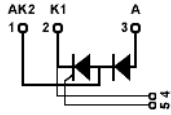
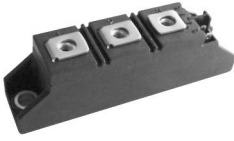


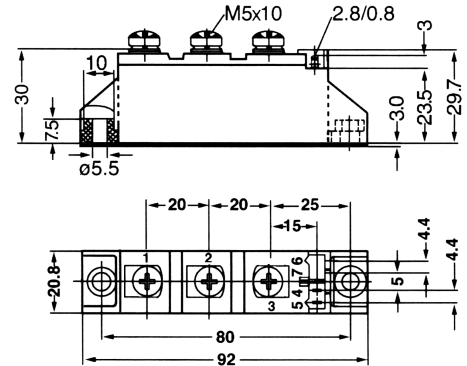
STD/SDT49

Thyristor-Diode Modules, Diode-Thyristor Modules



Type	V_{RSM}	V_{RRM}
	V_{DSM}	V_{DRM}
	V	V
STD/SDT49GK08	900	800
STD/SDT49GK12	1300	1200
STD/SDT49GK14	1500	1400
STD/SDT49GK16	1700	1600
STD/SDT49GK18	1900	1800

Dimensions in mm (1mm=0.0394")



Symbol	Test Conditions		Maximum Ratings	Unit
I_{TRMS} , I_{FRMS} I_{TAVM} , I_{FAVM}	$T_{VJ}=T_{VJM}$ $T_C=85^{\circ}C$; 180° sine		80 49	A
I_{TSM} , I_{FSM}	$T_{VJ}=45^{\circ}C$ $V_R=0$	$t=10ms$ (50Hz), sine $t=8.3ms$ (60Hz), sine	1150 1230	A
	$T_{VJ}=T_{VJM}$ $V_R=0$	$t=10ms$ (50Hz), sine $t=8.3ms$ (60Hz), sine	1000 1070	
$\int i^2 dt$	$T_{VJ}=45^{\circ}C$ $V_R=0$	$t=10ms$ (50Hz), sine $t=8.3ms$ (60Hz), sine	6600 6280	A ² s
	$T_{VJ}=T_{VJM}$ $V_R=0$	$t=10ms$ (50Hz), sine $t=8.3ms$ (60Hz), sine	5000 4750	
$(di/dt)_{cr}$	$T_{VJ}=T_{VJM}$ $f=50Hz$, $t_p=200\mu s$ $V_D=2/3V_{DRM}$ $I_G=0.45A$ $di_G/dt=0.45A/\mu s$	repetitive, $I_T=150A$	150	A/ μs
		non repetitive, $I_T=I_{TAVM}$	500	
$(dv/dt)_{cr}$	$T_{VJ}=T_{VJM}$; $R_{GK}=\infty$; method 1 (linear voltage rise)	$V_{DR}=2/3V_{DRM}$	1000	V/ μs
P_{GM}	$T_{VJ}=T_{VJM}$ $I_T=I_{TAVM}$	$t_p=30\mu s$ $t_p=300\mu s$	10 5	W
P_{GAV}			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 $I_{ISOL}\leq 1mA$	$t=1min$ $t=1s$	3000 3600	V~
M_d	Mounting torque (M5) Terminal connection torque (M5)		2.5-4.0/22-35 2.5-4.0/22-35	Nm/lb.in.
Weight	Typical including screws		90	g

STD/SDT49

Thyristor-Diode Modules, Diode-Thyristor Modules

Symbol	Test Conditions	Characteristic Values	Unit
I_{RRM}, I_{DRM}	$T_{VJ}=T_{VJM}; V_R=V_{RRM}; V_D=V_{DRM}$	5	mA
V_T, V_F	$I_T, I_F=200A; T_{VJ}=25^{\circ}C$	1.75	V
V_{TO}	For power-loss calculations only ($T_{VJ}=125^{\circ}C$)	0.85	V
r_T		5.3	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	$T_{VJ}=T_{VJM}; I_T=120A; t_p=200\mu s; -di/dt=10A/\mu s$ $V_R=100V; dv/dt=20V/\mu s; V_D=2/3V_{DRM}$	typ. 150	μs
Q_S	$T_{VJ}=T_{VJM}; I_T, I_F=50A; -di/dt=0.64A/\mu s$	90	μC
I_{RM}		11	A
R_{thJC}	per thyristor/diode; DC current per module	0.53 0.265	K/W
R_{thJK}	per thyristor/diode; DC current per module	0.73 0.365	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/SDT49

Thyristor-Diode Modules, Diode-Thyristor Modules

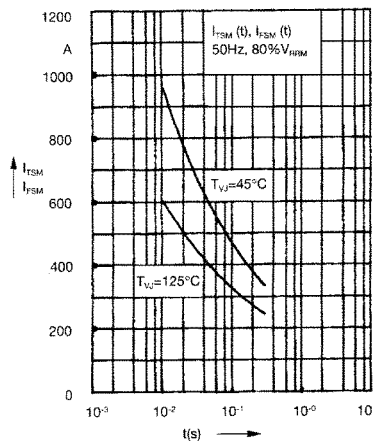


Fig. 1 Surge overload current
 I_{TSM} , I_{FSM} : Crest value, t : duration

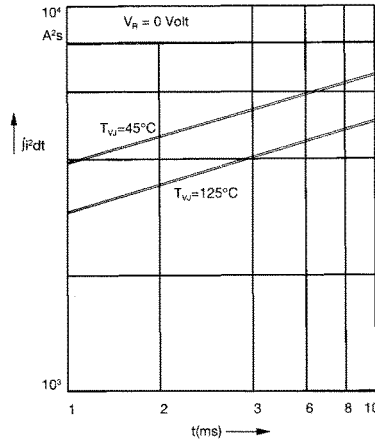


Fig. 2 $\int i^2 dt$ versus time (1-10 ms)

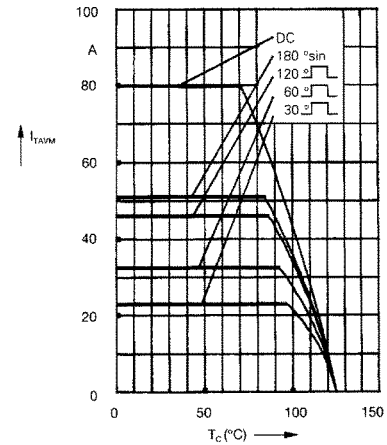


Fig. 2a Maximum forward current
at case temperature

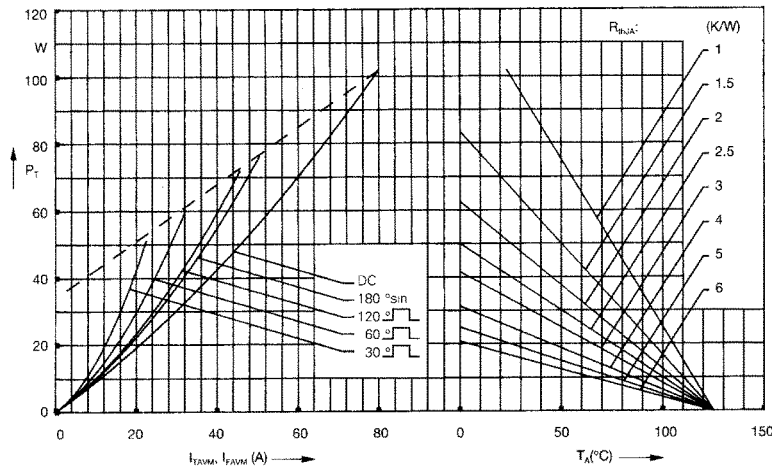


Fig. 3 Power dissipation versus on-state current and ambient temperature
(per thyristor or diode)

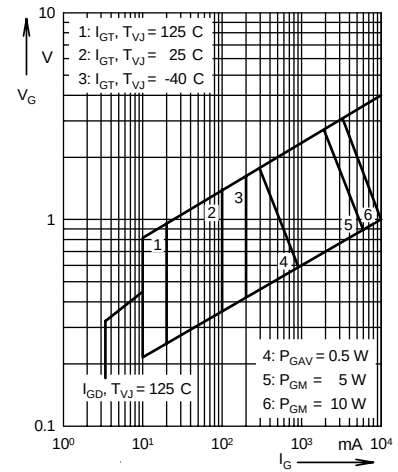


Fig. 4 Gate trigger characteristics

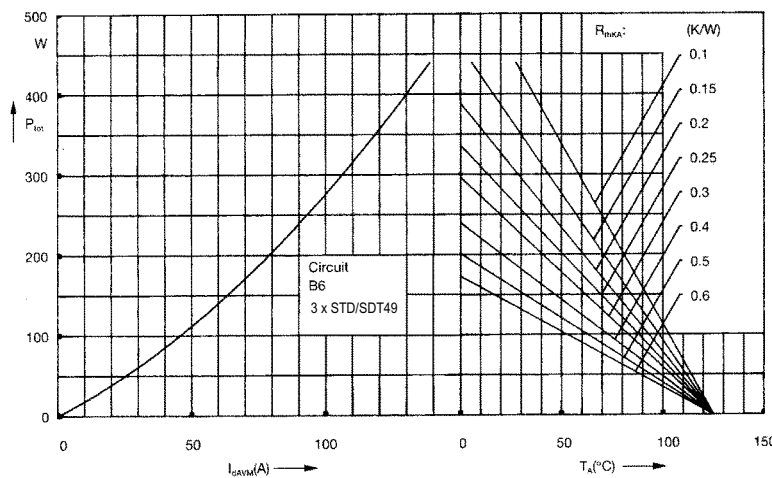


Fig. 5 Three phase rectifier bridge: Power dissipation versus direct output current
and ambient temperature

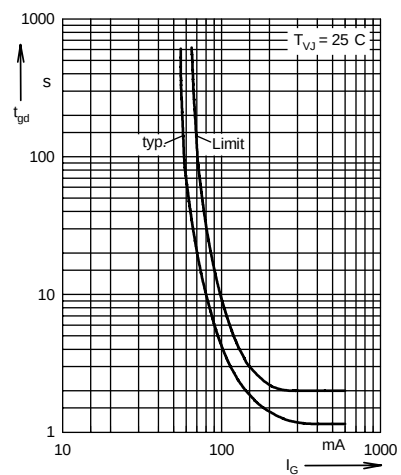


Fig. 6 Gate trigger delay time

STD/SDT49

Thyristor-Diode Modules, Diode-Thyristor Modules

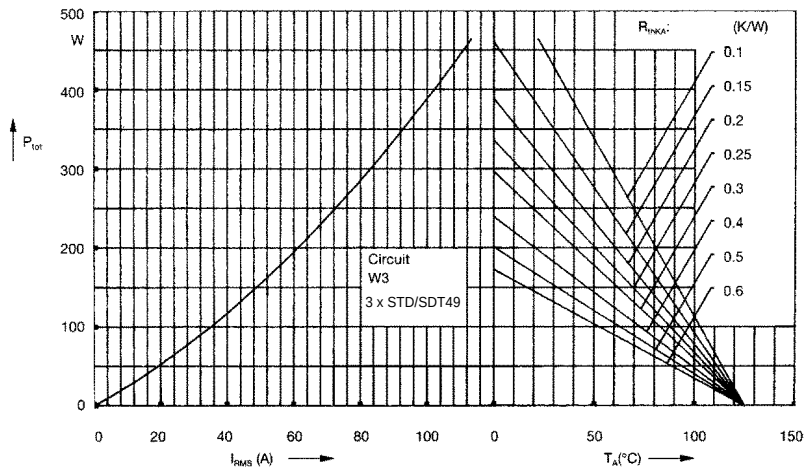


Fig. 7 Three phase AC-controller: Power dissipation versus RMS output current and ambient temperature

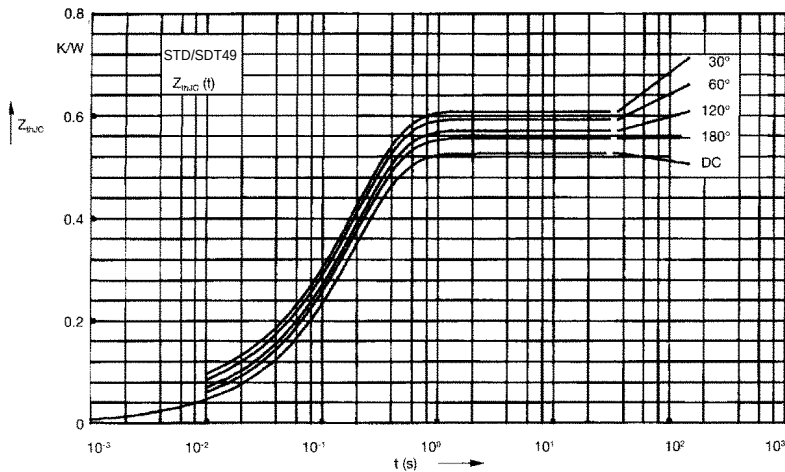


Fig. 8 Transient thermal impedance junction to case (per thyristor or diode)

$R_{\theta JC}$ for various conduction angles d :

d	$R_{\theta JC}$ (K/W)
DC	0.53
180°	0.55
120°	0.58
60°	0.6
30°	0.62

Constants for $Z_{\theta JC}$ calculation:

i	$R_{\theta i}$ (K/W)	t_i (s)
1	0.015	0.0035
2	0.026	0.02
3	0.489	0.195

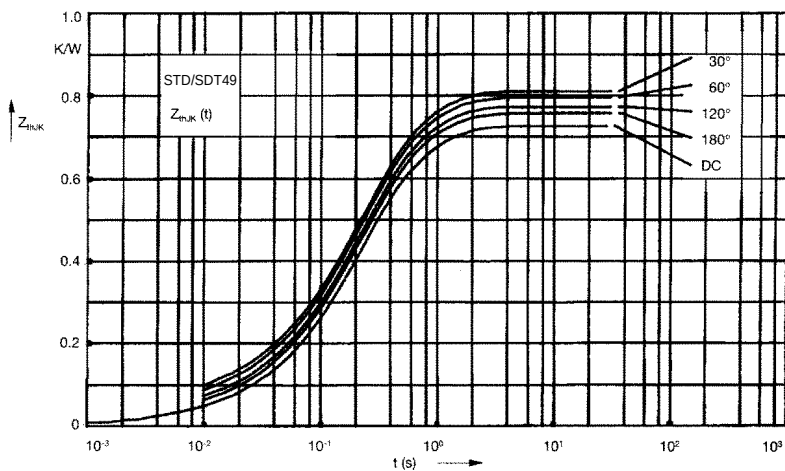


Fig. 9 Transient thermal impedance junction to heatsink (per thyristor or diode)

$R_{\theta JK}$ for various conduction angles d :

d	$R_{\theta JK}$ (K/W)
DC	0.73
180°	0.75
120°	0.78
60°	0.8
30°	0.82

Constants for $Z_{\theta JK}$ calculation:

i	$R_{\theta i}$ (K/W)	t_i (s)
1	0.015	0.0035
2	0.026	0.02
3	0.489	0.195
4	0.2	0.68