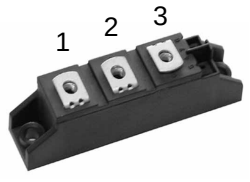
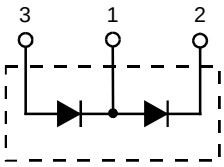
CDD70

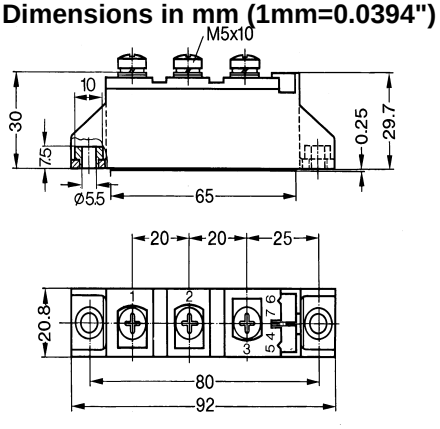
Diode-Diode Modules





Type	V_{RSM} V	V_{RRM} V
CDD70N08	900	800
CDD70N12	1300	1200
CDD70N14	1500	1400
CDD70N16	1700	1600
CDD70N18	1900	1800

Dimensions in mm (1mm=0.0394")



Symbol	Test Conditions		Maximum Ratings	Unit
I_{FRMS} I_{FAVM}	$T_{VJ}=T_{VJM}$ $T_C=100^oC$; 180° sine		150 70	A
I_{FSM}	$T_{VJ}=45^oC$ $V_R=0$	t=10ms (50Hz), sine t=8.3ms (60Hz), sine	1400 1650	A
	$T_{VJ}=T_{VJM}$ $V_R=0$	t=10ms(50Hz), sine t=8.3ms(60Hz), sine	1200 1400	
$\int i^2dt$	$T_{VJ}=45^oC$ $V_R=0$	t=10ms (50Hz), sine t=8.3ms (60Hz), sine	9800 11300	A^2s
	$T_{VJ}=T_{VJM}$ $V_R=0$	t=10ms(50Hz), sine t=8.3ms(60Hz), sine	7200 8100	
T_{VJ} T_{VJM} T_{stg}			-40...+150 150 -40...+125	^oC
V_{ISOL}	50/60Hz, RMS $I_{ISOL}\leq 1mA$	t=1min t=1s	3000 3600	V~
M_d	Mounting torque (M5) Terminal connection torque (M5)		2.5-4/22-35 2.5-4/22-35	Nm/lb.in.
Weight	Typical including screws		90	g

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Diode-Diode Modules

Symbol	Test Conditions	Characteristic Values	Unit
I_R	$T_{VJ}=T_{VJM}$; $V_R=V_{RRM}$	10	mA
V_F	I_F=200A; T_{VJ}=25°C	1.48	V
V_{TO}	For power-loss calculations only	0.8	V
r_T	$T_{VJ}=T_{VJM}$	3	mΩ
Q_S	T_{VJ}=125°C; I_F=50A; -di/dt=3A/us	100	uC
I_{RM}		24	A
R_{thJC}	per diode; DC current per module	0.51 0.255	K/W
R_{thJK}	per diode; DC current per module	0.71 0.355	K/W
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

FEATURES

* International standard package
* 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

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Diode-Diode Modules

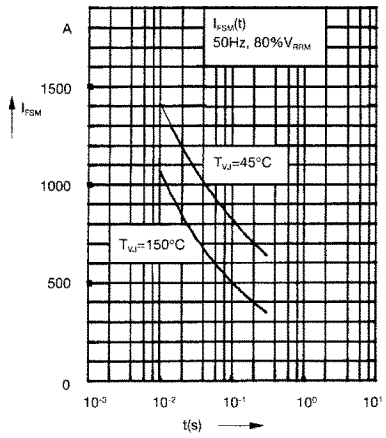

Fig. 1 Surge overload current
I_{FSM}: Crest value, t: duration

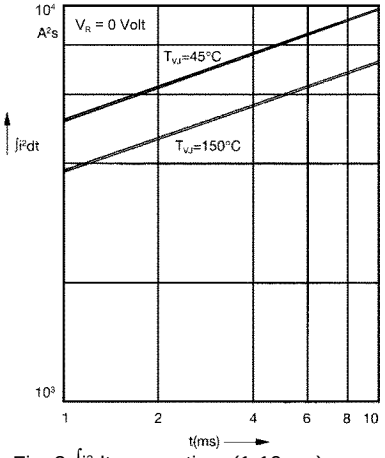

Fig. 2 $\int i^2dt$ versus time (1-10 ms)

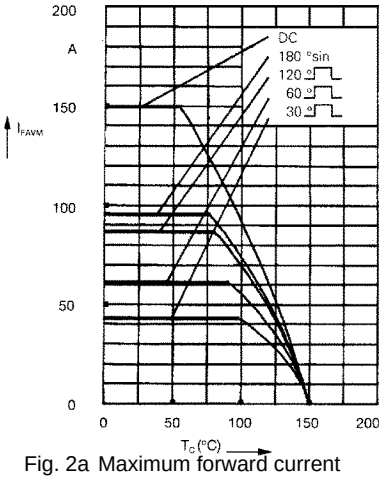

Fig. 2a Maximum forward current at case temperature

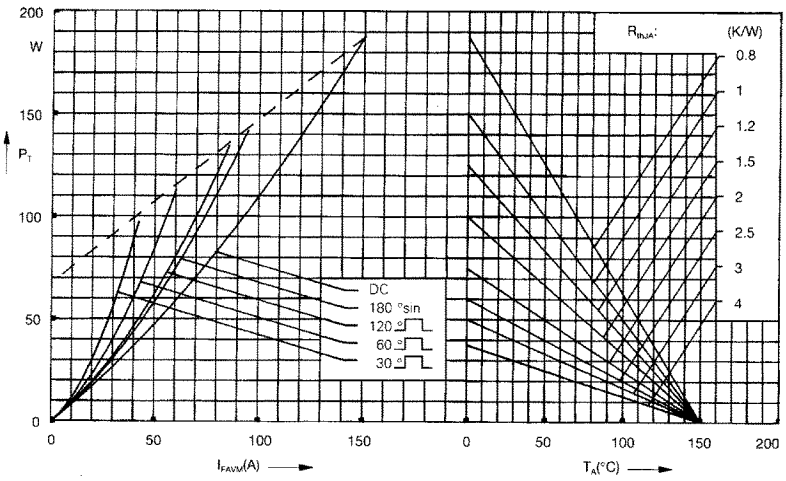

Fig. 3 Power dissipation versus forward current and ambient temperature (per diode)

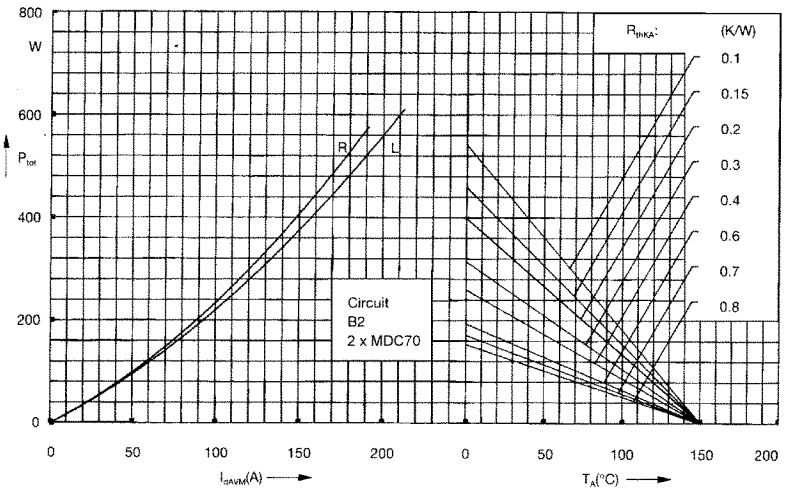

Fig. 4 Single phase rectifier bridge: Power dissipation versus direct output current and ambient temperature
R = resistive load
L = inductive load

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Diode-Diode Modules

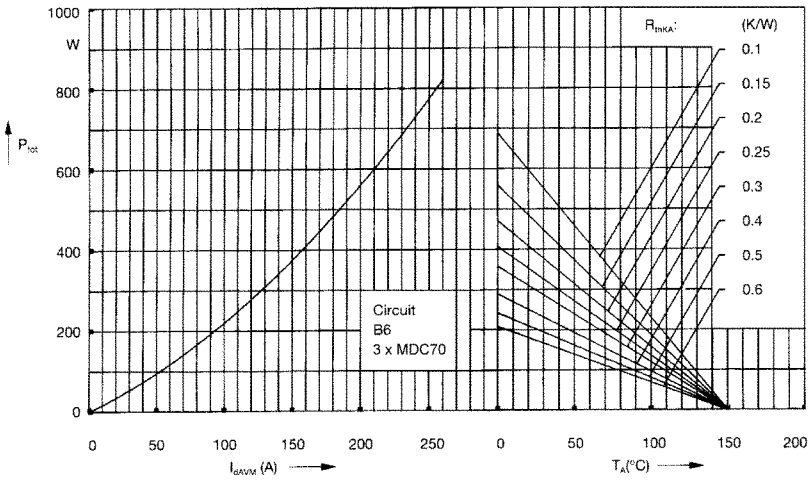

Fig. 5 Three phase rectifier bridge: Power dissipation versus direct output current and ambient temperature

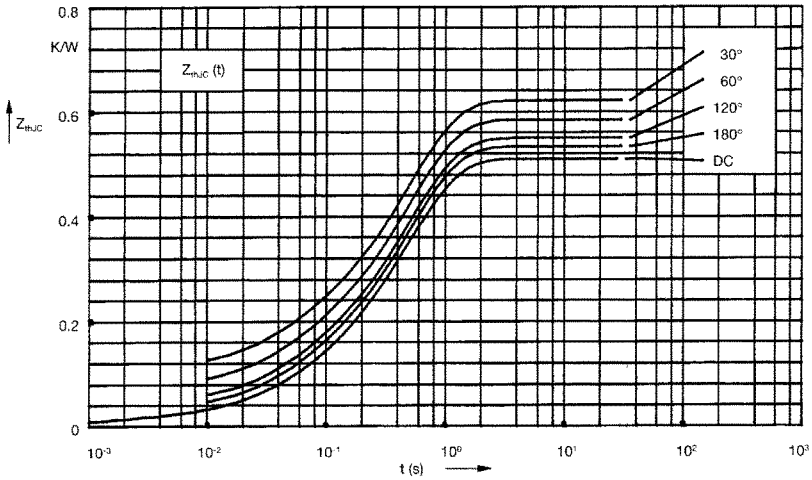

Fig. 6 Transient thermal impedance junction to case (per diode)

R_{thJC} for various conduction angles d:

d	R_{thJC} (K/W)
DC	0.51
180°C	0.53
120°C	0.55
60°C	0.58
30°C	0.62

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.013	0.0015
2	0.055	0.045
3	0.442	0.485

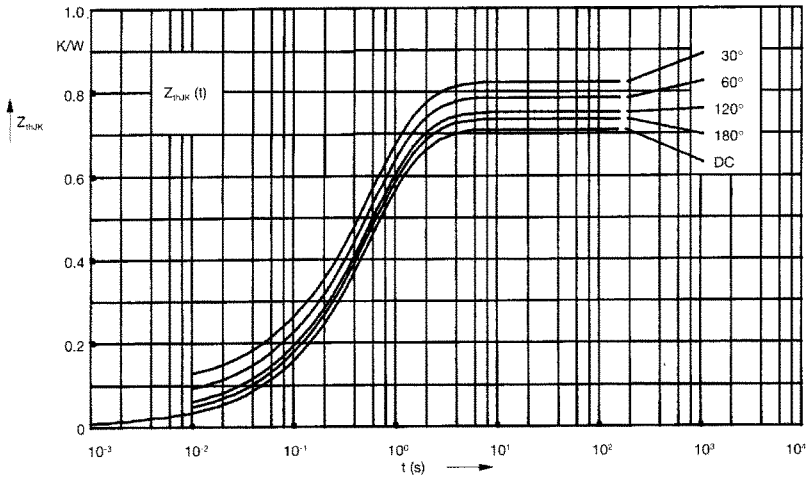

Fig. 7 Transient thermal impedance junction to heatsink (per diode)

R_{thJK} for various conduction angles d:

d	R_{thJK} (K/W)
DC	0.71
180°C	0.73
120°C	0.75
60°C	0.78
30°C	0.82

Constants for Z_{thJK} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.013	0.0015
2	0.055	0.045
3	0.442	0.485
4	0.2	1.25