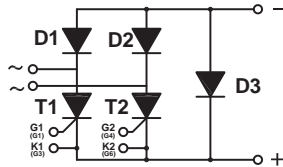


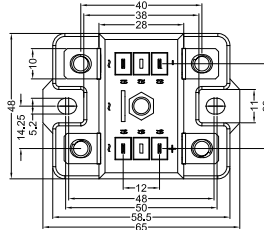
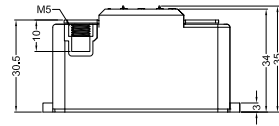
S1PHB75GKXXB

Single Phase Half Controlled Bridge Modules With Free Wheeling Diode



| Type | V_{RSM} V_{DSM} V | V_{RRM} V_{DRM} V |
|--------------|-----------------------------|-----------------------------|
| S1PHB75GK08B | 900 | 800 |
| S1PHB75GK12B | 1300 | 1200 |
| S1PHB75GK14B | 1500 | 1400 |
| S1PHB75GK16B | 1700 | 1600 |
| S1PHB75GK18B | 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 | 75 75 59 | A |
| I_{TSM}, I_{FSM} | $T_{VJ}=45^{\circ}C$ $V_R=0$ t=10ms (50Hz), sine t=8.3ms (60Hz), sine | 810 970 | A |
| | $T_{VJ}=T_{VJM}$ $V_R=0$ t=10ms(50Hz), sine t=8.3ms(60Hz), sine | 720 860 | |
| I^2t | $T_{VJ}=45^{\circ}C$ $V_R=0$ t=10ms (50Hz), sine t=8.3ms (60Hz), sine | 2200 2200 | A ² s |
| | $T_{VJ}=T_{VJM}$ $V_R=0$ t=10ms(50Hz), sine t=8.3ms(60Hz), sine | 1800 1800 | |
| $(di/dt)_{cr}$ | $T_{VJ}=125^{\circ}C$ f=50Hz, $t_p=200\mu s$ $V_D=2/3V_{DRM}$ $I_G=0.3A$ dig/dt=0.3A/us | repetitive, $I_T=50A$ 150 | A/us |
| | non repetitive, $I_T=1/2I_{dAV}$ | 500 | |
| $(dv/dt)_{cr}$ | $T_{VJ}=T_{VJM}$; $R_{GK}=\infty$; method 1 (linear voltage rise) | $V_{DR}=2/3V_{DRM}$ 1000 | V/us |
| P_{GM} | $T_{VJ}=T_{VJM}$ $I_T=I_{TAVM}$ | $t_p=30\mu s$ 10 $t_p=500\mu s$ 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±15% | Nm |
| | Terminal connection torque (M5) | 5±15% | Nm |
| Weight | typical | 165 | g |



S1PHB75GKXXB

Single Phase Half Controlled Bridge Modules With Free Wheeling Diode

| Symbol | Test Conditions | Characteristic Values | Unit |
|------------|--|-----------------------|------------------|
| I_R, I_D | $T_{VJ}=T_{VJM}; V_R=V_{RRM}; V_D=V_{DRM}$ | 8 | mA |
| V_T | $I_T=118A; T_{VJ}=25^{\circ}C$ | 1.64 | V |
| V_{To} | For power-loss calculations only | 0.83 | V |
| r_T | | 10.5 | 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 | 0.85 0.17 | K/W |
| R_{thJK} | per thyristor/Diode; DC per module | 1.10 0.22 | K/W |
| d_s | Creeping distance on surface | 16.1 | mm |
| d_A | Creepage distance in air | 7.1 | mm |
| a | Maximum allowable acceleration | 50 | m/s ² |

S1PHB75GKXXB

Single Phase Half Controlled Bridge Modules With Free Wheeling Diode

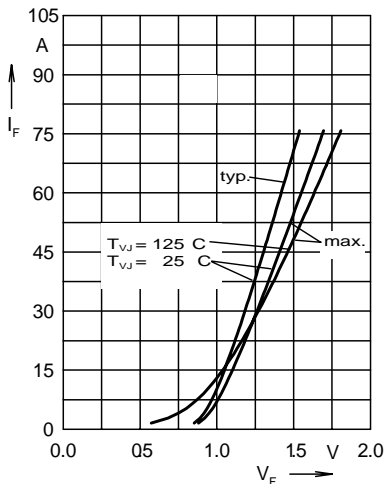


Fig. 3 Forward current versus voltage drop per diode

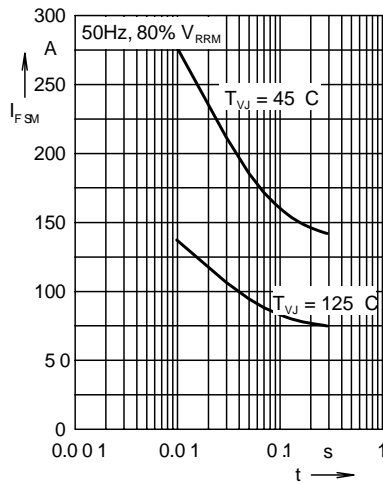


Fig. 4 Surge overload current

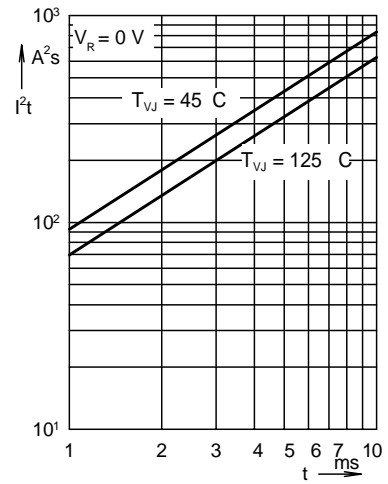


Fig. 5 i^2t versus time per diode

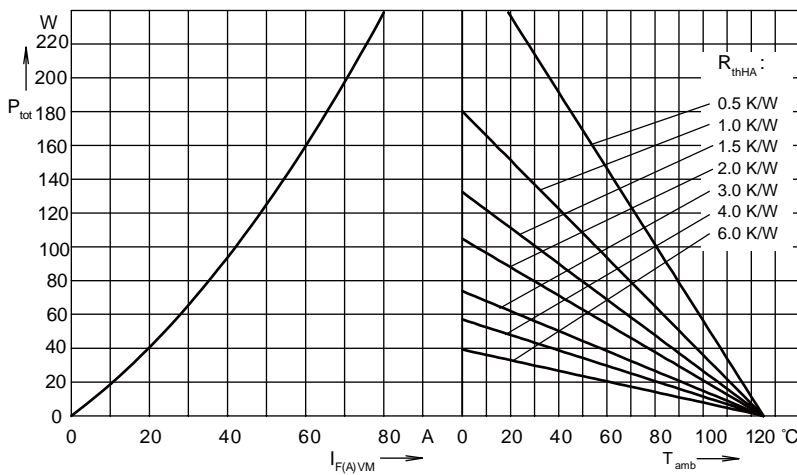


Fig. 6 Power dissipation versus direct output current and ambient temperature

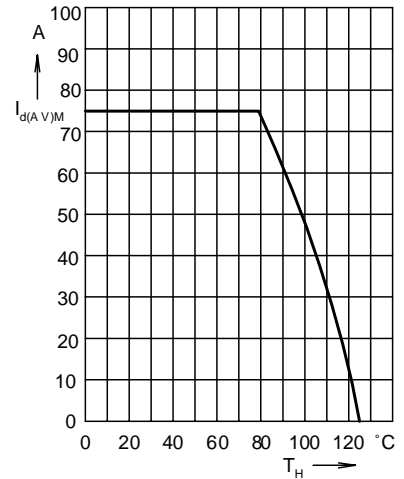


Fig. 7 Max. forward current versus heatsink temperature

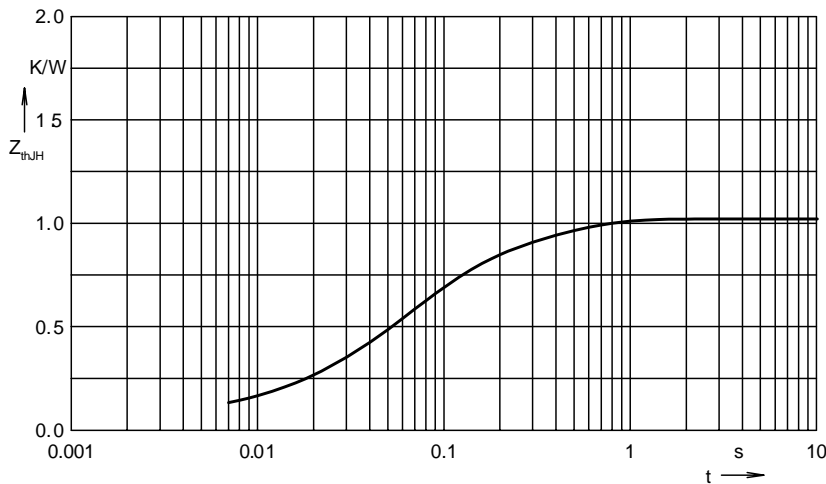


Fig. 8 Transient thermal impedance junction to heatsink

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 |