

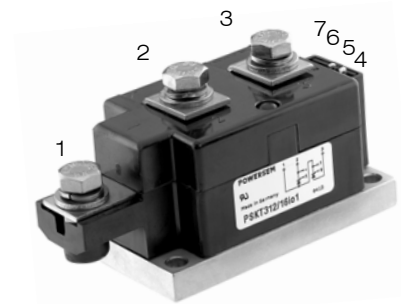
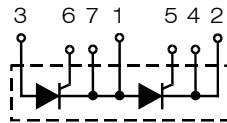
Thyristor Modules Thyristor/Diode Modules

PSKT 170

$I_{TRMS} = 2x\ 350\ A$
 $I_{TAVM} = 2x\ 203\ A$
 $V_{RRM} = 1200-1800\ V$

Preliminary Data Sheet

V_{RSM}	V_{RRM}	Type
V_{DSM}	V_{DRM}	Version 1
V	V	
1300	1200	PSKT 170/12io1
1500	1400	PSKT 170/14io1
1700	1600	PSKT 170/16io1
1900	1800	PSKT 170/18io1



Symbol	Test Conditions	Maximum Ratings
I_{TRMS} I_{TAVM}	$T_{VJ} = T_{VJM}$ $T_C = 85^\circ C$; 180° sine	350 A 203 A
I_{TSM} , I_{FSM}	$T_{VJ} = 45^\circ C$; $V_R = 0$	$t = 10\ ms\ (50\ Hz)$ 5400 A $t = 8.3\ ms\ (60\ Hz)$ 5800 A
	$T_{VJ} = T_{VJM}$ $V_R = 0$	$t = 10\ ms\ (50\ Hz)$ 5000 A $t = 8.3\ ms\ (60\ Hz)$ 5500 A
$\int i^2 dt$	$T_{VJ} = 45^\circ C$ $V_R = 0$	$t = 10\ ms\ (50\ Hz)$ 146 000 A ² s $t = 8.3\ ms\ (60\ Hz)$ 140 000 A ² s
	$T_{VJ} = T_{VJM}$ $V_R = 0$	$t = 10\ ms\ (50\ Hz)$ 125 000 A ² s $t = 8.3\ ms\ (60\ Hz)$ 126 000 A ² s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$ $f = 50\ Hz$, $t_p = 200\ \mu s$ $V_D = 2/3 V_{DRM}$ $I_G = 1\ A$, $di_G/dt = 1\ A/\mu s$	repetitive, $I_T = 660\ A$ 100 A/ μs non repetitive, $I_T = I_{TAVM}$ 500 A/ μs
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}$; $V_{DR} = 2/3 V_{DRM}$ $R_{GK} = \infty$; method 1 (linear voltage rise)	1000 V/ μs
P_{GM}	$T_{VJ} = T_{VJM}$ $I_T = I_{TAVM}$	$t_p = 30\ \mu s$ 120 W $t_p = 500\ \mu s$ 60 W
P_{GAV} V_{RGM}		20 W 10 V
T_{VJ}		-40...+130 °C
T_{VJM}		130 °C
T_{stg}		-40...+125 °C
V_{ISOL}	50/60 Hz, RMS $I_{ISOL} \leq 1\ mA$	$t = 1\ min$ 3000 V~ $t = 1\ s$ 3600 V~
M_d	Mounting torque (M6) Terminal connection torque (M8)	4.5-7/40-62 Nm/lb.in. 11-13/97-115 Nm/lb.in.
Weight	Typical including screws	750 g

Features

- International standard package
- Direct copper bonded Al₂O₃-ceramic base plate
- Planar passivated chips
- Isolation voltage 3600 V~
- UL registered, E 148688
- Keyed gate/cathode twin pins

Applications

- Motor control
- Power converter
- Heat and temperature control for industrial furnaces and chemical processes
- Lighting control
- Contactless switches

Advantages

- Space and weight savings
- Simple mounting
- Improved temperature and power cycling capability
- Reduced protection circuits

Data according to IEC 60747 and refer to a single thyristor/diode unless otherwise stated.

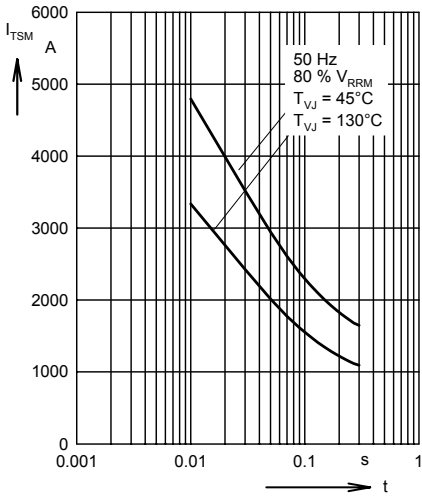


Fig. 3 Surge overload current
 I_{TSM} , I_{FSM} : Crest value, t : duration

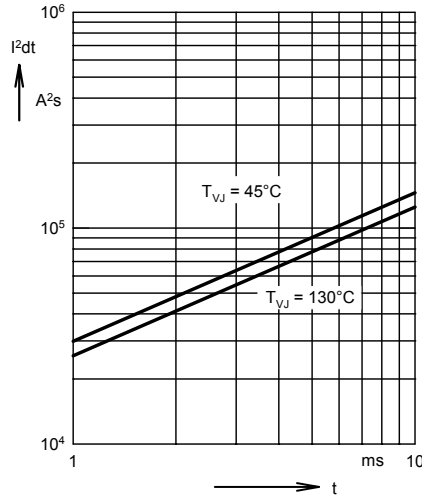


Fig. 4 $\int i^2 dt$ versus time (1-10 ms)

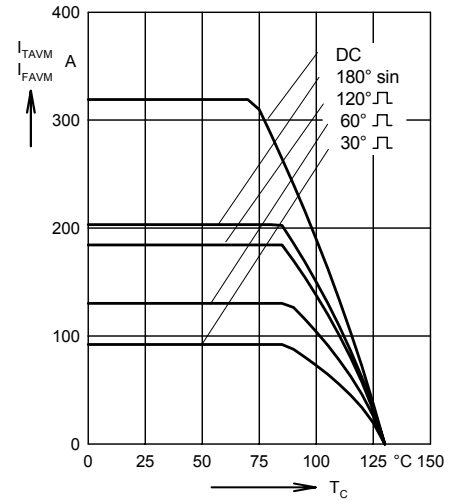


Fig. 4a Maximum forward current at case temperature

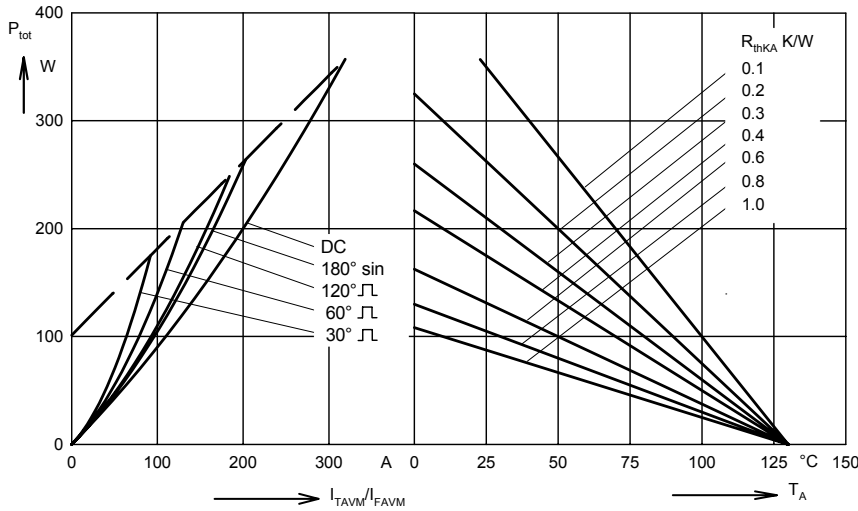


Fig. 5 Power dissipation versus on-state current and ambient temperature (per thyristor or diode)

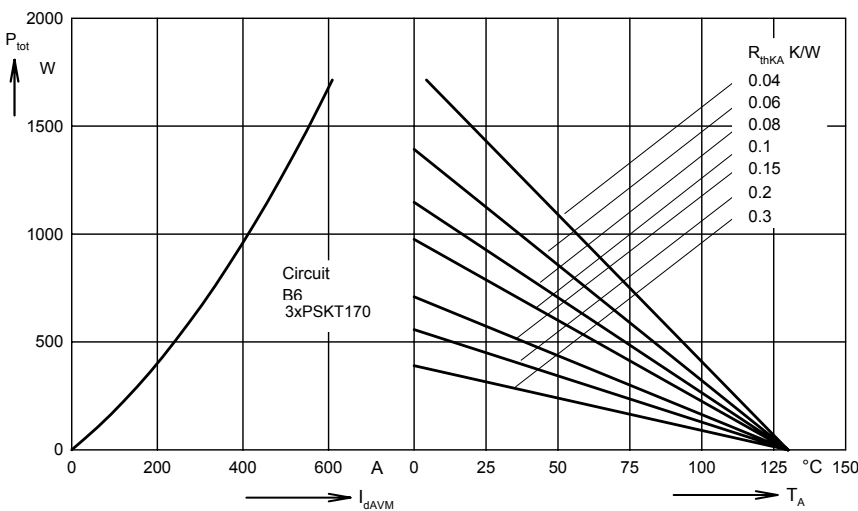


Fig. 6 Three phase rectifier bridge: Power dissipation versus direct output current and ambient temperature

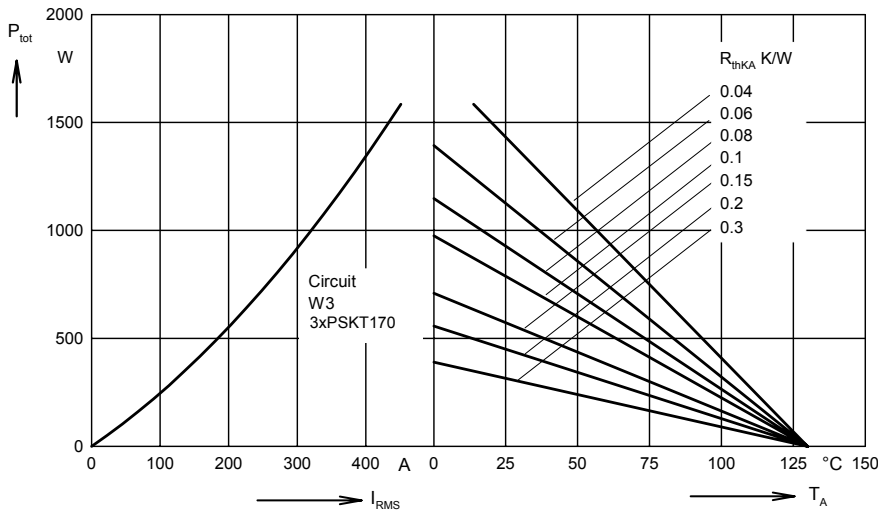


Fig. 7 Three phase AC-controller:
Power dissipation versus RMS
output current and ambient
temperature

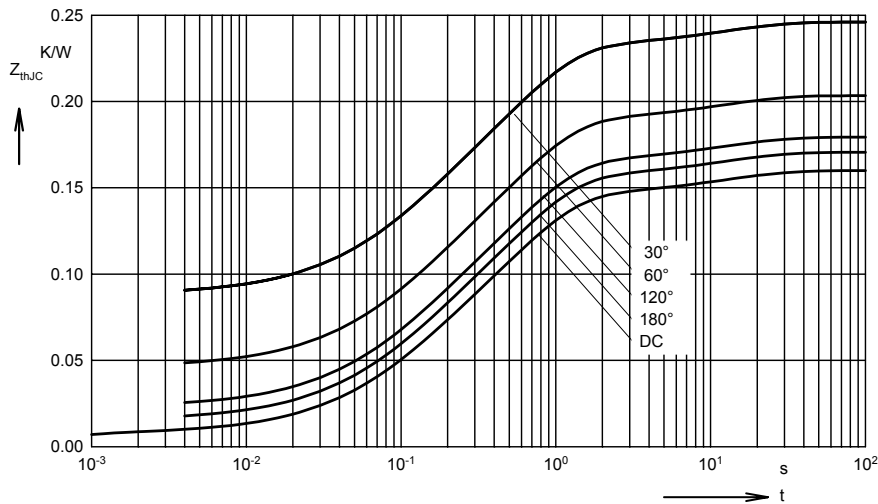


Fig. 8 Transient thermal impedance
junction to case (per thyristor or
diode)

R_{thJC} for various conduction angles d :

d	R_{thJC} (K/W)
DC	0.160
180°	0.171
120°	0.180
60°	0.203
30°	0.247

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.0077	0.00054
2	0.0413	0.098
3	0.096	0.54
4	0.0149	12

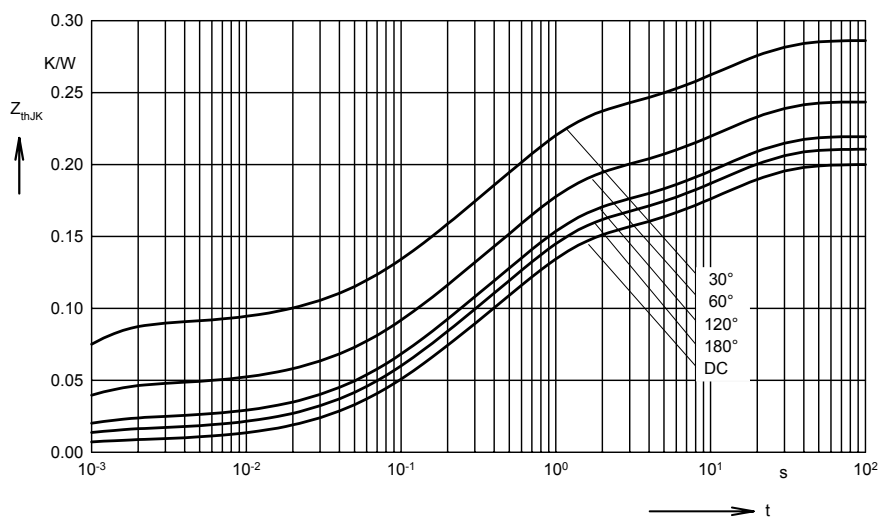


Fig. 9 Transient thermal impedance
junction to heatsink (per thyristor
or diode)

R_{thJK} for various conduction angles d :

d	R_{thJK} (K/W)
DC	0.200
180°	0.211
120°	0.220
60°	0.243
30°	0.287

Constants for Z_{thJK} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.0077	0.00054
2	0.0413	0.098
3	0.096	0.54
4	0.0149	12
5	0.04	12