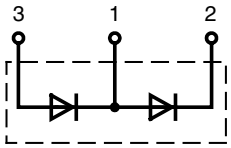
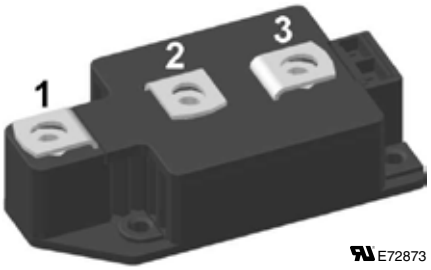
High Power Diode Modules

I_{FRSM} = 2x 450 A
I_{FAVM} = 2x 290 A
V_{RRM} = 1200-1600 V

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





E72873

Symbol	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)	11	kA
	V_R = 0	t = 8.3 ms	(60 Hz)	11,7	kA
	$T_{VJ} = T_{VJM}$;	t = 10 ms	(50 Hz)	9	kA
	V_R = 0	t = 8.3 ms	(60 Hz)	9,6	kA
I^2t	T_{VJ} = 45°C;	t = 10 ms	(50 Hz)	605	kA^2s
	V_R = 0	t = 8.3 ms	(60 Hz)	560	kA^2s
	$T_{VJ} = T_{VJM}$;	t = 10 ms	(50 Hz)	405	kA^2s
	V_R = 0	t = 8.3 ms	(60 Hz)	380	kA^2s
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	Nm
	Terminal connection torque (M8)			12 - 15	Nm
Weight	Typical including screws			320	g

Symbol	Conditions		Characteristics Values	
I_{RRM}	$V_R = V_{RRM}$;	$T_{VJ} = T_{VJM}$	40	mA
V_F	I_F = 600 A;	T_{VJ} = 25°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
	per module	*other values*	0.065	K/W
R_{thJK}	per diode; DC current	*see Fig. 6/7*	0.169	K/W
	per module		0.0845	K/W
Q_S	T_{VJ} = 125°C; I_F = 400 A; -di/dt = 50 A/µs		760	µC
I_{RM}			275	A
d_S	Creeping distance on surface		12.7	mm
d_A	Creepage distance in 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

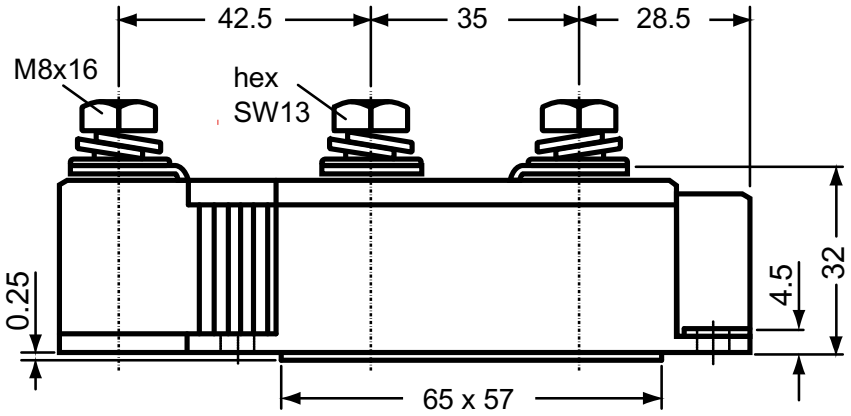
Applications

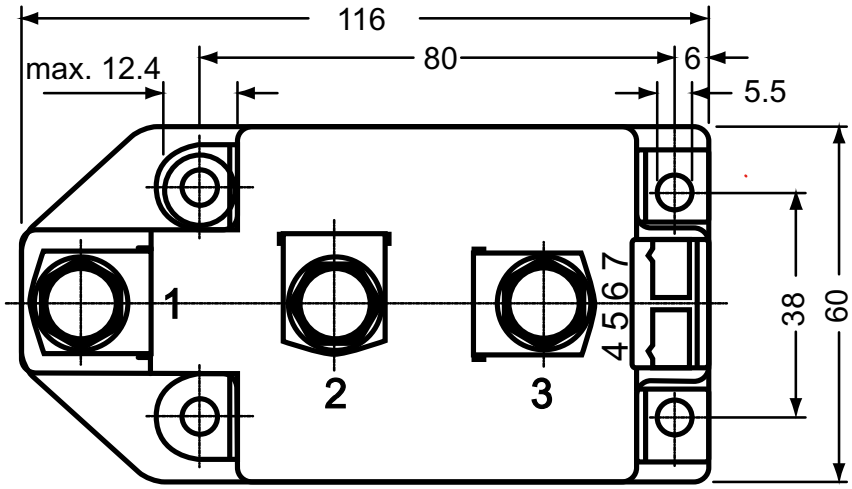
- Supplies for DC power equipment
- DC supply for PWM inverter
- Field supply for DC motors
- Battery DC power supplies

Advantages

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

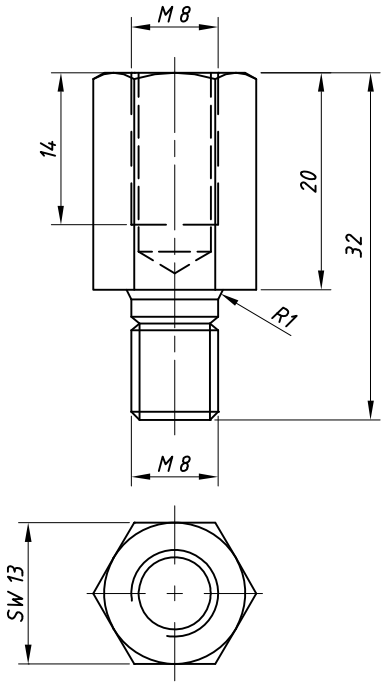
Dimensions in mm (1 mm = 0.0394“)





Threaded spacer for higher Anode / Cathode construction:

Type **ZY 250** (material brass)



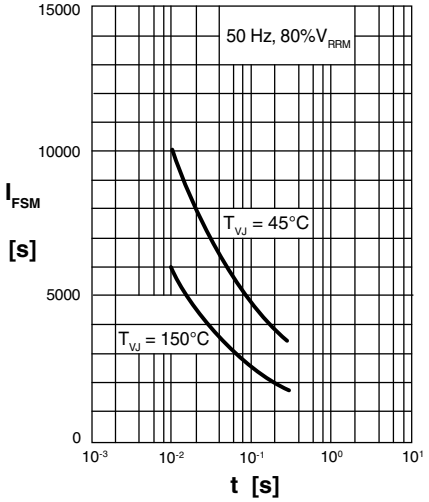


Fig. 1 Surge overload current
I_{FSM}: Crest value, t: duration

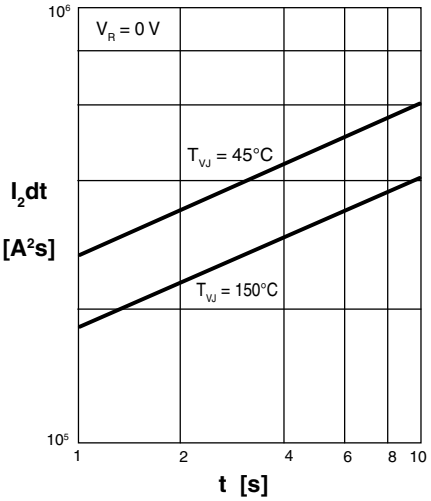


Fig. 2 I^2dt versus time (1-10 ms)

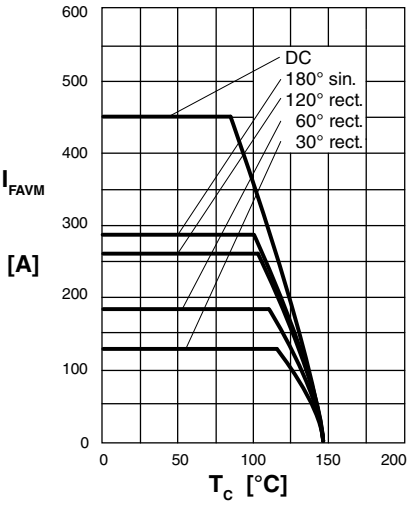


Fig. 2a Maximum forward current at case temperature

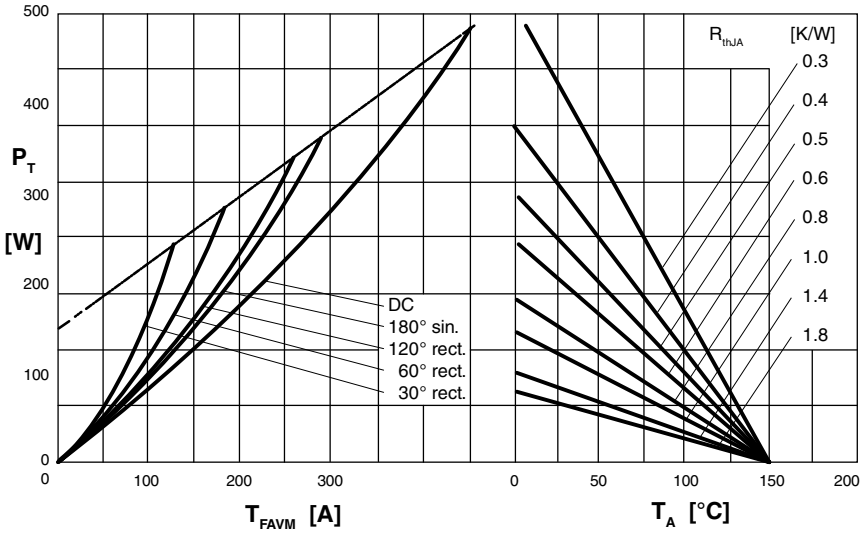
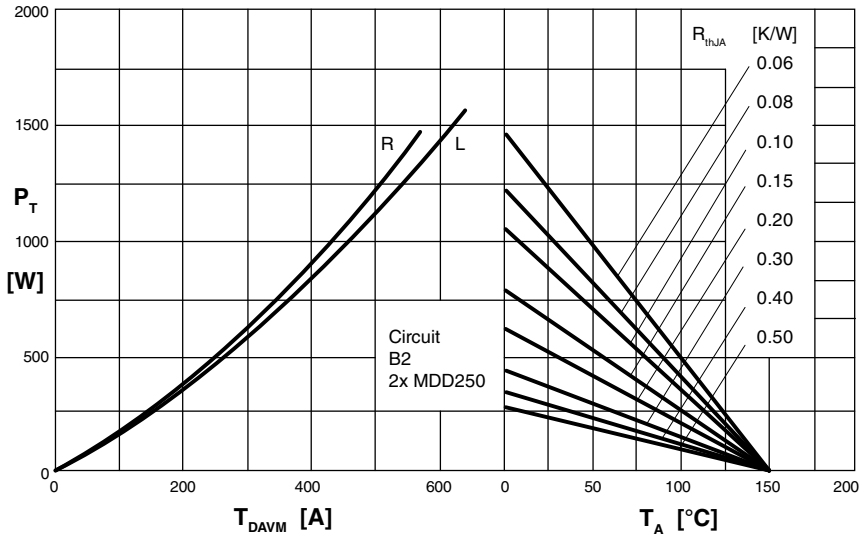


Fig. 3 Power dissipation vs. forward current and ambient temperature (per diode)



R = resistive load
L = inductive load

Fig. 4 Single phase rectifier bridge: Power dissipation vs. direct output current and ambient

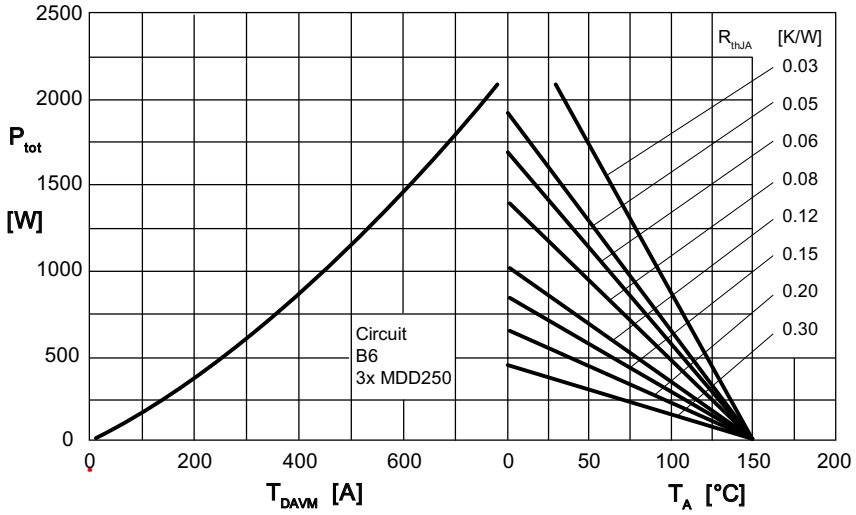
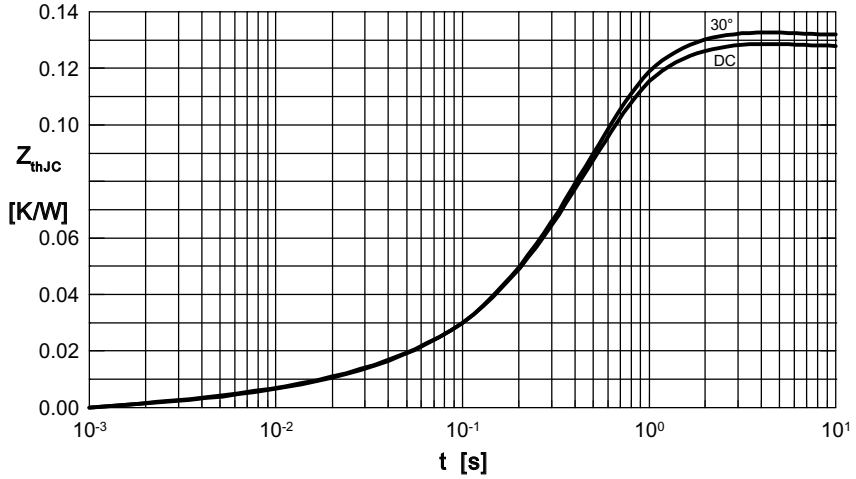


Fig. 5 Three phase rectifier bridge: Power dissipation versus direct output current and ambient temperature



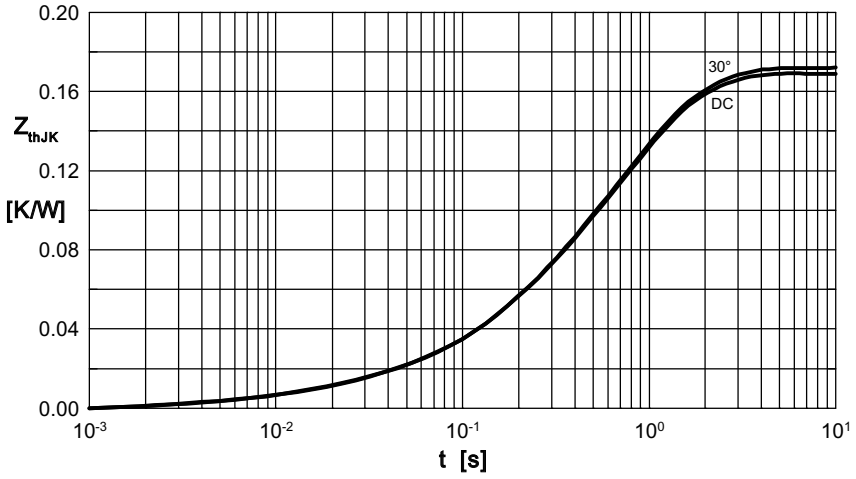
R_{thJC} for various conduction angles d:

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	01091	0.456

Fig. 7 Transient thermal impedance junction to case (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

Fig. 8 Transient thermal impedance junction to heatsink (per diode)

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