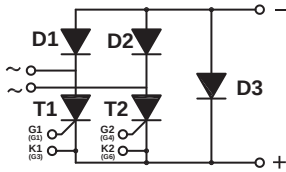


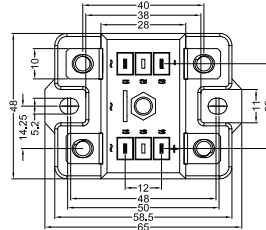
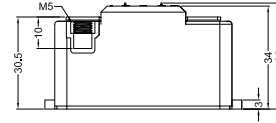
S1PHB50GKXXB

Single Phase Half Controlled Bridge Modules With Free Wheeling Diode



Type	V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V
S1PHB50GK08	900	800
S1PHB50GK12	1300	1200
S1PHB50GK14	1500	1400
S1PHB50GK16	1700	1600
S1PHB50GK18	1900	1800

Dimensions in mm (1mm=0.0394")



Symbol	Test Conditions	Maximum Ratings	Unit
I_{dAV} I_{dAVM} I_{FRMS}, I_{TRMS}	$T_K=85^{\circ}C$, module module per leg	50 50 39	A
I_{TSM}, I_{FSM}	$T_{VJ}=45^{\circ}C$ $V_R=0$ $t=10ms$ (50Hz), sine $t=8.3ms$ (60Hz), sine	540 580	A
	$T_{VJ}=T_{VJM}$ $V_R=0$ $t=10ms$ (50Hz), sine $t=8.3ms$ (60Hz), sine	480 540	
I^2t	$T_{VJ}=45^{\circ}C$ $V_R=0$ $t=10ms$ (50Hz), sine $t=8.3ms$ (60Hz), sine	1500 1500	A^2s
	$T_{VJ}=T_{VJM}$ $V_R=0$ $t=10ms$ (50Hz), sine $t=8.3ms$ (60Hz), sine	1200 1200	
$(di/dt)_{cr}$	$T_{VJ}=125^{\circ}C$ $f=50Hz$, $t_p=200us$ $V_D=2/3V_{DRM}$ $I_G=0.3A$ $di/dt=0.3A/us$	repetitive, $I_T=50A$ 150	A/us
	non repetitive, $I_T=1/2I_{dAV}$	500	
$(dv/dt)_{cr}$	$T_{VJ}=T_{VJM}$; $V_{DR}=2/3V_{DRM}$ $R_{GK}=\infty$; method 1 (linear voltage rise)	1000	V/us
P_{GM}	$T_{VJ}=T_{VJM}$ $I_T=I_{TAVM}$	$t_p=30us$ 10 $t_p=500us$ 5	W
P_{GAVM}		0.5	W
V_{RGM}		10	V
T_{VJ} T_{VJM} T_{stg}		-40...+125 125 -40...+125	$^{\circ}C$
V_{ISOL}	50/60Hz, RMS $I_{ISOL} \leq 1mA$	$t=1min$ 2500 $t=1s$ 3000	V~
M_d	Mounting torque (M5)	$5 \pm 15\%$	Nm
	Terminal connection torque (M5)	$5 \pm 15\%$	Nm
Weight	typical	165	g



S1PHB50GKXXB

Single Phase Half Controlled Bridge Modules With Free Wheeling Diode

Symbol	Test Conditions	Characteristic Values	Unit
I_R, I_D	$T_{VJ}=T_{VJM}; V_R=V_{RRM}; V_D=V_{DRM}$	5	mA
V_T	$I_T=78A; T_{VJ}=25^{\circ}C$	1.64	V
V_{TO}	For power-loss calculations only	0.85	V
r_T		11	m Ω
V_{GT}	$V_D=6V; T_{VJ}=25^{\circ}C$ $T_{VJ}=-40^{\circ}C$	1.5 1.6	V
I_{GT}	$V_D=6V; T_{VJ}=25^{\circ}C$ $T_{VJ}=-40^{\circ}C$	100 200	mA
V_{GD}	$T_{VJ}=T_{VJM}; V_D=2/3V_{DRM}$	0.2	V
I_{GD}		5	mA
I_L	$t_p=10\mu s; I_G=0.45A; T_{VJ}=25^{\circ}C$ $di_G/dt=0.45A/\mu s$	450	mA
I_H	$T_{VJ}=25^{\circ}C; V_D=6V; R_{GK}=\infty$	200	mA
t_{gd}	$T_{VJ}=25^{\circ}C; V_D=1/2V_{DRM}$ $I_G=0.45A; di_G/dt=0.45A/\mu s$	2	μs
t_q	$T_{VJ}=T_{VJM}; I_T=20A; t_p=200\mu s; V_R=100V$ $V_D=2/3V_{DRM}; dv/dt=15V/\mu s; di/dt=-10A/\mu s$ typ.	250	μs
R_{thJC}	per thyristor/Diode; DC per module	0.9 0.18	K/W
R_{thJK}	per thyristor/Diode; DC per module	1.1 0.22	K/W
ds	Creeping distance on surface	16.1	mm
da	Creepage distance in air	7.1	mm
a	Maximum allowable acceleration	50	m/s ²

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Single Phase Half Controlled Bridge Modules With Free Wheeling Diode

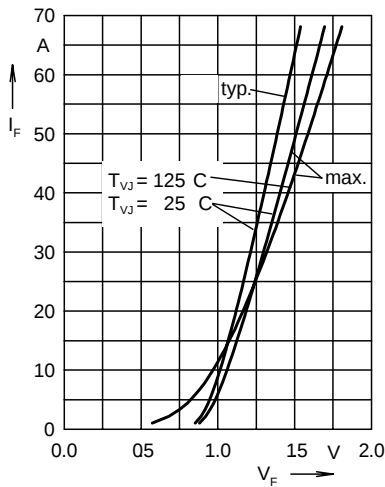


Fig. 3 Forward current versus voltage drop per diode

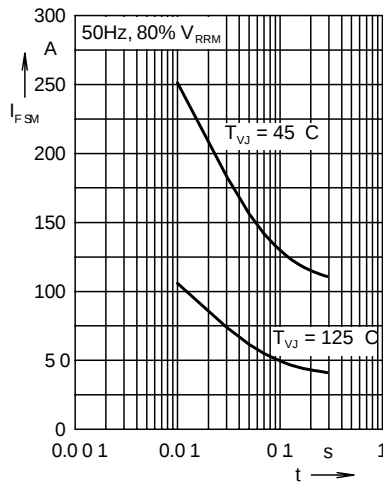


Fig. 4 Surge overload current

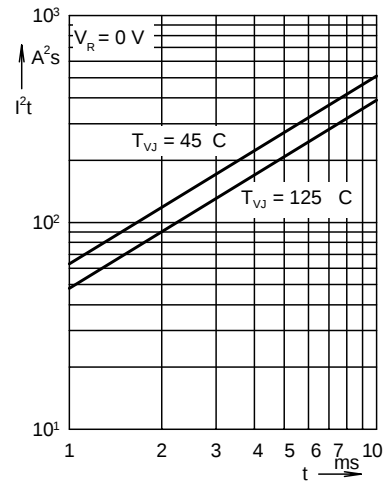


Fig. 5 i^2t versus time per diode

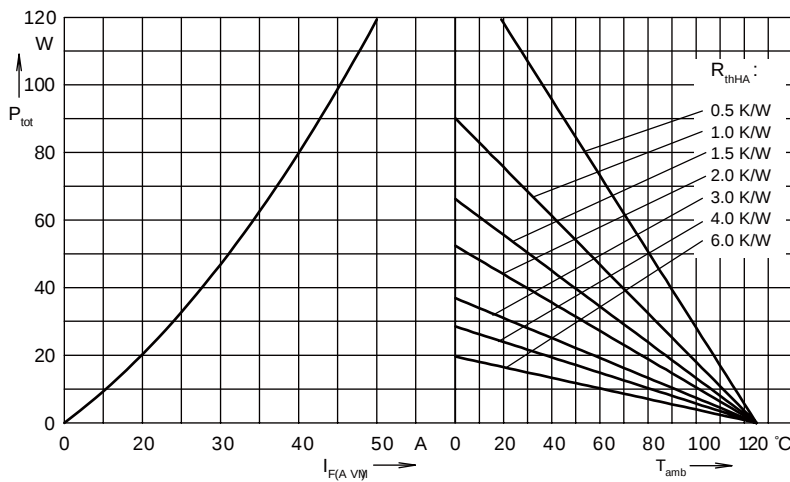


Fig. 6 Power dissipation versus direct output current and ambient temperature

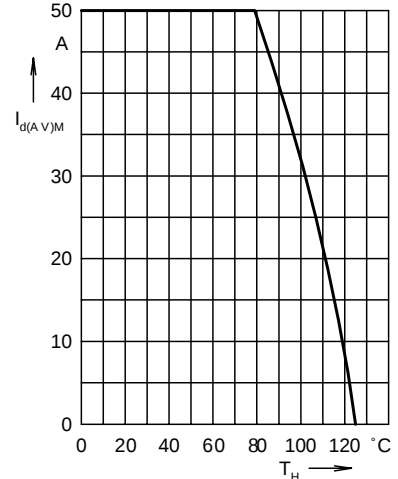


Fig. 7 Max. forward current versus heatsink temperature

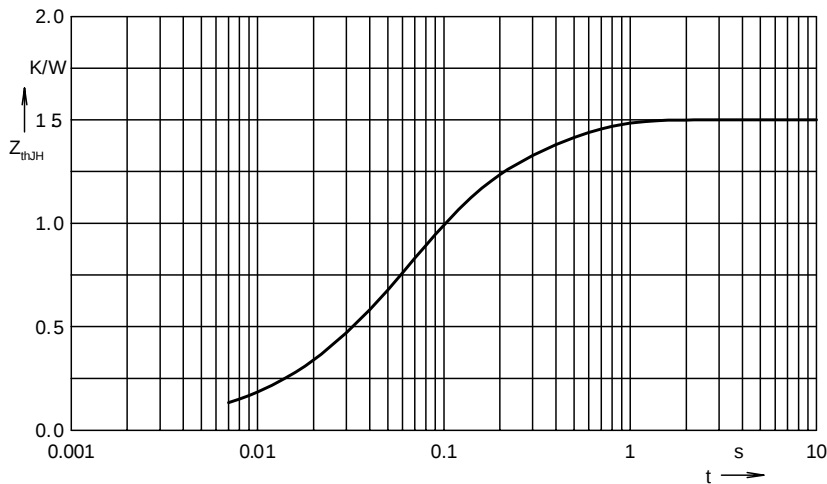


Fig. 8 Transient thermal impedance junction to heatsink

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