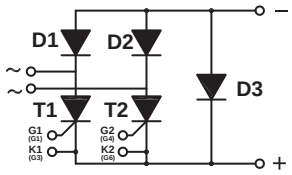
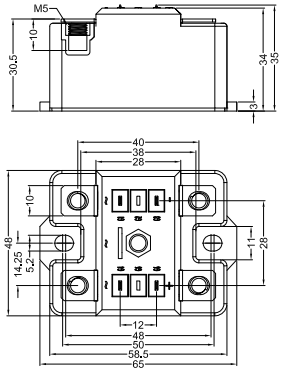
S1PHB41GKXXB

Single Phase Half Controlled Bridge Modules With Free Wheeling Diode



Type	V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V
S1PHB41GK08B	900	800
S1PHB41GK12B	1300	1200
S1PHB41GK14B	1500	1400
S1PHB41GK16B	1700	1600
S1PHB41GK18B	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		40 40 31	A
I_{TSM}, I_{FSM}	T_{VJ}=45°C V_R=0	t=10ms (50Hz), sine t=8.3ms (60Hz), sine	430 460	A
	T_{VJ}=T_{VJM} V_R=0	t=10ms(50Hz), sine t=8.3ms(60Hz), sine	380 430	
I^2t	T_{VJ}=45°C V_R=0	t=10ms (50Hz), sine t=8.3ms (60Hz), sine	1200 1440	A^2s
	T_{VJ}=T_{VJM} V_R=0	t=10ms(50Hz), sine t=8.3ms(60Hz), sine	960 1150	
$(di/dt)_{cr}$	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=40A 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	2500 3000	V~
M_d	Mounting torque (M5) Terminal connection torque (M5)		5±15% 5±15%	Nm Nm
Weight	typical		165	g

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Symbol	Test Conditions	Characteristic Values	Unit
I_R, I_D	$T_{VJ}=T_{VJM}$; $V_R=V_{RRM}$; $V_D=V_{DRM}$	4	mA
V_T	I_T=62A; T_{VJ}=25°C	1.64	V
V_{TO}	For power-loss calculations only	0.88	V
r_T		13	mΩ
V_{GT}	V_D=6V; T_{VJ}=25°C T_{VJ}=-40°C	1.5 1.6	V
I_{GT}	V_D=6V; T_{VJ}=25°C T_{VJ}=-40°C	100 200	mA
V_{GD}	$T_{VJ}=T_{VJM}$; V_D=2/3V_{DRM}	0.2	V
I_{GD}		5	mA
I_L	t_p=10us; I_G=0.45A; T_{VJ}=25°C di_G/dt=0.45A/us	450	mA
I_H	T_{VJ}=25°C; V_D=6V; R_{GK}=∞	200	mA
t_{gd}	T_{VJ}=25°C; V_D=1/2V_{DRM} I_G=0.45A; di_G/dt=0.45A/us	2	us
t_q	$T_{VJ}=T_{VJM}$; I_T=20A; t_p=200us; V_R=100V typ. V_D=2/3V_{DRM}; dv/dt=15V/us; di/dt=-10A/us	250	us
R_{thJC}	per thyristor/Diode; DC per module	0.98 0.196	K/W
R_{thJK}	per thyristor/Diode; DC per module	1.20 0.24	K/W
ds	Creeping distance on surface	16.1	mm
d_A	Creepage distance in air	7.1	mm
a	Maximum allowable acceleration	50	m/s^2

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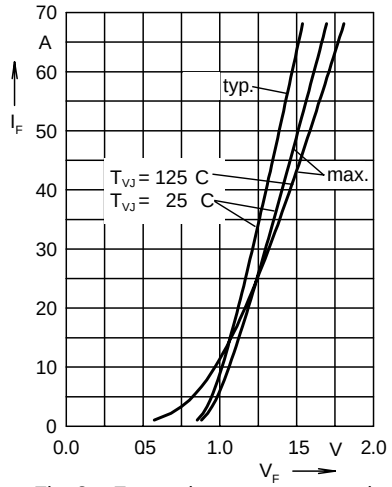

Fig. 3 Forward current versus voltage drop per diode

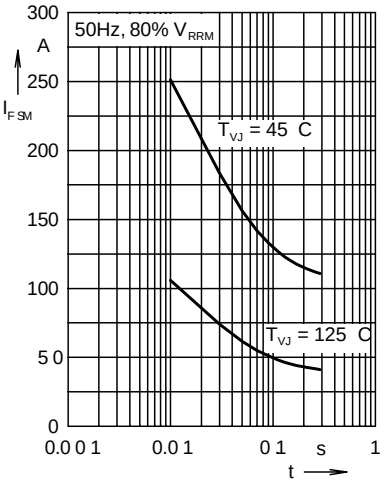

Fig. 4 Surge overload current

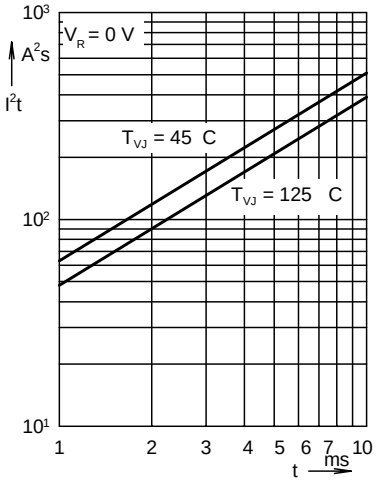

Fig. 5 I^2t versus time per diode

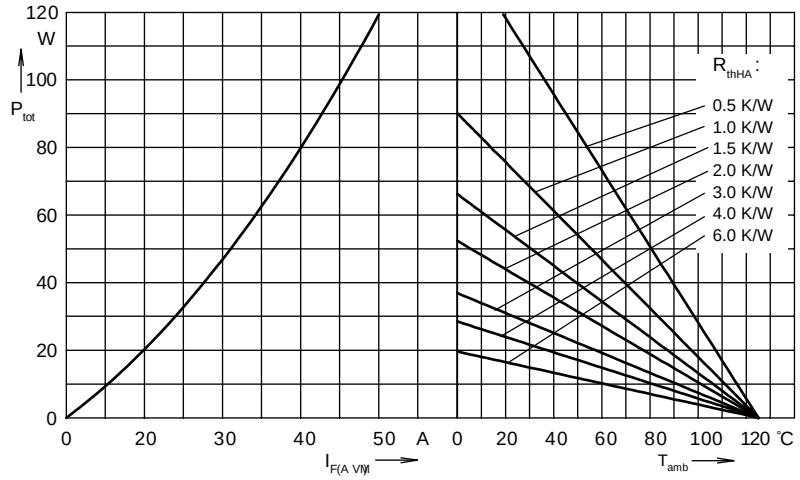

Fig. 6 Power dissipation versus direct output current and ambient temperature

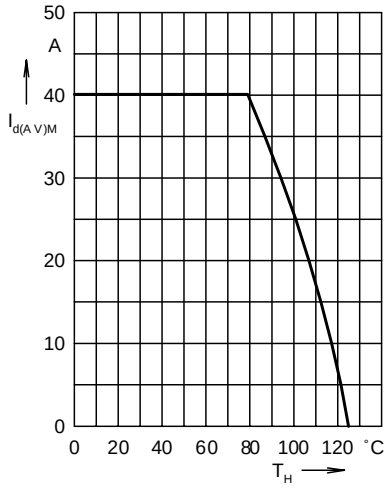

Fig. 7 Max. forward current versus heatsink temperature

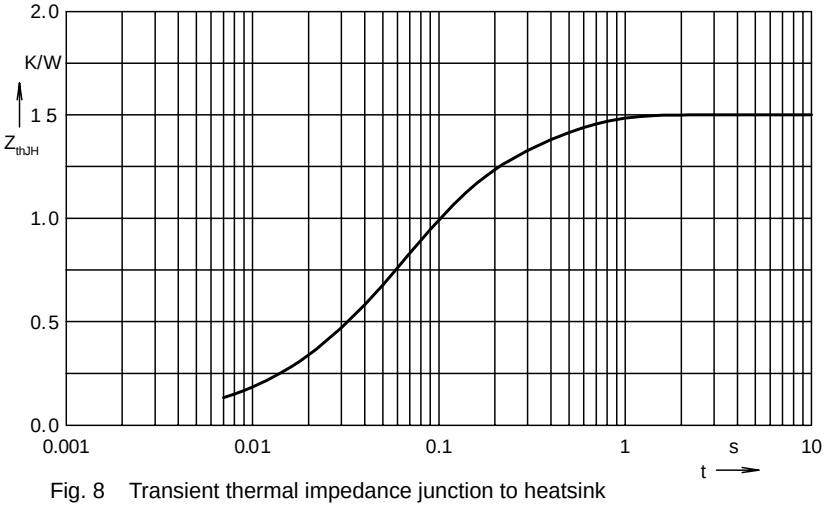

Fig. 8 Transient thermal impedance junction to heatsink

Constants for Z_{thJH} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.005	0.008
2	0.2	0.05
3	0.875	0.06
4	0.47	0.25

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