C};$	t = 10 ms (50 Hz), sine	8500	A
	$V_R = 0$	t = 8.3 ms (60 Hz), sine	9000	A
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	7500	A
	$V_R = 0$	t = 8.3 ms (60 Hz), sine	8000	A
$\int i^2 dt$	$T_{VJ} = 45^{\circ}\text{C}$	t = 10 ms (50 Hz), sine	360 000	A^2s
	$V_R = 0$	t = 8.3 ms (60 Hz), sine	340 000	A^2s
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	280 000	A^2s
	$V_R = 0$	t = 8.3 ms (60 Hz), sine	260 000	A^2s
T_{VJ}			-40...+150	$^{\circ}\text{C}$
T_{VJM}			150	$^{\circ}\text{C}$
T_{stg}			-40...+125	$^{\circ}\text{C}$
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	$I_{ISOL} \leq 1 \text{ mA}$	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

Symbol	Test Conditions	Characteristic Values
I_{RRM}	$T_{VJ} = T_{VJM}; V_R = V_{RRM}$	40 mA
V_F	$I_F = 600 \text{ A}; T_{VJ} = 25^\circ\text{C}$	1.4 V
V_{T0}	For power-loss calculations only	0.75 V
r_T	$T_{VJ} = T_{VJM}$	0.9 mΩ
R_{thJC}	per diode; DC current	0.129 K/W
	per module	0.065 K/W
R_{thJK}	per diode; DC current	0.169 K/W
	per module	0.0845 K/W
Q_S	$T_{VJ} = 125^\circ\text{C}; I_F = 400 \text{ A}; -di/dt = 50 \text{ A}/\mu\text{s}$	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 diode unless otherwise stated.

Features

- Direct copper bonded Al_2O_3 -ceramic base plate
- Planar passivated chips
- Isolation voltage 3600 V~
- UL registered, E 72873

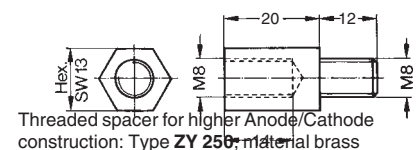
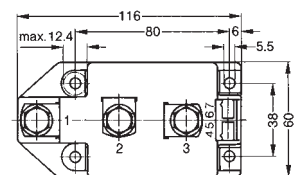
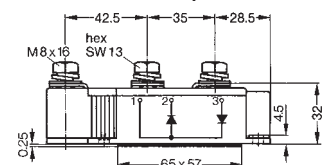
Applications

- 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")



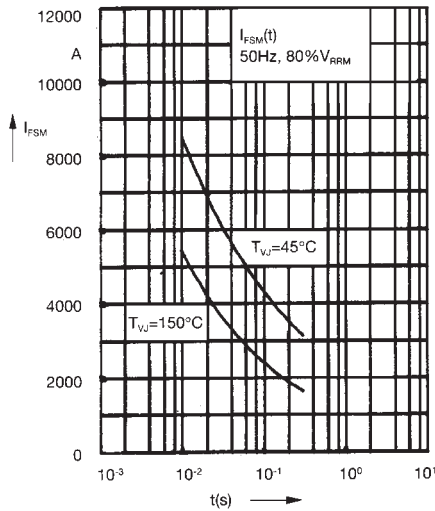


Fig. 1 Surge overload current
 I_{FSM} : Crest value, t : duration

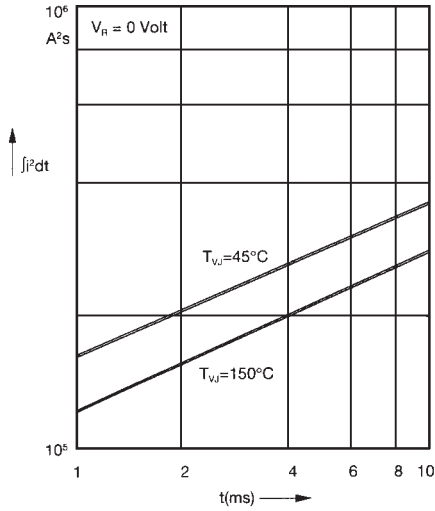


Fig. 2 j^2dt versus time (1-10 ms)

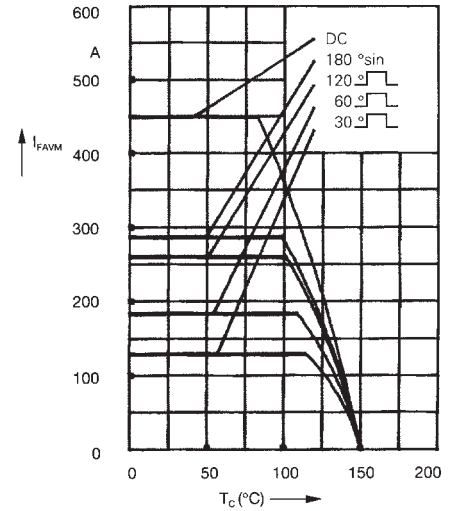


Fig. 2a Maximum forward current
 at case temperature

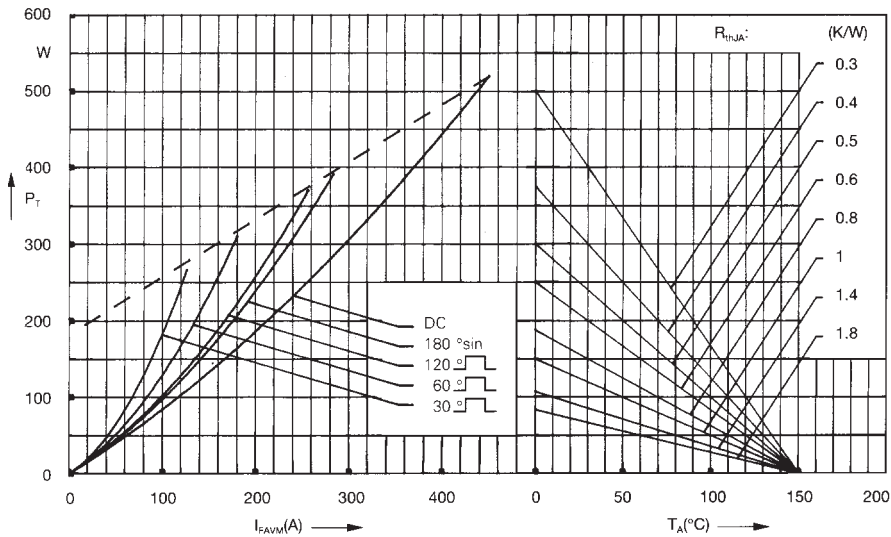


Fig. 3 Power dissipation versus
 forward current and ambient
 temperature (per diode)

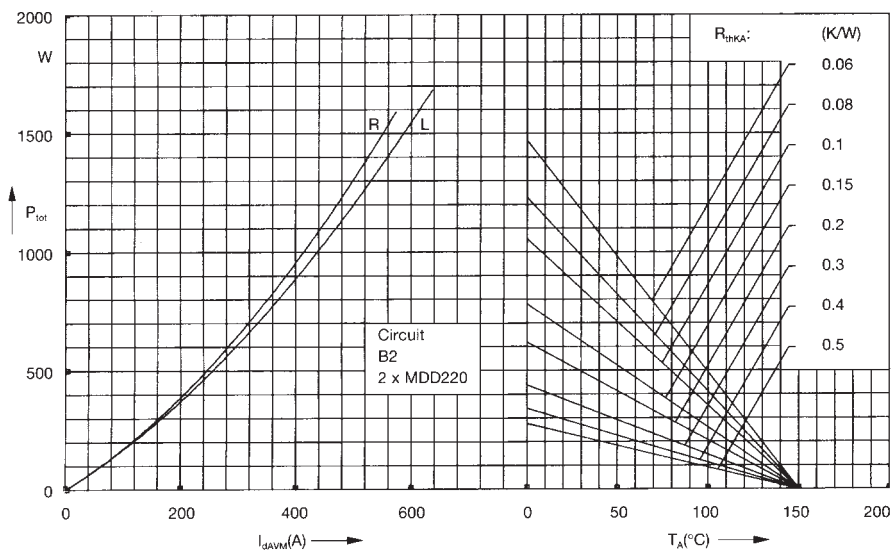


Fig. 4 Single phase rectifier bridge:
 Power dissipation versus direct
 output current and ambient
 temperature
 R = resistive load
 L = inductive load

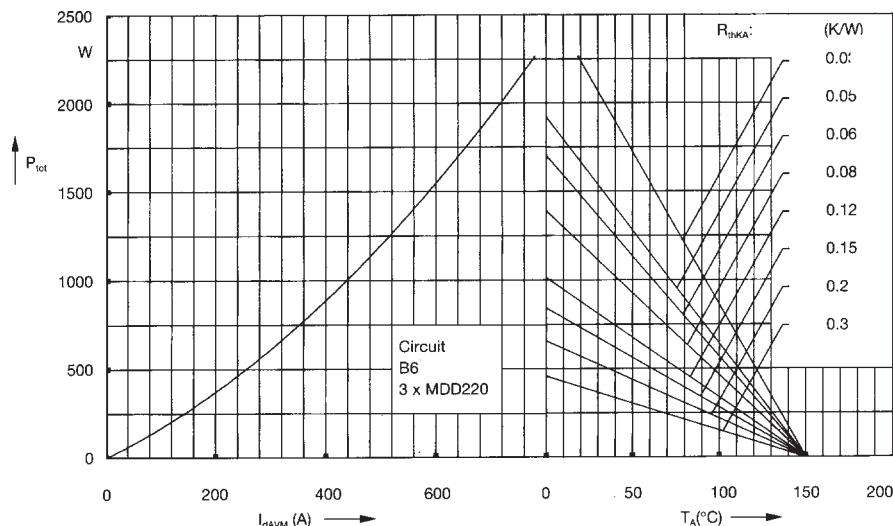


Fig. 5 Three phase rectifier bridge: Power dissipation versus direct output current and ambient temperature

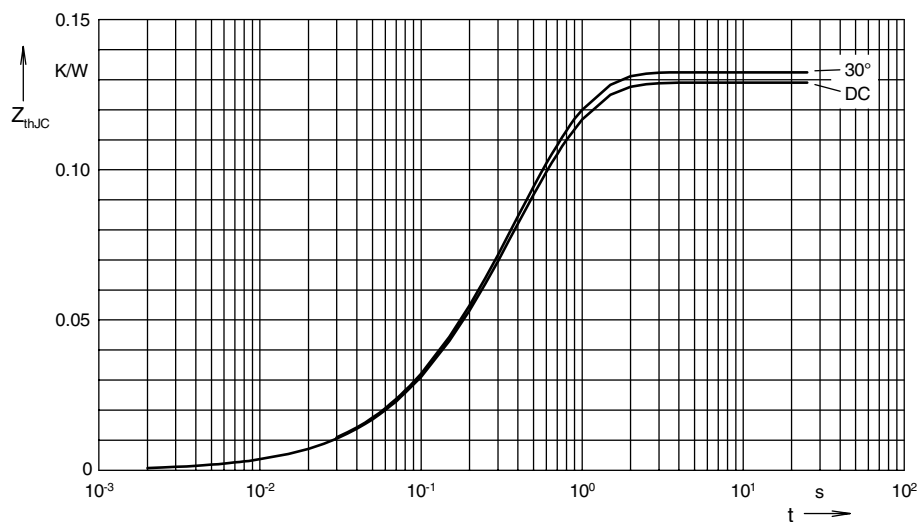


Fig. 6 Transient thermal impedance junction to case (per diode)

$R_{\theta JC}$ for various conduction angles d :

d	$R_{\theta JC}$ (K/W)
DC	0.129
180°	0.131
120°	0.132
60°	0.132
30°	0.133

Constants for $Z_{\theta JC}$ calculation:

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

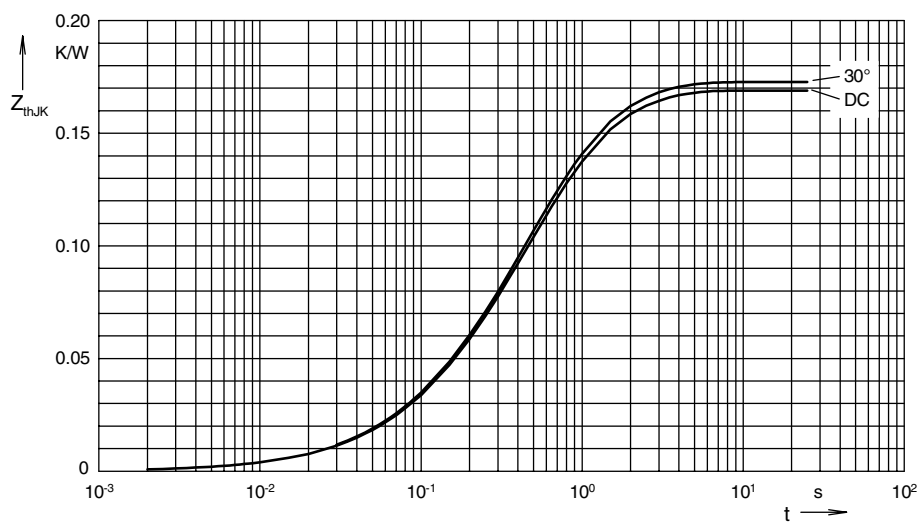


Fig. 7 Transient thermal impedance junction to heatsink (per diode)

$R_{\theta JK}$ for various conduction angles d :

d	$R_{\theta JK}$ (K/W)
DC	0.169
180°	0.171
120°	0.172
60°	0.172
30°	0.173

Constants for $Z_{\theta JK}$ calculation:

i	$R_{\theta i}$ (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