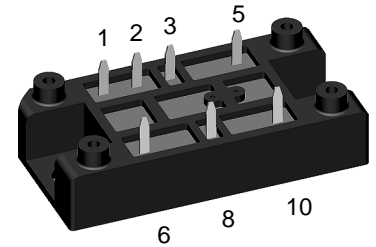
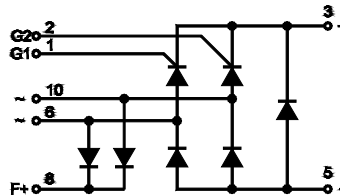


Half Controlled Single Phase Rectifier Bridge

Including Freewheeling Diode and Field Diodes

$V_{RRM} = 800-1600\text{ V}$
 $I_{dAVM} = 21\text{ A}$

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type
900	800	VHFD 16-08io1
1300	1200	VHFD 16-12io1
1500	1400	VHFD 16-14io1
1700	1600	VHFD 16-16io1



Bridge and Freewheeling Diode

Symbol	Test Conditions	Maximum Ratings
I_{dAV}	$T_H = 85^\circ\text{C}$, module	16 A
I_{dAVM} ①	module	21 A
I_{FRMS} , I_{TRMS}	per leg	15 A
I_{FSM} , I_{TSM}	$T_{VJ} = 45^\circ\text{C}$; $V_R = 0\text{ V}$	$t = 10\text{ ms}$ (50 Hz), sine 150 A $t = 8.3\text{ ms}$ (60 Hz), sine 170 A
	$T_{VJ} = T_{VJM}$ $V_R = 0\text{ V}$	$t = 10\text{ ms}$ (50 Hz), sine 130 A $t = 8.3\text{ ms}$ (60 Hz), sine 140 A
I^2t	$T_{VJ} = 45^\circ\text{C}$ $V_R = 0\text{ V}$	$t = 10\text{ ms}$ (50 Hz), sine 110 A^2s $t = 8.3\text{ ms}$ (60 Hz), sine 120 A^2s
	$T_{VJ} = T_{VJM}$ $V_R = 0\text{ V}$	$t = 10\text{ ms}$ (50 Hz), sine 85 A^2s $t = 8.3\text{ ms}$ (60 Hz), sine 80 A^2s
$(di/dt)_{cr}$	$T_{VJ} = 125^\circ\text{C}$ $f = 50\text{ Hz}$, $t_p = 200\ \mu\text{s}$ $V_D = 2/3 V_{DRM}$	repetitive, $I_T = 50\text{ A}$ 150 $\text{A}/\mu\text{s}$
	$I_G = 0.3\text{ A}$, $di_G/dt = 0.3\text{ A}/\mu\text{s}$	non repetitive, $I_T = 0.5 I_{dAV}$ 500 $\text{A}/\mu\text{s}$
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}$; $V_{DR} = 2/3 V_{DRM}$ $R_{GK} = \infty$; method 1 (linear voltage rise)	1000 $\text{V}/\mu\text{s}$
V_{RGM}		10 V
P_{GM}	$T_{VJ} = T_{VJM}$ $I_T = 0.5 I_{dAVM}$	$t_p = 30\ \mu\text{s}$ $\leq 10\text{ W}$ $t_p = 500\ \mu\text{s}$ $\leq 5\text{ W}$ $t_p = 10\text{ ms}$ $\leq 1\text{ W}$
		0.5 W
	P_{GAVM}	
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	$t = 1\text{ min}$ 3000 V~ $t = 1\text{ s}$ 3600 V~
	$I_{ISOL} \leq 1\text{ mA}$	
d_s	Creep distance on surface	12.7 mm
d_A	Strike distance in air	9.4 mm
a	Max. allowable acceleration	50 m/s^2
M_d	Mounting torque (M5)	2-2.5 Nm
	(10-32 UNF)	18-22 lb.in.
Weight		35 g

Features

- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- Blocking voltage up to 1600 V
- Low forward voltage drop
- Leads suitable for PC board soldering
- UL registered E 72873

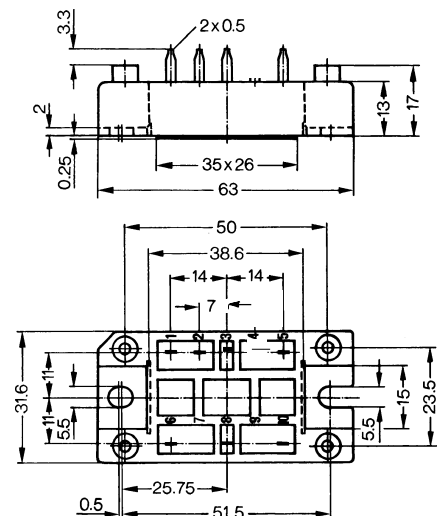
Applications

- Supply for DC power equipment
- DC motor control

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



Symbol	Test Conditions	Characteristic Values
I_R, I_D	$V_R = V_{RRM}; V_D = V_{DRM}$ $T_{VJ} = T_{VJM}$ $T_{VJ} = 25^\circ\text{C}$	≤ 5 mA ≤ 0.3 mA
V_T, V_F	$I_T, I_F = 45$ A; $T_{VJ} = 25^\circ\text{C}$	≤ 2.55 V
V_{T0}	For power-loss calculations only ($T_{VJ} = 125^\circ\text{C}$)	1.0 V
r_T		40 m Ω
V_{GT}	$V_D = 6$ V; $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = -40^\circ\text{C}$	≤ 1.0 V ≤ 1.2 V
I_{GT}	$V_D = 6$ V; $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = -40^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$	≤ 65 mA ≤ 80 mA ≤ 50 mA
V_{GD}	$T_{VJ} = T_{VJM};$ $V_D = 2/3 V_{DRM}$	≤ 0.2 V
I_{GD}	$T_{VJ} = T_{VJM};$ $V_D = 2/3 V_{DRM}$	≤ 5 mA
I_L	$I_G = 0.3$ A; $t_g = 30$ μs ; $di_G/dt = 0.3$ A/ μs ; $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = -40^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$	≤ 150 mA ≤ 200 mA ≤ 100 mA
I_H	$T_{VJ} = 25^\circ\text{C}; V_D = 6$ V; $R_{GK} = \infty$	≤ 100 mA
t_{gd}	$T_{VJ} = 25^\circ\text{C}; V_D = 0.5V_{DRM}$ $I_G = 0.3$ A; $di_G/dt = 0.3$ A/ μs	≤ 2 μs
t_q	$T_{VJ} = 125^\circ\text{C}; I_T = 15$ A, $t_p = 300$ μs , $V_R = 100$ V	typ. 150 μs
Q_r	$di/dt = -10$ A/ μs , $dv/dt = 20$ V/ μs , $V_D = 2/3 V_{DRM}$	75 μC
R_{thJC}	per thyristor (diode); DC current	2.4 K/W
	per module	0.6 K/W
R_{thJH}	per thyristor (diode); DC current	3.0 K/W
	per module	0.75 K/W

Field Diodes

Symbol	Test Conditions	Maximum Ratings
I_{FAV}	$T_H = 85^\circ\text{C}$, per Diode	4 A
I_{FAVM}	per diode	4 A
I_{FRMS}	per diode	6 A
I_{FSM}	$T_{VJ} = 45^\circ\text{C};$ $V_R = 0$ V	$t = 10$ ms (50 Hz), sine 100 A $t = 8.3$ ms (60 Hz), sine 110 A
	$T_{VJ} = T_{VJM}$ $V_R = 0$ V	$t = 10$ ms (50 Hz), sine 85 A $t = 8.3$ ms (60 Hz), sine 94 A
I^2t	$T_{VJ} = 45^\circ\text{C}$ $V_R = 0$ V	$t = 10$ ms (50 Hz), sine 50 A ² s $t = 8.3$ ms (60 Hz), sine 50 A ² s
	$T_{VJ} = T_{VJM}$ $V_R = 0$ V	$t = 10$ ms (50 Hz), sine 36 A ² s $t = 8.3$ ms (60 Hz), sine 37 A ² s
I_R	$V_R = V_{RRM}$ $T_{VJ} = T_{VJM}$ $T_{VJ} = 25^\circ\text{C}$	1 mA 0.15 mA
V_F	$I_F = 21$ A; $T_{VJ} = 25^\circ\text{C}$	1.83 V
V_{T0}	For power-loss calculations only ($T_{VJ} = 125^\circ\text{C}$)	0.9 V
r_T		50 m Ω
R_{thJC}	per diode; DC current	4.4 K/W
R_{thJH}	per diode; DC current	5.2 K/W

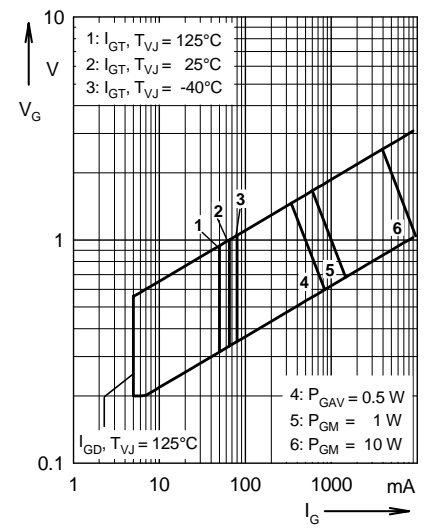


Fig. 1 Gate trigger range

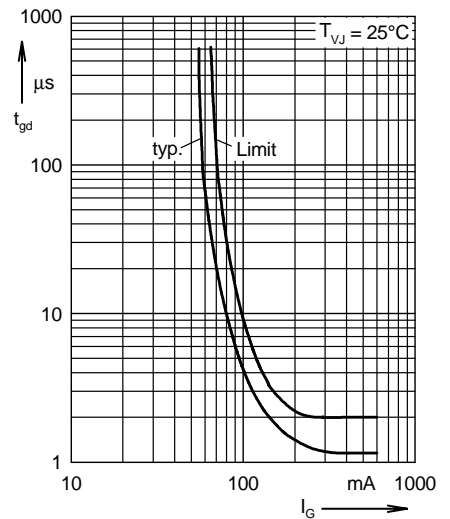


Fig. 2 Gate controlled delay time t_{gd}

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

① for resistive load

IXYS reserves the right to change limits, test conditions and dimensions.

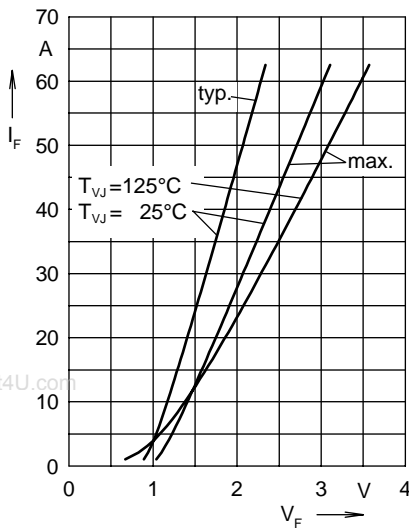


Fig. 3 Forward current versus voltage drop per diode

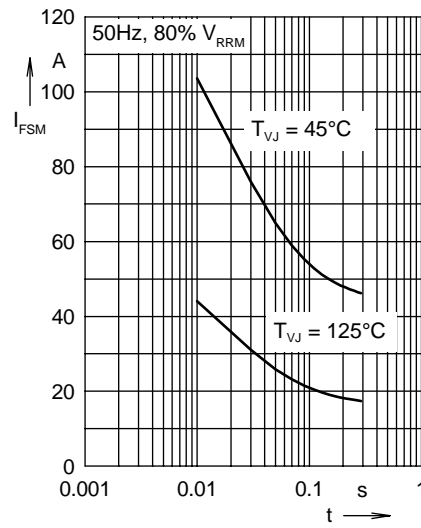


Fig. 4 Surge overload current

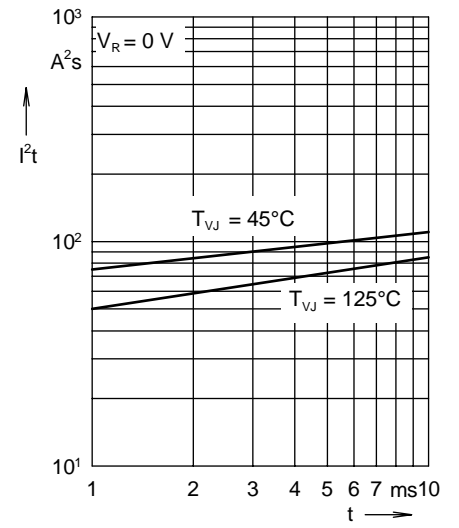


Fig. 5 I^2t versus time per diode

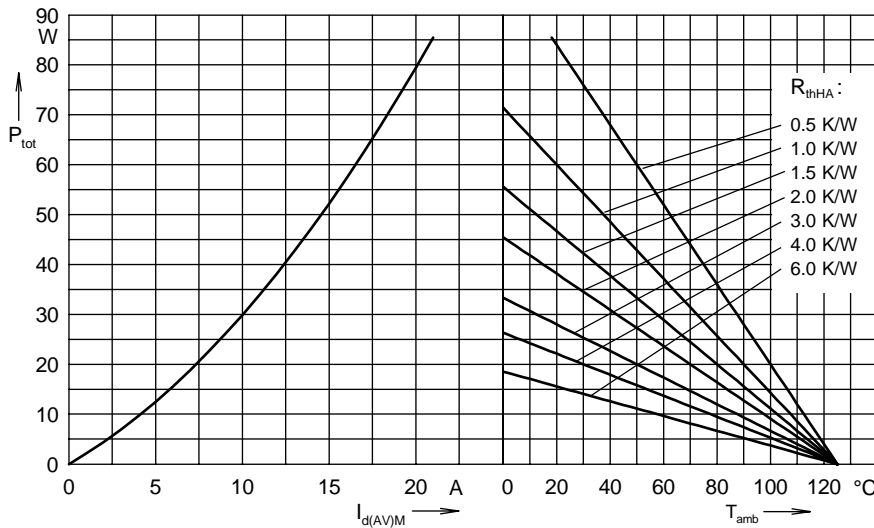


Fig. 6 Power dissipation versus direct output current and ambient temperature

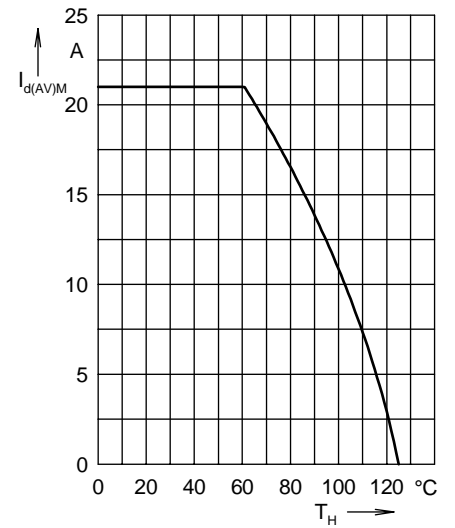


Fig. 7 Max. forward current versus heatsink temperature

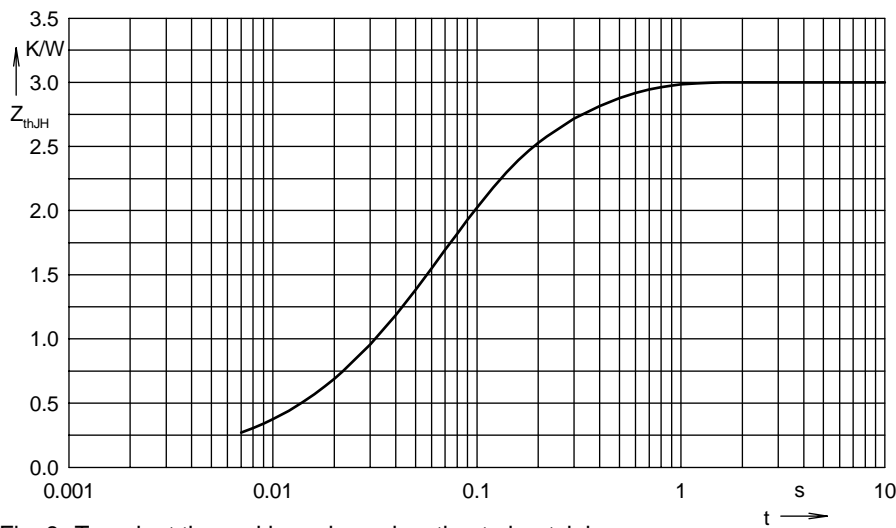


Fig. 8 Transient thermal impedance junction to heatsink

Constants for Z_{thJH} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.01	0.008
2	0.4	0.05
3	1.69	0.06
4	0.9	0.25