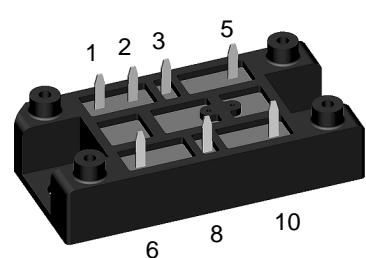
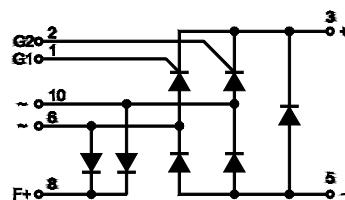


Half Controlled Single Phase Rectifier Bridge

Including Freewheeling Diode and Field Diodes

V_{RRM} = 800-1600 V
I_{dAVM} = 40 A

V _{RSM} V _{DSM}	V _{RRM} V _{DRM}	Type
V	V	
900	800	VHFD 37-08io1
1300	1200	VHFD 37-12io1
1500	1400	VHFD 37-14io1
1700	1600	VHFD 37-16io1



Bridge and Freewheeling Diode

Symbol	Test Conditions	Maximum Ratings		
I _{dAV}	T _H = 85°C, module	36	A	
I _{dAVM} ①	module	40	A	
I _{FRMS} , I _{TRMS}	per leg	31	A	
I _{FSM} , I _{TSM}	T _{VJ} = 45°C; V _R = 0 V	t = 10 ms (50 Hz), sine t = 8.3 ms (60 Hz), sine	320	A
	T _{VJ} = T _{VJM} V _R = 0 V	t = 10 ms (50 Hz), sine t = 8.3 ms (60 Hz), sine	350	A
I ² t	T _{VJ} = 45°C V _R = 0 V	t = 10 ms (50 Hz), sine t = 8.3 ms (60 Hz), sine	280	A
	T _{VJ} = T _{VJM} V _R = 0 V	t = 10 ms (50 Hz), sine t = 8.3 ms (60 Hz), sine	310	A
(di/dt) _{cr}	T _{VJ} = 125°C f = 50 Hz, t _p = 200 μs V _D = 2/3 V _{DRM} I _G = 0.3 A, di _G /dt = 0.3 A/μs	repetitive, I _T = 50 A non repetitive, I _T = 0.5 I _{dAV}	500	A ² s
			520	A ² s
			390	A ² s
			400	A ² s
(dv/dt) _{cr}	T _{VJ} = T _{(vij)m} ; V _{DR} = 2/3 V _{DRM} R _{GR} = ∞; method 1 (linear voltage rise)		1000	V/μs
V _{RGM}			10	V
P _{GM}	T _{VJ} = T _{VJM} I _T = 0.5 I _{dAVM}	t _p = 30 μs t _p = 500 μs t _p = 10 ms	≤ 10 ≤ 5 ≤ 1	W
P _{GAVM}			0.5	W
T _{VJ}			-40...+125	°C
T _{VJM}			125	°C
T _{stg}			-40...+125	°C
V _{ISOL}	50/60 Hz, RMS I _{ISOL} ≤ 1 mA	t = 1 min t = 1 s	3000 3600	V~
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) (10-32 UNF)		2-2.5 18-22	Nm 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

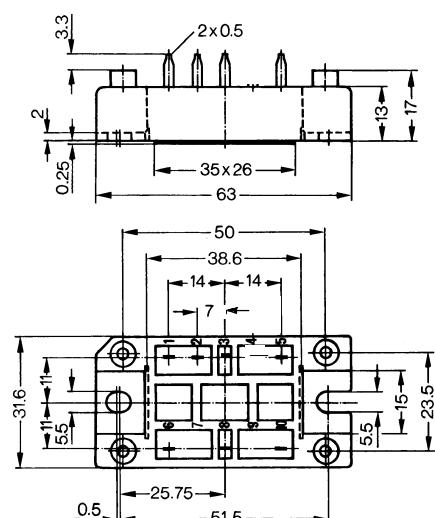
Applications

- 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	$V_R = V_{RRM}$; $V_D = V_{DRM}$ $T_{VJ} = T_{VJM}$ $T_{VJ} = 25^\circ C$	≤ 5	mA	
		≤ 0.3	mA	
V_T, V_F	$I_T, I_F = 45 A$; $T_{VJ} = 25^\circ C$	≤ 1.45	V	
V_{TO}	For power-loss calculations only ($T_{VJ} = 125^\circ C$)	0.85	V	
r_T		13	$m\Omega$	
V_{GT}	$V_D = 6 V$; $T_{VJ} = 25^\circ C$ $T_{VJ} = -40^\circ C$	≤ 1.0	V	
		≤ 1.2	V	
I_{GT}	$V_D = 6 V$; $T_{VJ} = 25^\circ C$ $T_{VJ} = -40^\circ C$ $T_{VJ} = 125^\circ C$	≤ 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	$I_G = 0.3 A$; $t_G = 30 \mu s$; $di_G/dt = 0.3 A/\mu s$;	$T_{VJ} = 25^\circ C$	≤ 150	mA
		$T_{VJ} = -40^\circ C$	≤ 200	mA
		$T_{VJ} = 125^\circ C$	≤ 100	mA
I_H	$T_{VJ} = 25^\circ C$; $V_D = 6 V$; $R_{GK} = \infty$	≤ 100	mA	
t_{gd}	$T_{VJ} = 25^\circ C$; $V_D = 1/2 V_{DRM}$ $I_G = 0.3 A$; $di_G/dt = 0.3 A/\mu s$	≤ 2	μs	
t_q	$T_{VJ} = 125^\circ C$, $I_T = 15 A$, $t_p = 300 \mu s$, $V_R = 100 V$	typ.	150	μs
Q_r	$di/dt = -10 A/\mu s$, $dv/dt = 20 V/\mu s$, $V_D = 2/3 V_{DRM}$	75	μC	
R_{thJC}	per thyristor (diode); DC current	1.2	K/W	
	per module	0.3	K/W	
R_{thJH}	per thyristor (diode); DC current	1.55	K/W	
	per module	0.39	K/W	

Field Diodes

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

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.

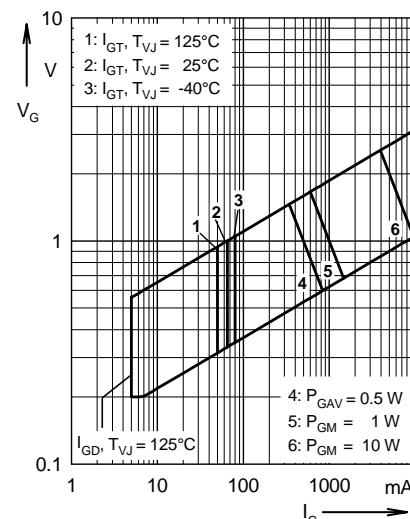


Fig. 1 Gate trigger range

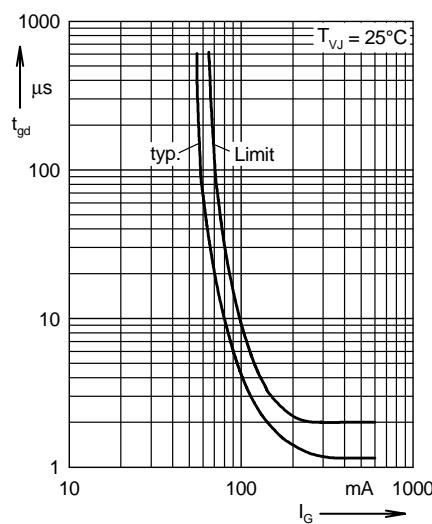


Fig. 2 Gate controlled delay time t_{gd}

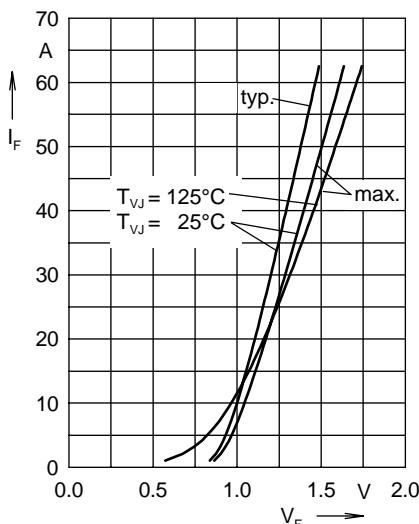


Fig. 3 Forward current versus voltage drop per diode

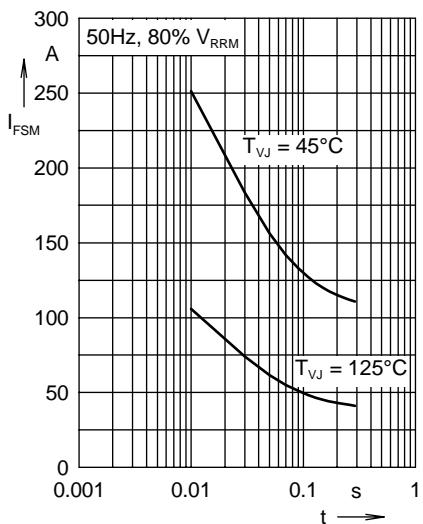


Fig. 4 Surge overload current

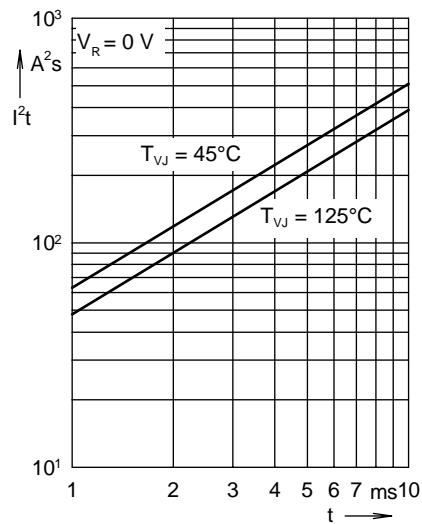


Fig. 5 I^2t versus time per diode

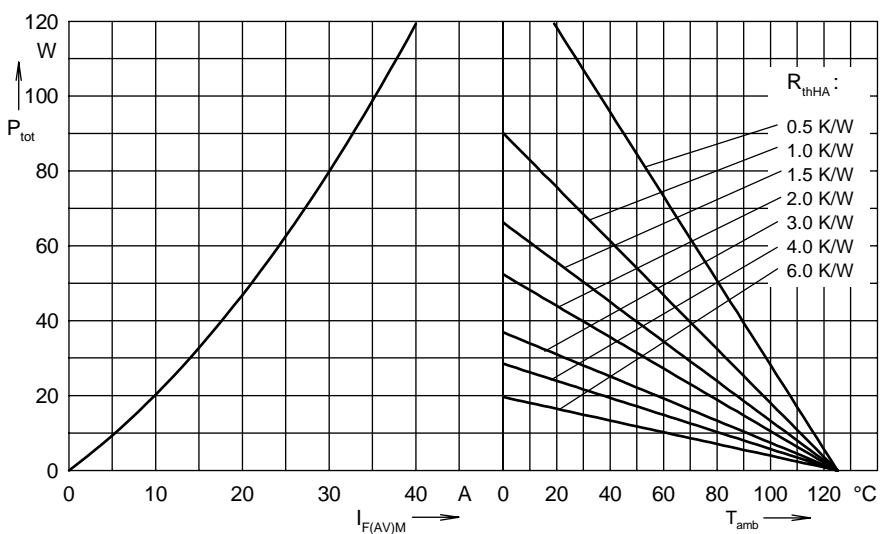


Fig. 6 Power dissipation versus direct output current and ambient temperature

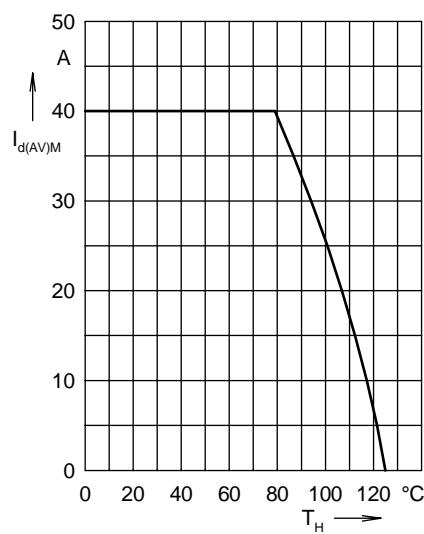


Fig. 7 Max. forward current versus heatsink temperature

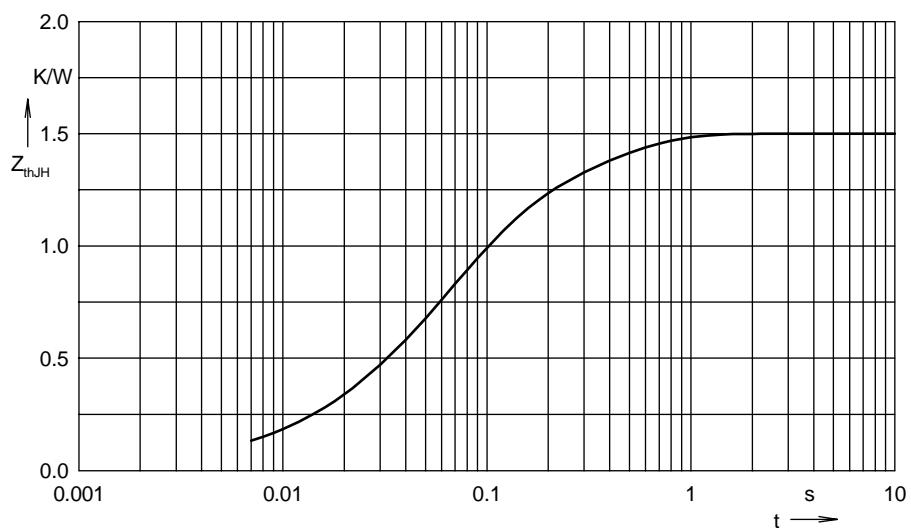


Fig. 8 Transient thermal impedance junction to heatsink

Constants for Z_{thJH} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.005	0.008
2	0.2	0.05
3	0.875	0.06
4	0.47	0.25