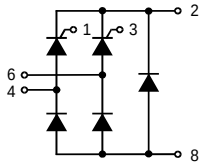
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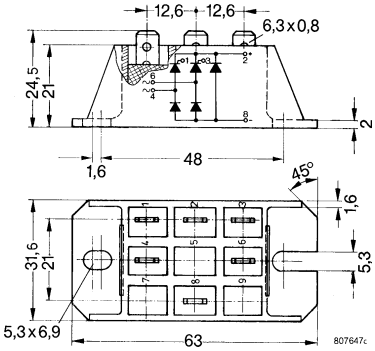
Single Phase Half Controlled Bridge With Free Wheeling Diode





Type	V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V
S1PHB28-08	900	800
S1PHB28-12	1300	1200
S1PHB28-14	1500	1400
S1PHB28-16	1700	1600
S1PHB28-18	1900	1800

Dimensions in mm (1mm=0.0394")



Symbol	Test Conditions		Maximum Ratings	Unit
I_{dAV} I_{dAVM} I_{FRMS}, I_{TRMS}	T_K=85°C, module module per leg		28 32 23	A
I_{TSM}, I_{FSM}	T_{VJ}=45°C V_R=0	t=10ms (50Hz), sine t=8.3ms (60Hz), sine	300 330	A
	T_{VJ}=T_{VJM} V_R=0	t=10ms(50Hz), sine t=8.3ms(60Hz), sine	270 300	
I^2t	T_{VJ}=45°C V_R=0	t=10ms (50Hz), sine t=8.3ms (60Hz), sine	440 455	A^2s
	T_{VJ}=T_{VJM} V_R=0	t=10ms(50Hz), sine t=8.3ms(60Hz), sine	365 370	
$(di/dt)_{cr}$	T_{VJ}=125°C f=50Hz, t_p=200us V_D=2/3V_{DRM} I_G=0.3A di_G/dt=0.3A/us	repetitive, I_T=50A non repetitive, I_T=1/2I_{dAV}	150 500	A/us
$(dv/dt)_{cr}$	T_{VJ}=T_{VJM}; R_{GK}=∞; method 1 (linear voltage rise)	V_{DR}=2/3V_{DRM}	1000	V/us
P_{GM}	T_{VJ}=T_{VJM} I_T=I_{TAVM}	t_p=30us t_p=500us	10 5	W
P_{GAVM}			0.5	W
V_{RGM}			10	V
T_{VJ} T_{VJM} T_{stg}			-40...+125 125 -40...+125	°C
V_{ISOL}	50/60Hz, RMS I_{ISOL}≤1mA	t=1min t=1s	3000 3600	V~
M_d	Mounting torque (M5) (10-32 UNF)		2-2.5 18-22	Nm lb.in.
Weight			50	g

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Symbol	Test Conditions	Characteristic Values	Unit
I_R, I_D	$T_{VJ}=T_{VJM}$; $V_R=V_{RRM}$; $V_D=V_{DRM}$ $T_{VJ}=25^oC$	5 0.3	mA
V_T, V_F	I_T, I_F=45A; $T_{VJ}=25^oC$	1.6	V
V_{TO}	For power-loss calculations only ($T_{VJ}=125^oC$)	0.9	V
r_T		15	mΩ
V_{GT}	V_D=6V; $T_{VJ}=25^oC$ $T_{VJ}=-40^oC$	1.0 1.2	V
I_{GT}	V_D=6V; $T_{VJ}=25^oC$ $T_{VJ}=-40^oC$ $T_{VJ}=125^oC$	65 80 50	mA
V_{GD}	$T_{VJ}=T_{VJM}$; $V_D=2/3V_{DRM}$	0.2	V
I_{GD}	$T_{VJ}=T_{VJM}$; $V_D=2/3V_{DRM}$	5	mA
I_L	t_G=30us; I_G=0.3A; $T_{VJ}=25^oC$ di_G/dt=0.3A/us $T_{VJ}=-40^oC$ $T_{VJ}=125^oC$	150 200 100	mA
I_H	$T_{VJ}=25^oC$; V_D=6V; $R_{GK}=\infty$	100	mA
t_{gd}	$T_{VJ}=25^oC$; $V_D=1/2V_{DRM}$ I_G=0.3A; di_G/dt=0.3A/us	2	us
t_q	$T_{VJ}=125^oC$; I_T=15A; t_p=300us; V_R=100V typ.	150	us
Q_r	$V_D=2/3V_{DRM}$; dv/dt=20V/us; di/dt=-10A/us	75	uC
R_{thJC}	per thyristor(diode); DC current per module	1.4 0.35	K/W
R_{thJK}	per thyristor(diode); DC current per module	2.0 0.5	K/W
d_S	Creepage distance on surface	12.6	mm
d_A	Creepage distance in air	6.3	mm
a	Maximum allowable acceleration	50	m/s^2

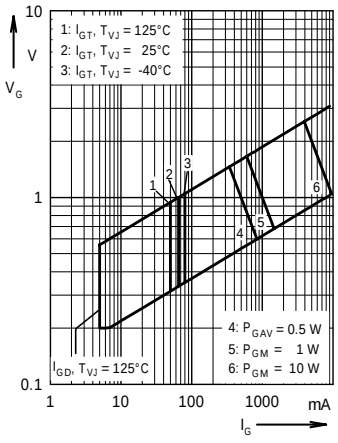


Fig. 1 Gate trigger range

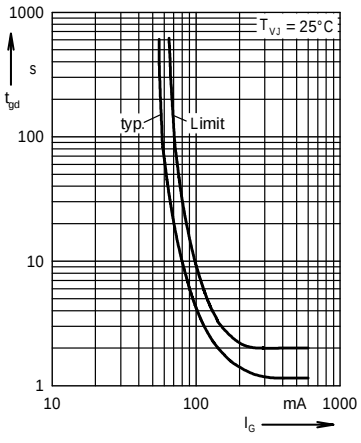


Fig. 2 Gate controlled delay time t_{gd}

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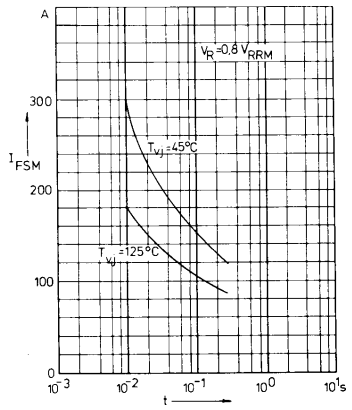


Fig. 3 Surge overload current per chip
I_{FSM}: Crest value, t: duration

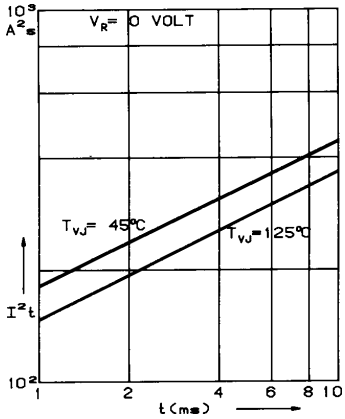


Fig. 4 I^2t versus time (1-10 ms) per chip

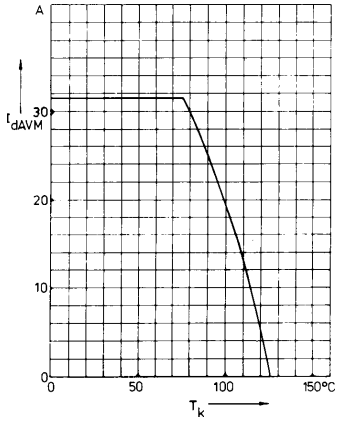


Fig. 5 Max. forward current at heatsink temperature

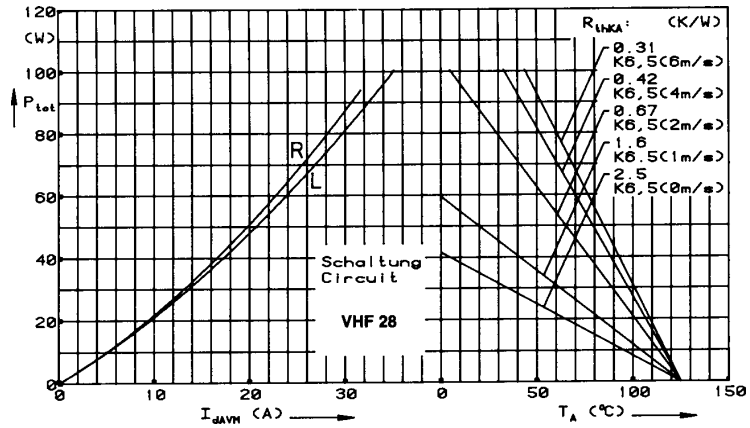


Fig. 6 Power dissipation versus direct output current and ambient temperature

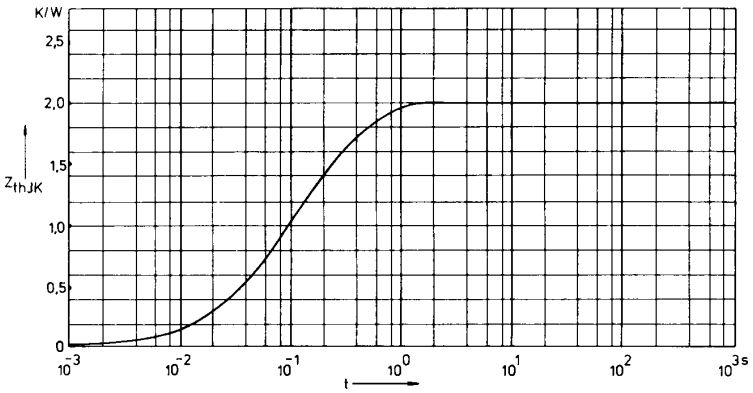


Fig. 7 Transient thermal impedance junction to heatsink per chip

Constants for Z_{thJK} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.3441	0.0344
2	1.1554	0.12
3	1.5005	0.5