

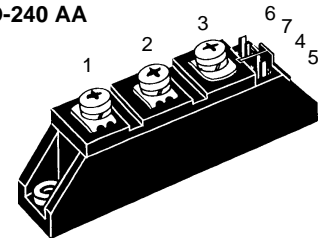
# Thyristor Modules

$$I_{TRMS} = 2 \times 40 \text{ A}$$

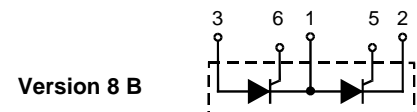
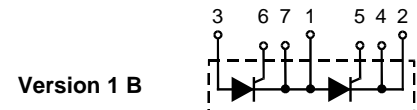
$$I_{TAVM} = 2 \times 25 \text{ A}$$

$$V_{RRM} = 800\text{-}1600 \text{ V}$$

$V_{RSM}$	$V_{RRM}$	Type	
$V_{DSM}$	$V_{DRM}$	Version 1 B	Version 8 B
V	V		
900	800	MCC 19-08io1 B	MCC 19-08io8 B
1300	1200	MCC 19-12io1 B	MCC 19-12io8 B
1500	1400	MCC 19-14io1 B	MCC 19-14io8 B
1700	1600	MCC 19-16io1 B	MCC 19-16io8 B

**TO-240 AA**


Symbol	Test Conditions	Maximum Ratings	
$I_{TRMS}$	$T_{VJ} = T_{VJM}$	40	A
$I_{TAVM}$	$T_C = 58^\circ\text{C}$ ; 180° sine	25	A
	$T_C = 85^\circ\text{C}$ ; 180° sine	18	A
$I_{TSM}$	$T_{VJ} = 45^\circ\text{C}$ ;	$t = 10 \text{ ms}$ (50 Hz), sine	400 A
	$V_R = 0$	$t = 8.3 \text{ ms}$ (60 Hz), sine	420 A
	$T_{VJ} = T_{VJM}$	$t = 10 \text{ ms}$ (50 Hz), sine	350 A
	$V_R = 0$	$t = 8.3 \text{ ms}$ (60 Hz), sine	370 A
$\int i^2 dt$	$T_{VJ} = 45^\circ\text{C}$	$t = 10 \text{ ms}$ (50 Hz), sine	800 A <sup>2</sup> s
	$V_R = 0$	$t = 8.3 \text{ ms}$ (60 Hz), sine	730 A <sup>2</sup> s
	$T_{VJ} = T_{VJM}$	$t = 10 \text{ ms}$ (50 Hz), sine	600 A <sup>2</sup> s
	$V_R = 0$	$t = 8.3 \text{ ms}$ (60 Hz), sine	570 A <sup>2</sup> s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$ $f = 50 \text{ Hz}$ , $t_p = 200 \mu\text{s}$ $V_D = 2/3 V_{DRM}$ $I_G = 0.45 \text{ A}$ $di_G/dt = 0.45 \text{ A}/\mu\text{s}$	repetitive, $I_T = 45 \text{ A}$	150 A/ $\mu\text{s}$
		non repetitive, $I_T = I_{TAVM}$	500 A/ $\mu\text{s}$
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}$ ; $R_{GK} = \infty$ ; method 1 (linear voltage rise)	$V_{DR} = 2/3 V_{DRM}$	1000 V/ $\mu\text{s}$
$P_{GM}$	$T_{VJ} = T_{VJM}$	$t_p = 30 \mu\text{s}$	10 W
	$I_T = I_{TAVM}$	$t_p = 300 \mu\text{s}$	5 W
$P_{GAV}$			0.5 W
$V_{RGM}$			10 V
$T_{VJ}$		-40...+125	°C
$T_{VJM}$		125	°C
$T_{stg}$		-40...+125	°C
$V_{ISOL}$	50/60 Hz, RMS	$t = 1 \text{ min}$	3000 V~
	$I_{ISOL} \leq 1 \text{ mA}$	$t = 1 \text{ s}$	3600 V~
$M_d$	Mounting torque (M5)	2.5-4.0/22-35	Nm/lb.in.
	Terminal connection torque (M5)	2.5-4.0/22-35	Nm/lb.in.
Weight	Typical including screws	90	g



### Features

- International standard package, JEDEC TO-240 AA
- Direct copper bonded Al<sub>2</sub>O<sub>3</sub> -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

Data according to IEC 60747 and refer to a single thyristor unless otherwise stated. IXYS reserves the right to change limits, test conditions and dimensions



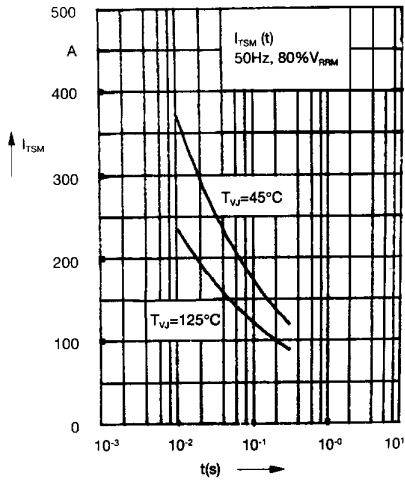


Fig. 3 Surge overload current  
 $I_{TSM}$ : Crest value,  $t$ : duration

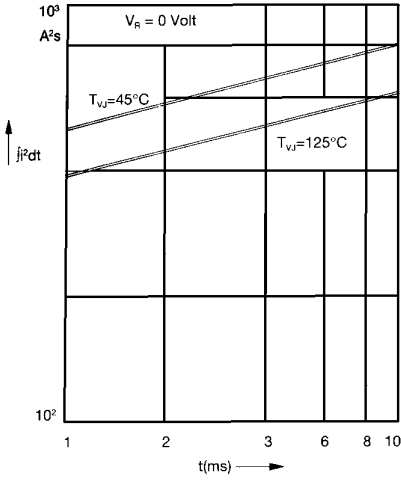


Fig. 4  $j^2t dt$  versus time (1-10 ms)

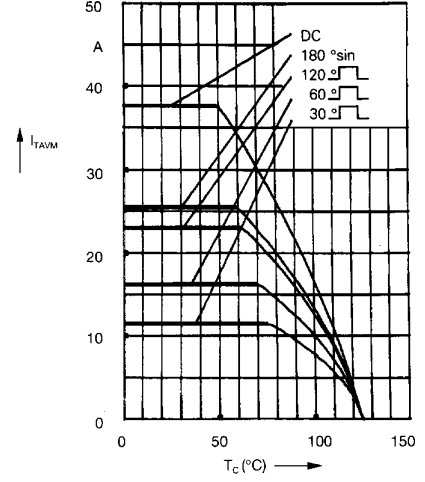


Fig. 4a Maximum forward current at case temperature

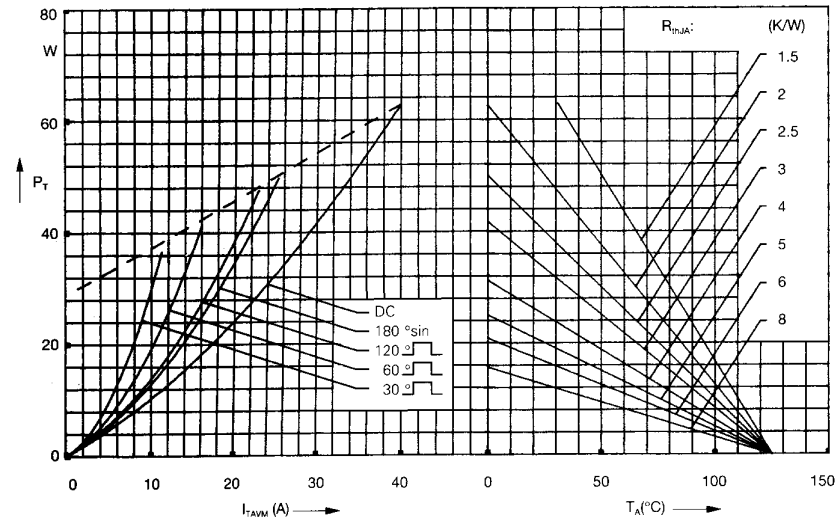


Fig. 5 Power dissipation versus on-state current and ambient temperature (per thyristor)

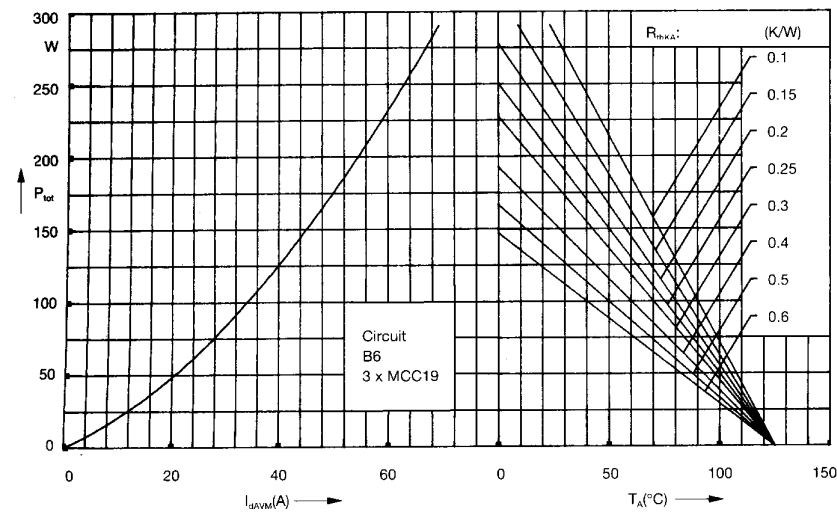


Fig. 6 Three phase rectifier bridge: Power dissipation versus direct output current and ambient temperature

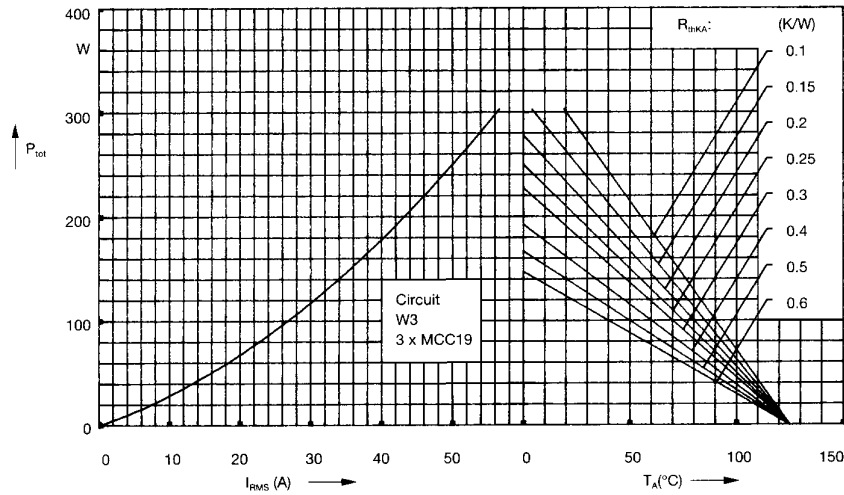


Fig. 7 Three phase AC-controller: Power dissipation versus RMS output current and ambient temperature

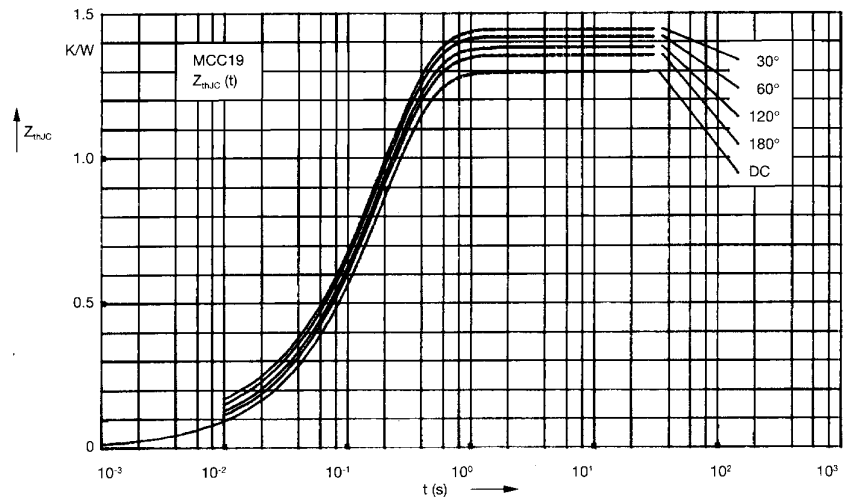


Fig. 8 Transient thermal impedance junction to case (per thyristor)

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

d	$R_{thJC}$ (K/W)
DC	1.3
180°	1.35
120°	1.39
60°	1.42
30°	1.45

Constants for  $Z_{thJC}$  calculation:

i	$R_{thi}$ (K/W)	$t_i$ (s)
1	0.018	0.0033
2	0.041	0.0216
3	1.241	0.191

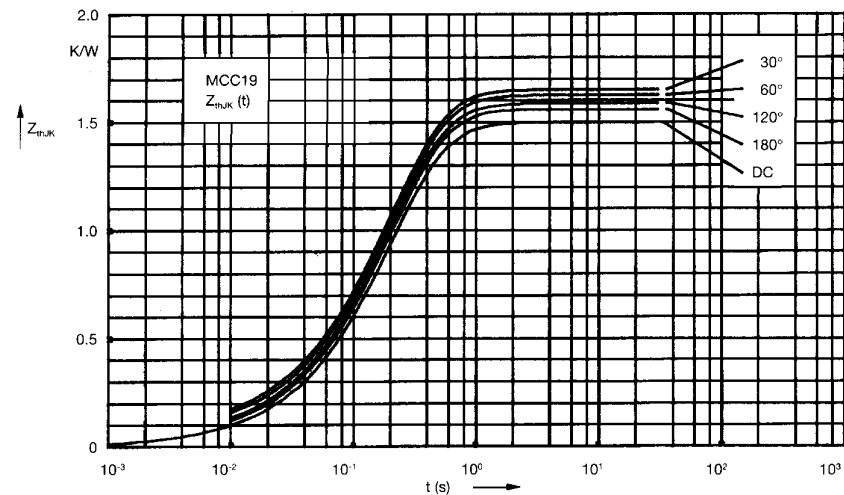


Fig. 9 Transient thermal impedance junction to heatsink (per thyristor)

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

d	$R_{thJK}$ (K/W)
DC	1.5
180°	1.55
120°	1.59
60°	1.62
30°	1.65

Constants for  $Z_{thJK}$  calculation:

i	$R_{thi}$ (K/W)	$t_i$ (s)
1	0.018	0.0033
2	0.041	0.0216
3	1.241	0.191
4	0.2	0.46