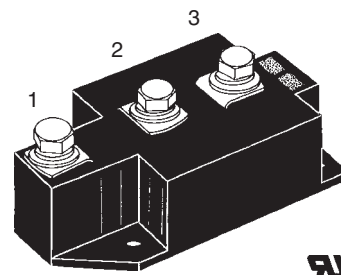
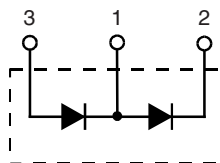


High Power Diode Modules

V_{RSM}	V_{RRM}	Type
V	V	
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°C; 180° sine		270	A	
I _{FSM}	T _{VJ} = 45°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 ² dt	T _{VJ} = 45°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} ≤ 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	

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	other values see Fig. 6/7	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.

$$\begin{aligned} I_{\text{FRMS}} &= 2 \times 450 \text{ A} \\ I_{\text{FAVM}} &= 2 \times 270 \text{ A} \\ V_{\text{BRM}} &= 800\text{--}1800 \text{ V} \end{aligned}$$

Features

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

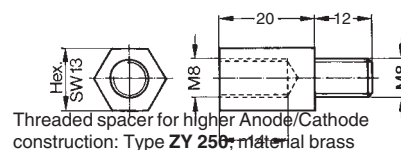
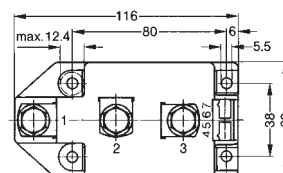
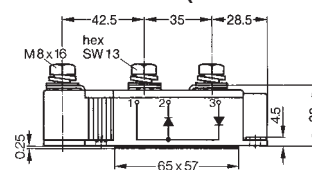
Applications

- 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")



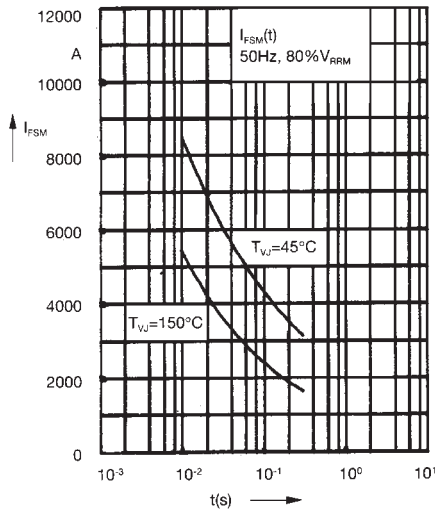


Fig. 1 Surge overload current
 I_{FSM} : Crest value, t : duration

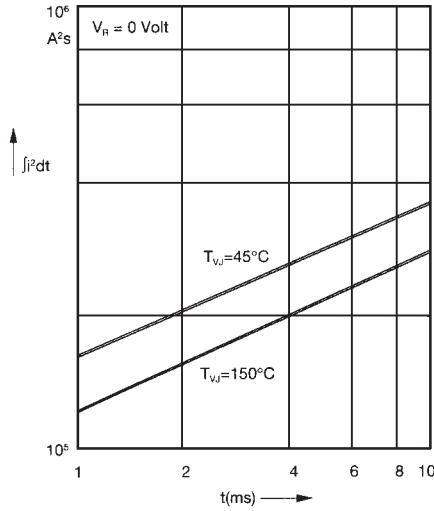


Fig. 2 j^2dt versus time (1-10 ms)

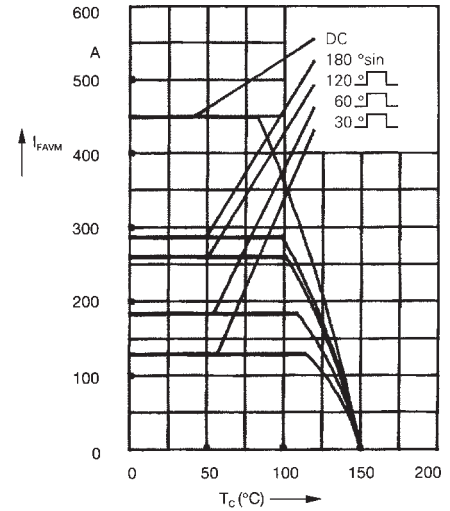


Fig. 2a Maximum forward current at case temperature

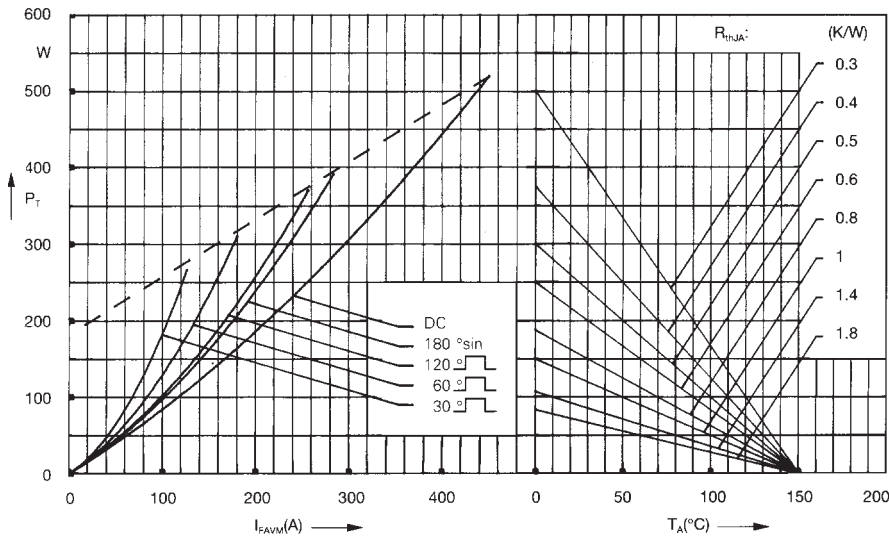


Fig. 3 Power dissipation versus forward current and ambient temperature (per diode)

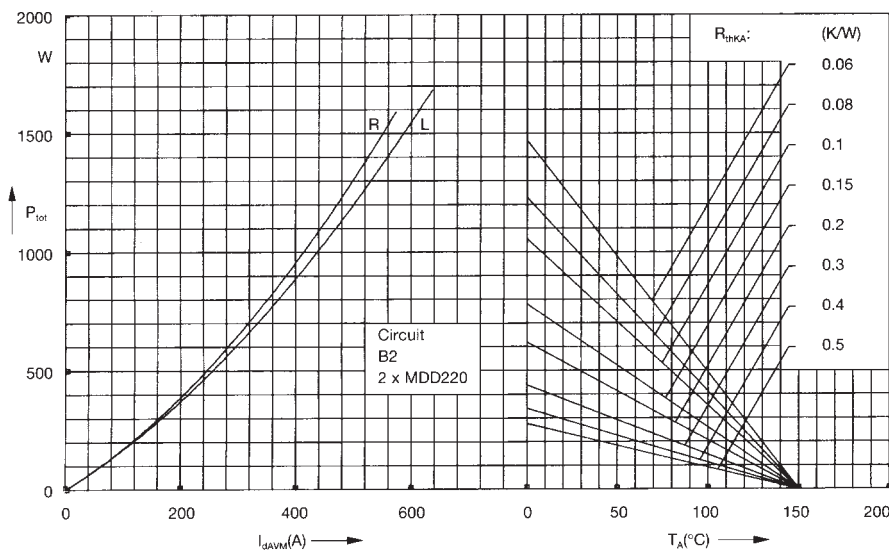


Fig. 4 Single phase rectifier bridge:
 Power dissipation versus direct output current and ambient temperature
 R = resistive load
 L = inductive load

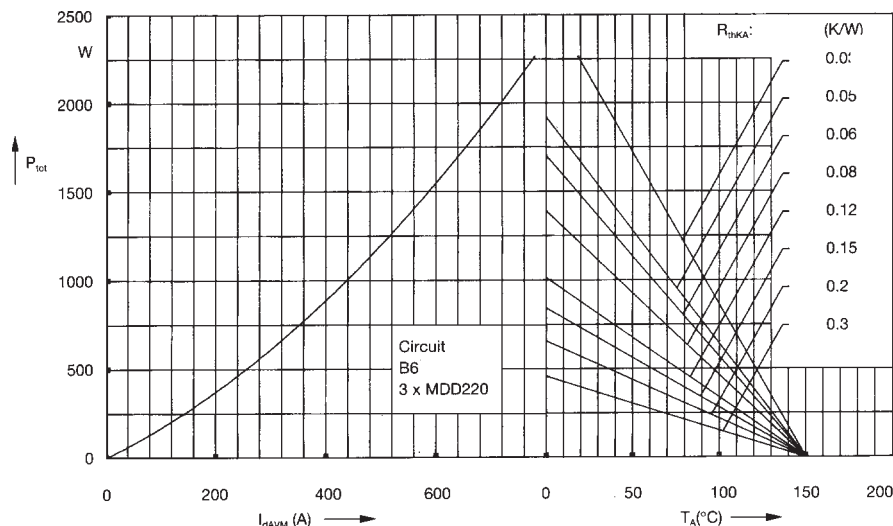


Fig. 5 Three phase rectifier bridge:
Power dissipation versus direct
output current and ambient
temperature

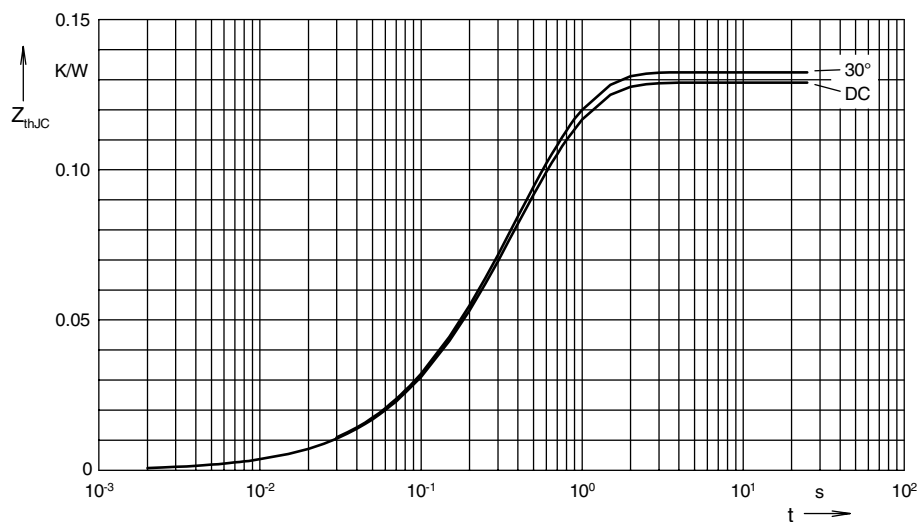


Fig. 6 Transient thermal impedance
junction to case (per diode)

$R_{\theta JC}$ 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

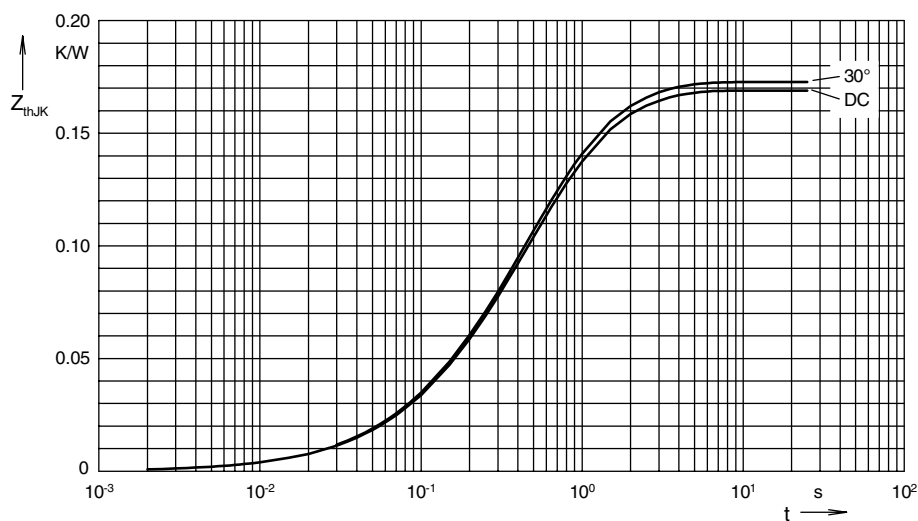


Fig. 7 Transient thermal impedance
junction to heatsink (per diode)

$R_{\theta JK}$ 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