

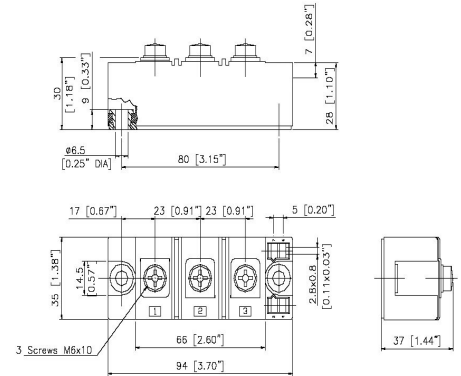
SDD190

Diode-Diode Modules



Type	V_{RSM} V	V_{RRM} V
SDD190N08	900	800
SDD190N12	1300	1200
SDD190N14	1500	1400
SDD190N16	1700	1600
SDD190N18	1900	1800

Dimensions in mm (1mm=0.0394")



Symbol	Test Conditions	Maximum Ratings	Unit
I_{FRMS} I_{FAVM}	$T_{VJ}=T_{VJM}$ $T_C=100^{\circ}C$; 180° sine	300 190	A
I_{FSM}	$T_{VJ}=45^{\circ}C$ $V_R=0$ t=10ms (50Hz), sine t=8.3ms (60Hz), sine	6600 7290	A
	$T_{VJ}=T_{VJM}$ $V_R=0$ t=10ms(50Hz), sine t=8.3ms(60Hz), sine	5600 6200	
$\int i^2 dt$	$T_{VJ}=45^{\circ}C$ $V_R=0$ t=10ms (50Hz), sine t=8.3ms (60Hz), sine	218000 221000	A^2s
	$T_{VJ}=T_{VJM}$ $V_R=0$ t=10ms(50Hz), sine t=8.3ms(60Hz), sine	157000 160000	
T_{VJ} T_{VJM} T_{stg}		-40...+150 150 -40...+125	$^{\circ}C$
V_{ISOL}	50/60Hz, RMS $I_{ISOL} \leq 1mA$ t=1min t=1s	3000 3600	V~
M_d	Mounting torque (M6) Terminal connection torque (M6)	2.25-2.75/20-25 4.5-5.5/40-48	Nm/lb.in.
Weight	Typical including screws	120	g

SDD190

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Symbol	Test Conditions	Characteristic Values	Unit
I_R	$T_{VJ}=T_{VJM}; V_R=V_{RRM}$	20	mA
V_F	$I_F=300A; T_{VJ}=25^{\circ}C$	1.15	V
V_{TO}	For power-loss calculations only	0.8	V
r_T	$T_{VJ}=T_{VJM}$	0.8	m Ω
Q_S	$T_{VJ}=125^{\circ}C; I_F=300A; -di/dt=50A/us$	550	μC
I_{RM}		235	A
R_{thJC}	per diode; DC current per module	0.21 0.105	K/W
R_{thJK}	per diode; DC current per module	0.31 0.155	K/W
ds	Creepage distance on surface	12.7	mm
dA	Strike distance through air	9.6	mm
a	Maximum allowable acceleration	50	m/s ²

FEATURES

- * International standard package
- * Direct copper bonded Al₂O₃-ceramic base plate
- * Planar passivated chips
- * Isolation voltage 3600 V~

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

SDD190

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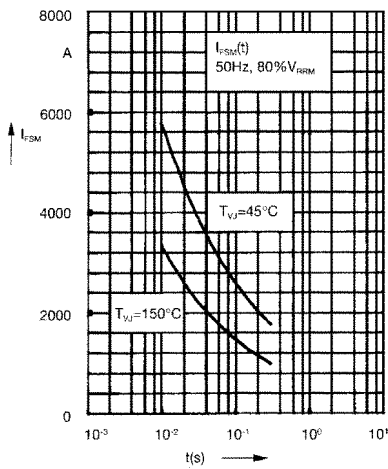


Fig. 1 Surge overload current
 I_{FSM} : Crest value, t : duration

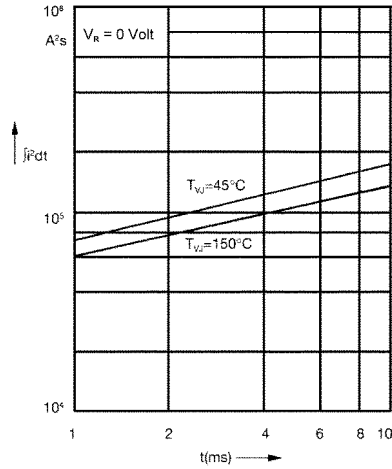


Fig. 2 $\int i^2 dt$ versus time (1-10 ms)

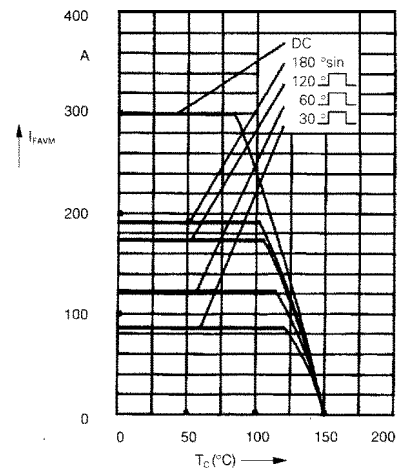


Fig. 2a Maximum forward current
 at case temperature

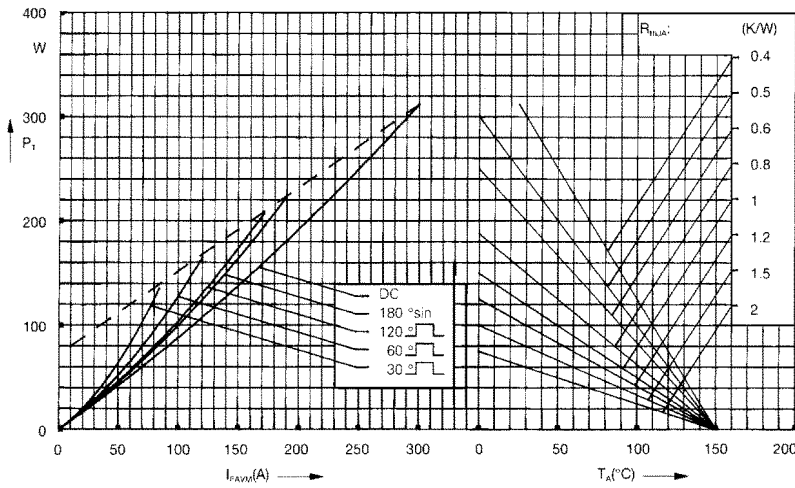


Fig. 3 Power dissipation versus
 forward current and ambient
 temperature (per diode)

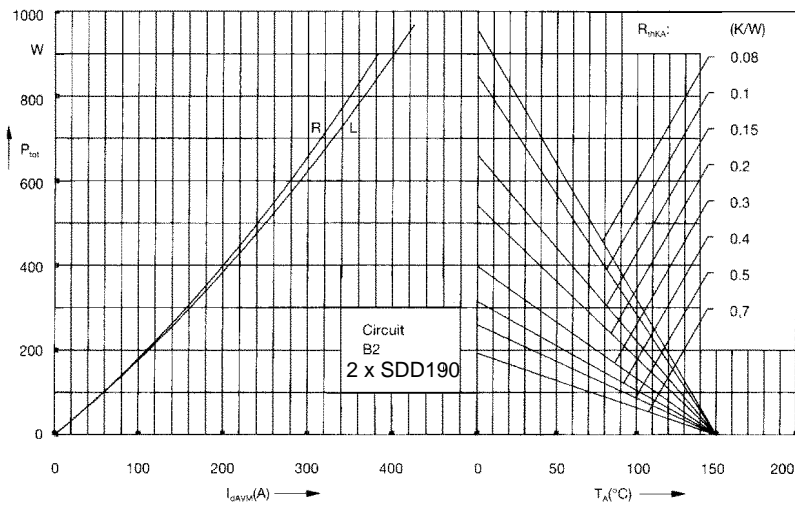


Fig. 4 Single phase rectifier bridge:
 Power dissipation versus direct
 output current and ambient
 temperature
 R = resistive load
 L = inductive load

SDD190

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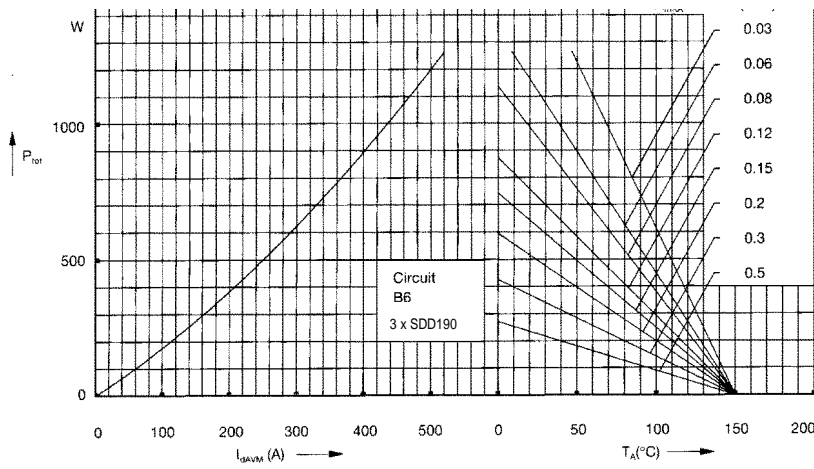


Fig. 5 Three phase rectifier bridge: Power dissipation versus direct output current and ambient temperature

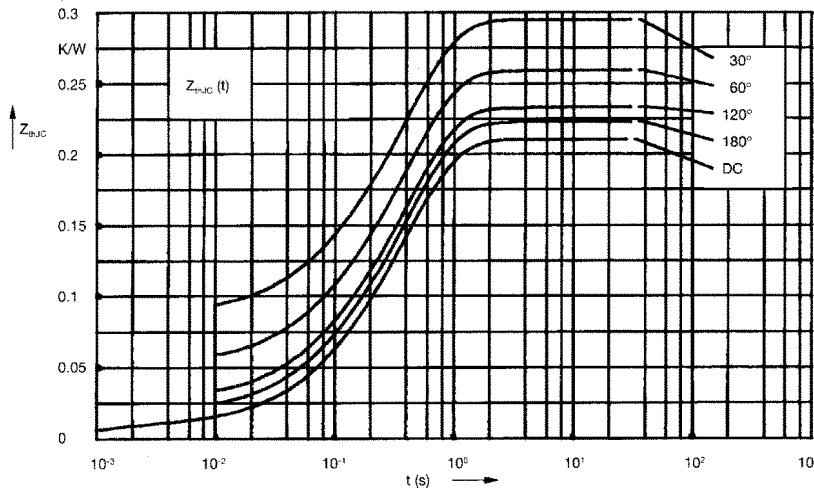


Fig. 6 Transient thermal impedance junction to case (per diode)

R_{thJC} for various conduction angles d:

d	R_{thJC} (K/W)
DC	0.210
180°C	0.223
120°C	0.233
60°C	0.260
30°C	0.295

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.0087	0.001
2	0.0163	0.065
3	0.185	0.4

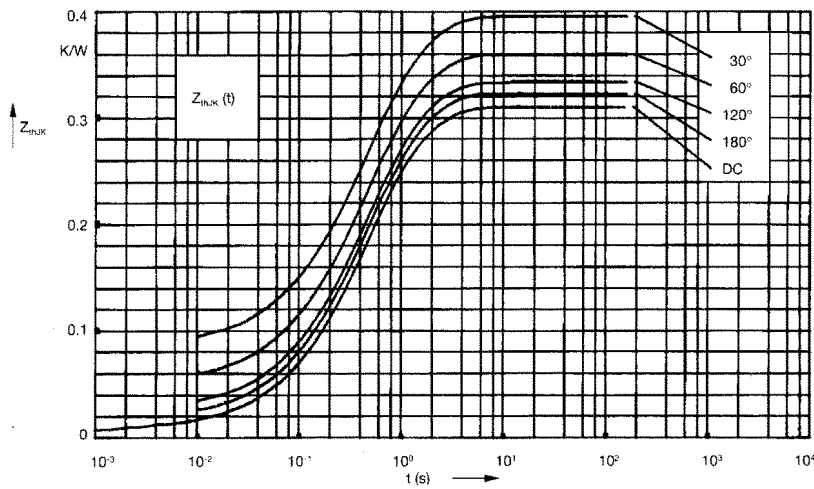


Fig. 7 Transient thermal impedance junction to heatsink (per diode)

R_{thJK} for various conduction angles d:

d	R_{thJK} (K/W)
DC	0.31
180°C	0.323
120°C	0.333
60°C	0.360
30°C	0.395

Constants for Z_{thJK} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.0087	0.001
2	0.0163	0.065
3	0.185	0.4
4	0.1	1.29