

Single Phase Half Controlled Bridges with freewheeling diode

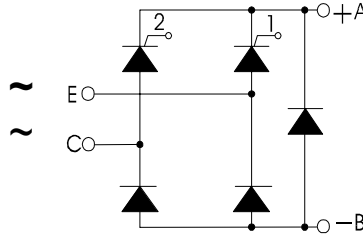
PSCH 85

I_{dAV} = 82 A
 V_{RRM} = 400-1600 V

Preliminary Data Sheet

V_{RSM} V_{DSM}	V_{RRM} V_{DRM}	Type
500	400	PSCH 85/04
900	800	PSCH 85/08
1300	1200	PSCH 85/12
1500	1400	PSCH 85/14
*1700	*1600	PSCH 85/16

* Delivery on request



Symbol	Test Conditions	Maximum Ratings
I_{dAV}	$T_C = 85^\circ\text{C}$ per module	82 A
I_{FSM}, I_{TSM}	$T_{VJ} = 45^\circ\text{C}$ $t = 10\text{ ms}$ (50 Hz), sine	1150 A
	$V_R = 0$ $t = 8.3\text{ ms}$ (60 Hz), sine	1230 A
	$T_{VJ} = T_{VJM}$ $t = 10\text{ ms}$ (50 Hz), sine	1000 A
	$V_R = 0$ $t = 8.3\text{ ms}$ (60 Hz), sine	1070 A
$\int i^2 dt$	$T_{VJ} = 45^\circ\text{C}$ $t = 10\text{ ms}$ (50 Hz), sine	6600 A ² s
	$V_R = 0$ $t = 8.3\text{ ms}$ (60 Hz), sine	6280 A ² s
	$T_{VJ} = T_{VJM}$ $t = 10\text{ ms}$ (50 Hz), sine	5000 A ² s
	$V_R = 0$ $t = 8.3\text{ ms}$ (60 Hz), sine	4750 A ² s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$ repetitive, $I_T = 50\text{ A}$ $f = 400\text{ Hz}$, $t_p = 200\mu\text{s}$ $V_D = 2/3 V_{DRM}$	150 A/ μs
	$I_G = 0.3\text{ A}$ non repetitive, $I_T = 1/3 \cdot I_{dAV}$	500 A/ μs
	$di_G/dt = 0.3\text{ A}/\mu\text{s}$	
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}$ $V_{DR} = 2/3 V_{DRM}$ $R_{GK} = \infty$, method 1 (linear voltage rise)	1000 V/ μs
P_{GM}	$T_{VJ} = T_{VJM}$ $t_p = 30\mu\text{s}$	$\leq 10\text{ W}$
	$I_T = I_{TAVM}$ $t_p = 500\mu\text{s}$	$\leq 5\text{ W}$
P_{GAVM}		0.5 W
V_{RGM}		10 V
T_{VJ}		-40 ... + 125 °C
T_{VJM}		125 °C
T_{stg}		-40 ... + 125 °C
V_{ISOL}	50/60 HZ, RMS $t = 1\text{ min}$	2500 V ~
	$I_{ISOL} \leq 1\text{ mA}$ $t = 1\text{ s}$	3000 V ~
M_d	Mounting torque (M6)	5 Nm
	Terminal connection torque (M6)	5 Nm
Weight	typ.	270 g

Features

- Package with screw terminals
- Isolation voltage 3000 V~
- Planar glasspassivated chips
- Low forward voltage drop
- UL registered, file E 148688

Applications

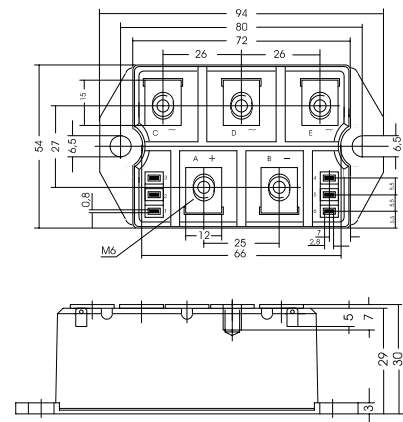
- Heat and temperature control for industrial furnaces and chemical processes
- Lighting control
- Motor control
- Power converter

Advantages

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

Package, style and outline

Dimensions in mm (1mm = 0.0394")



Symbol	Test Conditions		Characteristic Value	
I _D , I _R	T _{VJ} = T _{VJM} , V _R = V _{RRM} , V _D = V _{DRM}		≤	5 mA
V _T	I _T = 200A, T _{VJ} = 25°C		≤	1.75 V
V _{TO}	For power-loss calculations only (T _{VJ} = T _{VJM})			0.85 V
r _T				6 mΩ
V _{GT}	V _D = 6V	T _{VJ} = 25°C	≤	1.5 V
		T _{VJ} = -40°C	≤	1.6 V
I _{GT}	V _D = 6V	T _{VJ} = 25°C	≤	100 mA
		T _{VJ} = -40°C	≤	200 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	T _{VJ} = 25°C, t _p = 30μs		≤	450 mA
	I _G = 0.3A, di _G /dt = 0.3A/μs			
I _H	T _{VJ} = 25°C, V _D = 6V, R _{GK} = ∞		≤	200 mA
t _{gd}	T _{VJ} = 25°C, V _D = ½ V _{DRM}		≤	2 μs
	I _G = 0.3A, di _G /dt = 0.3A/μs			
t _q	T _{VJ} = T _{VJM} , I _T = 20A, t _p = 200μs, V _R = 100V			150 μs
	-di/dt = 10A/μs, dv/dt = 15V/μs, V _D = 2/3 V _{DRM}			
R _{thJC}	per thyristor; sine 180°el			0.65 K/W
	per module			0.13 K/W
R _{thJK}	per thyristor; sine 180° el			0.8 K/W
	per module			0.16 K/W
d _S	Creeping distance on surface			10.0 mm
d _A	Creeping distance in air			9.4 mm
a	Max. allowable acceleration			50 m/s ²

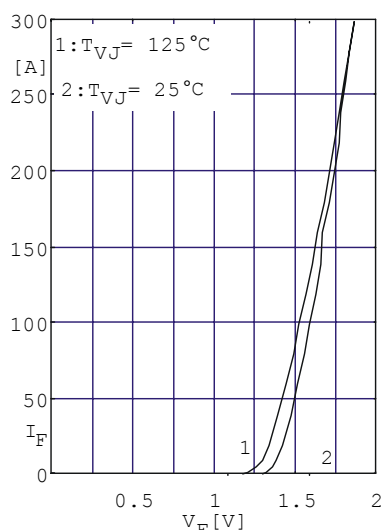


Fig. 1 Forward current vs. voltage drop per diode or thyristor

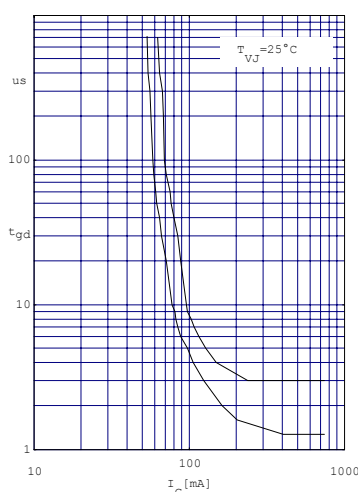


Fig. 2 Gate trigger delay time

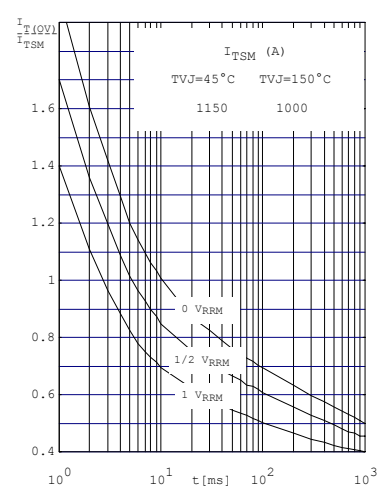


Fig. 3 Surge overload current per diode (or thyristor) I_{FSM} , I_{TSM} : Crest value t : duration

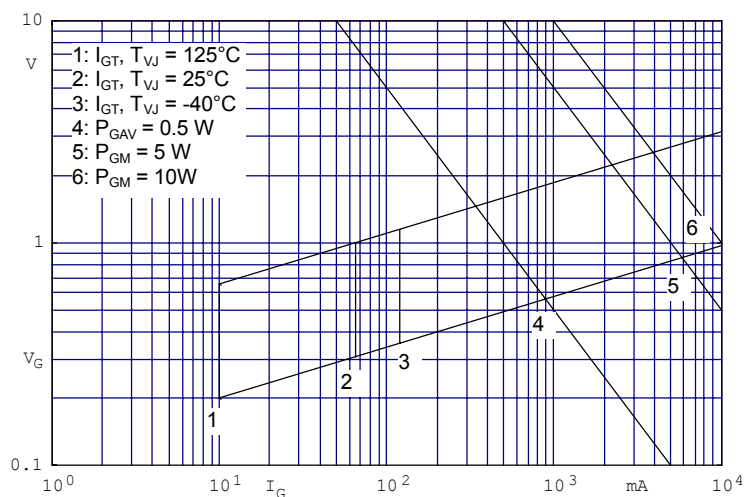


Fig.4 Gate trigger characteristic

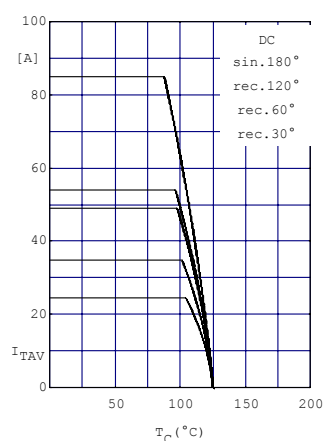


Fig.5 Maximum forward current at case temperature

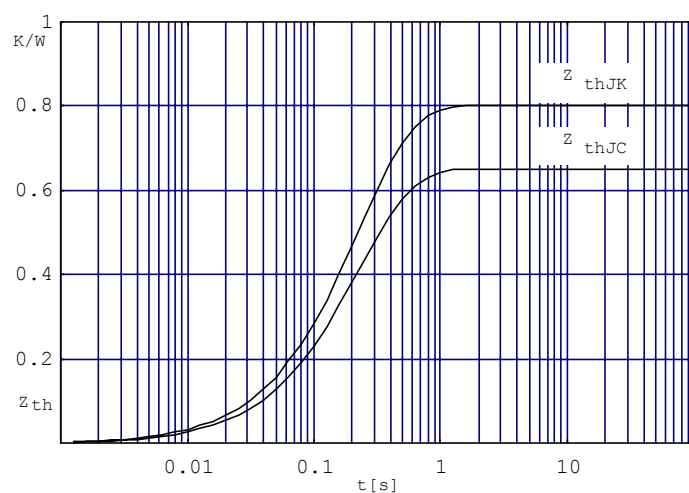


Fig.6 Transient thermal impedance per thyristor or diode (calculated)

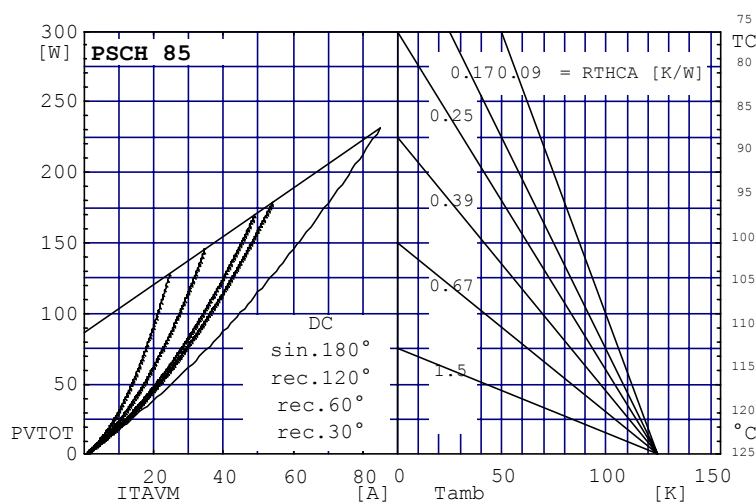


Fig. 7 Power dissipation vs. direct output current and ambient temperature