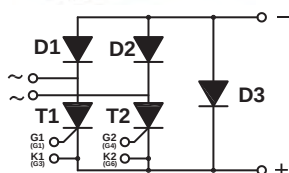
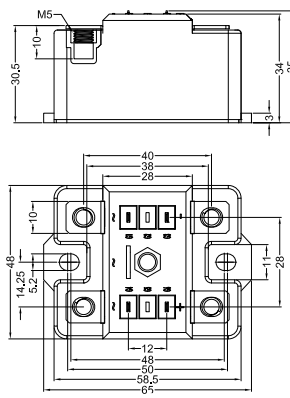


S1PHB41GK12B

Single Phase Half Controlled Bridge Modules With Free Wheeling Diode



Dimensions in mm



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

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 ² s
	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
	$T_{VJ}=T_{VJM};$ V _{DR} =2/3V _{DRM} R _{GK} =∞; method 1 (linear voltage rise)		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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Single Phase Half Controlled Bridge Modules With Free Wheeling Diode

Symbol	Test Conditions	Characteristic Values	Unit
I_R, I_D	$T_{VJ}=T_{VJM}; V_R=V_{RRM}; V_D=V_{DRM}$	4	mA
V_T	$I_T=62A; T_{VJ}=25^{\circ}C$	1.64	V
V_{TO}	For power-loss calculations only	0.88	V
r_T		13	mΩ
V_{GT}	$V_D=6V; T_{VJ}=25^{\circ}C$ $T_{VJ}=-40^{\circ}C$	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	us
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	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
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

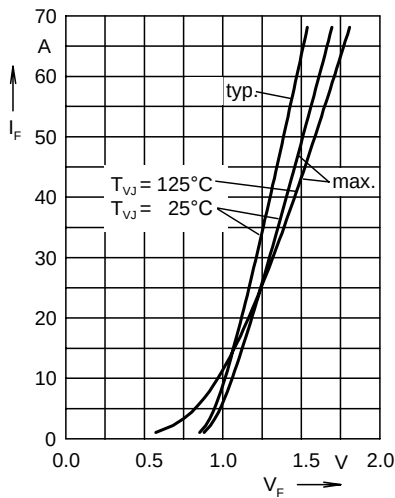


Fig. 3 Forward current versus voltage drop per diode

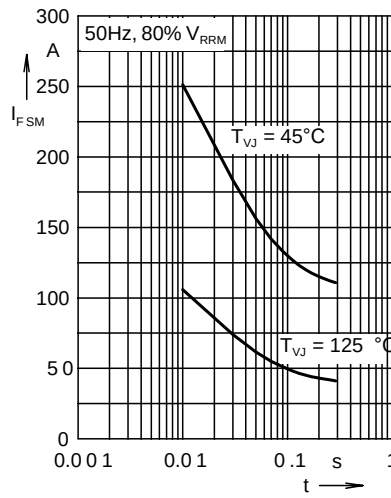


Fig. 4 Surge overload current

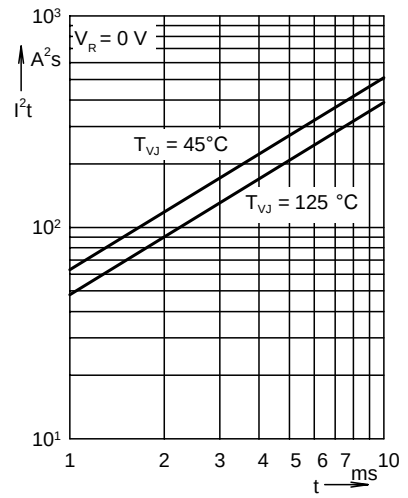


Fig. 5 I^2t versus time per diode

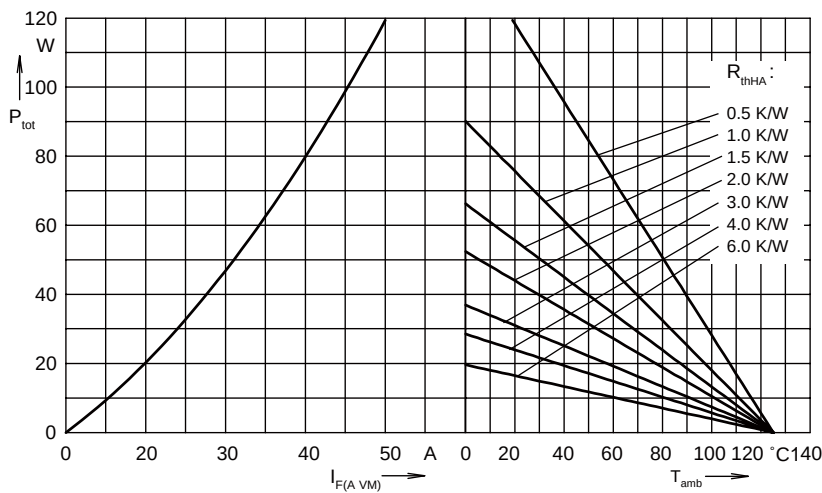


Fig. 6 Power dissipation versus direct output current and ambient temperature

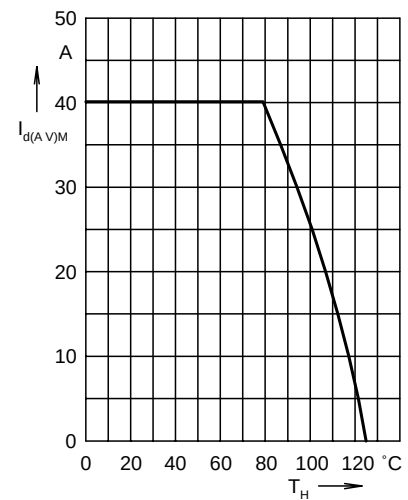


Fig. 7 Max. forward current versus heatsink temperature

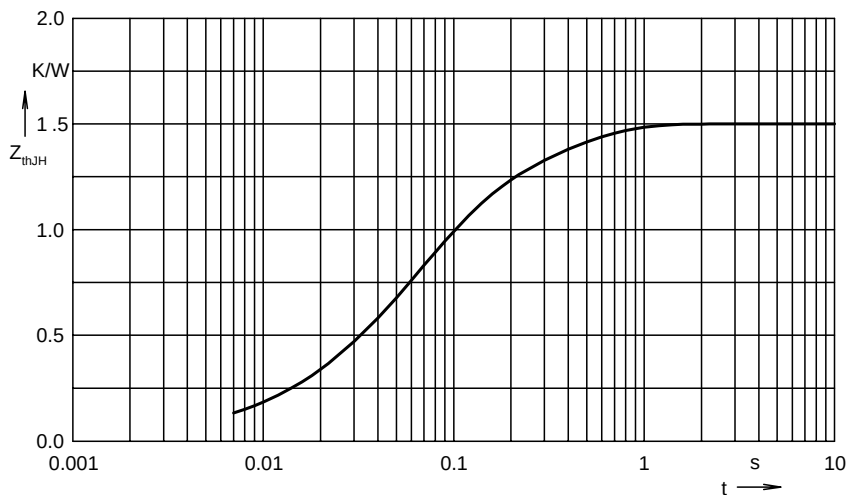


Fig. 8 Transient thermal impedance junction to heatsink

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