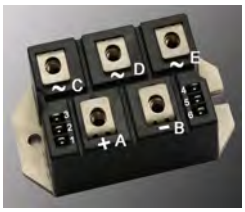
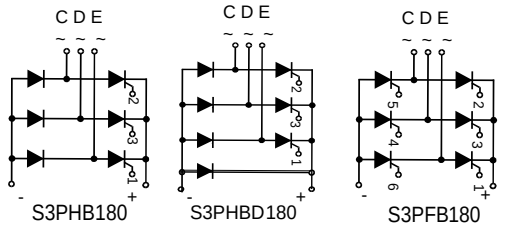
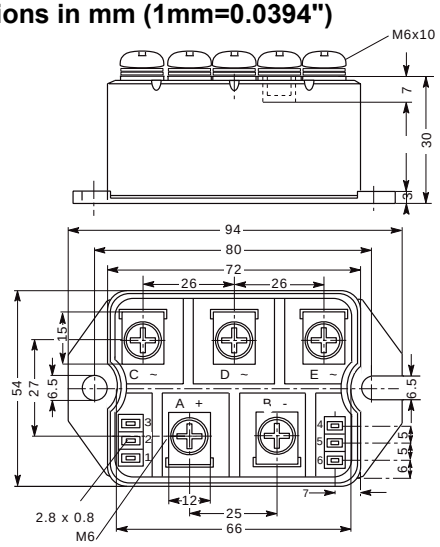
S3PHB180, S3PHBD180, S3PFB180

Three Phase Half Controlled Bridge Modules/Full Controlled Bridge





Dimensions in mm (1mm=0.0394")



Type			V_{RSM}	V_{RRM}
			V	V
S3PHB180G08B	S3PHBD180G08B	S3PFB180G08B	900	800
S3PHB180G12B	S3PHBD180G12B	S3PFB180G12B	1300	1200
S3PHB180G16B	S3PHBD180G16B	S3PFB180G16B	1700	1600
S3PHB180G18B	S3PHBD180G18B	S3PFB180G18B	1900	1800

Symbol	Test Conditions		Maximum Ratings	Unit
I_{dav} I_{davm} I_{FRMS},I_{TRMS}	T_C=85°C, module module per leg		180 180 89	A
I_{FSM},I_{TSM}	T_{VJ}=45°C V_R=0	t=10ms (50Hz), sine t=8.3ms (60Hz), sine	1500 1600	A
	T_{VJ}=T_{VJM} V_R=0	t=10ms(50Hz), sine t=8.3ms(60Hz), sine	1350 1450	
I^2t	T_{VJ}=45°C V_R=0	t=10ms (50Hz), sine t=8.3ms (60Hz), sine	11200 10750	A^2s
	T_{VJ}=T_{VJM} V_R=0	t=10ms(50Hz), sine t=8.3ms(60Hz), sine	9100 8830	
(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=1/2· I_{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 t_p = 10ms	10 5 1	W
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 (M6) (10-32 UNF)		5 ± 15 % 44 ± 15 %	Nm/lb.in.
Weight	typical		305	g

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Three Phase Half Controlled Bridge Modules/Full Controlled Bridge

Symbol	Test Conditions	Characteristic Values	Unit
I_D,I_R	$T_{VJ}=T_{VJM}$; $V_R=V_{RRM}$; $V_D=V_{DRM}$	5	mA
V_{TM}/ V_{FM}	I_{TM}, I_{FM}=180A;T_{VJ}=25°C for every chip	1.64	V
V_{TO}	For power-loss calculations only	0.85	V
r_T		3.5	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_{VJ}=25°C; t_p=10us I_G=0.45A; 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; -di/dt=10A/us typ. V_R=100V; dv/dt=15V/us; V_D=2/3V_{DRM}	250	us
I_{RM}		45	A
R_{thJC}	per thyristor/diode; DC current per module	0.46 0.077	K/W
R_{thJH}	per thyristor/diode; DC current per module	0.55 0.092	K/W
d_S	Creeping distance on surface	10	mm
d_A	Strike distance through air	9.4	mm
a	Maximum allowable acceleration	50	m/s^2

FEATURES
* Low forward voltage drop
* Package with copper base plate
* Glass passivated chips
* Isolation voltage 3000 V~
* UL File NO.E310749
* RoHS compliant

APPLICATIONS
* Input rectifiers for PWM inverter
* Supplies fir DC power equipment
* Field supply for DC motors
* Battery DC power supplies

ADVANTAGES
* Space and weight savings
* Easy to mount with two screws
* Improved temperature and power cycling capability
* Small and light weight

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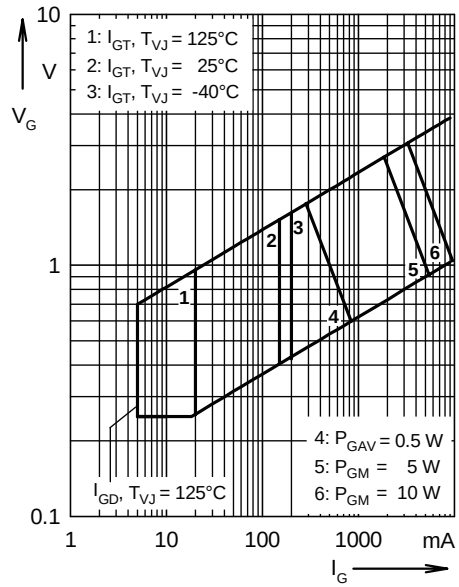

Fig. 1 Gate trigger characteristics

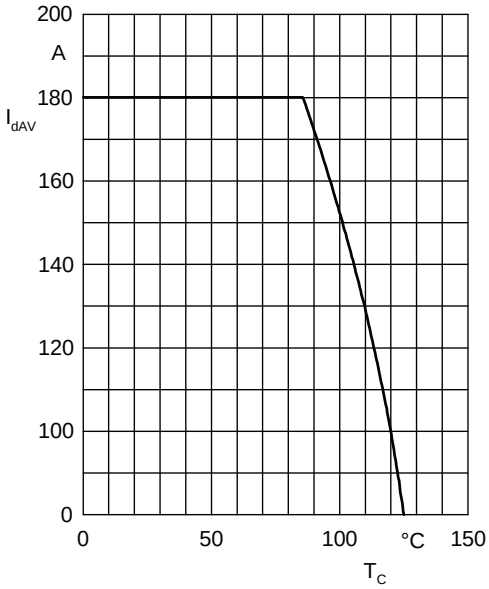

Fig. 2 DC output current at case temperature

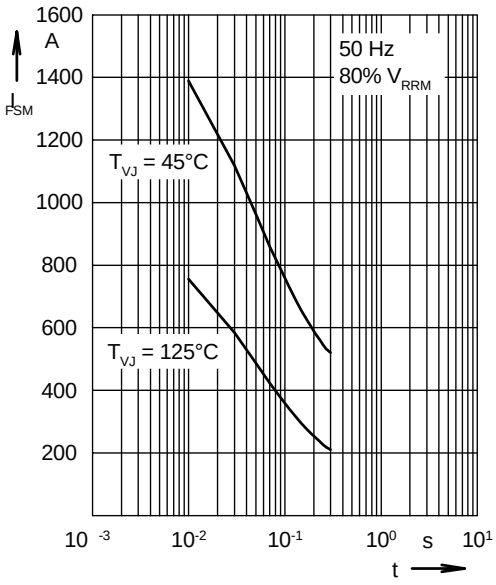

Fig. 3 Surge overload current
I_{FSM}: Crest value, t: duration

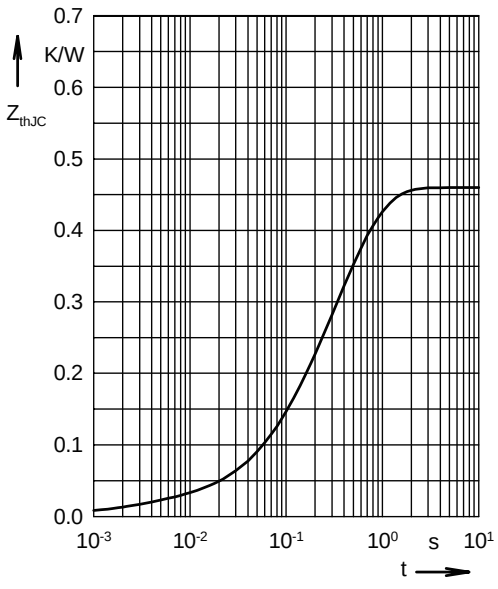

Fig. 4 Transient thermal impedance junction to case (per leg)

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