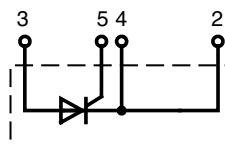


High Power Single Thyristor Modules

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

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}	$T_{\text{VJ}} = T_{\text{VJM}}$ 180° sine	$T_{\text{C}} = 25^{\circ}\text{C}$ 928 A $T_{\text{C}} = 85^{\circ}\text{C}$ 600 A
I_{TSM}	$T_{\text{VJ}} = 45^{\circ}\text{C};$ $t = 10 \text{ ms}$ (50 Hz) $V_{\text{R}} = 0$ $t = 8.3 \text{ ms}$ (60 Hz)	15000 A 16000 A
	$T_{\text{VJ}} = T_{\text{VJM}};$ $t = 10 \text{ ms}$ (50 Hz) $V_{\text{R}} = 0$ $t = 8.3 \text{ ms}$ (60 Hz)	13000 A 14400 A
I^2t	$T_{\text{VJ}} = 45^{\circ}\text{C};$ $t = 10 \text{ ms}$ (50 Hz) $V_{\text{R}} = 0$ $t = 8.3 \text{ ms}$ (60 Hz)	1 125 000 A ² s 1 062 000 A ² s
	$T_{\text{VJ}} = T_{\text{VJM}};$ $t = 10 \text{ ms}$ (50 Hz) $V_{\text{R}} = 0$ $t = 8.3 \text{ ms}$ (60 Hz)	845 000 A ² s 813 000 A ² s
$(di/dt)_{\text{cr}}$	$T_{\text{VJ}} = T_{\text{VJM}};$ repetitive, $I_{\text{T}} = 960 \text{ A}$ $f = 50 \text{ Hz}; t_{\text{p}} = 200 \mu\text{s};$	100 A/ μs
	$V_{\text{D}} = \frac{2}{3} V_{\text{DRM}};$ $I_{\text{G}} = 1 \text{ A};$ non repetitive, $I_{\text{T}} = I_{\text{TAVM}}$ $di_{\text{G}}/dt = 1 \text{ A}/\mu\text{s}$	500 A/ μs
$(dv/dt)_{\text{cr}}$	$T_{\text{VJ}} = T_{\text{VJM}};$ $V_{\text{D}} = \frac{2}{3} V_{\text{DRM}};$ $R_{\text{GK}} = \infty;$ method 1 (linear voltage rise)	1000 V/ μs
P_{GM}	$T_{\text{VJ}} = T_{\text{VJM}};$ $t_{\text{p}} = 30 \mu\text{s}$ $I_{\text{T}} = I_{\text{T(AV)M}};$ $t_{\text{p}} = 500 \mu\text{s}$	120 W 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 $t = 1 \text{ min}$ $I_{\text{ISOL}} \leq 1 \text{ mA}$ $t = 1 \text{ s}$	3000 V~ 3600 V~
M_{d}	Mounting torque (M6) Terminal connection torque (M8)	4.5 - 7 Nm 11-13 Nm
Weight	Typical including screws	650 g

Features

- Direct Copper Bonded Al_2O_3 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

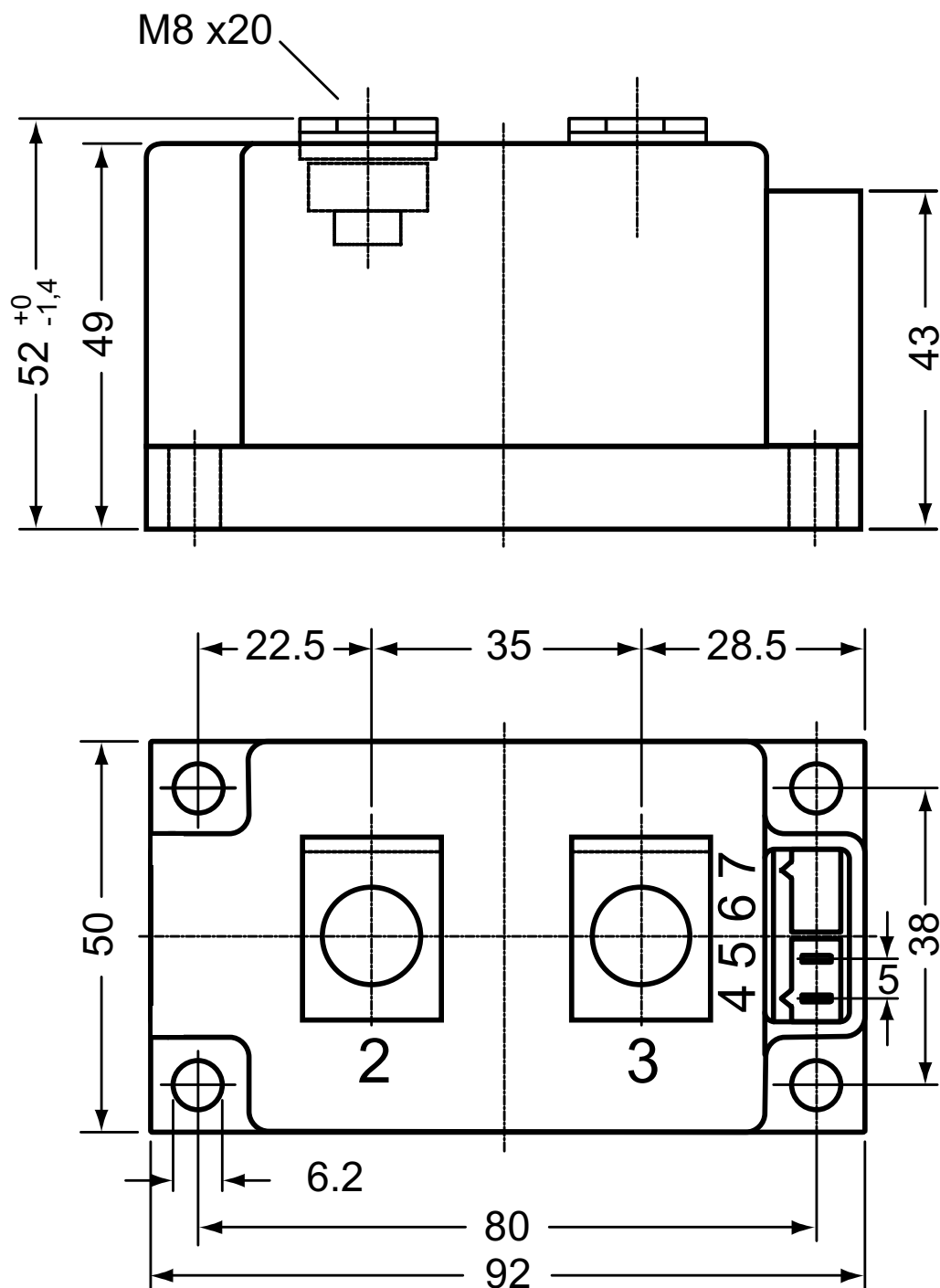
Advantages

- 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 $T_{VJ} = T_{VJM}$	0.77	V
r_t	$T_{VJ} = T_{VJM}$	0.42	m Ω
V_{GT}	$V_D = 6$ V $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = -40^\circ\text{C}$	2 3	V V
I_{GT}	$V_D = 6$ V $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = -40^\circ\text{C}$	300 400	mA mA
V_{GD} I_{GD}	$V_D = \frac{2}{3} V_{DRM}$ $T_{VJ} = T_{VJM}$	0.25 10	V 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} R_{thJK}	DC current DC current	0.065 0.085	K/W 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

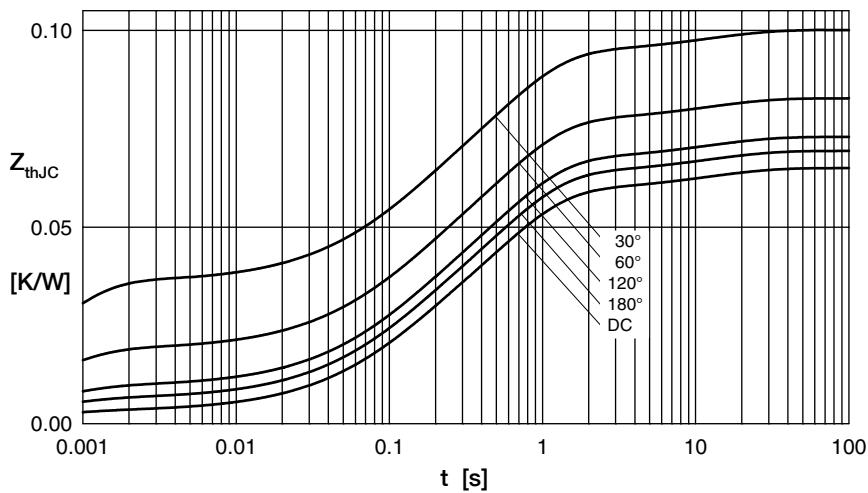


Fig. 1 Transient thermal impedance junction to case

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

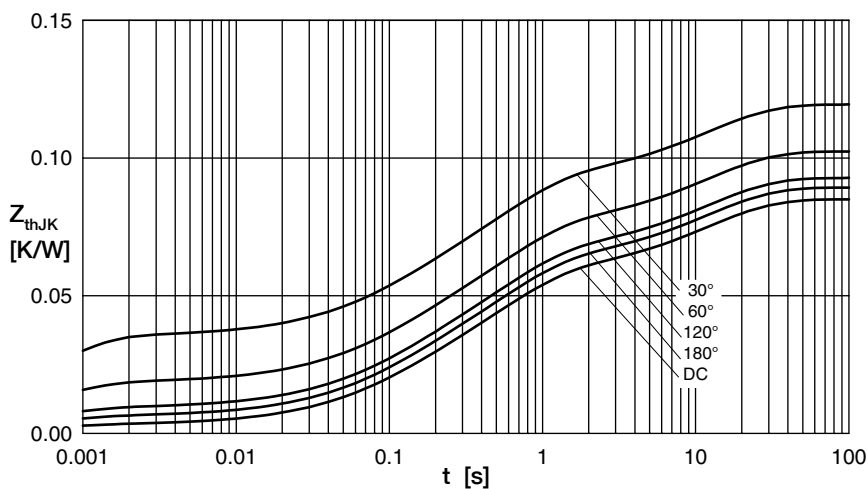


Fig. 2 Transient thermal impedance junction to heatsink

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