

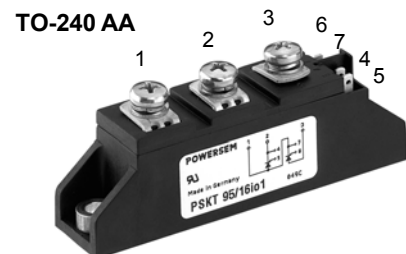
PSKT94 /PSKH 94

$$\begin{aligned} I_{TRMS} &= 2 \times 180 \text{ A} \\ I_{TAVM} &= 2 \times 104 \text{ A} \\ V_{RRM} &= 2000\text{-}2200 \text{ V} \end{aligned}$$

High Voltage Thyristor Module High Voltage Thyristor/Diode Modules

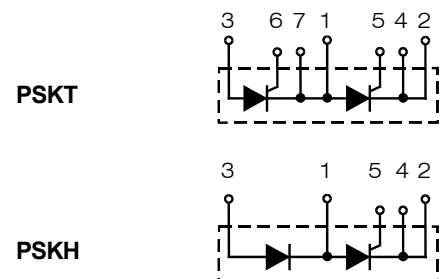
Preliminary Data Sheet

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



Symbol	Test Conditions	Maximum Ratings	
I_{TRMS}	$T_{VJ} = T_{VJM}$	180	A
I_{TAVM}	$T_C = 85^\circ\text{C}; 180^\circ \text{ sine}$	104	A
I_{TSM}	$T_{VJ} = 45^\circ\text{C};$	$t = 10 \text{ ms (50 Hz)}$	1700 A
	$V_R = 0$	$t = 8.3 \text{ ms (60 Hz)}$	1800 A
	$T_{VJ} = T_{VJM}$	$t = 10 \text{ ms (50 Hz)}$	1540 A
	$V_R = 0$	$t = 8.3 \text{ ms (60 Hz)}$	1640 A
$\int i^2 dt$	$T_{VJ} = 45^\circ\text{C}$	$t = 10 \text{ ms (50 Hz)}$	14450 A ² s
	$V_R = 0$	$t = 8.3 \text{ ms (60 Hz)}$	13500 A ² s
	$T_{VJ} = T_{VJM}$	$t = 10 \text{ ms (50 Hz)}$	11850 A ² s
	$V_R = 0$	$t = 8.3 \text{ ms (60 Hz)}$	11300 A ² s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$ repetitive, $I_T = 250 \text{ A}$ $f = 50 \text{ Hz}, t_p = 200 \mu\text{s}$ $V_D = 2/3 V_{DRM}$	150	A/ μs
	$I_G = 0.45 \text{ A},$ non repetitive, $I_T = I_{TAVM}$ $di_G/dt = 0.45 \text{ A}/\mu\text{s}$	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}	$T_{VJ} = T_{VJM}$ $t_p = 30 \mu\text{s}$	10	W
	$I_T = I_{TAVM}$ $t_p = 300 \mu\text{s}$	5	W
P_{GAV}		0.5	W
V_{RGM}		10	V
T_{VJ}		-40...125	$^\circ\text{C}$
T_{VJM}		125	$^\circ\text{C}$
T_{stg}		-40...125	$^\circ\text{C}$
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)	2.5-4.0/22-35	Nm/lb.in.
	Terminal connection torque (M5)	2.5-4.0/22-35	Nm/lb.in.
Weight	Typical including screws	90	g

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



Features

- International standard package, JEDEC TO-240 AA
- Direct Copper Bonded Al_2O_3 -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

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	m Ω
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	$T_{VJ} = T_{VJM}$	170	μC
I_{RM}	$-di/dt = 6 \text{ A}/\mu\text{s}; I_T = 50 \text{ A}$	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

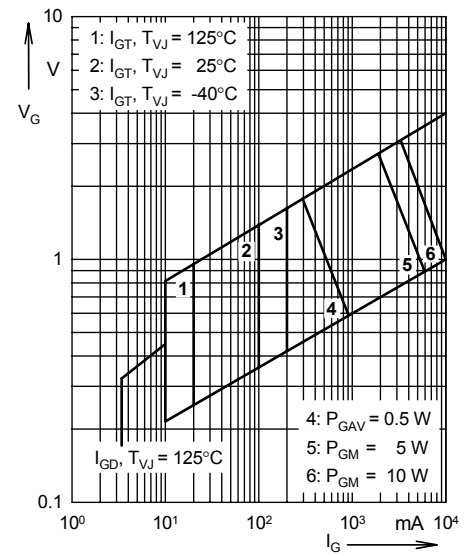


Fig. 1 Gate trigger characteristics

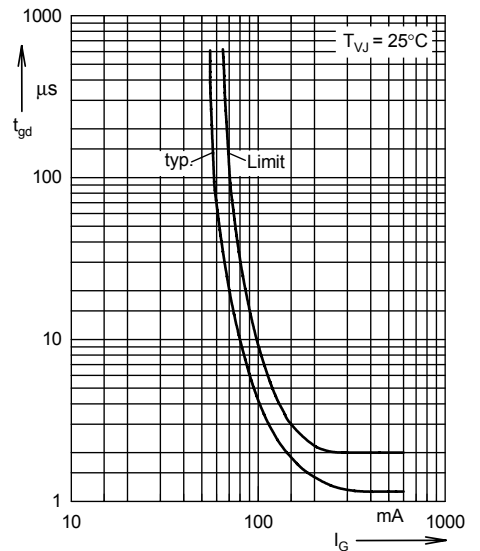
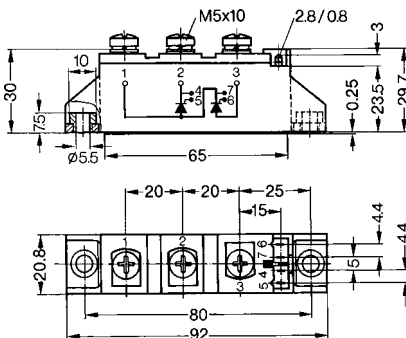


Fig. 2 Gate trigger delay time

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