

Single Phase Half Controlled Bridges with freewheeling diode

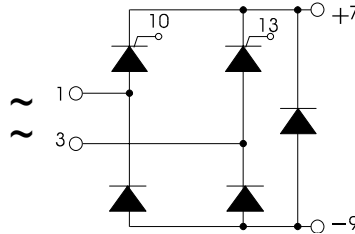
PSCH 55

I_{dAV} = 46A
 V_{RRM} = 400-1600 V

Preliminary Data Sheet

V_{RSM} V_{DSM}	V_{RRM} V_{DRM}	Type
700	600	PSCH 55/06
900	800	PSCH 55/08
1300	1200	PSCH 55/12
1500	1400	PSCH 55/14
*1700	*1600	PSCH 55/16

* Delivery on request



Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	$T_C = 85^\circ\text{C}$	per module	46	A
I_{TSM}, I_{FSM}	$T_{VJ} = 45^\circ\text{C}$	$t = 10\text{ ms}$ (50 Hz), sine	520	A
	$V_R = 0$	$t = 8.3\text{ ms}$ (60 Hz), sine	560	A
	$T_{VJ} = T_{VJM}$	$t = 10\text{ ms}$ (50 Hz), sine	460	A
	$V_R = 0$	$t = 8.3\text{ ms}$ (60 Hz), sine	500	A
$\int i^2 dt$	$T_{VJ} = 45^\circ\text{C}$	$t = 10\text{ ms}$ (50 Hz), sine	1350	$\text{A}^2\text{ s}$
	$V_R = 0$	$t = 8.3\text{ ms}$ (60 Hz), sine	1300	$\text{A}^2\text{ s}$
	$T_{VJ} = T_{VJM}$	$t = 10\text{ ms}$ (50 Hz), sine	1050	$\text{A}^2\text{ s}$
	$V_R = 0$	$t = 8.3\text{ ms}$ (60 Hz), sine	1030	$\text{A}^2\text{ s}$
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$	repetitive, $I_T = 150\text{ A}$	100	$\text{A}/\mu\text{s}$
	$f = 50\text{ Hz}$, $t_p = 200\mu\text{s}$			
	$V_D = 2/3 V_{DRM}$			
	$I_G = 0.3\text{ A}$	non repetitive, $I_T = 1/2 \cdot I_{dAV}$	500	$\text{A}/\mu\text{s}$
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}$	$V_{DR} = 2/3 V_{DRM}$	1000	$\text{V}/\mu\text{s}$
	$R_{GK} = \infty$, method 1 (linear voltage rise)			
P_{GM}	$T_{VJ} = T_{VJM}$	$t_p = 30\mu\text{s}$	≤ 10	W
	$I_T = I_{TAVM}$	$t_p = 300\mu\text{s}$	≤ 5	W
P_{GAVM}			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	(M5)	5	Nm
	Terminal connection torque	(M3)	1.5	Nm
		(M5)	5	Nm
Weight	typ.		220	g

Features

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

Applications

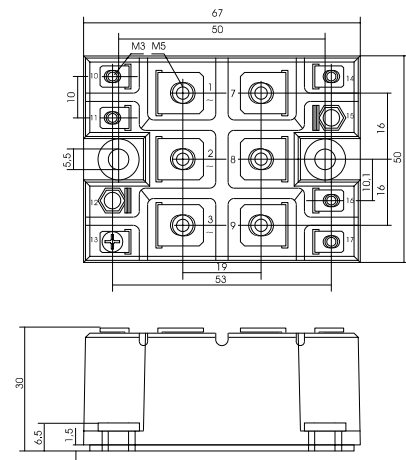
- Heat and temperature control for industrial furnaces and chemical processes
- Lighting control
- Motor control
- Power converter

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 = 80A, T _{VJ} = 25°C	≤	1.64	V	
V _{TO}	For power-loss calculations only (T _{VJ} = T _{VJM})		0.85	V	
r _T			11	mΩ	
V _{GT}	V _D = 6V	T _{VJ} = 25°C	≤	1.0	V
		T _{VJ} = -40°C	≤	1.6	V
I _{GT}	V _D = 6V	T _{VJ} = 25°C	≤	100	mA
		T _{VJ} = -40°C	≤	150	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 = 10μs		≤	200	mA
	I _G = 0.3A, di _G /dt = 0.3A/μs				
I _H	T _{VJ} = 25°C, V _D = 6V, R _{GK} = ∞	≤	150	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		1.2	K/W	
	per module		0.24	K/W	
R _{thJK}	per thyristor; sine 180° el		1.31	K/W	
	per module		0.262	K/W	
d _S	Creeping distance on surface		8.0	mm	
d _A	Creeping distance in air		4.5	mm	
a	Max. allowable acceleration		50	m/s ²	

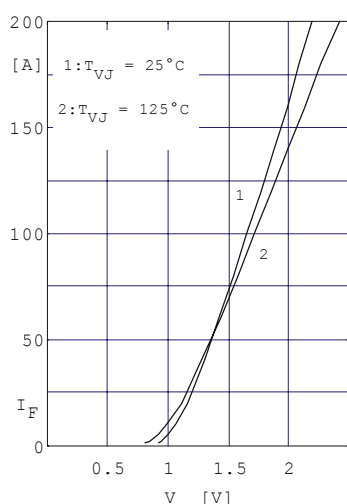


Fig. 1 Forward current vs. voltage drop per diode or thyristor

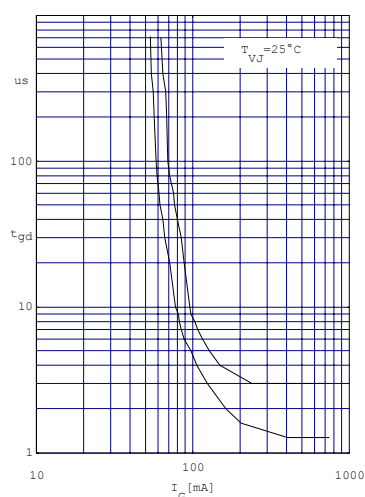


Fig. 2 Gate trigger delay time

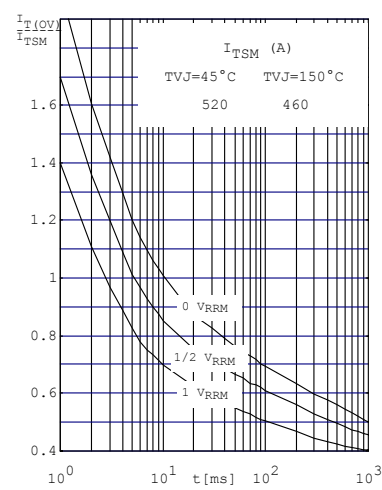


Fig. 3 Surge overload current per diode (or thyristor) I_{FSM} , I_{TSM} : Crest value t : duration

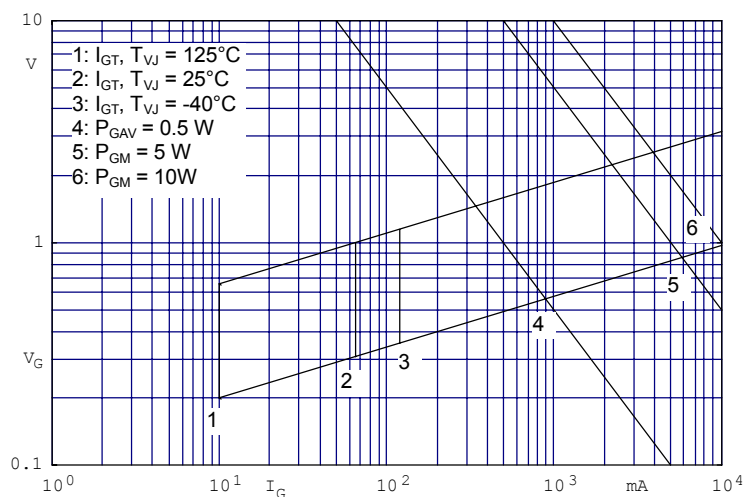


Fig.4 Gate trigger characteristic

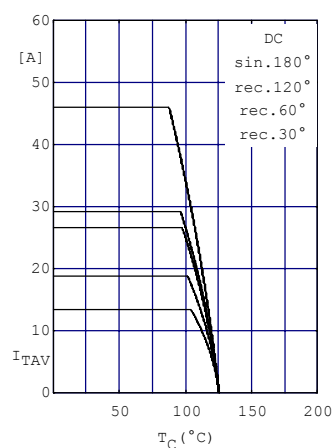


Fig.5 Maximum forward current at case temperature

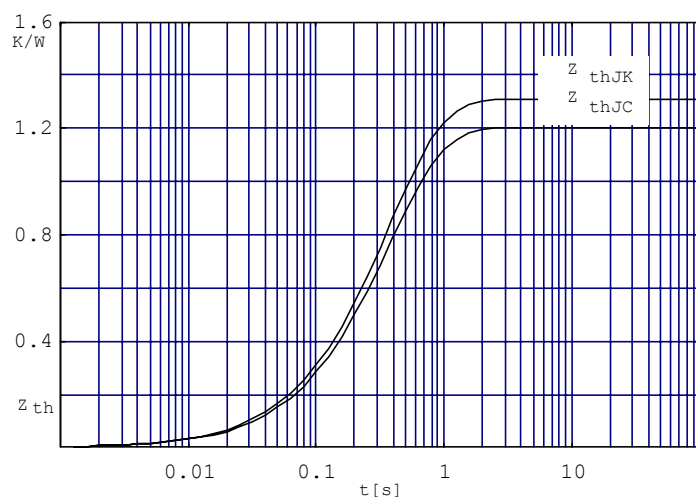


Fig.6 Transient thermal impedance per thyristor or diode (calculated)

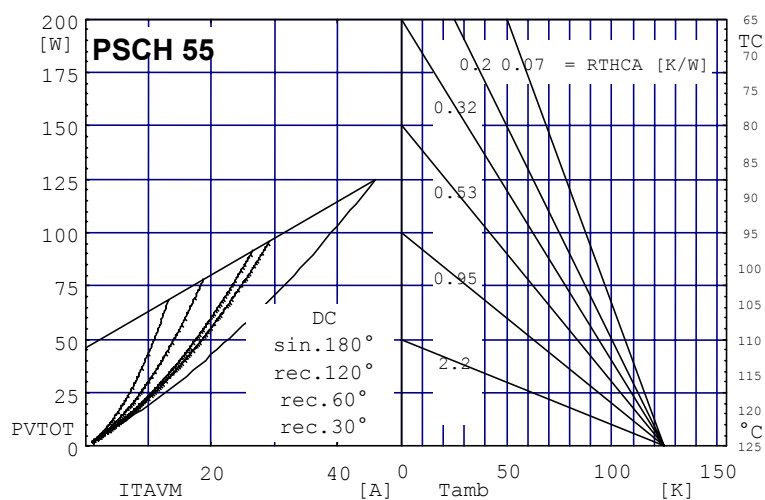


Fig.7 Power dissipation vs. direct output current and ambient temperature