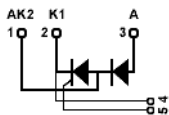
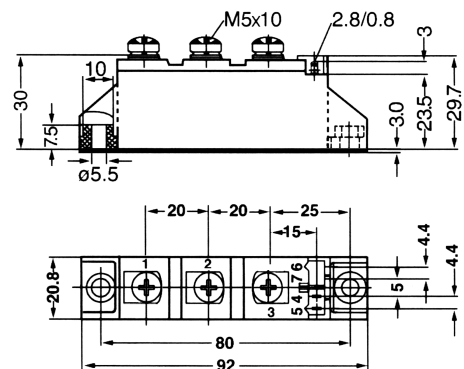


Thyristor-Diode Modules, Diode-Thyristor Modules



Dimensions in mm (1mm=0.0394")



Symbol	Test Conditions	Maximum Ratings	Unit
I_{TRMS} , I_{FRMS} I_{TAVM} , I_{FAVM}	$T_{VJ}=T_{VJM}$ $T_C=85^{\circ}\text{C}$; 180° sine	40 18	A
I_{TSM} , I_{FSM}	$T_{VJ}=45^{\circ}\text{C}$ $V_R=0$	$t=10\text{ms}$ (50Hz), sine $t=8.3\text{ms}$ (60Hz), sine	400 420
	$T_{VJ}=T_{VJM}$ $V_R=0$	$t=10\text{ms}$ (50Hz), sine $t=8.3\text{ms}$ (60Hz), sine	350 370
	$T_{VJ}=45^{\circ}\text{C}$ $V_R=0$	$t=10\text{ms}$ (50Hz), sine $t=8.3\text{ms}$ (60Hz), sine	800 730
	$T_{VJ}=T_{VJM}$ $V_R=0$	$t=10\text{ms}$ (50Hz), sine $t=8.3\text{ms}$ (60Hz), sine	600 570
$\int i^2 dt$	$T_{VJ}=45^{\circ}\text{C}$ $V_R=0$	$t=10\text{ms}$ (50Hz), sine $t=8.3\text{ms}$ (60Hz), sine	A^2s
	$T_{VJ}=T_{VJM}$ $V_R=0$	$t=10\text{ms}$ (50Hz), sine $t=8.3\text{ms}$ (60Hz), sine	
$(di/dt)_{cr}$	$T_{VJ}=T_{VJM}$ $f=50\text{Hz}$, $t_p=200\mu\text{s}$ $V_D=2/3V_{DRM}$ $I_G=0.45\text{A}$ $di_G/dt=0.45\text{A}/\mu\text{s}$	repetitive, $I_T=45\text{A}$ non repetitive, $I_T=I_{TAVM}$	150 500
$(dv/dt)_{cr}$	$T_{VJ}=T_{VJM}$; $V_{DR}=2/3V_{DRM}$ $R_{GK}=\infty$; method 1 (linear voltage rise)		1000
P_{GM}	$T_{VJ}=T_{VJM}$ $I_T=I_{TAVM}$	$t_p=30\mu\text{s}$ $t_p=300\mu\text{s}$	10 5
P_{GAV}			0.5
V_{RGM}			10
T_{VJ} T_{VJM} T_{stg}		-40...+125 125 -40...+125	$^{\circ}\text{C}$
V_{ISOL}	50/60Hz, RMS $I_{ISOL}\leq 1\text{mA}$	$t=1\text{min}$ $t=1\text{s}$	3000 3600
M_d	Mounting torque (M5)		2.5-4.0/22-35
	Terminal connection torque (M5)		2.5-4.0/22-35
Weight	Typical including screws		90

STD/SDT18

Thyristor-Diode Modules, Diode-Thyristor Modules

Symbol	Test Conditions	Characteristic Values	Unit
I_{RRM}, I_{DRM}	$T_{VJ}=T_{VJM}; V_R=V_{RRM}; V_D=V_{DRM}$	3	mA
V_T, V_F	$I_T, I_F=80A; T_{VJ}=25^{\circ}C$	2.05	V
V_{TO}	For power-loss calculations only ($T_{VJ}=125^{\circ}C$)	0.85	V
r_T		18	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}		10	mA
I_L	$T_{VJ}=25^{\circ}C; t_p=10\mu s; V_D=6V$ $I_G=0.45A; di_G/dt=0.45A/\mu s$	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	$T_{VJ}=T_{VJM}; I_T=20A; t_p=200\mu s; -di/dt=10A/\mu s$ $V_R=100V; dv/dt=20V/\mu s; V_D=2/3V_{DRM}$	typ. 150	μs
Q_S	$T_{VJ}=T_{VJM}; I_T, I_F=25A; -di/dt=0.64A/\mu s$	50	μC
I_{RM}		6	A
R_{thJC}	per thyristor/diode; DC current per module	1.3 0.65	K/W
R_{thJK}	per thyristor/diode; DC current per module	1.5 0.75	K/W
d_s	Creeping distance on surface	12.7	mm
d_A	Strike distance through air	9.6	mm
a	Maximum allowable acceleration	50	m/s ²

FEATURES

- * International standard package
- * Copper base plate
- * Planar passivated chips
- * Isolation voltage 3600 V~

APPLICATIONS

- * DC motor control
- * Softstart AC motor controller
- * Light, heat and temperature control

ADVANTAGES

- * Space and weight savings
- * Simple mounting with two screws
- * Improved temperature and power cycling
- * Reduced protection circuits

STD/SDT18

Thyristor-Diode Modules, Diode-Thyristor Modules

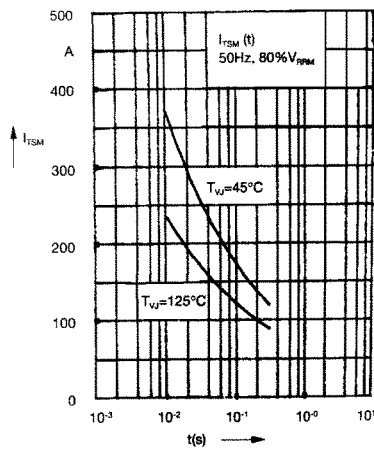


Fig. 1 Surge overload current
 I_{TSM} : Crest value, t : duration

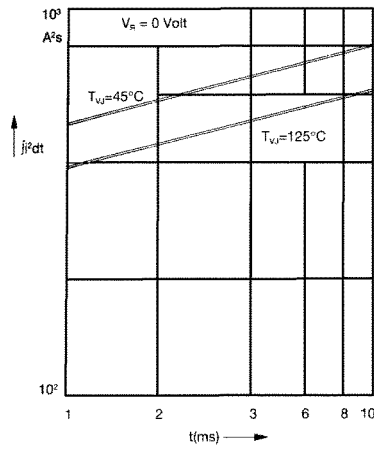


Fig. 2 $\int i^2 dt$ versus time (1-10 ms)

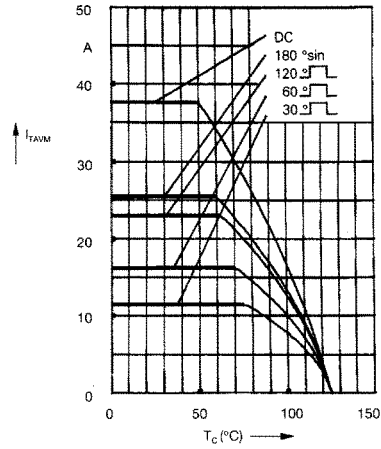


Fig. 2a Maximum forward current
at case temperature

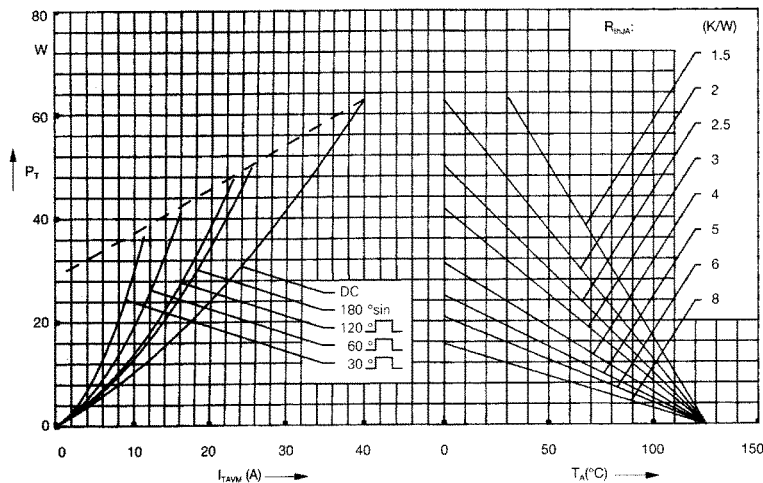


Fig. 3 Power dissipation versus on-state current and ambient temperature
(per thyristor)

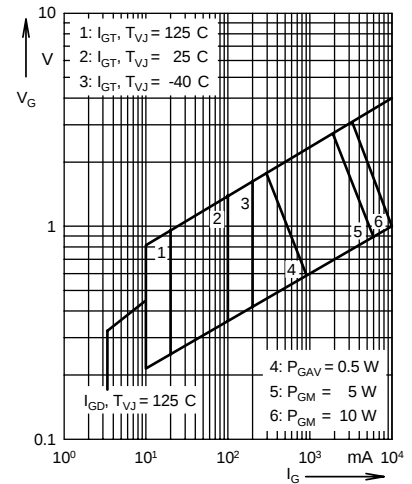


Fig. 4 Gate trigger characteristics

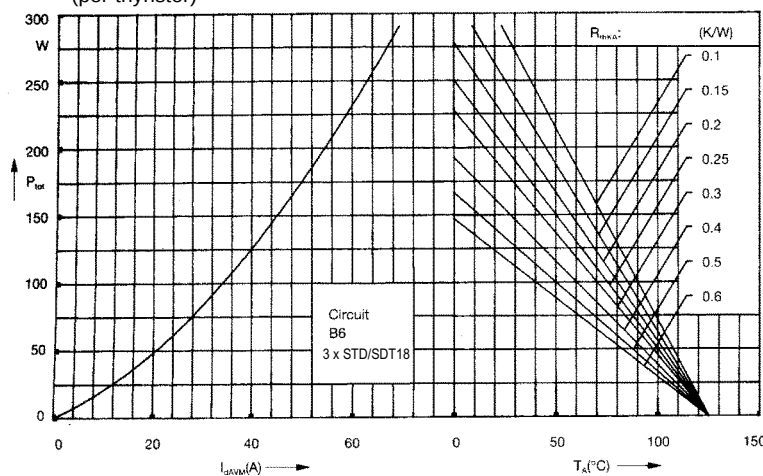


Fig. 5 Three phase rectifier bridge: Power dissipation versus direct output current and ambient temperature

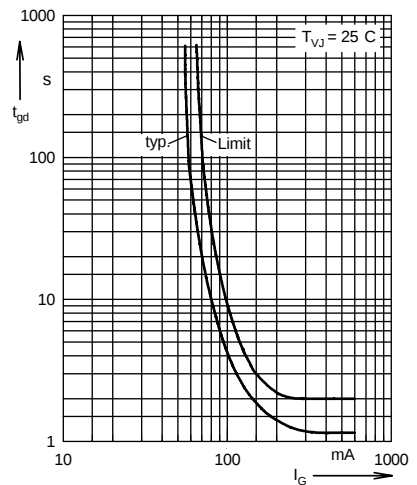


Fig. 6 Gate trigger delay time

STD/SDT18

Thyristor-Diode Modules, Diode-Thyristor Modules

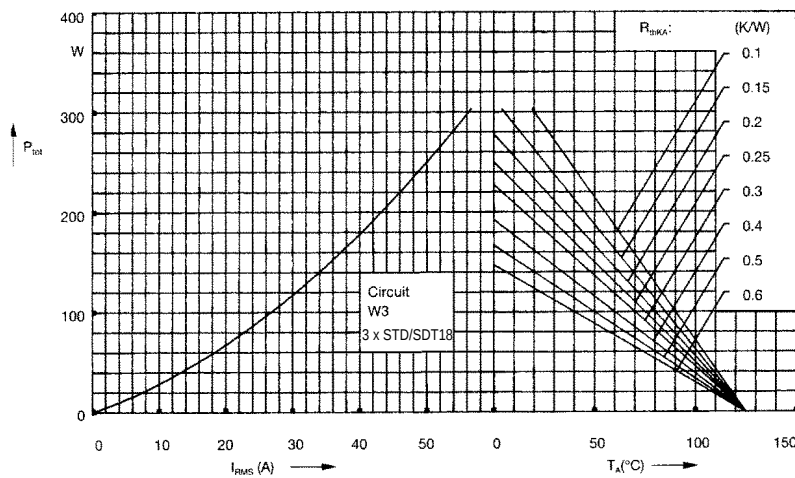


Fig. 7 Three phase AC-controller:
Power dissipation versus RMS
output current and ambient
temperature

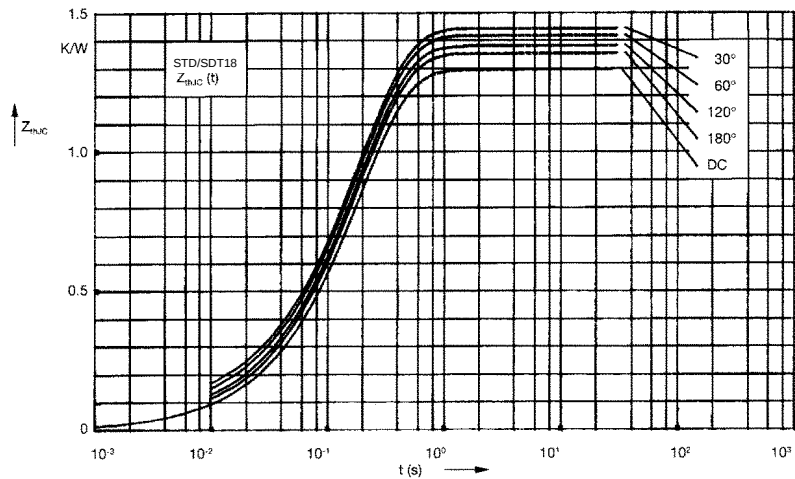


Fig. 8 Transient thermal impedance
junction to case (per thyristor)

R_{thJC} for various conduction angles d:

d	R_{thJC} (K/W)
DC	1.3
180°	1.35
120°	1.39
60°	1.42
30°	1.45

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.018	0.0033
2	0.041	0.0216
3	1.241	0.191

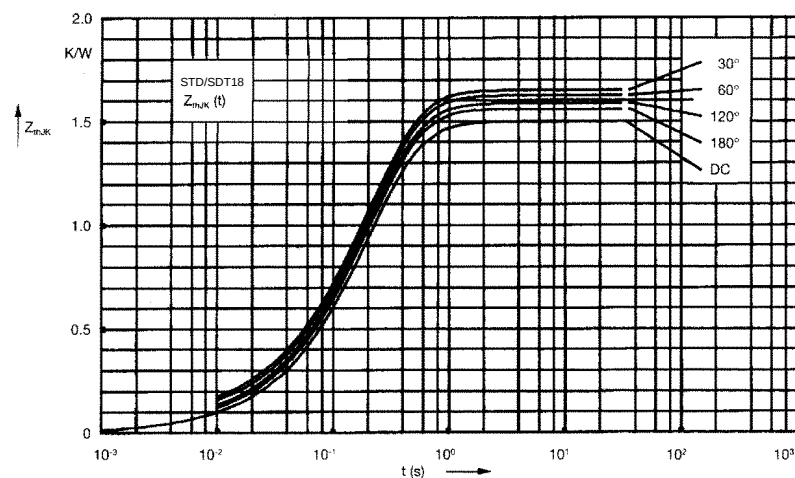


Fig. 9 Transient thermal impedance
junction to heatsink (per thyristor)

R_{thJK} for various conduction angles d:

d	R_{thJK} (K/W)
DC	1.5
180°	1.55
120°	1.59
60°	1.62
30°	1.65

Constants for Z_{thJK} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.018	0.0033
2	0.041	0.0216
3	1.241	0.191
4	0.2	0.46