

Thyristor Modules Thyristor/Diode Modules

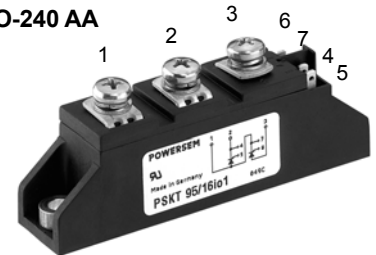
PSKT 26
PSKH 26

$I_{TRMS} = 2x 50 A$
 $I_{TAVM} = 2x 32 A$
 $V_{RRM} = 800-1600 V$

Preliminary Data Sheet

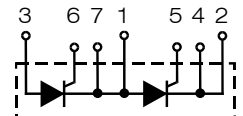
V_{RSM}	V_{RRM}	Type		
V_{DSM}	V_{DRM}	Version 8		
V	V	Version 1	Version 8	Version 8
900	800	PSKT 26/08io1	PSKT 26/08io8	PSKH 26/08io8
1300	1200	PSKT 26/12io1	PSKT 26/12io8	PSKH 26/12io8
1500	1400	PSKT 26/14io1	PSKT 26/14io8	PSKH 26/14io8
1700	1600	PSKT 26/16io1	PSKT 26/16io8	PSKH 26/16io8

TO-240 AA

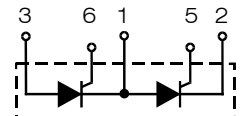


Symbol	Test Conditions	Maximum Ratings		
I_{TRMS}^1 , I_{FRMS} I_{TAVM}^2 , I_{FAVM}	$T_{VJ} = T_{VJM}$ $T_C = 75^\circ C$; $T_C = 85^\circ C$;	50 32 27	A A A	
I_{TSM}^3 , I_{FSM}	$T_{VJ} = 45^\circ C$; $V_R = 0$; $T_{VJ} = T_{VJM}$ $V_R = 0$	$t = 10$ ms (50 Hz), sine $t = 8.3$ ms (60 Hz), sine $t = 10$ ms (50 Hz), sine $t = 8.3$ ms (60 Hz), sine	520 560 460 500	A A A A
$\int i^2 dt$	$T_{VJ} = 45^\circ C$ $V_R = 0$ $T_{VJ} = T_{VJM}$ $V_R = 0$	$t = 10$ ms (50 Hz), sine $t = 8.3$ ms (60 Hz), sine $t = 10$ ms (50 Hz), sine $t = 8.3$ ms (60 Hz), sine	1350 1300 1050 1030	A ² s A ² s A ² s A ² s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$ $f = 50$ Hz, $t_p = 200$ μs $V_D = 2/3 V_{DRM}$ $I_G = 0.45$ A $di_G/dt = 0.45$ A/ μs	repetitive, $I_T = 45$ A non repetitive, $I_T = I_{TAVM}$	150 500	A/ μs 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}	$T_{VJ} = T_{VJM}$ $I_T = I_{TAVM}$	$t_p = 30$ μs $t_p = 300$ μs	10 5	W W
P_{GAV}			0.5	W
V_{RGM}			10	V
T_{VJ}			-40...+125	$^\circ C$
T_{VJM}			125	$^\circ C$
T_{stg}			-40...+125	$^\circ C$
V_{ISOL}	50/60 Hz, RMS $I_{ISOL} \leq 1$ mA	$t = 1$ min $t = 1$ s	3000 3600	V~ V~
M_d	Mounting torque (M5) Terminal connection torque (M5)		2.5-4.0/22-35 2.5-4.0/22-35	Nm/lb.in. Nm/lb.in.
Weight	Typical including screws		90	g

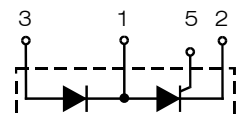
PSKT
Version 1



PSKT
Version 8



PSKH
Version 8



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

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

Symbol	Test Conditions	Characteristic Values
I_{RRM}, I_{DRM}	$T_{VJ} = T_{VJM}; V_R = V_{RRM}; V_D = V_{DRM}$	3 mA
V_T, V_F	$I_T, I_F = 80 \text{ A}; T_{VJ} = 25^\circ\text{C}$	1.64 V
V_{T0}	For power-loss calculations only ($T_{VJ} = 125^\circ\text{C}$)	0.85 V
r_T		11.0 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}	$T_{VJ} = T_{VJM}; V_D = 2/3 V_{DRM}$	0.2 V
I_{GD}		10 mA
I_L	$T_{VJ} = 25^\circ\text{C}; t_p = 10 \mu\text{s}; V_D = 6 \text{ V}$ $I_G = 0.45 \text{ A}; di_G/dt = 0.45 \text{ A}/\mu\text{s}$	450 mA
I_H	$T_{VJ} = 25^\circ\text{C}; V_D = 6 \text{ V}; R_{GK} = \infty$	200 mA
t_{gd}	$T_{VJ} = 25^\circ\text{C}; V_D = 1/2 V_{DRM}$ $I_G = 0.45 \text{ A}; di_G/dt = 0.45 \text{ A}/\mu\text{s}$	2 μs
t_q	$T_{VJ} = T_{VJM}; I_T = 20 \text{ A}; t_p = 200 \mu\text{s}; -di/dt = 10 \text{ A}/\mu\text{s}$ typ. $V_R = 100 \text{ V}; dv/dt = 20 \text{ V}/\mu\text{s}; V_D = 2/3 V_{DRM}$	150 μs
Q_S	$T_{VJ} = T_{VJM}; I_T, I_F = 25 \text{ A}; -di/dt = 0.64 \text{ A}/\mu\text{s}$	50 μC
I_{RM}		6 A
R_{thJC}	per thyristor/diode; DC current	0.88 K/W
	per module	0.44 K/W
R_{thJK}	per thyristor/diode; DC current	1.08 K/W
	per module	0.54 K/W
d_s	Creepage distance on surface	12.7 mm
d_A	Strike distance through air	9.6 mm
a	Maximum allowable acceleration	50 m/s ²

Optional accessories for module-type PSKT 26 version 1
Keyed gate/cathode twin plugs with wire length = 350 mm, gate = yellow, cathode = red

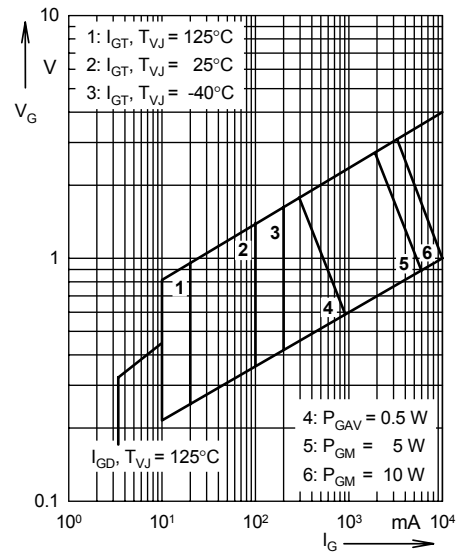


Fig. 1 Gate trigger characteristics

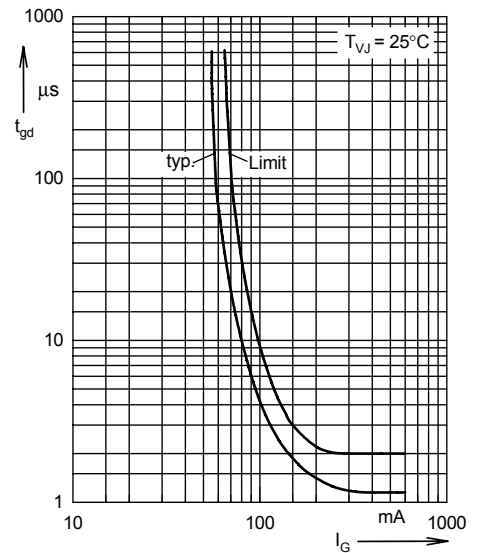
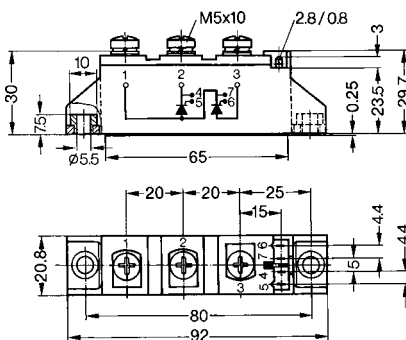


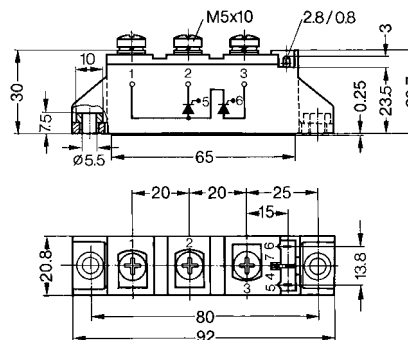
Fig. 2 Gate trigger delay time

Dimensions in mm (1 mm = 0.0394")

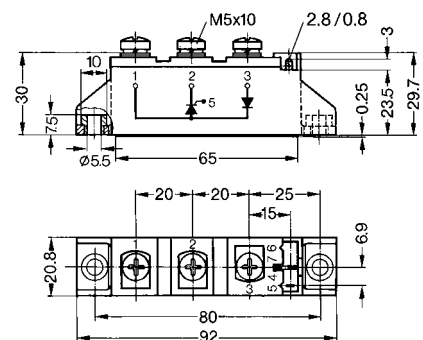
PSKT/ PSKH Version 1



PSKT Version 8



PSKH Version 8



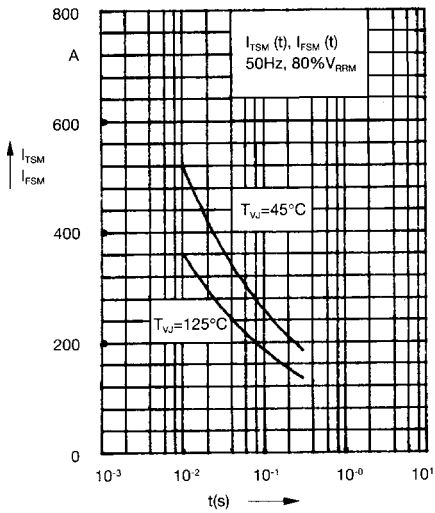


Fig. 3 Surge overload current
 I_{TSM}, I_{FSM} : Crest value, t : duration

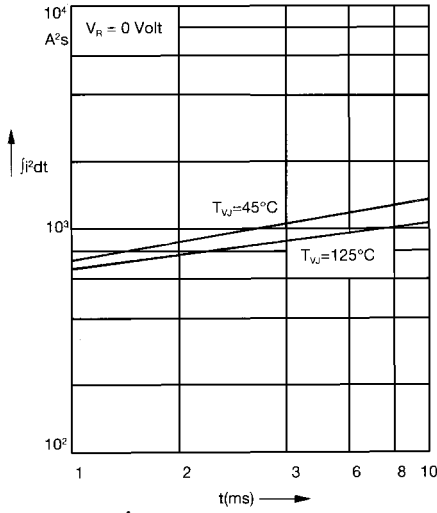


Fig. 4 $\int j^2 dt$ versus time (1-10 ms)

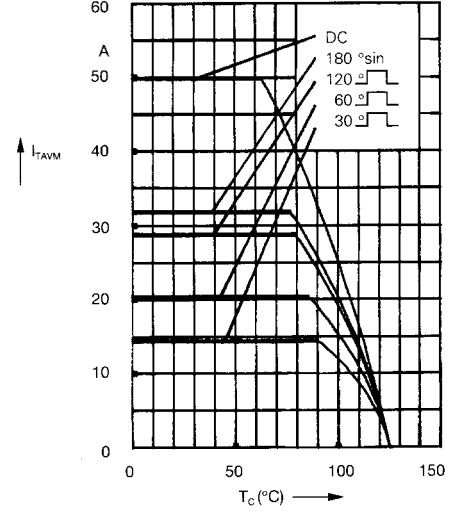


Fig. 4a Maximum forward current at case temperature

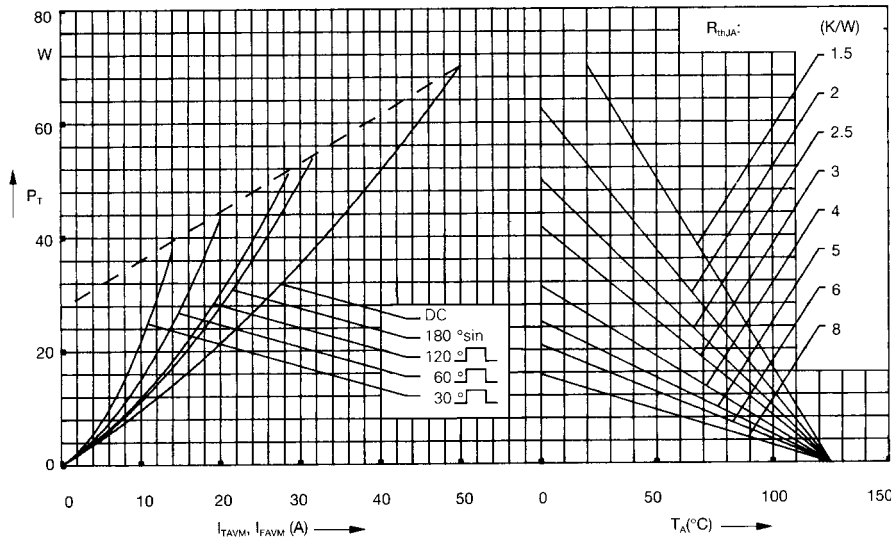


Fig. 5 Power dissipation versus on-state current and ambient temperature (per thyristor or diode)

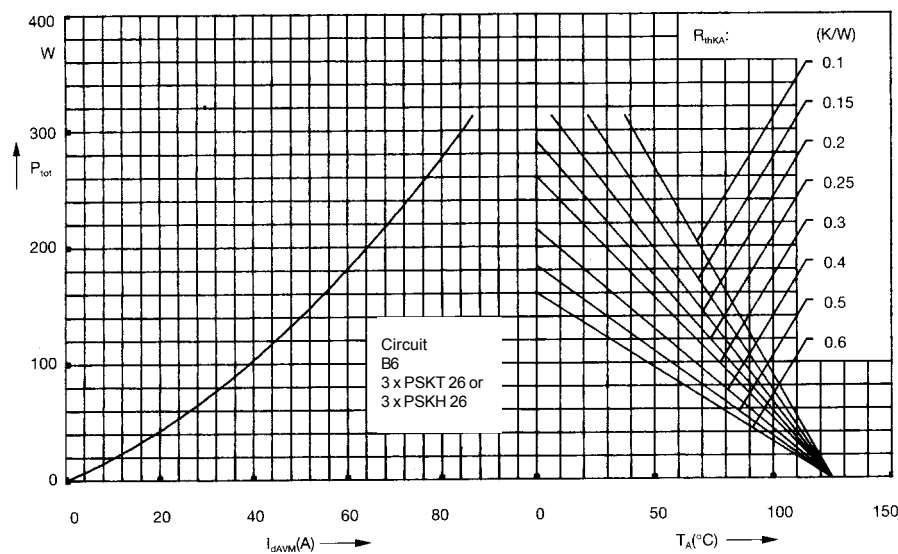


Fig. 6 Three phase rectifier bridge: Power dissipation versus direct output current and ambient temperature

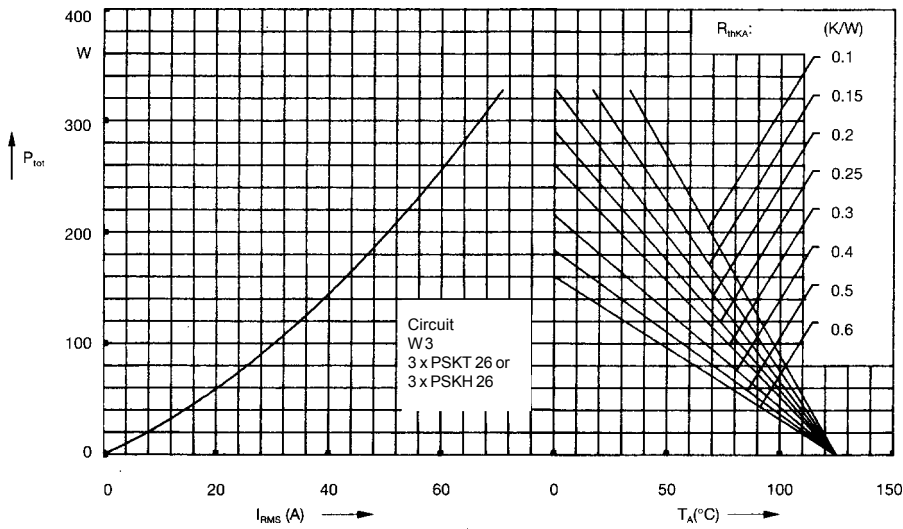


Fig. 7 Three phase AC-controller:
Power dissipation versus RMS
output current and ambient
temperature

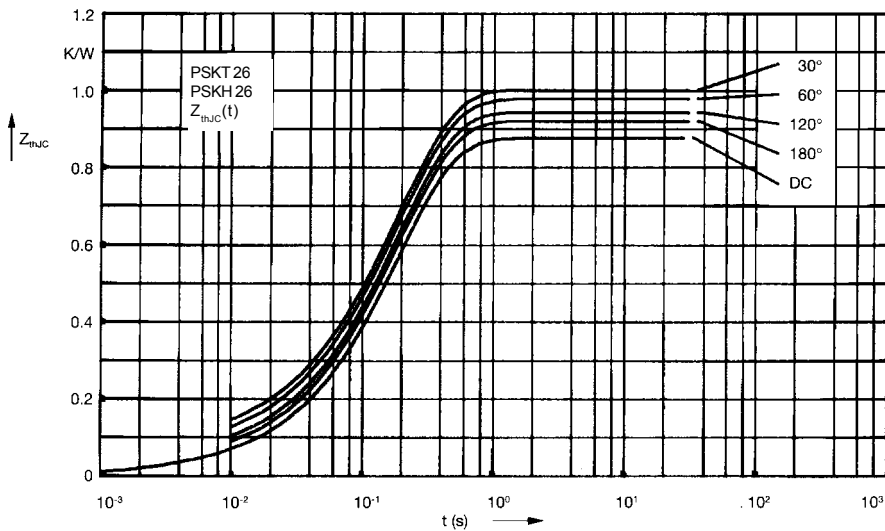


Fig. 8 Transient thermal impedance
junction to case (per thyristor or
diode)

R_{thJC} for various conduction angles d:

d	R_{thJC} (K/W)
DC	0.88
180°	0.92
120°	0.95
60°	0.98
30°	1.01

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.019	0.0031
2	0.029	0.0216
3	0.832	0.191

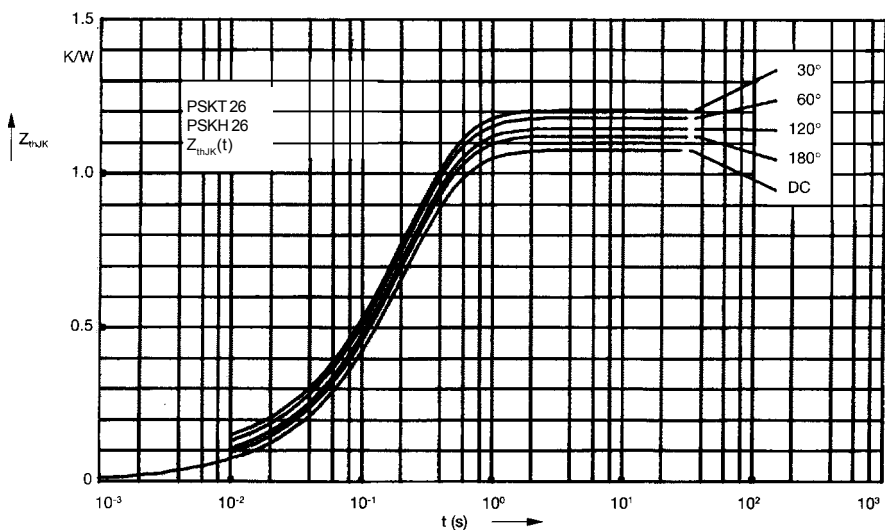


Fig. 9 Transient thermal impedance
junction to heatsink (per thyristor
or diode)

R_{thJK} for various conduction angles d:

d	R_{thJK} (K/W)
DC	1.08
180°	1.12
120°	1.15
60°	1.18
30°	1.21

Constants for Z_{thJK} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.019	0.0031
2	0.029	0.0216
3	0.832	0.191
4	0.2	0.45