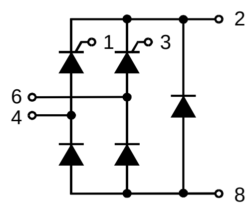
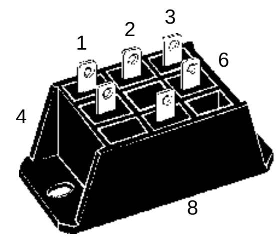
Half Controlled Single Phase Rectifier Bridge

with Freewheeling Diode

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

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type
900	**800**	**VHF 15-08io5**
1300	**1200**	**VHF 15-12io5**
1500	**1400**	**VHF 15-14io5**
1700	**1600**	**VHF 15-16io5**





Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	T_K = 85°C, module		15	A
I_{dAVM} ①	module		21	A
I_{FRMS}, I_{TRMS}	per leg		15	A
I_{FSM}, I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	190	A
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	210	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	170	A
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	190	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	160	A^2s
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	180	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	140	A^2s
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	145	A^2s
$(di/dt)_{cr}$	T_{VJ} = 125°C; f =50 Hz, t_P =200 µs; V_D = 2/3 V_{DRM}	repetitive, I_T = 50 A	150	A/µs
	I_G = 0.3 A, di_G/dt = 0.3 A/µs	non repetitive, I_T = 1/2 • I_{dAV}	500	A/µs
$(dv/dt)_{cr}$	T_{VJ} = T_{VJM}; V_{DR} = 2/3 V_{DRM}; R_{GK} = ∞; method 1 (linear voltage rise)		1000	V/µs
V_{RGM}			10	V
P_{GM}	T_{VJ} = T_{VJM}	t_p = 30 µs	≤ 10	W
	I_T = I_{TAVM}	t_p = 500 µs	≤ 5	W
		t_p = 10 ms	≤ 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	t = 1 min	3000	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque	(M5)	2-2.5	Nm
		(10-32 UNF)	18-22	lb.in.
Weight			50	g

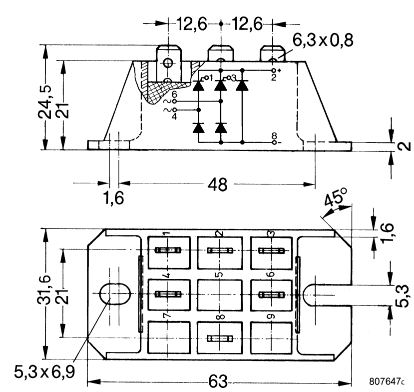
Data according to IEC 60747 and refer to a single thyristor/diode unless otherwise stated.
① for resistive load
IXYS reserves the right to change limits, test conditions and dimensions.

Features
- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- 1/4" fast-on terminals
- 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	$V_R = V_{RRM}$; $V_D = V_{DRM}$	$T_{VJ} = T_{VJM}$	≤	5	mA
		$T_{VJ} = 25°C$	≤	0.3	mA
V_T, V_F	I_T, $I_F = 45$ A; $T_{VJ} = 25°C$		≤	2.8	V
V_{T0}	For power-loss calculations only ($T_{VJ} = 125°C$)			1.0	V
r_T				40	mΩ
V_{GT}	$V_D = 6$ V;	$T_{VJ} = 25°C$	≤	1.0	V
		$T_{VJ} = -40°C$	≤	1.2	V
I_{GT}	$V_D = 6$ V;	$T_{VJ} = 25°C$	≤	65	mA
		$T_{VJ} = -40°C$	≤	80	mA
		$T_{VJ} = 125°C$	≤	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;	$T_{VJ} = 25°C$	≤	150	mA
	$di_G/dt = 0.3$ A/µs;	$T_{VJ} = -40°C$	≤	200	mA
		$T_{VJ} = 125°C$	≤	100	mA
I_H	$T_{VJ} = 25°C$; $V_D = 6$ V; $R_{GK} = \infty$		≤	100	mA
t_{gd}	$T_{VJ} = 25°C$; $V_D = 1/2\ V_{DRM}$ $I_G = 0.3$ A; $di_G/dt = 0.3$ A/µs		≤	2	µs
t_q	$T_{VJ} = 125°C$, $I_T = 15$ 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_{thJK}	per thyristor (diode); DC current			3.0	K/W
	per module			0.75	K/W
d_S	Creepage distance on surface			12.6	mm
d_A	Creepage distance in air			6.3	mm
a	Max. allowable acceleration			50	m/s^2

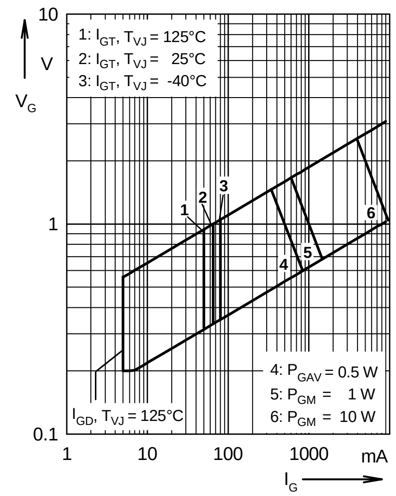


Fig. 1 Gate trigger range

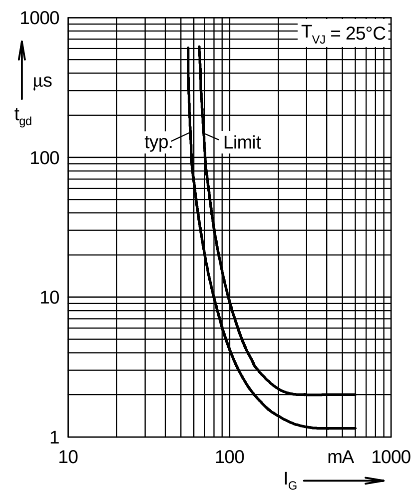


Fig. 2 Gate controlled delay time t_{gd}

750

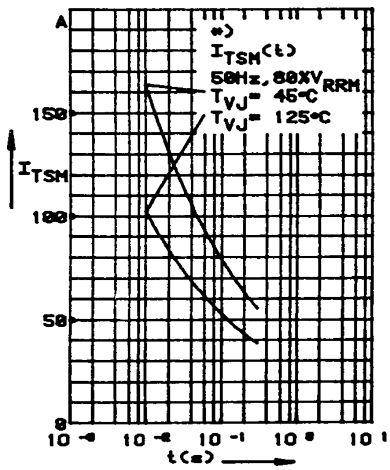


Fig. 3 Surge overload current per chip
I_{FSM}: Crest value, t: duration

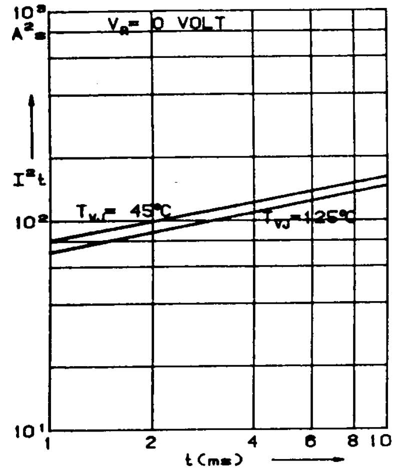


Fig. 4 I^2t versus time (1-10 ms) per chip

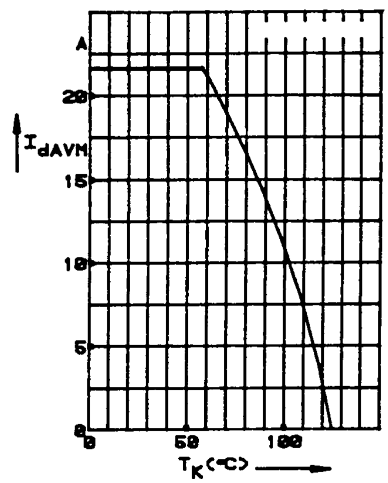


Fig. 5 Max. forward current at heatsink temperature

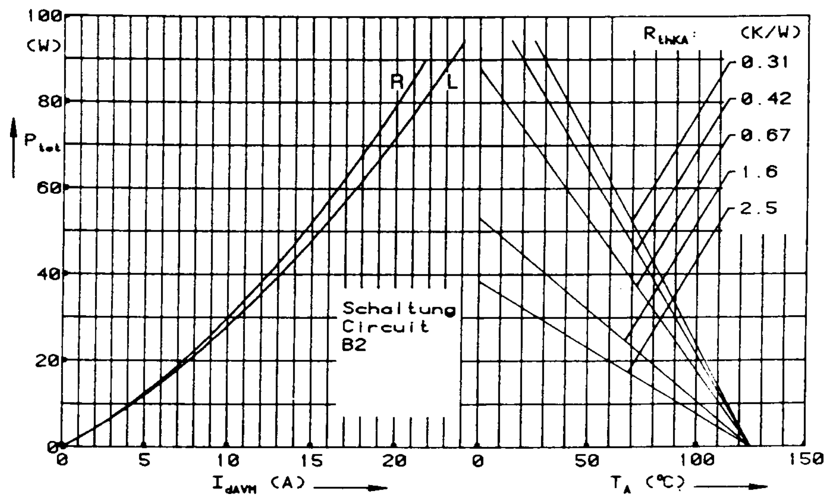


Fig. 6 Power dissipation versus direct output current and ambient temperature

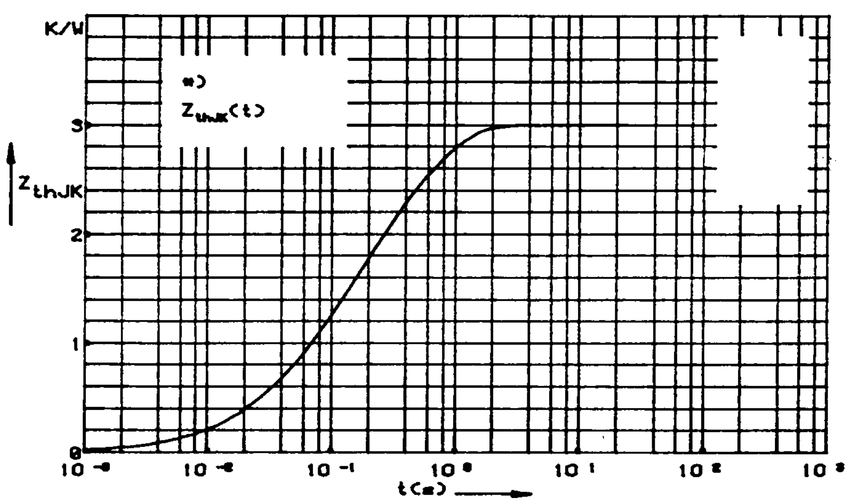


Fig. 7 Transient thermal impedance junction to heatsink per chip

Constants for Z_{thJK} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.34	0.0344
2	1.16	0.12
3	1.5	0.5