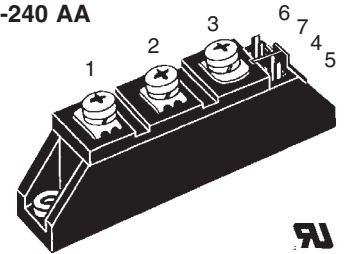
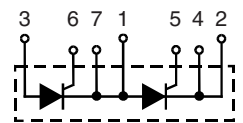
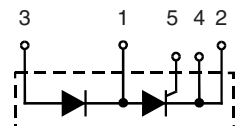
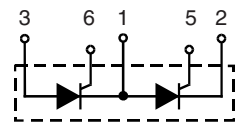
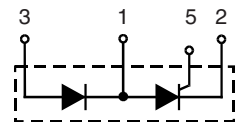


# Thyristor Modules

## Thyristor/Diode Modules

$I_{TRMS} = 2 \times 50 \text{ A}$   
 $I_{TAVM} = 2 \times 32 \text{ A}$   
 $V_{RRM} = 800-1600 \text{ V}$

$V_{RSM}$	$V_{RRM}$	Type					
$V_{DSM}$	$V_{DRM}$	Version			Version		
V	V	1 B	8 B	1 B	8 B	1 B	8 B
900	800	MCC 26-08	io1 B / io8 B	MCD 26-08	io1 B / io8 B		
1300	1200	MCC 26-12	io1 B / io8 B	MCD 26-12	io1 B / io8 B		
1500	1400	MCC 26-14	io1 B / io8 B	MCD 26-14	io1 B / io8 B		
1700	1600	MCC 26-16	io1 B / io8 B	MCD 26-16	io1 B / io8 B		

**TO-240 AA**

**MCC**  
**Version 1 B**

**MCD**  
**Version 1 B**

**MCC**  
**Version 8 B**

**MCD**  
**Version 8 B**


Symbol	Conditions	Maximum Ratings	
$I_{TRMS}, I_{FRMS}$	$T_{VJ} = T_{VJM}$	50	A
$I_{TAVM}, I_{FAVM}$	$T_C = 75^\circ\text{C}; 180^\circ \text{ sine}$	32	A
	$T_C = 85^\circ\text{C}; 180^\circ \text{ sine}$	27	A
$I_{TSM}, I_{FSM}$	$T_{VJ} = 45^\circ\text{C};$ $V_R = 0$	$t = 10 \text{ ms (50 Hz), sine}$ $t = 8.3 \text{ ms (60 Hz), sine}$	520 560 A A
	$T_{VJ} = T_{VJM}$ $V_R = 0$	$t = 10 \text{ ms (50 Hz), sine}$ $t = 8.3 \text{ ms (60 Hz), sine}$	460 500 A A
$\int i^2 dt$	$T_{VJ} = 45^\circ\text{C}$ $V_R = 0$	$t = 10 \text{ ms (50 Hz), sine}$ $t = 8.3 \text{ ms (60 Hz), sine}$	1350 1300 $\text{A}^2\text{s}$ $\text{A}^2\text{s}$
	$T_{VJ} = T_{VJM}$ $V_R = 0$	$t = 10 \text{ ms (50 Hz), sine}$ $t = 8.3 \text{ ms (60 Hz), sine}$	1050 1030 $\text{A}^2\text{s}$ $\text{A}^2\text{s}$
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$ $f = 50 \text{ Hz}, t_p = 200 \mu\text{s}$ $V_D = \frac{2}{3} V_{DRM}$ $I_G = 0.45 \text{ A}$ $di_G/dt = 0.45 \text{ A}/\mu\text{s}$	repetitive, $I_T = 45 \text{ A}$	150 $\text{A}/\mu\text{s}$
	$T_{VJ} = T_{VJM}$ $R_{GK} = \infty$ ; method 1 (linear voltage rise)	non repetitive, $I_T = I_{TAVM}$	500 $\text{A}/\mu\text{s}$
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}$ $R_{GK} = \infty$ ; method 1 (linear voltage rise)	$V_{DR} = \frac{2}{3} V_{DRM}$	1000 $\text{V}/\mu\text{s}$
$P_{GM}$	$T_{VJ} = T_{VJM}$ $I_T = I_{TAVM}$	$t_p = 30 \mu\text{s}$ $t_p = 300 \mu\text{s}$	10 5 W W
$P_{GAV}$			0.5 W
$V_{RGM}$			10 V
$T_{VJ}$			-40...+125 $^\circ\text{C}$
$T_{VJM}$			125 $^\circ\text{C}$
$T_{stg}$			-40...+125 $^\circ\text{C}$
$V_{ISOL}$	50/60 Hz, RMS $I_{ISOL} \leq 1 \text{ mA}$	$t = 1 \text{ min}$ $t = 1 \text{ s}$	3000 3600 V~ V~
$M_d$	Mounting torque (M5) Terminal connection torque (M5)		2.5-4.0/22-35 2.5-4.0/22-35 $\text{Nm}/\text{lb.in.}$ $\text{Nm}/\text{lb.in.}$
<b>Weight</b>	Typical including screws		90 g

Data according to IEC 60747 and refer to a single thyristor/diode unless otherwise stated.

### Features

- International standard package, JEDEC TO-240 AA
- Direct copper bonded  $\text{Al}_2\text{O}_3$  -ceramic base plate
- Planar passivated chips
- Isolation voltage 3600 V~
- UL registered, E 72873
- Gate-cathode twin pins for version 1B

### Applications

- DC motor control
- Softstart AC motor controller
- Light, heat and temperature control

### Advantages

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



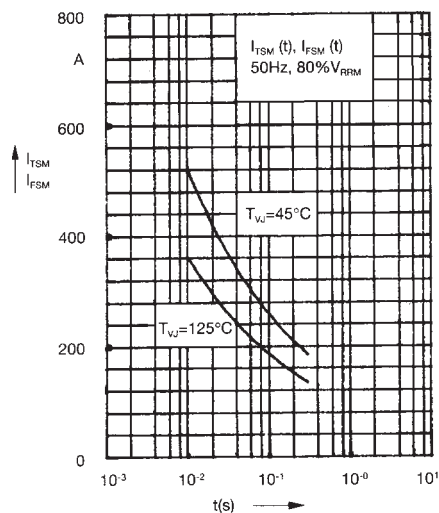


Fig. 3 Surge overload current  
 $I_{TSM}, I_{FSM}$ : Crest value, t: duration

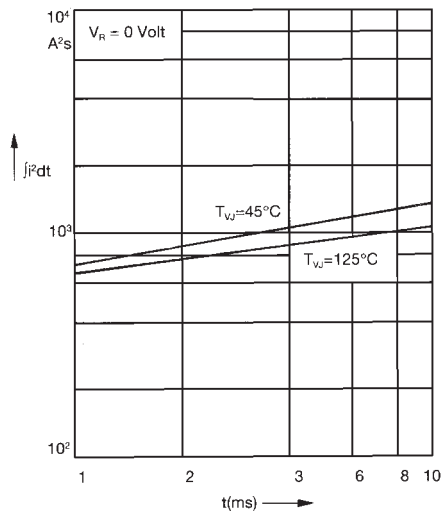


Fig. 4  $j^2dt$  versus time (1-10 ms)

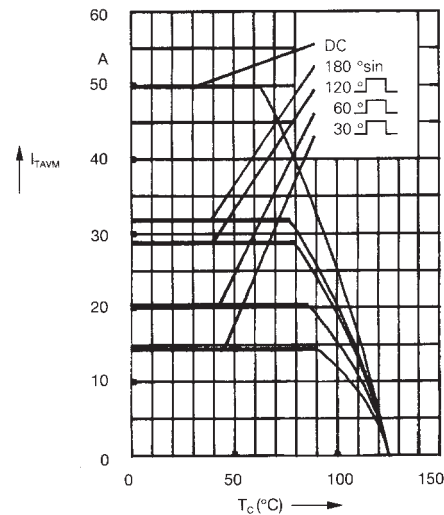


Fig. 4a Maximum forward current at case temperature

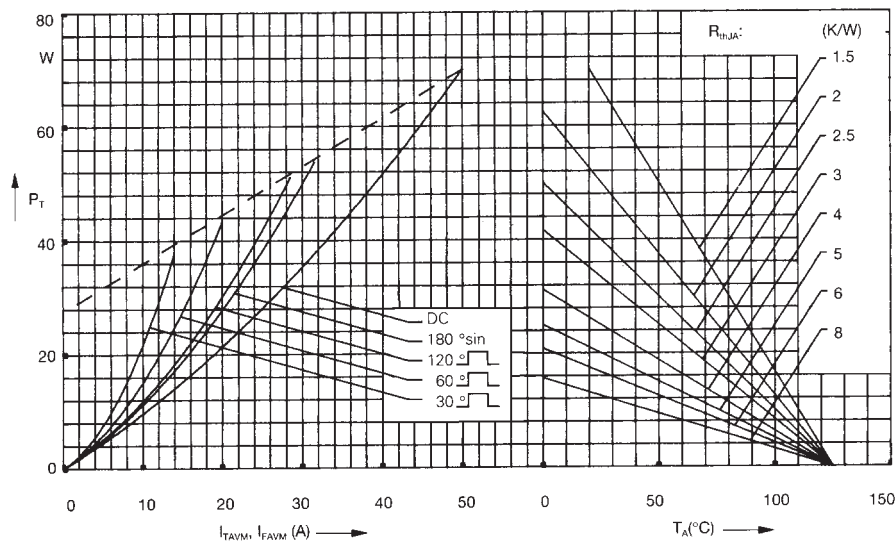


Fig. 5 Power dissipation versus on-state current and ambient temperature (per thyristor or diode)

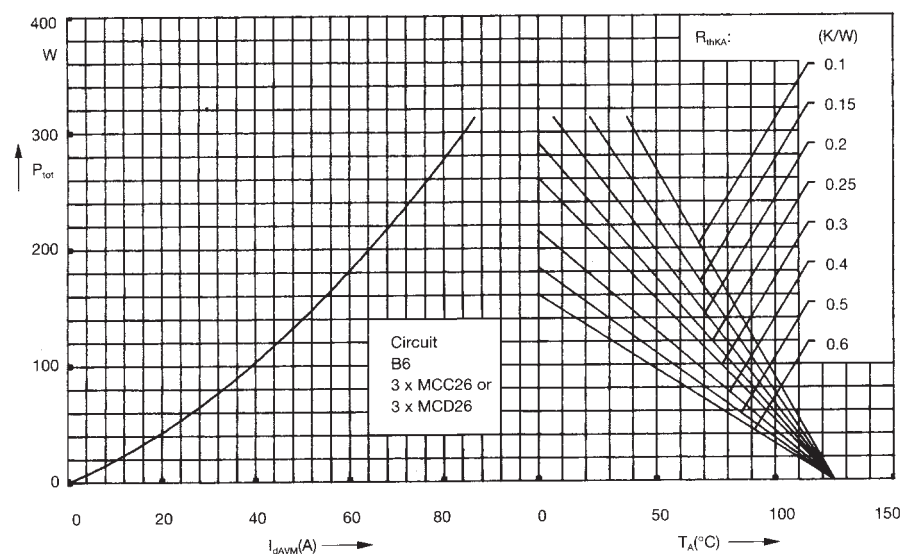


Fig. 6 Three phase rectifier bridge: Power dissipation versus direct output current and ambient temperature

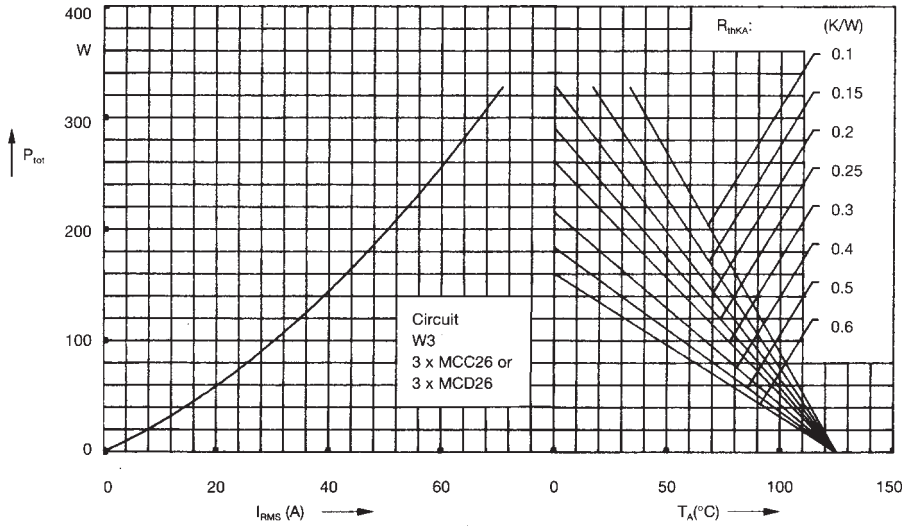


Fig. 7 Three phase AC-controller: Power dissipation versus RMS output current and ambient temperature

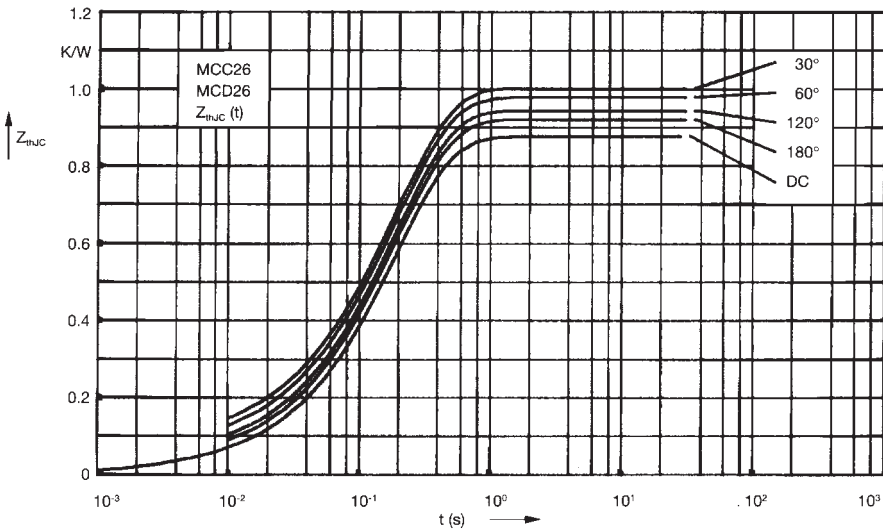


Fig. 8 Transient thermal impedance junction to case (per thyristor or diode)

$R_{thjC}$  for various conduction angles  $d$ :

$d$	$R_{thjC}$ (K/W)
DC	0.88
180°	0.92
120°	0.95
60°	0.98
30°	1.01

Constants for  $Z_{thjC}$  calculation:

$i$	$R_{thi}$ (K/W)	$t_i$ (s)
1	0.019	0.0031
2	0.029	0.0216
3	0.832	0.191

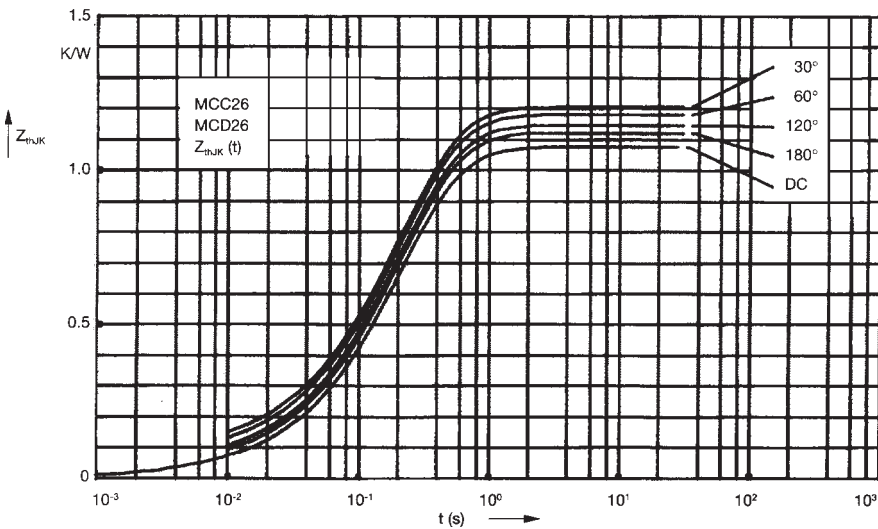


Fig. 9 Transient thermal impedance junction to heatsink (per thyristor or diode)

$R_{thjK}$  for various conduction angles  $d$ :

$d$	$R_{thjK}$ (K/W)
DC	1.08
180°	1.12
120°	1.15
60°	1.18
30°	1.21

Constants for  $Z_{thjK}$  calculation:

$i$	$R_{thi}$ (K/W)	$t_i$ (s)
1	0.019	0.0031
2	0.029	0.0216
3	0.832	0.191
4	0.2	0.45