

PSKT94 /PSKH 94

$$I_{TRMS} = 2x 180 A$$

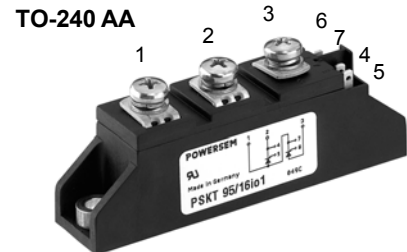
$$I_{TAVM} = 2x 104 A$$

$$V_{RRM} = 2000-2200 V$$

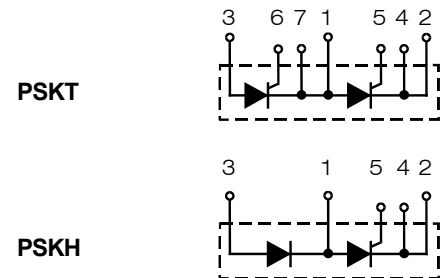
High Voltage Thyristor Module High Voltage Thyristor/Diode Modules

Preliminary Data Sheet

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type
2100	2000	PSKT 94/20io1 PSKH 94/20io1
2300	2200	PSKT 94/22io1 PSKH 94/22io1



Symbol	Test Conditions	Maximum Ratings	
I_{TRMS}	$T_{VJ} = T_{VJM}$	180	A
I_{TAVM}	$T_C = 85^{\circ}C$; 180° sine	104	A
I_{TSM}	$T_{VJ} = 45^{\circ}C$; $V_R = 0$	t = 10 ms (50 Hz) t = 8.3 ms (60 Hz)	1700 A 1800 A
	$T_{VJ} = T_{VJM}$ $V_R = 0$	t = 10 ms (50 Hz) t = 8.3 ms (60 Hz)	1540 A 1640 A
$\int i^2 dt$	$T_{VJ} = 45^{\circ}C$ $V_R = 0$	t = 10 ms (50 Hz) t = 8.3 ms (60 Hz)	14450 A ² s 13500 A ² s
	$T_{VJ} = T_{VJM}$ $V_R = 0$	t = 10 ms (50 Hz) t = 8.3 ms (60 Hz)	11850 A ² s 11300 A ² s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$ repetitive, f = 50 Hz, t _p = 200 μs	$I_T = 250 A$	150 A/μs
	$V_D = 2/3 V_{DRM}$ $I_G = 0.45 A$, non repetitive, di _G /dt = 0.45 A/μs	$I_T = I_{TAVM}$	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 μs t _p = 300 μs	10 W 5 W
P_{GAV}			0.5 W
V_{RGM}			10 V
T_{VJ}			-40...125 °C
T_{VJM}			125 °C
T_{stg}			-40...125 °C
V_{ISOL}	50/60 Hz, RMS t = 1 min		3000 V~
	$I_{ISOL} \leq 1 mA$ t = 1 s		3600 V~
M_d	Mounting torque (M5)		2.5-4.0/22-35 Nm/lb.in.
	Terminal connection torque (M5)		2.5-4.0/22-35 Nm/lb.in.
Weight	Typical including screws		90 g



Features

- International standard package, JEDEC TO-240 AA
- Direct Copper Bonded Al₂O₃ -ceramic base plate
- Planar passivated chips
- Isolation voltage 3600 V~
- UL registered, E 148688
- Gate-cathode twin pins for version 1

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 capability
- Reduced protection circuits

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

Symbol	Test Conditions	Characteristic Values
I_{RRM}, I_{DRM}	$T_{VJ} = T_{VJM}; V_R = V_{RRM}$	15 mA
V_T	$I_T = 300 \text{ A}; T_{VJ} = 25^\circ\text{C}$	1.74 V
V_{T0}	For power-loss calculations only ($T_{VJ} = T_{VJM}$)	0.85 V
r_T		3.2 mΩ
V_{GT}	$V_D = 6 \text{ V}; T_{VJ} = 25^\circ\text{C}$	1.5 V
	$T_{VJ} = -40^\circ\text{C}$	1.6 V
I_{GT}	$V_D = 6 \text{ V}; T_{VJ} = 25^\circ\text{C}$	100 mA
	$T_{VJ} = -40^\circ\text{C}$	200 mA
V_{GD}	$T_{VJ} = T_{VJM}; V_D = 2/3 V_{DRM}$	0.25 V
I_{GD}	$T_{VJ} = T_{VJM}; V_D = 2/3 V_{DRM}$	10 mA
I_L	$T_{VJ} = 25^\circ\text{C}; V_D = 6 \text{ V}; t_p = 30 \mu\text{s}$ $di_G/dt = 0.45 \text{ A}/\mu\text{s}; I_G = 0.45 \text{ A}$	200 mA
I_H	$T_{VJ} = 25^\circ\text{C}; V_D = 6 \text{ V}; R_{GK} = \infty$	150 mA
t_{gd}	$T_{VJ} = 25^\circ\text{C}; V_D = 1/2 V_{DRM}$ $di_G/dt = 0.45 \text{ A}/\mu\text{s}; I_G = 0.45 \text{ A}$	2 μs
t_q	$T_{VJ} = T_{VJM}; V_R = 100 \text{ V}; V_D = 2/3 V_{DRM}; t_p = 200 \mu\text{s}$ $dv/dt = 20 \text{ V}/\mu\text{s}; I_T = 150 \text{ A}; -di/dt = 10 \text{ A}/\mu\text{s}$	typ. 185 μs
Q_S	$T_{VJ} = T_{VJM}$ $-di/dt = 6 \text{ A}/\mu\text{s}; I_T = 50 \text{ A}$	170 μC
I_{RM}		45 A
R_{thJC}	per thyristor; DC current	0.22 K/W
	per module	0.11 K/W
R_{thJK}	per thyristor; DC current	0.42 K/W
	per module	0.21 K/W
d_S	Creeping distance on surface	12.7 mm
d_A	Creepage distance in air	9.6 mm
a	Maximum allowable acceleration	50 m/s ²

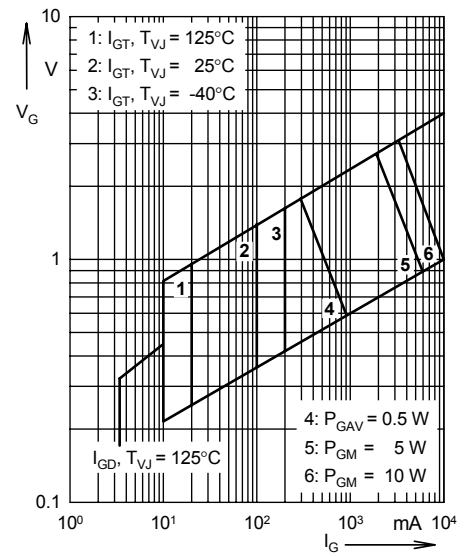


Fig. 1 Gate trigger characteristics

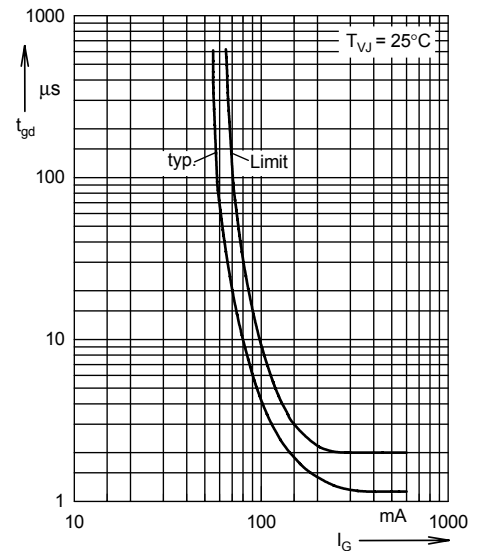
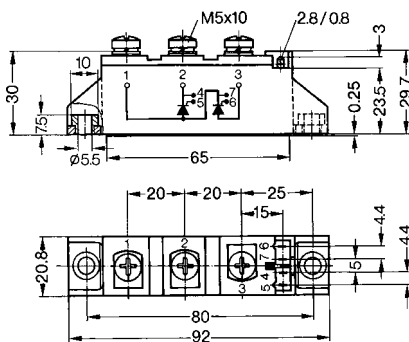


Fig. 2 Gate trigger delay time

Dimensions in mm (1 mm = 0.0394")



R_{thJC} for various conduction angles d:

d	R_{thJC} (K/W)
DC	0.22
180°	0.23
120°	0.25
60°	0.27
30°	0.28

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.0066	0.0019
2	0.0678	0.0477
3	0.1456	0.344

R_{thJK} for various conduction angles d:

d	R_{thJK} (K/W)
DC	0.42
180°	0.43
120°	0.45
60°	0.47
30°	0.48

Constants for Z_{thJK} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.0066	0.0019
2	0.0678	0.0477
3	0.1456	0.344
4	0.2	1.32