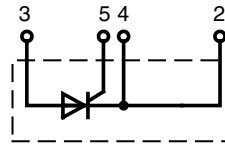


High Power Single Thyristor Modules

$I_{FRMS} = 928 \text{ A}$
 $I_{FAVM} = 600 \text{ A}$
 $V_{RRM} = 1600\text{-}2200 \text{ V}$

V_{RSM} V	V_{RRM} V	Type
1700	1600	MCO 600-16io1
1900	1800	MCO 600-18io1
2100	2000	MCO 600-20io1
2300	2200	MCO 600-22io1



Symbol	Conditions	Maximum Ratings
I_{TRMS}	$T_{VJ} = T_{VJM}$ 180° sine	$T_C = 25^\circ\text{C}$ 928 A $T_C = 85^\circ\text{C}$ 600 A
I_{TSM}	$T_{VJ} = 45^\circ\text{C}; V_R = 0$ $t = 10 \text{ ms}$ (50 Hz) $t = 8.3 \text{ ms}$ (60 Hz)	15000 A 16000 A
I^2t	$T_{VJ} = T_{VJM}; V_R = 0$ $t = 10 \text{ ms}$ (50 Hz) $t = 8.3 \text{ ms}$ (60 Hz)	13000 A 14400 A
	$T_{VJ} = 45^\circ\text{C}; V_R = 0$ $t = 10 \text{ ms}$ (50 Hz) $t = 8.3 \text{ ms}$ (60 Hz)	1 125 000 A ² s 1 062 000 A ² s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}; f = 50 \text{ Hz}; t_p = 200 \mu\text{s};$ repetitive, $I_T = 960 \text{ A}$	100 A/ μs
	$V_D = \frac{2}{3} V_{DRM}; I_G = 1 \text{ A}; di_G/dt = 1 \text{ A}/\mu\text{s}$ non repetitive, $I_T = I_{TAVM}$	500 A/ μs
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}; V_D = \frac{2}{3} V_{DRM}; R_{GK} = \infty;$ method 1 (linear voltage rise)	1000 V/ μs
P_{GM}	$T_{VJ} = T_{VJM}; t_p = 30 \mu\text{s}$	120 W
	$I_T = I_{T(AV)M}; t_p = 500 \mu\text{s}$	60 W
P_{GAV}		30 W
V_{RGM}		10 V
T_{VJ}		-40...+140 °C
T_{VJM}		140 °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 (M6)	4.5 - 7 Nm
	Terminal connection torque (M8)	11-13 Nm
Weight	Typical including screws	650 g

Features

- Direct Copper Bonded Al₂O₃ ceramic with copper base plate
- Planar passivated chips
- Isolation voltage 3600 V~
- UL registered
- Keyed gate/cathode twin pins

Applications

- Motor control, soft starter
- Power converter
- Heat and temperature control for industrial furnaces and chemical processes
- Lighting control
- L

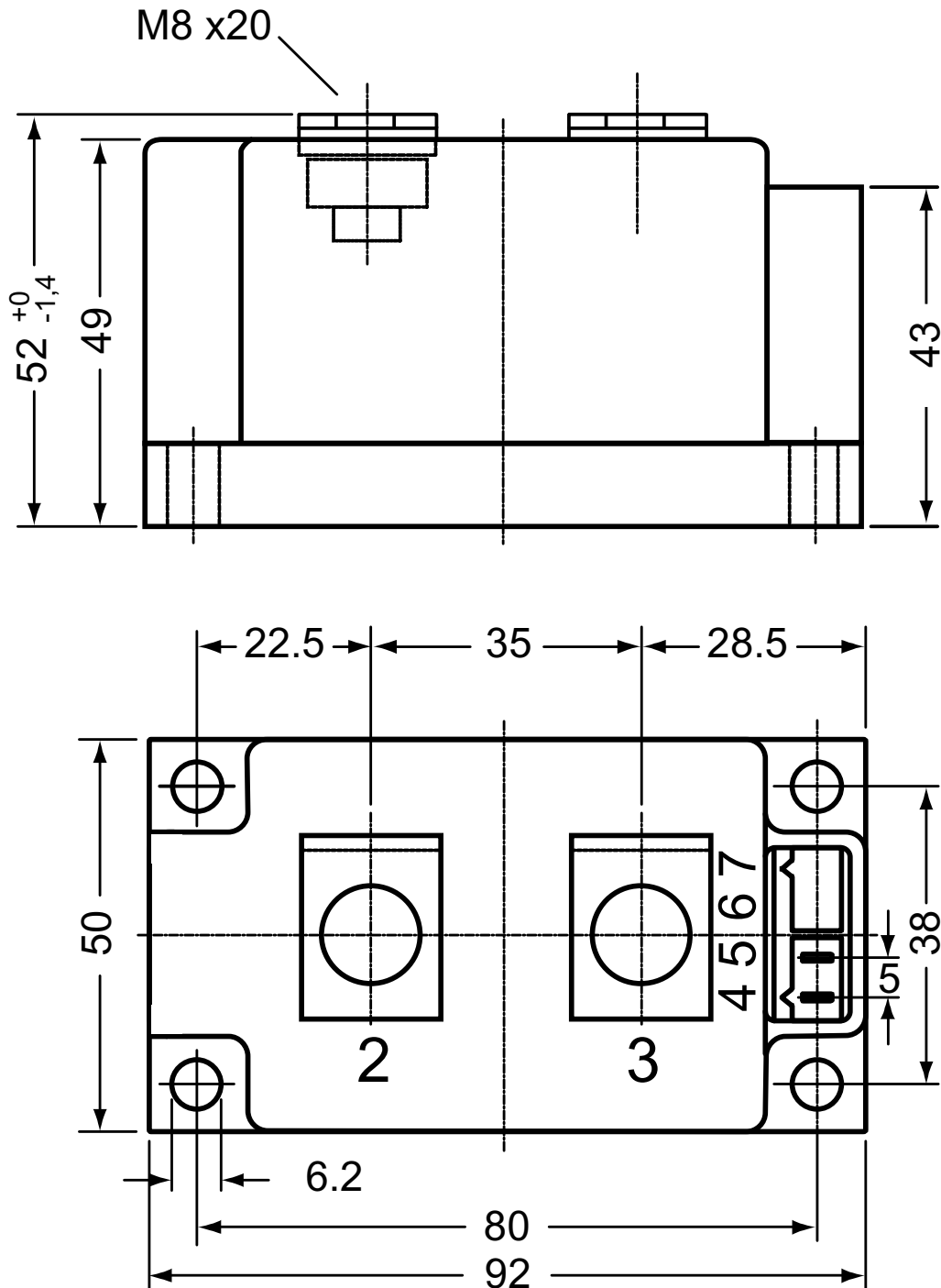
Advantages

- Improved temperature & power cycling
- Reduced protection circuits

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

Symbol	Conditions	Characteristic Values	
		typ.	max.
I_{RRM}	$V_R = V_{RRM}$	$T_{VJ} = T_{VJM}$	60 mA
V_T	$I_T = 600$ A	$T_{VJ} = 25^\circ\text{C}$	1.15 V
V_{T0}	For power-loss calculations only		0.77 V
r_t		$T_{VJ} = T_{VJM}$	0.42 m Ω
V_{GT}	$V_D = 6$ V	$T_{VJ} = 25^\circ\text{C}$	2 V
		$T_{VJ} = -40^\circ\text{C}$	3 V
I_{GT}	$V_D = 6$ V	$T_{VJ} = 25^\circ\text{C}$	300 mA
		$T_{VJ} = -40^\circ\text{C}$	400 mA
V_{GD}	$V_D = \frac{2}{3} V_{DRM}$	$T_{VJ} = T_{VJM}$	0.25 V
I_{GD}			10 mA
I_L	$t_p = 30$ μs ; $V_D = 6$ V $I_G = 1$ A; $di_G/dt = 1$ A/ μs	$T_{VJ} = 25^\circ\text{C}$	400 mA
I_H	$V_D = 6$ V; $R_{GK} = \infty$;	$T_{VJ} = 25^\circ\text{C}$	300 mA
t_{gd}	$V_D = \frac{1}{2} V_{DRM}$ $I_G = 1$ A; $di_G/dt = 1$ A/ μs	$T_{VJ} = 25^\circ\text{C}$	2 μs
t_q	$V_D = \frac{2}{3} V_{DRM}$ $dv/dt = 50$ V/ μs ; $-di/dt = 10$ A/ μs $I_T = 500$ A; $V_R = 100$ V; $t_p = 200$ μs	$T_{VJ} = T_{VJM}$	350 μs
R_{thJC}	DC current		0.065 K/W
R_{thJK}	DC current		0.085 K/W
d_S	Creeping distance on surface		12.7 mm
d_A	Creepage distance in air		9.6 mm
a	Maximum allowable acceleration		50 m/s ²

Dimensions in mm (1 mm = 0.0394")



Optional accessories for modules

Keyed gate/cathode twin plugs with wire length = 350 mm, gate = white, cathode = red

Type ZY 180L (L = Left for pin pair 4/5)

Type ZY 180R (R = Right for pin pair 6/7) } UL 758, style 3751

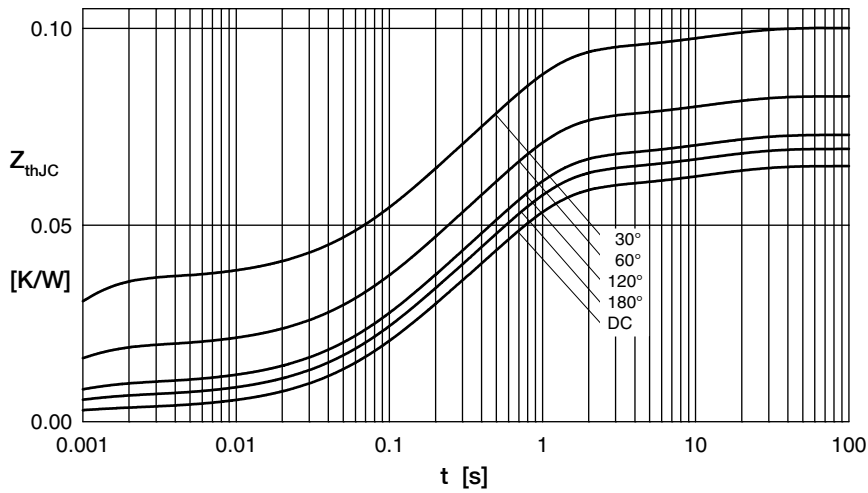


Fig. 1 Transient thermal impedance junction to case

R_{thJC} for various conduction angles d:

d	R_{thJC} [K/W]
DC	0.065
180°	0.069
120°	0.073
60°	0.083
30°	0.1

Constants for Z_{thJC} calculation:

i	R_{thi} [K/W]	t_i [s]
1	0.0031	0.00054
2	0.0168	0.098
3	0.039	0.54
4	0.0061	12

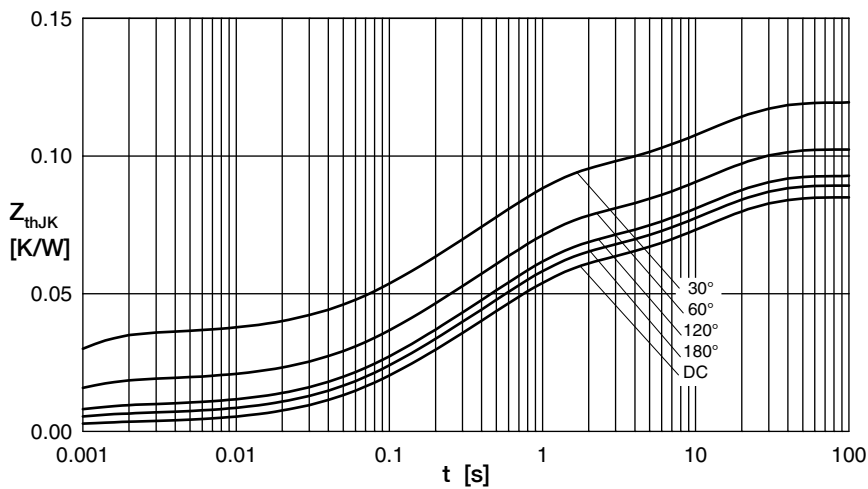


Fig. 2 Transient thermal impedance junction to heatsink

R_{thJK} for various conduction angles d:

d	R_{thJK} [K/W]
DC	0.085
180°	0.089
120°	0.093
60°	0.102
30°	0.119

Constants for Z_{thJK} calculation:

i	R_{thi} [K/W]	t_i [s]
1	0.0031	0.00054
2	0.0168	0.098
3	0.039	0.54
4	0.0061	12
5	0.02	12