CDD120
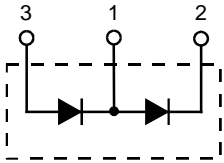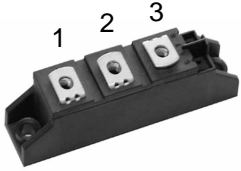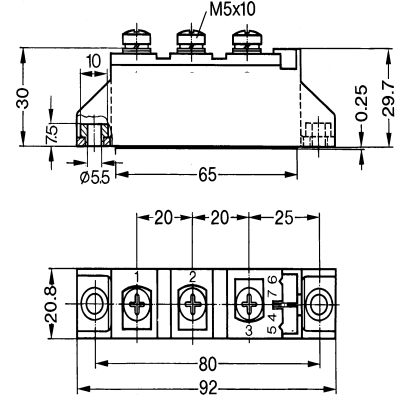
Diode-Diode Modules

Type	V$_{RSM}$ V	V$_{RRM}$ V
CDD120N08	900	800
CDD120N12	1300	1200
CDD120N14	1500	1400
CDD120N16	1700	1600
CDD120N18	1900	1800

Dimensions in mm (1mm=0.0394")

Symbol	Test Conditions		Maximum Ratings	Unit
I$_{FRMS}$ I$_{FAVM}$	T$_{VJ}$=T$_{VJM}$ T$_C$=105°C; 180° sine		180 120	A
I$_{FSM}$	T$_{VJ}$=45°C V$_R$=0	t=10ms (50Hz), sine t=8.3ms (60Hz), sine	2800 3300	A
	T$_{VJ}$=T$_{VJM}$ V$_R$=0	t=10ms(50Hz), sine t=8.3ms(60Hz), sine	2500 2750	
$\int$i^{2}dt	T$_{VJ}$=45°C V$_R$=0	t=10ms (50Hz), sine t=8.3ms (60Hz), sine	39200 45000	A^{2}s
	T$_{VJ}$=T$_{VJM}$ V$_R$=0	t=10ms(50Hz), sine t=8.3ms(60Hz), sine	31200 31300	
T$_{VJ}$ T$_{VJM}$ T$_{stg}$			-40...+150 150 -40...+125	^{o}C
V$_{ISOL}$	50/60Hz, RMS I$_{ISOL}\le$1mA	t=1min t=1s	3000 3600	V~
M$_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

CDD120

Diode-Diode Modules

Symbol	Test Conditions	Characteristic Values	Unit
I_R	$T_{VJ}=T_{VJM}$; $V_R=V_{RRM}$	15	mA
V_F	$I_F=300A$; $T_{VJ}=25^oC$	1.43	V
V_{TO}	For power-loss calculations only	0.75	V
r_T	$T_{VJ}=T_{VJM}$	1.95	mΩ
Q_S	$T_{VJ}=125^oC$; $I_F=50A$; -di/dt=6A/us	170	uC
I_{RM}		45	A
R_{thJC}	per diode; DC current per module	0.26 0.13	K/W
R_{thJK}	per diode; DC current per module	0.46 0.23	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

D E E Corp.
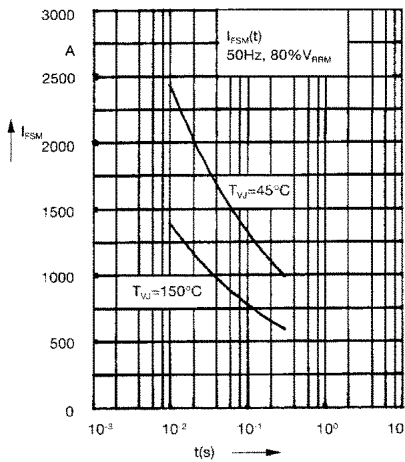
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Diode-Diode Modules

Fig. 1 Surge overload current
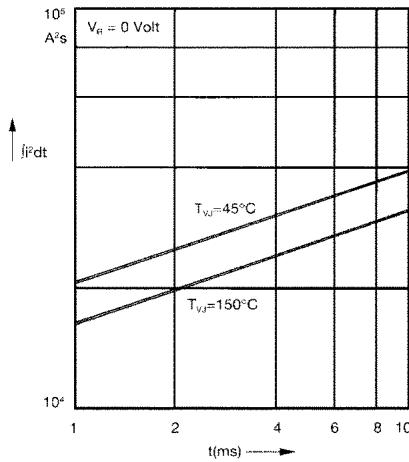I_{FSM}: Crest value, t: duration
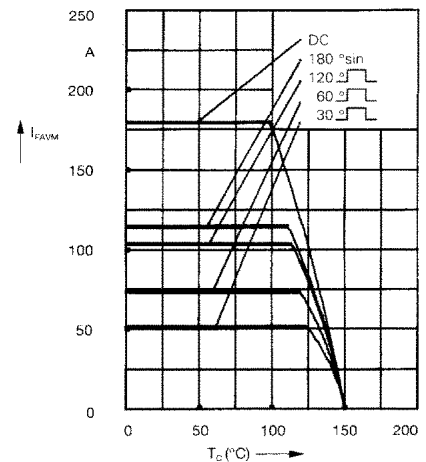
Fig. 2 $\int i^2 dt$ versus time (1-10 ms)

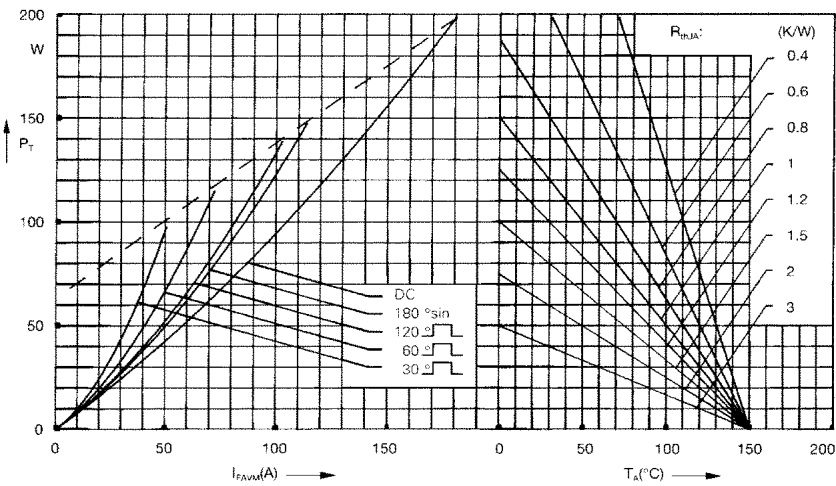Fig. 2a Maximum forward current
at case temperature

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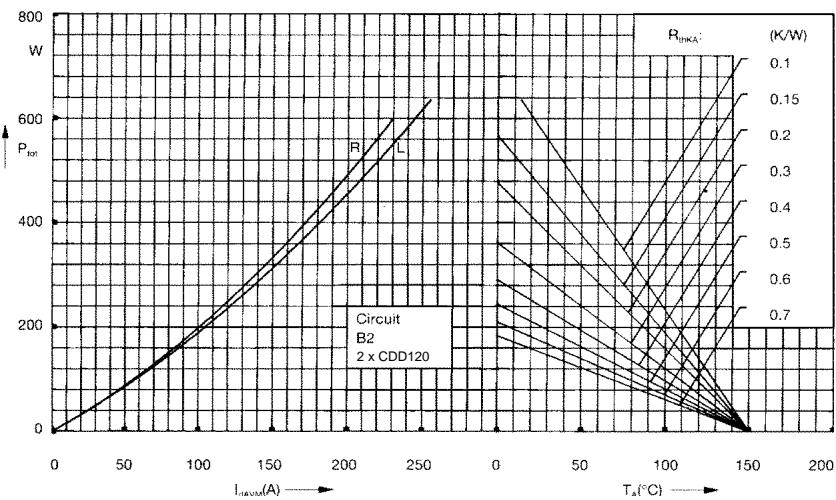forward current and ambient
temperature (per diode)

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

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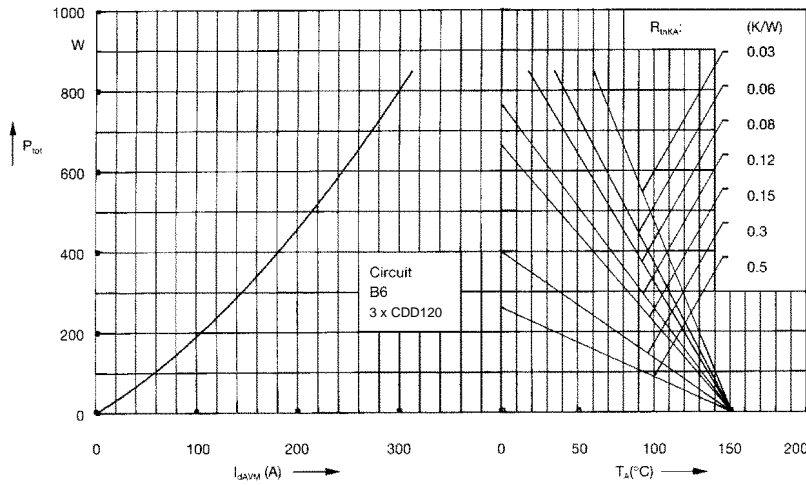
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Diode-Diode Modules

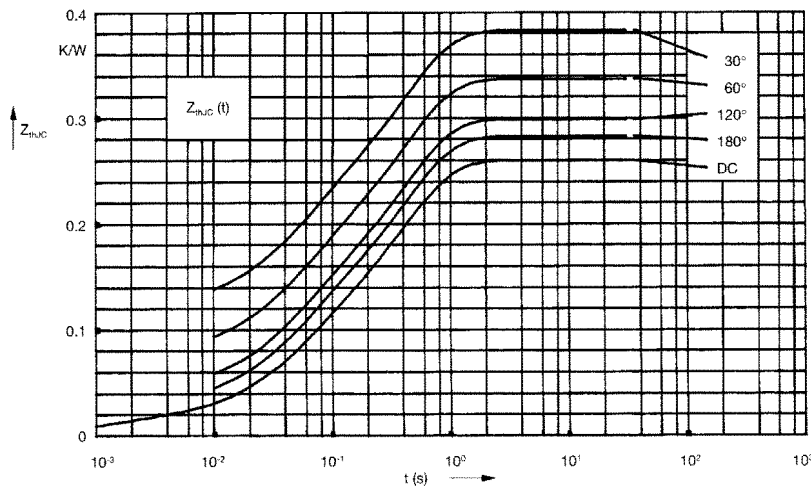Fig. 5 Three phase rectifier bridge: Power dissipation versus direct output current and ambient temperature

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

R_{thJC} for various conduction angles d:

d	R_{thJC} (K/W)
DC	0.26
180°C	0.28
120°C	0.30
60°C	0.34
30°C	0.38

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.013	0.0012
2	0.072	0.047
3	0.175	0.394

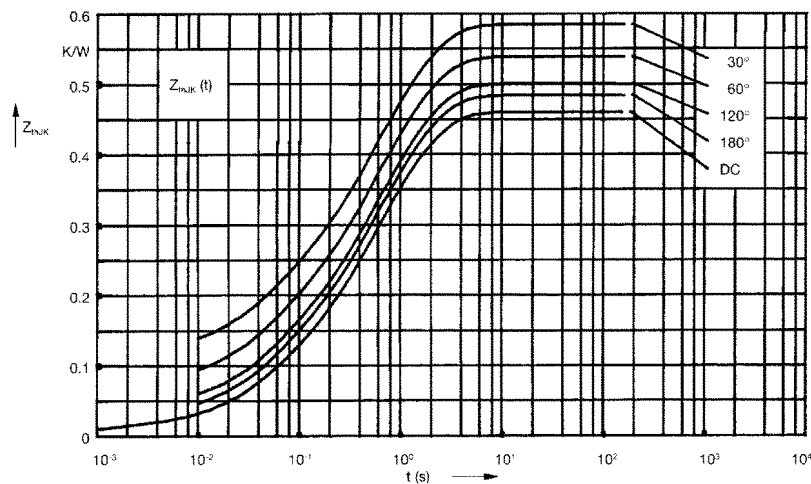
Fig. 7 Transient thermal impedance junction to heatsink (per diode)

R_{thJK} for various conduction angles d:

d	R_{thJK} (K/W)
DC	0.46
180°C	0.48
120°C	0.50
60°C	0.54
30°C	0.58

Constants for Z_{thJK} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.013	0.0012
2	0.072	0.047
3	0.175	0.394
4	0.2	1.32

D E E Corp.