POWERSEM

Single Phase Half Controlled Bridges with freewheeling diode

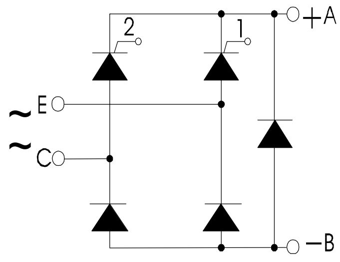
PSCH 125

I_{dAV} = 123 A
V_{RRM} = 400-1600 V

Preliminary Data Sheet

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

* Delivery on request



Symbol	Test Conditions			Maximum Ratings	
I_{dAV}	T_C = 85 °C, module			123	A
I_{FSM}, I_{TSM}	T_{VJ} = 45°C	t = 10 ms	(50 Hz), sine	1500	A
	V_R = 0	t = 8.3 ms	(60 Hz), sine	1600	A
	T_{VJ} = T_{VJM}	t = 10 ms	(50 Hz), sine	1350	A
	V_R = 0	t = 8.3 ms	(60 Hz), sine	1450	A
$\int i^2 dt$	T_{VJ} = 45°C	t = 10 ms	(50 Hz), sine	11 200	A^2 s
	V_R = 0	t = 8.3 ms	(60 Hz), sine	10 750	A^2 s
	T_{VJ} = T_{VJM}	t = 10 ms	(50 Hz), sine	9100	A^2 s
	V_R = 0	t = 8.3 ms	(60 Hz), sine	8830	A^2 s
$(di/dt)_{cr}$	T_{VJ} = T_{JVM}	repetitive, I_T = 50 A		150	A/µs
	f = 400Hz, t_P = 200µs				
	V_D = 2/3 V_{DRM}				
	I_G = 0.3 A	non repetitive, I_T = 1/3 · I_{dAV}		500	A/µs
	di_G/dt = 0.3 A/µs				
$(dv/dt)_{cr}$	T_{VJ} = T_{VJM}	V_{DR} = 2/3 V_{DRM}		1000	V/µs
	R_{GK} = ∞, method 1 (linear voltage rise)				
P_{GM}	T_{VJ} = T_{VJM}	t_P = 30µs		≤ 10	W
	I_T = I_{TAVM}	t_P = 500µs		≤ 5	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 min		2500	V ~
	I_{ISOL} ≤ 1 mA	t = 1 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 released, E 148688

Applications

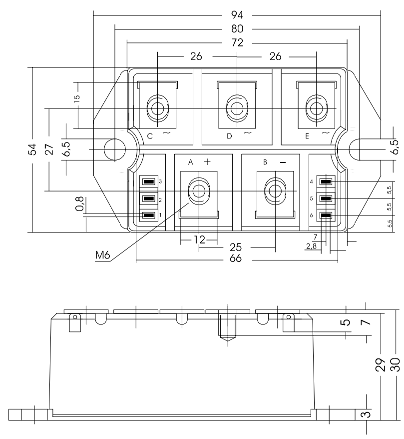
- Heat and temperature control for industrial furnaces and chemical processes
- Lighting control
- Motor control
- Power converter

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")



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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 I_G = 0.3A, di_G/dt = 0.3A/μs		≤	450	mA
I_H	T_{VJ} = 25°C, V_D = 6V, R_{GK} = ∞		≤	200	mA
t_{gd}	T_{VJ} = 25°C, V_D = ½ V_{DRM} I_G = 0.3A, di_G/dt = 0.3A/μs		≤	2	μs
t_q	$T_{VJ} = T_{VJM}$, I_T = 20A, t_P = 200μs, V_R = 100V -di/dt = 10A/μs, dv/dt = 15V/μs, V_D = 2/3 V_{DRM}			150	μs
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

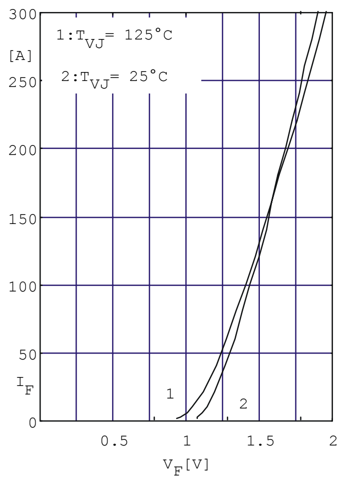

Fig. 1 Forward current vs. voltage drop per diode or thyristor

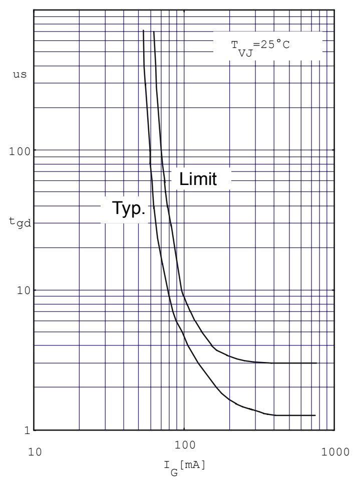

Fig. 2 Gate trigger delay time

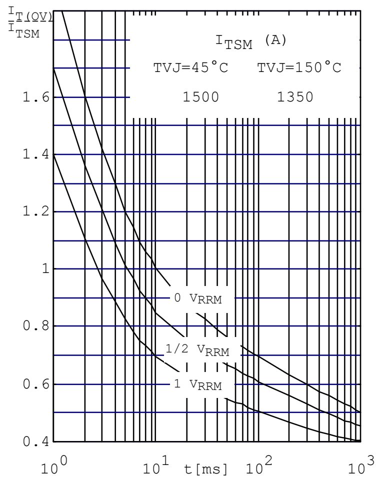

Fig. 3 Surge overload current per diode (or thyristor) I_{FSM}, I_{TSM}: Crest value t: duration

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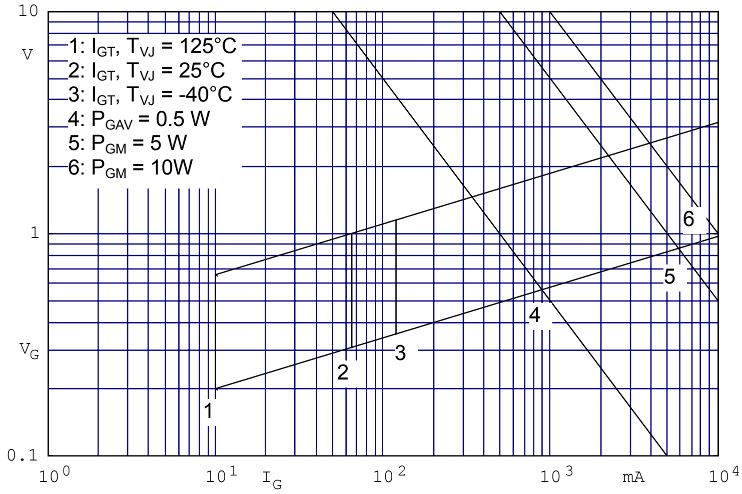

Fig.4 Gate trigger characteristic

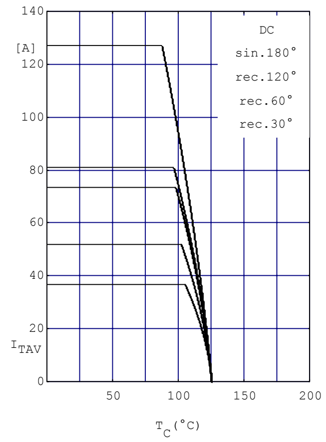

Fig.5 Maximum forward current at case temperature

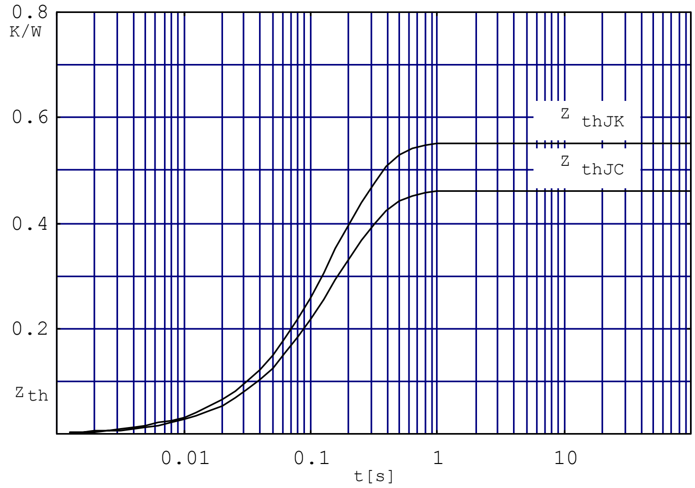

Fig.6 Transient thermal impedance per thyristor or diode (calculated)

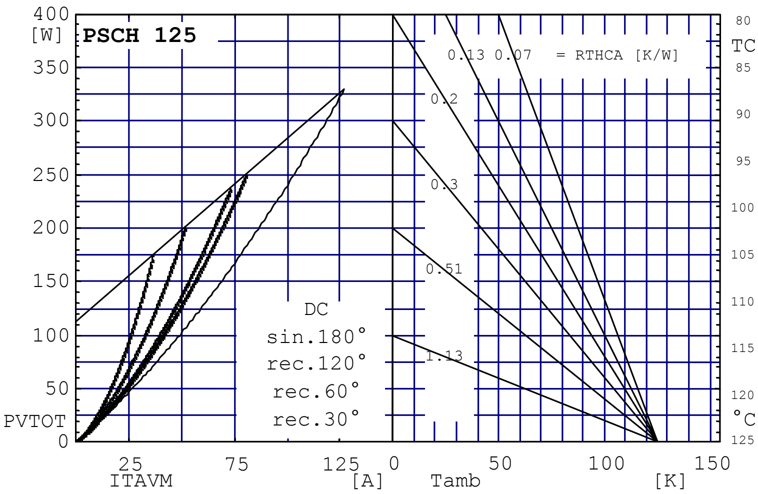

Fig. 7 Power dissipation vs. direct output current and ambient temperature

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