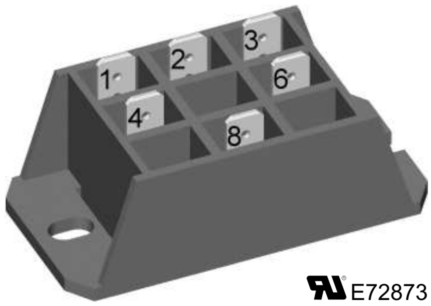
Half Controlled
Single Phase Rectifier Bridge
with Freewheeling Diode

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

Part numbers

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



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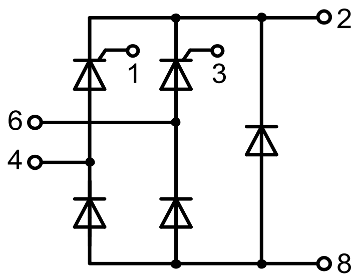


Features / Advantages:
- Planar passivated chips
- Space and weight savings
- Improved temperature & power cycling

Applications:
- Supply for DC power equipment
- DC motor control

Package: FO-F
- Isolation Voltage: 3600 V~
- DCB ceramic base plate
- 1/4" fast-on terminals
- Easy to mount with two screws
- RoHS compliant

Diodes

Symbol	Definitions	Conditions		min.	typ.	max.	Unit
I_{dAV}	*avarage DC output current*	module	$T_K = 85°C$			15	A
I_{dAVM}	*max. avarage DC output current*	for resistive load				21	A
I_{FRMS}, I_{TRMS}	*RMS forward current*	per leg				15	A
I_{FSM}, I_{TSM}	*max. surge forward current*	t = 1 0 ms (50 Hz), sine	$T_{VJ} = 45°C$			190	A
		t = 8.3 ms (60 Hz), sine; $V_R = 0$ V				210	A
		t = 1 0 ms (50 Hz), sine	$T_{VJ} = 125°C$			170	A
		t = 8.3 ms (60 Hz), sine; $V_R = 0$ V				190	A
I^2t	*I^2t value for fusing*	t = 1 0 ms (50 Hz), sine	$T_{VJ} = 45°C$			160	A^2s
		t = 8.3 ms (60 Hz), sine; $V_R = 0$ V				180	A^2s
		t = 1 0 ms (50 Hz), sine	$T_{VJ} = 125°C$			140	A^2s
		t = 8.3 ms (60 Hz), sine; $V_R = 0$ V				145	A^2s
$(di/dt)_{cr}$	*critical rate of rise of current*	f = 50 Hz, $t_P = 200$ µs, $V_D = {}^2/_3 V_{DRM}$	$T_{VJ} = 125°C$				
		$I_G = 0.3$ A, $di_G/dt = 0.3$ A/µs					
		repetitive, $I_T = 50$ A				150	A/µs
		non repetitive, $I_T = ½ I_{dAV}$				500	A/µs
$(dv/dt)_{cr}$	*critical rate of rise of voltage*	$V_D = {}^2/_3 V_{DRM}$	$T_{VJ} = 125°C$			1000	V/µs
		$R_{GK} = \infty$; method 1 (linear voltage rise)					
V_{RGM}	*max. reverse gate voltage*					10	V
P_{GM}	*max. gate power dissipation*	$I_T = I_{TAVM}$ $t_p = 30$ µs	$T_{VJ} = 125°C$			10	W
		$t_p = 500$ µs				5	W
		$t_p = 10$ ms				1	W
P_{GAVM}	*max. average gate power dissipation*					0.5	W

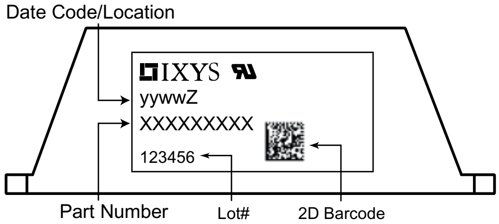
Thyristors

Symbol	Definitions	Conditions		min.	typ.	max.	Unit
I_R, I_D	*reverse, drain current*	$V_R = V_{RRM}$; $V_D = V_{DRM}$	$T_{VJ} = 25°C$			0,3	mA
			$T_{VJ} = 125°C$			5	mA
V_T, V_F	*forward voltage*	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}	*gate trigger voltage*	$V_D = 6$ V	$T_{VJ} = 25°C$			1.0	V
			$T_{VJ} = -40°C$			1.2	V
I_{GT}	*gate trigger current*	$V_D = 6$ V	$T_{VJ} = 25°C$			65	mA
			$T_{VJ} = -40°C$			80	mA
			$T_{VJ} = 125°C$			50	mA
V_{GD}	*gate non-trigger voltage*	$V_D = {}^2/_3 V_{DRM}$	$T_{VJ} = 125°C$			0.2	V
I_{GD}	*non-trigger gate current*					5	mA
I_L	*latching current*	$I_G = 0.3$ 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	*holding current*	$V_D = 6$ V, $R_{GK} = \infty$	$T_{VJ} = 25°C$			100	ns
t_{gd}	*gate controlled delay time*	$V_D = ½ V_{DRM}$	$T_{VJ} = 25°C$		150		µs
		$I_G = 0.3$ A, $di_G/dt = 0.3$ A/µs					
t_q	*turn-off time*	$I_T = 15$ A, $t_P = 300$ µs, $V_R = 100$ V;	$T_{VJ} = 125°C$		150		µs
Q_r	*reverse recovery charge*	di/dt = -10 A/µs, dv/dt = 20 V/µs, $V_D = {}^2/_3 V_{DRM}$			75		µC
R_{thJC}	*thermal resistance junction to case*	per thyristor (diode); DC current				2.4	K/W
		per module				0.6	K/W
R_{thJH}	*thermal resistance junction to heatsink*	per thyristor (diode); DC current			3.0		K/W
		per module			0.75		K/W

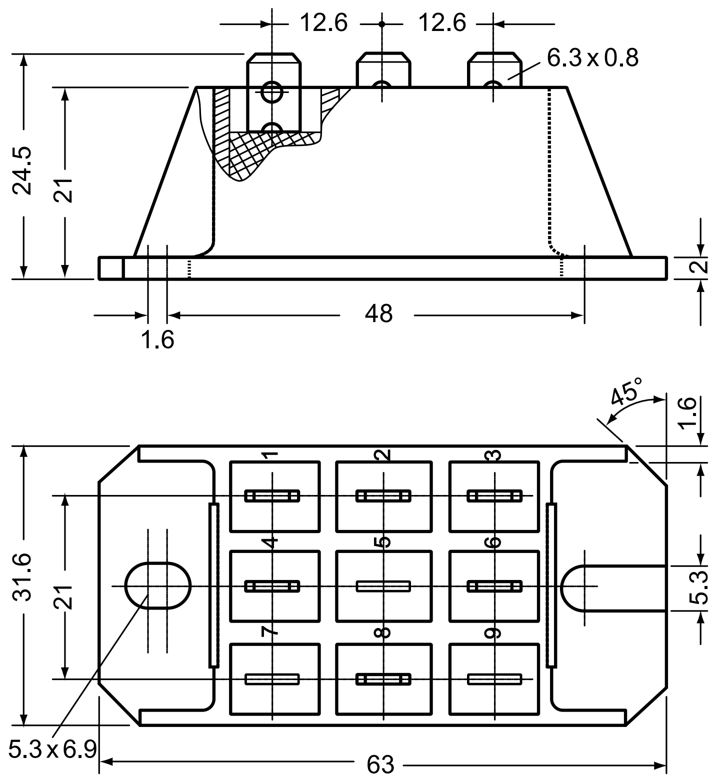
Data according to IEC 60747 and refer to a single thyristor/diode unless otherwise stated.

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

Package	FO-F					Ratings		
Symbol	**Definitions**	**Conditions**			**min.**	**typ.**	**max.**	**Unit**
I_{RMS}	*RMS current*	per terminal					100	A
T_{VJ}	*virtual junction temperature*				-40		125	°C
T_{op}	*operation temperature*				-40		100	°C
T_{stg}	*storage temperature*				-40		125	°C
Weight						45		g
M_D	*mounting torque*				2		2.5	Nm
$d_{Spp/App}$	*creepage distance on surface | striking distance through air*		*terminal to terminal*	18.0	6.0			mm
$d_{Spb/Apb}$			*terminal to backside*	26.0	20.0			mm
V_{ISOL}	*isolation voltage*	t = 1 second	50/60 Hz, RMS, I_{ISOL} < 1 mA		3600			V
		t = 1 minute			3000			V



Dimensions in mm (1 mm = 0.0394")



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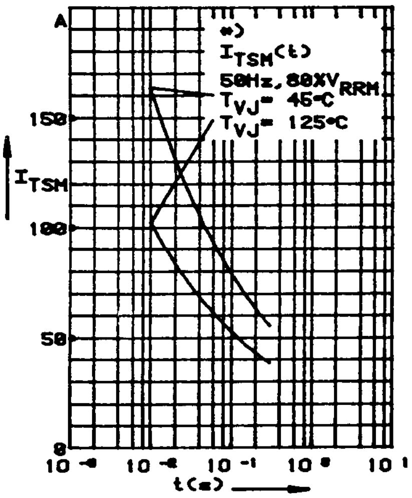


Fig. 1 Surge overload current per chip
I_{FSM}: Crest value, t: duration

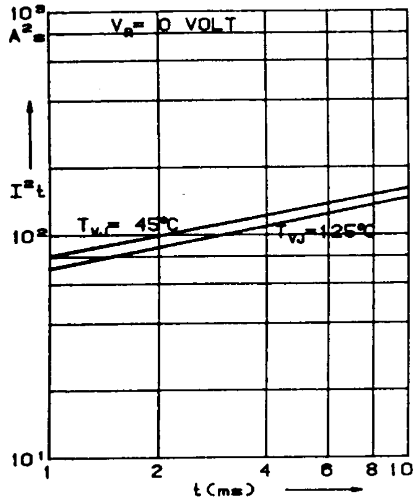


Fig. 2 I^2t versus time (1-10 ms) per chip

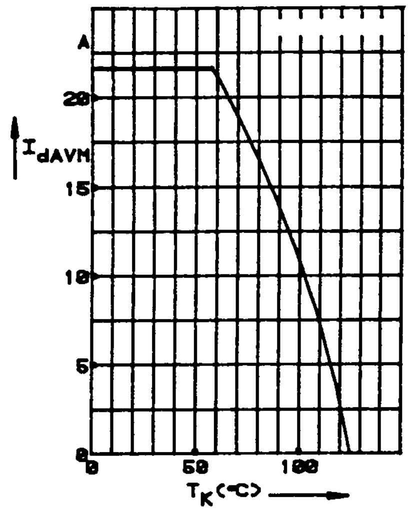
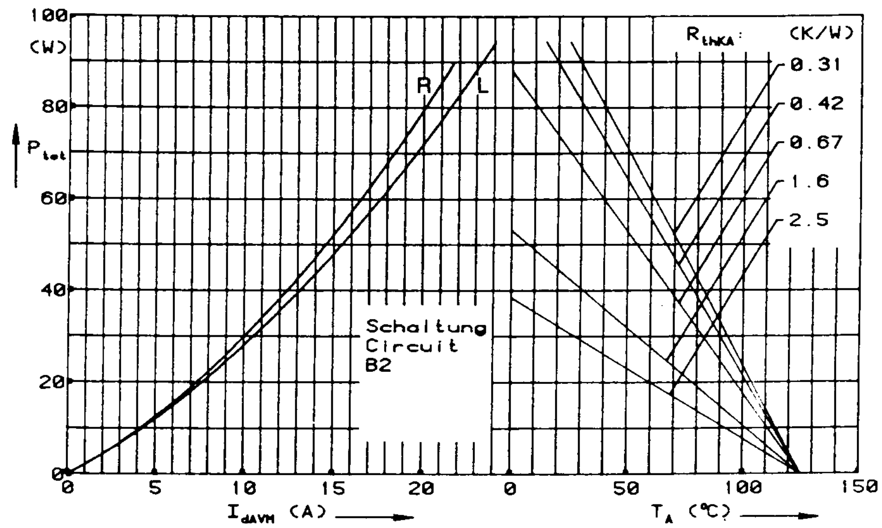


Fig. 3 Max. forward current at heatsink temperature



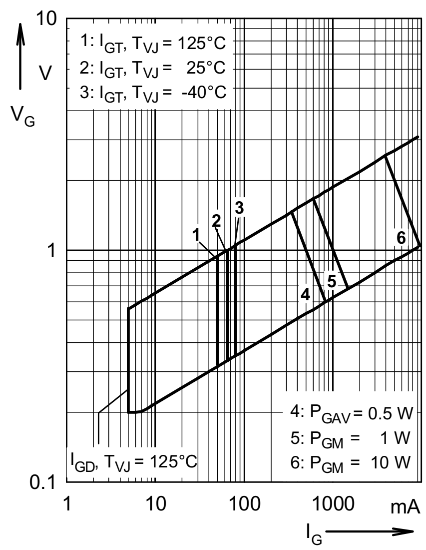
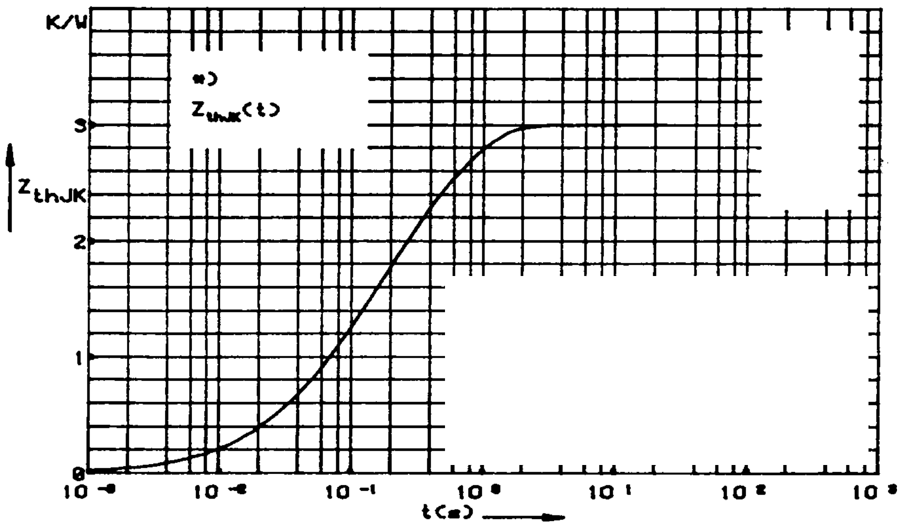


Fig. 4 Power dissipation versus direct output current and ambient temperature



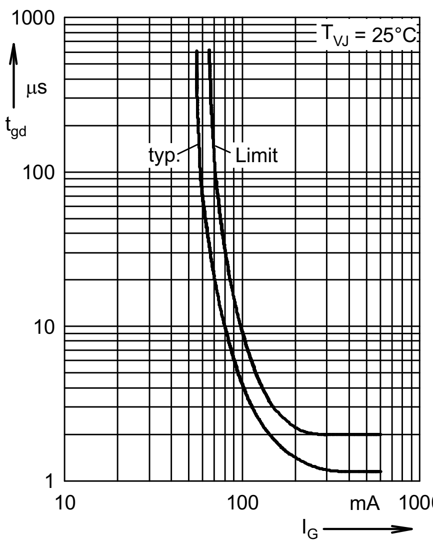


Fig. 6 Transient thermal impedance junction to heatsink per chip

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