

Single Phase Full Controlled Bridges with freewheeling diode

PSCT 125

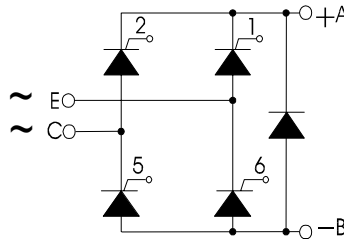
I_{dAV}
 V_{RRM}

= 123 A
= 400-1600 V

Preliminary Data Sheet

V_{RSM} V_{DSM}	V_{RRM} V_{DRM}	Type
500	400	PSCT 125/04
900	800	PSCT 125/08
1300	1200	PSCT 125/12
1500	1400	PSCT 125/14
*1700	*1600	PSCT 125/16

* Delivery on request



Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	$T_C = 85^\circ\text{C}$, module		123	A
I_{TSM}	$T_{VJ} = 45^\circ\text{C}$	$t = 10\text{ ms}$ (50 Hz), sine	1500	A
	$V_R = 0$	$t = 8.3\text{ ms}$ (60 Hz), sine	1600	A
	$T_{VJ} = T_{VJM}$	$t = 10\text{ ms}$ (50 Hz), sine	1350	A
	$V_R = 0$	$t = 8.3\text{ ms}$ (60 Hz), sine	1450	A
$\int i^2 dt$	$T_{VJ} = 45^\circ\text{C}$	$t = 10\text{ ms}$ (50 Hz), sine	11 200	$\text{A}^2\text{ s}$
	$V_R = 0$	$t = 8.3\text{ ms}$ (60 Hz), sine	10 750	$\text{A}^2\text{ s}$
	$T_{VJ} = T_{VJM}$	$t = 10\text{ ms}$ (50 Hz), sine	9100	$\text{A}^2\text{ s}$
	$V_R = 0$	$t = 8.3\text{ ms}$ (60 Hz), sine	8830	$\text{A}^2\text{ s}$
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$	repetitive, $I_T = 50\text{ A}$	150	$\text{A}/\mu\text{s}$
	$f = 400\text{ Hz}$, $t_p = 200\mu\text{s}$			
	$V_D = 2/3 V_{DRM}$			
$(dv/dt)_{cr}$	$I_G = 0.3\text{ A}$	non repetitive, $I_T = 1/3 \cdot I_{dAV}$	500	$\text{A}/\mu\text{s}$
	$di_G/dt = 0.3\text{ A}/\mu\text{s}$			
	$T_{VJ} = T_{VJM}$	$V_{DR} = 2/3 V_{DRM}$	1000	$\text{V}/\mu\text{s}$
P_{GM}	$R_{GK} = \infty$, method 1 (linear voltage rise)			
	$T_{VJ} = T_{VJM}$	$t_p = 30\mu\text{s}$	≤ 10	W
P_{GAVM}			≤ 5	W
	$I_T = I_{TAVM}$	$t_p = 500\mu\text{s}$	0.5	W
V_{RGM}			10	V
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	$t = 1\text{ min}$	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, E148688

Applications

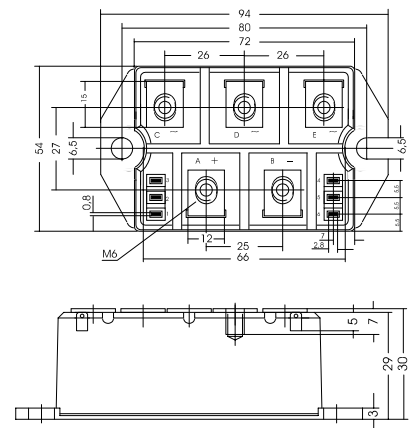
- Heat and temperature control for industrial furnaces and chemical processes
- Lighting control
- Motor control
- Power converter

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	≤	1.57	V	
V _{TO}	For power-loss calculations only (T _{VJ} = T _{VJM})		0.85	V	
r _T			3.5	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		0.46	K/W	
	per module		0.092	K/W	
R _{thJK}	per thyristor; sine 180° el		0.55	K/W	
	per module		0.11	K/W	
d _S	Creeping distance on surface		10	mm	
d _A	Creeping distance in air		9.4	mm	
a	Max. allowable acceleration		50	m/s ²	

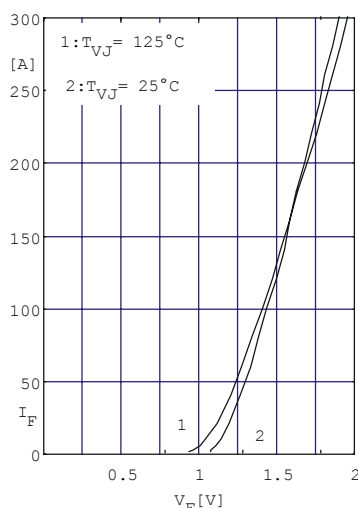


Fig. 1 Forward current vs. voltage drop per diode or thyristor

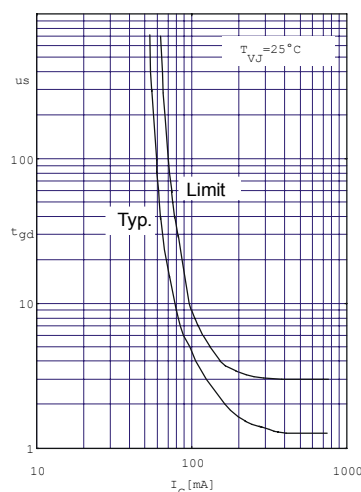


Fig. 2 Gate trigger delay time

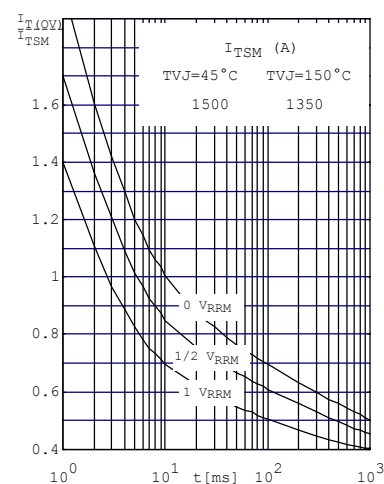


Fig. 3 Surge overload current per diode (or thyristor) I_{FSM} , I_{TSM} : Crest value t : duration

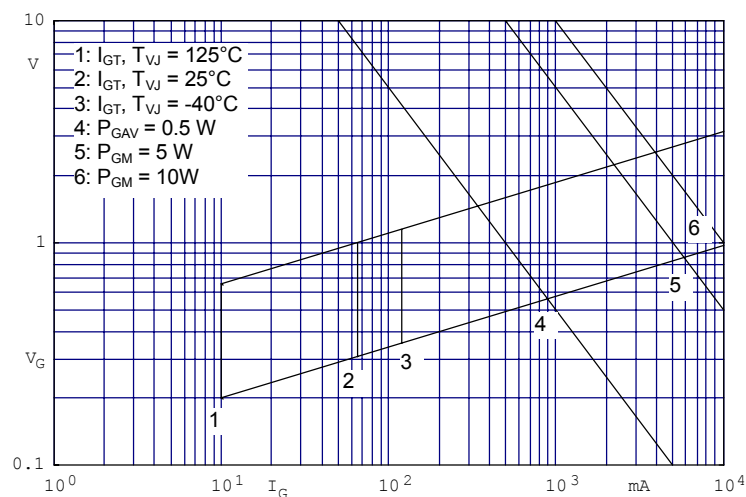


Fig.4 Gate trigger characteristic

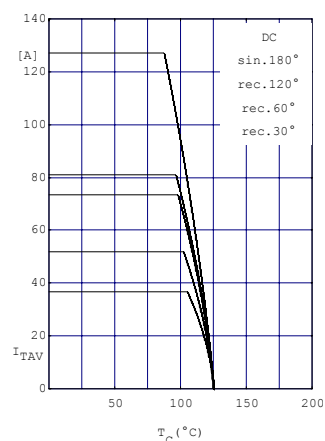


Fig.5 Maximum forward current at case temperature

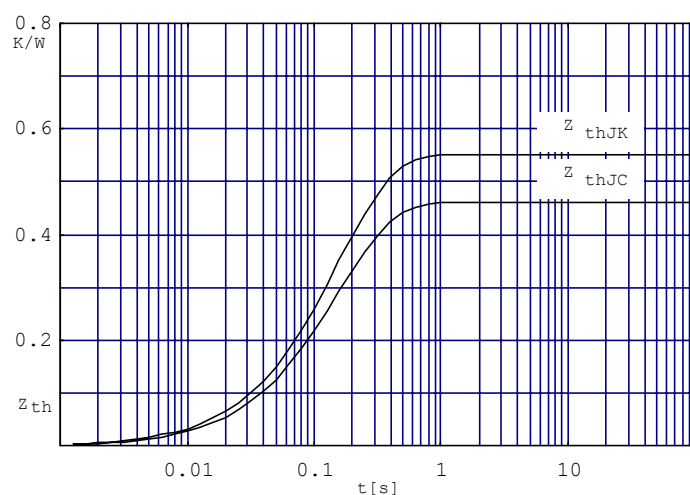


Fig.6 Transient thermal impedance per thyristor or diode (calculated)

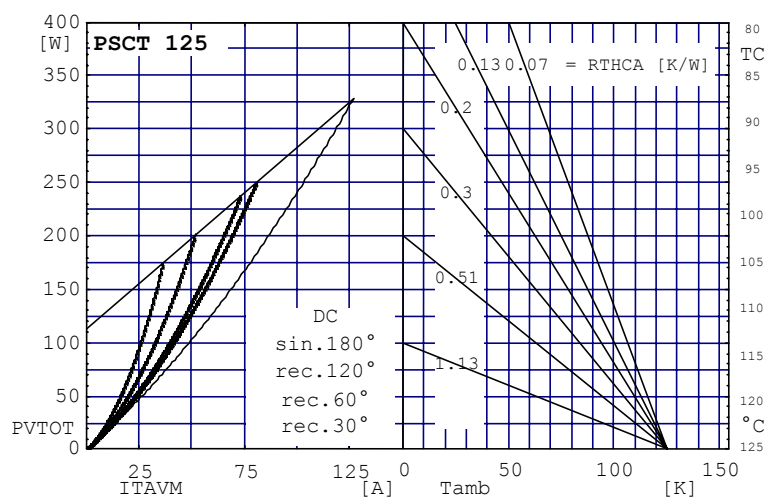


Fig. 7 Power dissipation vs. direct output current and ambient temperature