POWERSEM

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

TO-240 AA

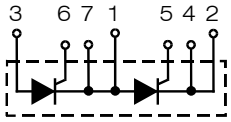
Preliminary Data Sheet

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

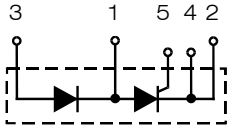
Symbol	Test Conditions		Maximum Ratings	
I_{TRMS}	$T_{VJ} = T_{VJM}$		180	A
I_{TAVM}	T_C = 85°C; 180° sine		104	A
I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz)	1700	A
	V_R = 0	t = 8.3 ms (60 Hz)	1800	A
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz)	1540	A
	V_R = 0	t = 8.3 ms (60 Hz)	1640	A
$\int i^2dt$	T_{VJ} = 45°C	t = 10 ms (50 Hz)	14450	A^2s
	V_R = 0	t = 8.3 ms (60 Hz)	13500	A^2s
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz)	11850	A^2s
	V_R = 0	t = 8.3 ms (60 Hz)	11300	A^2s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$; V_D = 2/3 V_{DRM} f = 50 Hz, t_P = 200 µs	repetitive, I_T = 250 A	150	A/µs
	I_G = 0.45 A, di_G/dt = 0.45 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} = ∞; method 1 (linear voltage rise)		1000	V/µs
P_{GM}	$T_{VJ} = T_{VJM}$	t_P = 30 µs	10	W
	$I_T = I_{TAVM}$	t_P = 300 µs	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

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

PSKT



PSKH



Features

- International standard package, JEDEC TO-240 AA
- **D**irect **C**opper **B**onded 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

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Symbol	Test Conditions	Characteristic Values	
I_{RRM}, I_{DRM}	T_{VJ} = T_{VJM}; V_R = V_{RRM}	15	mA
V_T	I_T = 300 A; T_{VJ} = 25°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 V; T_{VJ} = 25°C	1.5	V
	T_{VJ} = -40°C	1.6	V
I_{GT}	V_D = 6 V; T_{VJ} = 25°C	100	mA
	T_{VJ} = -40°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°C; V_D = 6 V; t_P = 30 µs di_G/dt = 0.45 A/µs; I_G = 0.45 A	200	mA
I_H	T_{VJ} = 25°C; V_D = 6 V; R_{GK} = ∞	150	mA
t_{gd}	T_{VJ} = 25°C; V_D = 1/2 V_{DRM} di_G/dt = 0.45 A/µs; I_G = 0.45 A	2	µs
t_q	T_{VJ} = T_{VJM}; V_R = 100 V; V_D = 2/3 V_{DRM}; t_P = 200 µs typ. dv/dt = 20 V/µs; I_T = 150 A; -di/dt = 10 A/µs	185	µs
Q_S	T_{VJ} = T_{VJM}	170	µC
I_{RM}	-di/dt = 6 A/µs; I_T = 50 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

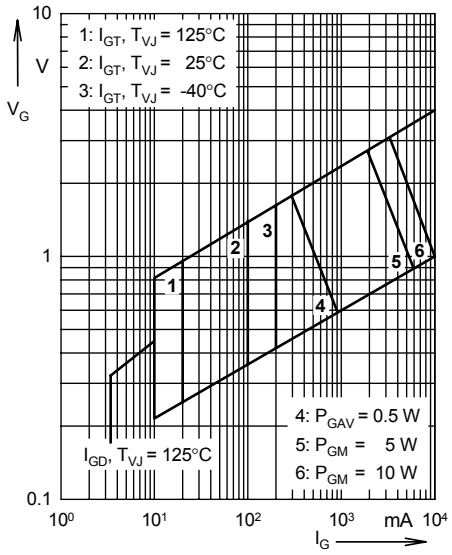


Fig. 1 Gate trigger characteristics

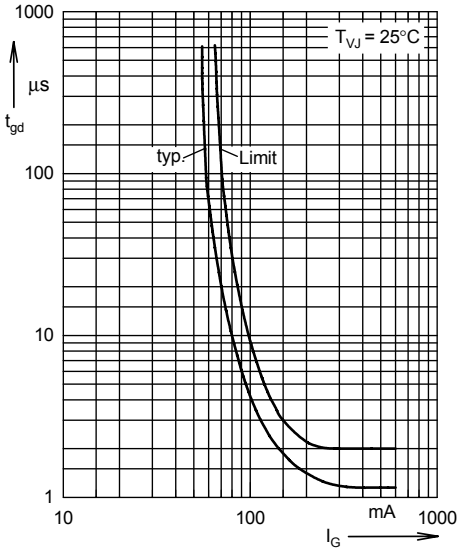
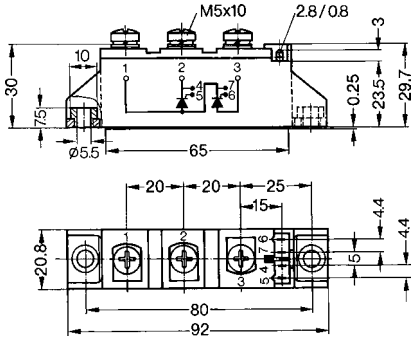


Fig. 2 Gate trigger delay time

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

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