

Thyristor Modules Thyristor/Diode Modules

PSKT 220
PSKH 220

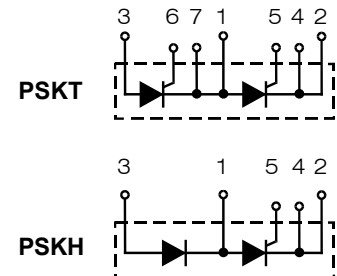
$I_{TRMS} = 2 \times 400 \text{ A}$
 $I_{TAVM} = 2 \times 250 \text{ A}$
 $V_{RRM} = 800-1600 \text{ V}$

Preliminary Data Sheet

V_{RSM}	V_{RRM}	Type	
V_{DSM}	V_{DRM}		
V	V	Version 1	Version 1
900	800	PSKT 220/08io1	PSKH 220/08io1
1300	1200	PSKT 220/12io1	PSKH 220/12io1
1500	1400	PSKT 220/14io1	PSKH 220/14io1
1700	1600	PSKT 220/16io1	PSKH 220/16io1



Symbol	Test Conditions	Maximum Ratings	
I_{TRMS}^1 I_{FRMS}	$T_{VJ} = T_{VJM}$ $T_C = 85^\circ\text{C}$; 180° sine	400	A
I_{TAVM}^1 I_{FAVM}		250	A
I_{TSM}^1 I_{FSM}	$T_{VJ} = 45^\circ\text{C}$; $V_R = 0$	$t = 10 \text{ ms}$ (50 Hz), sine	8500 A
		$t = 8.3 \text{ ms}$ (60 Hz), sine	9000 A
	$T_{VJ} = T_{VJM}$	$t = 10 \text{ ms}$ (50 Hz), sine	7000 A
	$V_R = 0$	$t = 8.3 \text{ ms}$ (60 Hz), sine	7600 A
$\int i^2 dt$	$T_{VJ} = 45^\circ\text{C}$	$t = 10 \text{ ms}$ (50 Hz), sine	360 000 A ² s
	$V_R = 0$	$t = 8.3 \text{ ms}$ (60 Hz), sine	336 000 A ² s
	$T_{VJ} = T_{VJM}$	$t = 10 \text{ ms}$ (50 Hz), sine	245 000 A ² s
	$V_R = 0$	$t = 8.3 \text{ ms}$ (60 Hz), sine	240 000 A ² s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$ $f = 50 \text{ Hz}$, $t_p = 200 \mu\text{s}$ $V_D = 2/3 V_{DRM}$ $I_G = 1 \text{ A}$ $di_G/dt = 1 \text{ A}/\mu\text{s}$	repetitive, $I_T = 750 \text{ A}$	100 A/ μs
		non repetitive, $I_T = 250 \text{ A}$	800 A/ μs
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}$; $R_{GK} = \infty$; method 1 (linear voltage rise)	$V_{DR} = 2/3 V_{DRM}$	1000 V/ μs
P_{GM}	$T_{VJ} = T_{VJM}$	$t_p = 30 \mu\text{s}$	120 W
	$I_T = I_{TAVM}$	$t_p = 500 \mu\text{s}$	60 W
P_{GAV}			20 W
V_{RGM}			10 V
T_{VJ}		-40...+140	°C
T_{VJM}		140	°C
T_{stg}		-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	$t = 1 \text{ min}$	3000 V~
	$I_{ISOL} \leq 1 \text{ mA}$	$t = 1 \text{ s}$	3600 V~
M_d	Mounting torque (M5)	2.5-5/22-44	Nm/lb.in.
	Terminal connection torque (M8)	12-15/106-132	Nm/lb.in.
Weight	Typical including screws	320	g



Features

- International standard package
- Direct copper bonded Al_2O_3 -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 with two screws
- Improved temperature and power cycling capability
- Reduced protection circuits

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

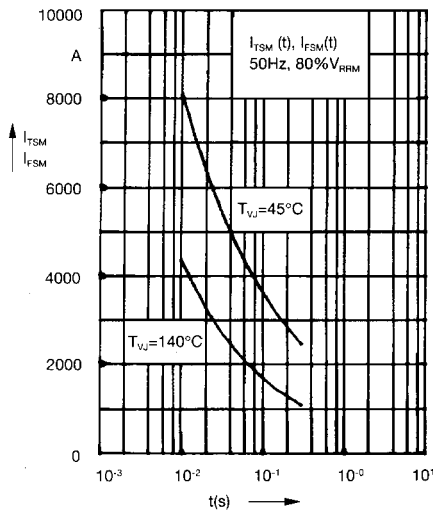


Fig. 3 Surge overload current
 I_{TSM}, I_{FSM} : Crest value, t : duration

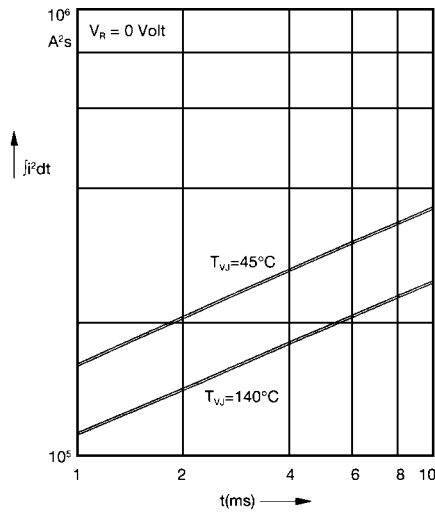


Fig. 4 $\int j^2 dt$ versus time (1-10 ms)

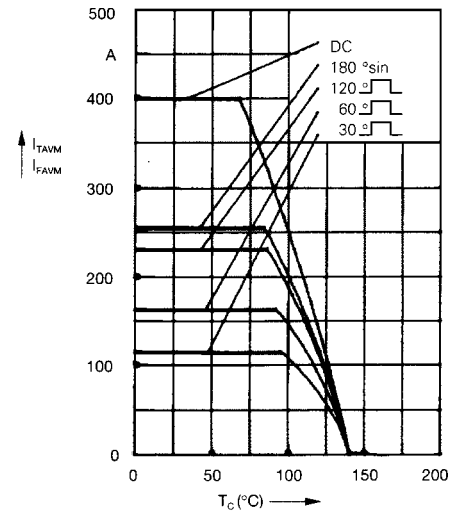


Fig. 4a Maximum forward current at case temperature

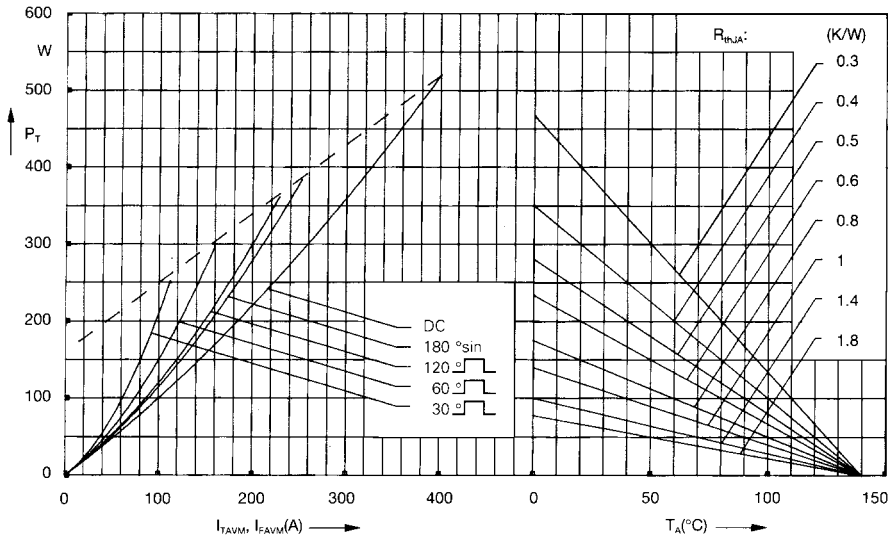


Fig. 5 Power dissipation versus on-state current and ambient temperature (per thyristor or diode)

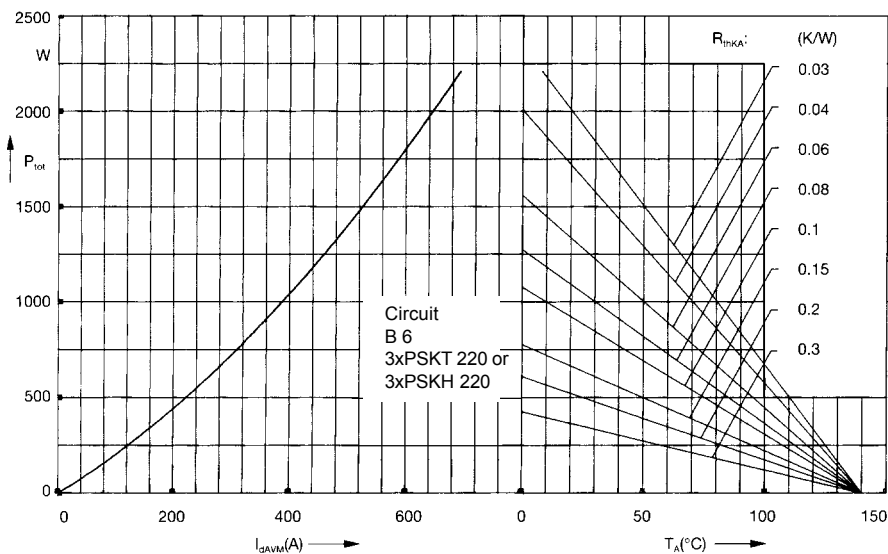


Fig. 6 Three phase rectifier bridge: Power dissipation versus direct output current and ambient temperature

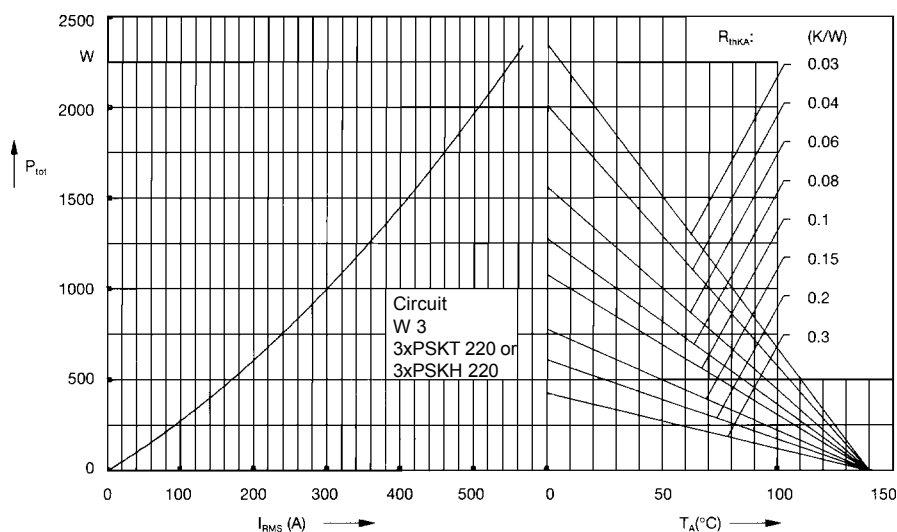


Fig. 7 Three phase AC-controller:
Power dissipation versus RMS
output current and ambient
temperature

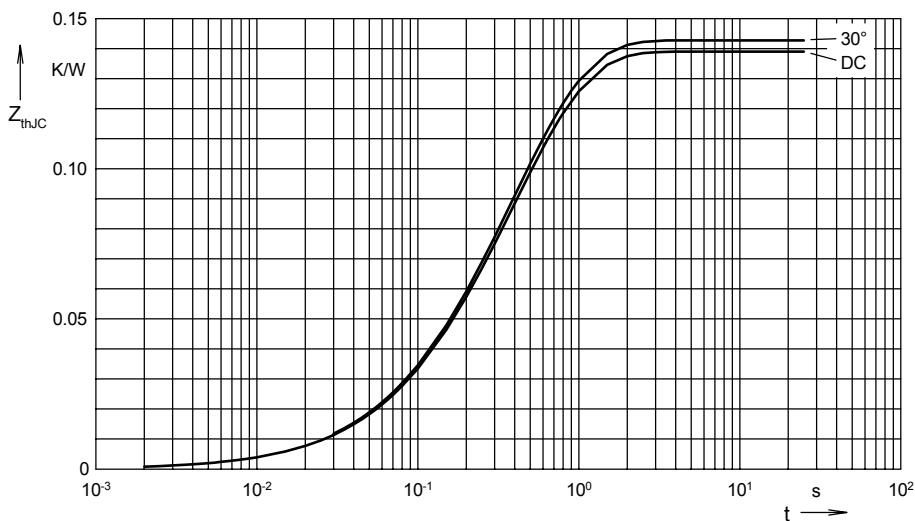


Fig. 8 Transient thermal impedance
junction to case (per thyristor or
diode)

R_{thJC} for various conduction angles d :

d	R_{thJC} (K/W)
DC	0.139
180°C	0.141
120°C	0.142
60°C	0.142
30°C	0.143

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.0037	0.0099
2	0.0177	0.168
3	0.1175	0.456

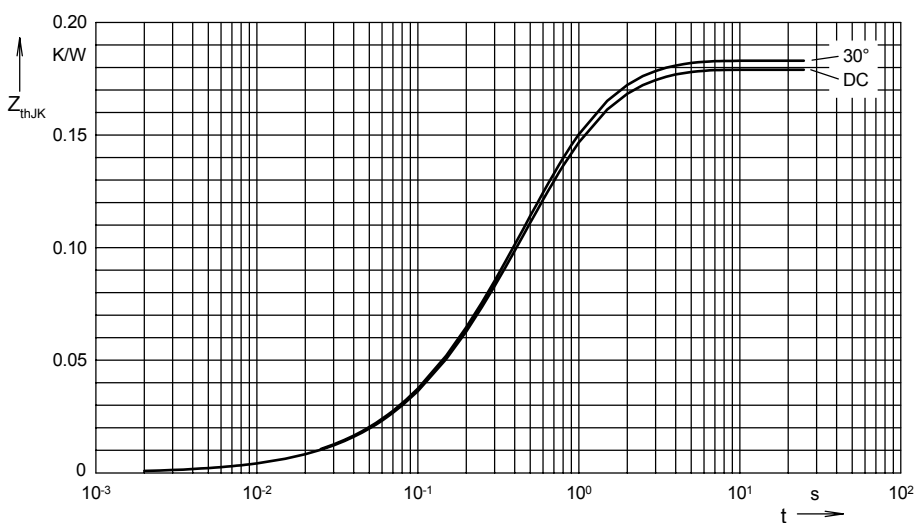


Fig. 9 Transient thermal impedance
junction to heatsink (per thyristor
or diode)

R_{thJK} for various conduction angles d :

d	R_{thJK} (K/W)
DC	0.179
180°C	0.181
120°C	0.182
60°C	0.183
30°C	0.183

Constants for Z_{thJK} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.0037	0.0099
2	0.0177	0.168
3	0.1175	0.456
4	0.04	1.36