

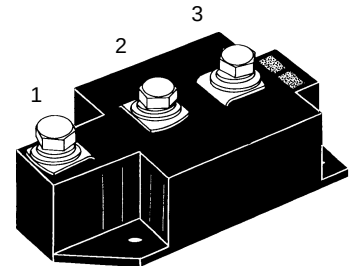
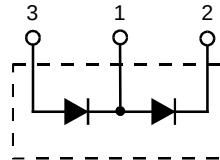
High Power Diode Modules

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

$$I_{FAVM} = 2 \times 290 \text{ A}$$

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

V_{RSM} V	V_{RRM} V	Type
900	800	MDD 250-08N1
1300	1200	MDD 250-12N1
1500	1400	MDD 250-14N1
1700	1600	MDD 250-16N1



Symbol	Test Conditions		Maximum Ratings	
I _{FRMS}	T _{VJ} = T _{VJM}		450	A
I _{FAVM}	T _C = 100°C; 180° sine		290	A
I _{FSM}	T _{VJ} = 45°C;	t = 10 ms (50 Hz), sine	11 000	A
	V _R = 0	t = 8.3 ms (60 Hz), sine	11 700	A
	T _{VJ} = T _{VJM}	t = 10 ms (50 Hz), sine	9000	A
	V _R = 0	t = 8.3 ms (60 Hz), sine	9600	A
∫i²dt	T _{VJ} = 45°C	t = 10 ms (50 Hz), sine	605 000	A²s
	V _R = 0	t = 8.3 ms (60 Hz), sine	560 000	A²s
	T _{VJ} = T _{VJM}	t = 10 ms (50 Hz), sine	405 000	A²s
	V _R = 0	t = 8.3 ms (60 Hz), sine	380 000	A²s
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

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

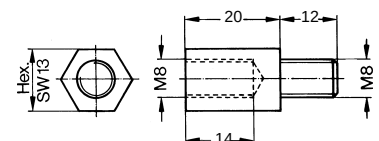
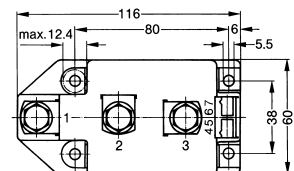
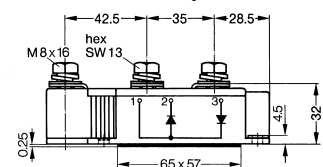
Advantages

- Space and weight savings
- Simple mounting
- Improved temperature and power cycling
- Reduced protection circuits

Symbol	Test Conditions	Characteristic Values
I_{RRM}	$T_{VJ} = T_{VJM}; V_R = V_{RRM}$	40 mA
V_F	$I_F = 600 \text{ A}; T_{VJ} = 25^\circ\text{C}$	1.3 V
V_{T0}	For power-loss calculations only	0.75 V
r_T	$T_{VJ} = T_{VJM}$	0.75 mΩ
R_{thJC}	per diode; DC current	0.129 K/W
R_{thJK}	per module	0.065 K/W
	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.
IXYS reserves the right to change limits, test conditions and dimensions

Dimensions in mm (1 mm = 0.0394")



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

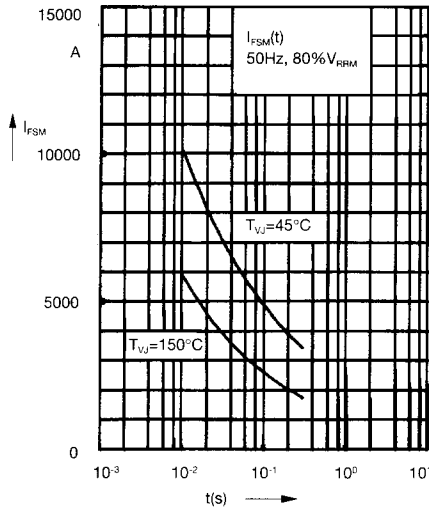


Fig. 1 Surge overload current
 I_{FSM} : Crest value, t : duration

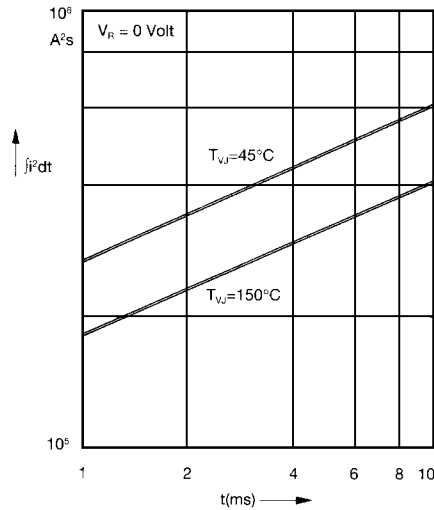


Fig. 2 $\int i^2 dt$ versus time (1-10 ms)

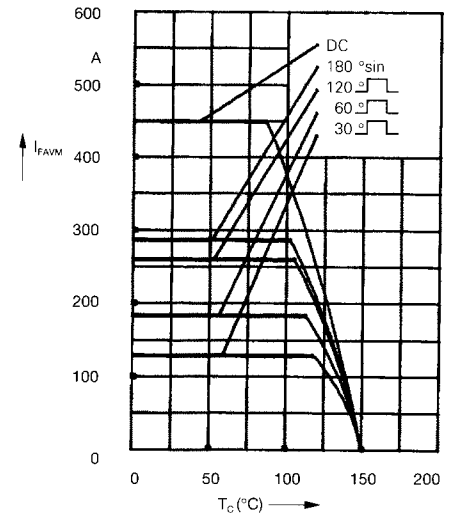


Fig. 2a Maximum forward current at case temperature

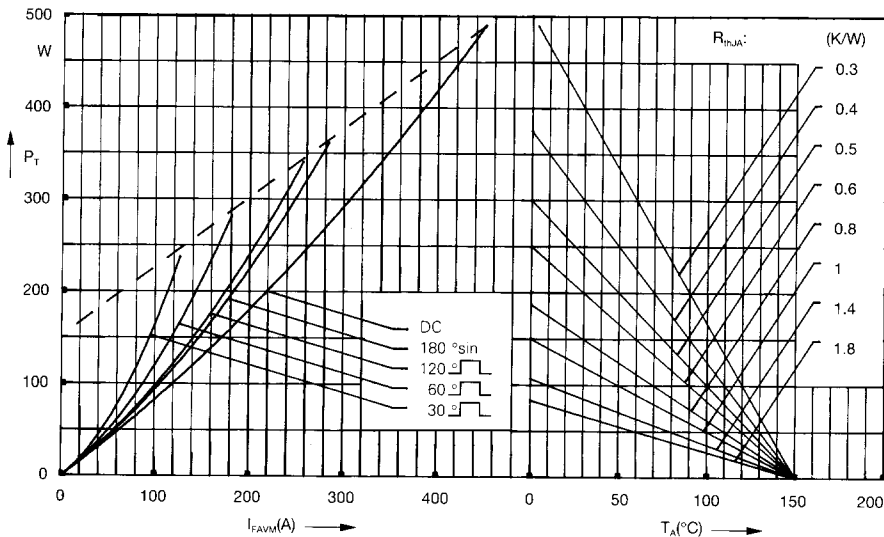


Fig. 3 Power dissipation versus forward current and ambient temperature (per diode)

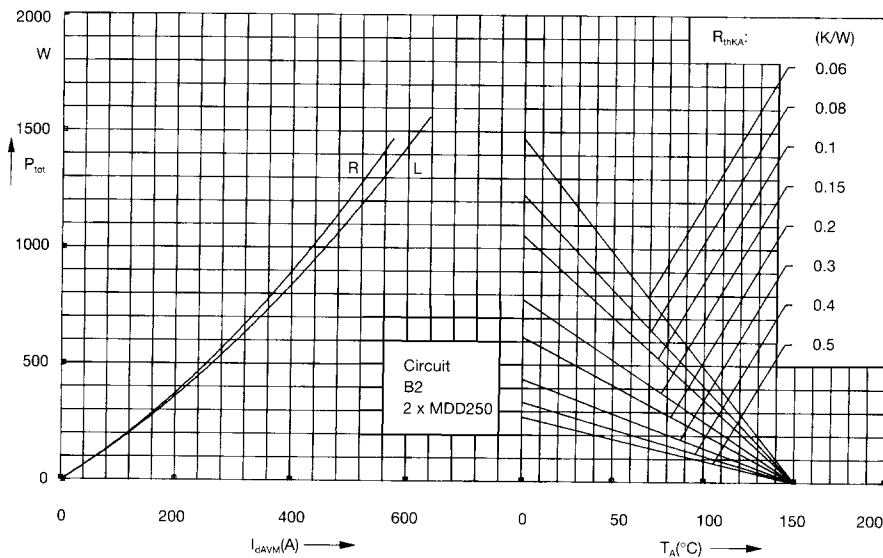


Fig. 4 Single phase rectifier bridge:
Power dissipation versus direct output current and ambient temperature
R = resistive load
L = inductive load

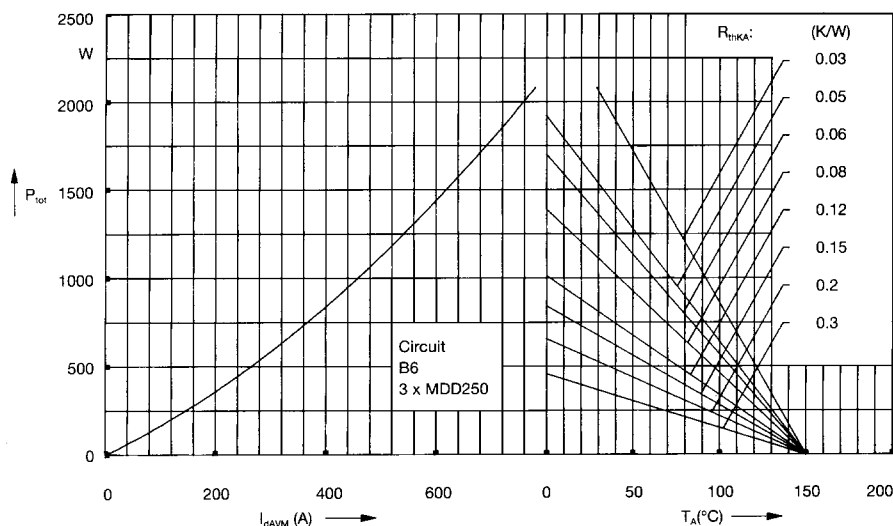


Fig. 5 Three phase rectifier bridge:
Power dissipation versus direct
output current and ambient
temperature

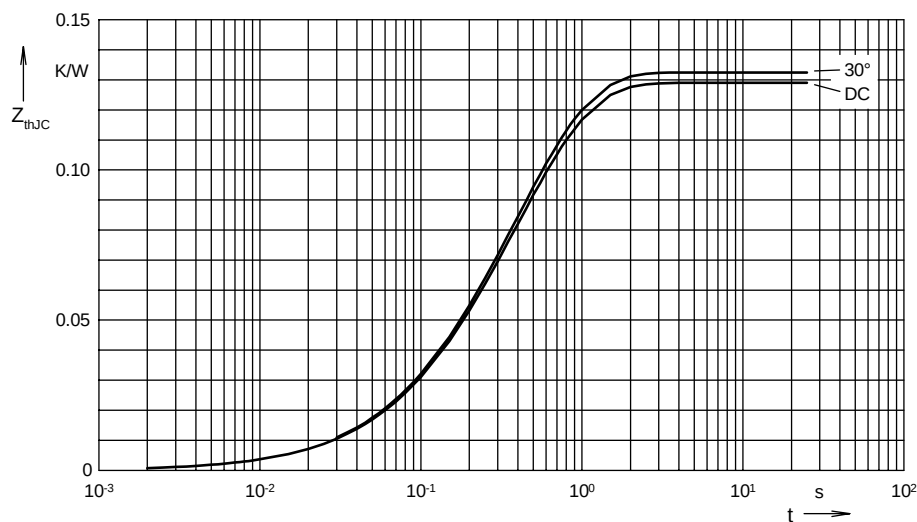


Fig. 6 Transient thermal impedance
junction to case (per diode)

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

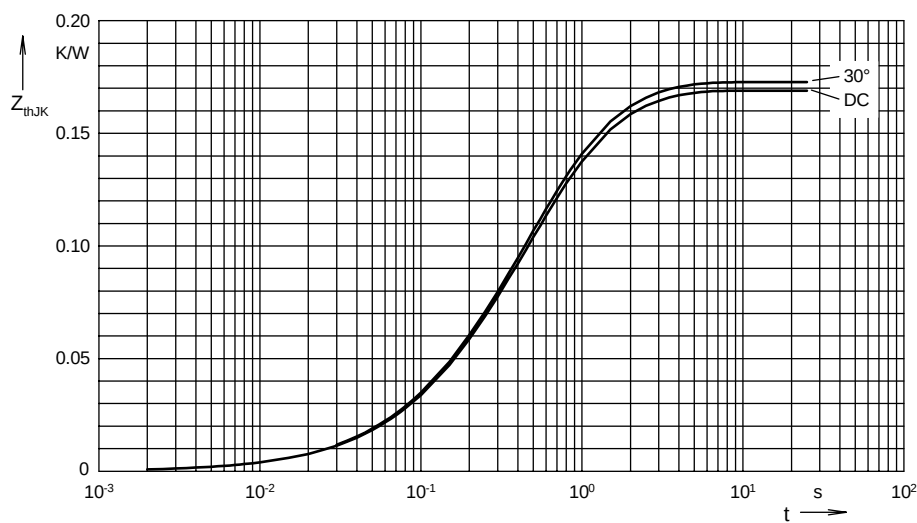


Fig. 7 Transient thermal impedance
junction to heatsink (per diode)

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

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