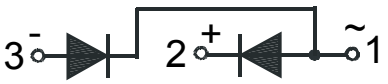
High Voltage Diode Module (TRACTION - PAC™)

PSTKD 82

I_{FRMS} = 180 A
I_{FAVM} = 82 A
V_{RRM} = 600-1800 V

Preliminary Data Sheet

V_{RSM} V	V_{RRM} V	Type
700	600	PSTKD 82/06
900	800	PSTKD 82/08
1100	1000	PSTKD 82/10
1300	1200	PSTKD 82/12
1500	1400	PSTKD 82/14
1700	1600	PSTKD 82/16
1900	1800	PSTKD 82/18



Symbol	Test Conditions		Maximum Ratings	
I_{FRMS}	$T_{VJ} = T_{VJM}$		180	A
I_{FAVM}	T_C = 110°C; 180° sine		82	A
I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz)	1700	A
	V_R = 0	t = 8.3 ms (60 Hz)	1950	A
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz)	1530	A
	V_R = 0	t = 8.3 ms (60 Hz)	1740	A
∫i²dt	T_{VJ} = 45°C	t = 10 ms (50 Hz)	14450	A²s
	V_R = 0	t = 8.3 ms (60 Hz)	15700	A²s
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz)	11700	A²s
	V_R = 0	t = 8.3 ms (60 Hz)	12500	A²s
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~
	$I_{ISOL} \le$ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque (M5)		5.0/44	Nm/lb.in.
	Terminal connection torque (ISK M5)		3.0/26	Nm/lb.in.
Weight	Typical including screws		56	g

Symbol	Test Conditions	Characteristic Values	
I_{RRM}, I_{DRM}	$T_{VJ} = T_{VJM}$; $V_R = V_{RRM}$	15	mA
V_T	I_T = 200 A; T_{VJ} = 25°C	1.74	V
V_{T0}	For power-loss calculations only ($T_{VJ} = T_{VJM}$)	0.8	V
r_T	$T_{VJ} = T_{VJM}$	2.7	mΩ
Q_S	T_{VJ} = 125 °C; I_F=50 A, -di/dt = 3 A/µs	170	µC
I_{RM}		45	A
R_{thJC}	per diode; DC current	0.35	K/W
	per module	0.18	K/W
R_{thJK}	per diode; DC current	0.55	K/W
	per module	0.275	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/s²

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

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~

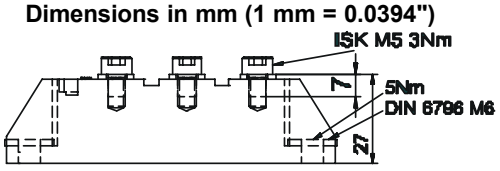
Applications

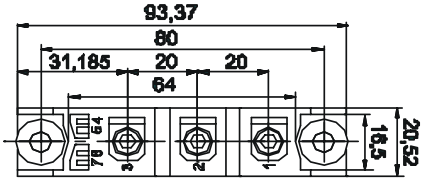
- Supplies for DC power equipment
- DC supply for PWM inverter
- Field supply for DC motors
- Battery DC power supplies

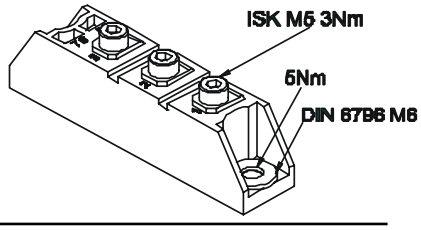
Advantages

- Space and weight savings
- Simple mounting with two screws
- Improved temperature and power cycling
- Reduced protection circuits

Dimensions in mm (1 mm = 0.0394")







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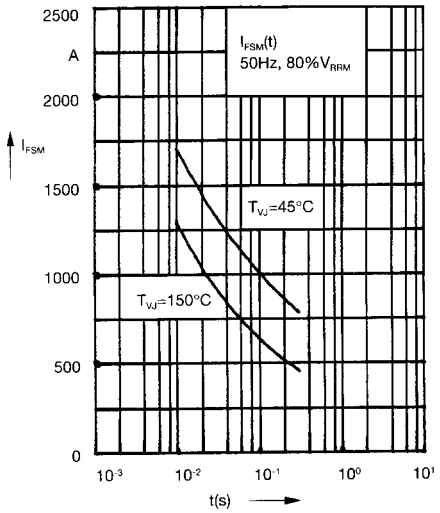

Fig. 1 Surge overload current
I_{FSM}: Crest value, t: duration

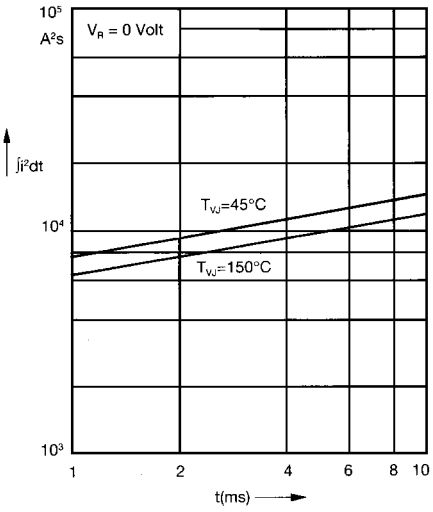

Fig. 2 $\int i^2dt$ versus time (1-10 ms)

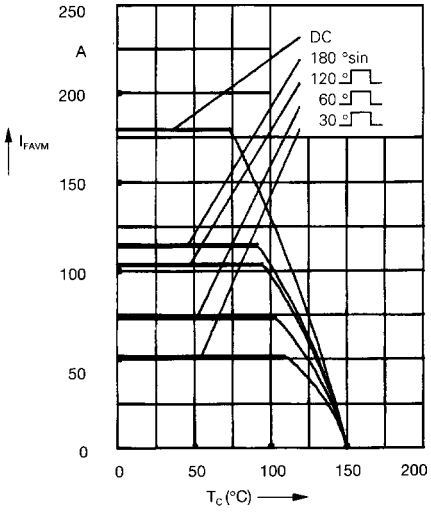

Fig. 2a Maximum forward current at case temperature

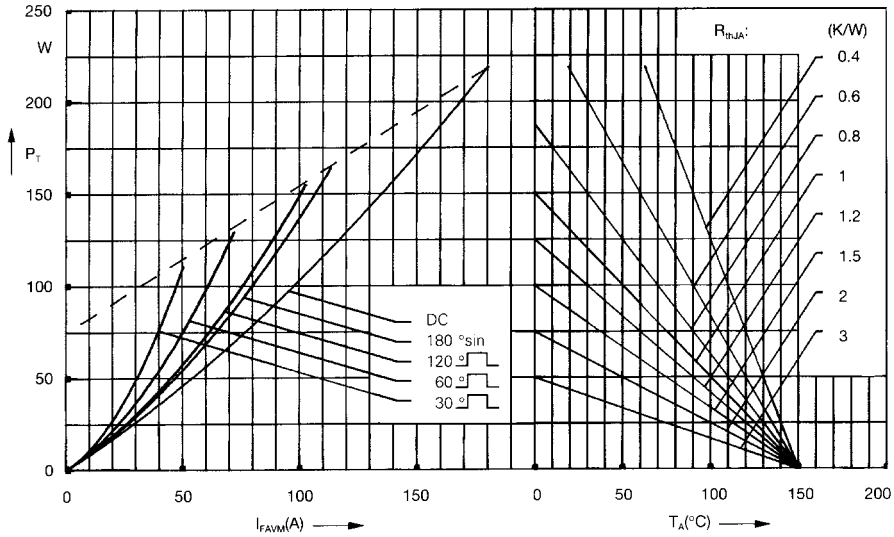

Fig. 3 Power dissipation versus forward current and ambient temperature (per diode)

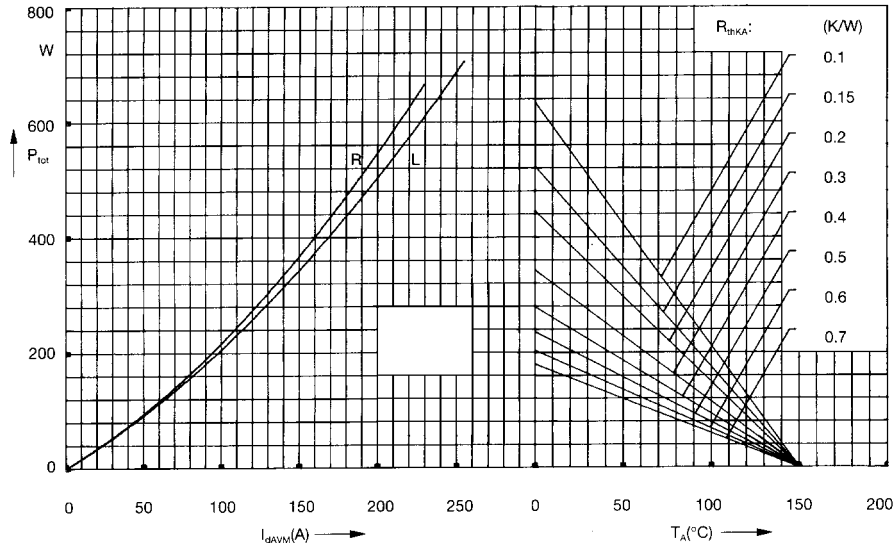

Fig. 4 Single phase rectifier bridge: Power dissipation versus direct output current and ambient temperature
R = resistive load
L = inductive load

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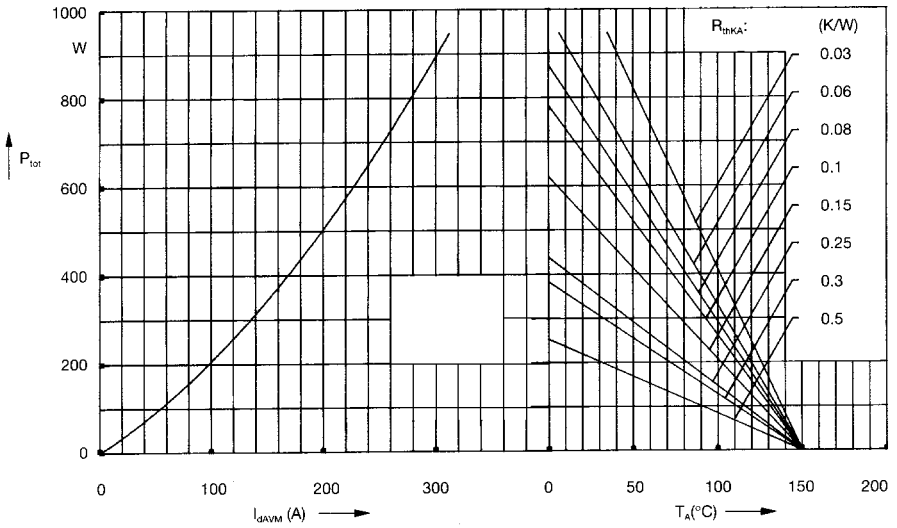

Fig. 5 Three phase rectifier bridge: Power dissipation versus direct output current and ambient temperature

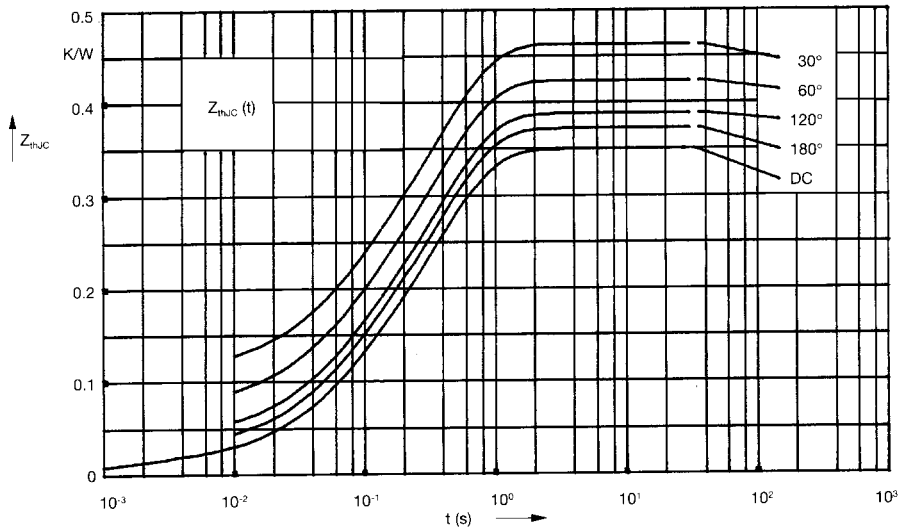

Fig. 6 Transient thermal impedance junction to case (per diode)

R_{thJC} for various conduction angles d:

d	R_{thJC} (K/W)
DC	0.35
180°	0.37
120°	0.39
60°	0.43
30°	0.47

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.013	0.0014
2	0.072	0.062
3	0.265	0.375

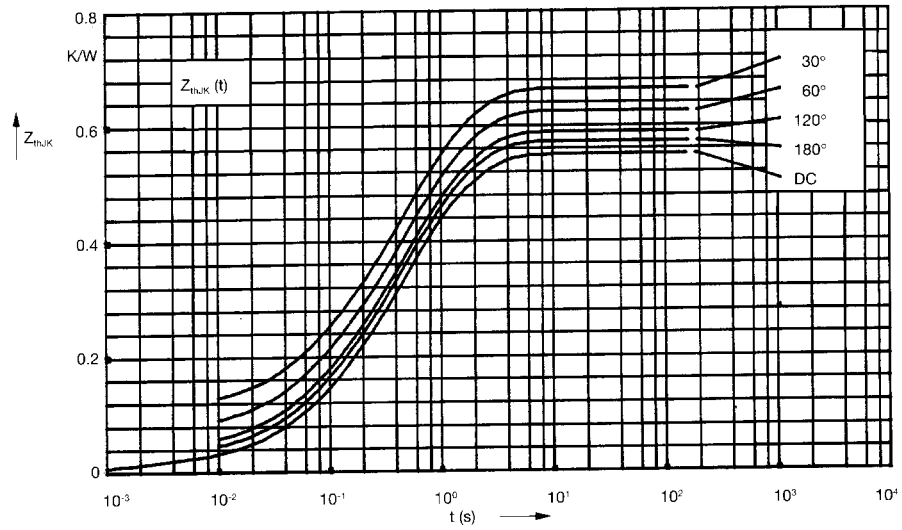

Fig. 7 Transient thermal impedance junction to heatsink (per diode)

R_{thJK} for various conduction angles d:

d	R_{thJK} (K/W)
DC	0.55
180°	0.57
120°	0.59
60°	0.63
30°	0.67

Constants for Z_{thJK} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.013	0.0014
2	0.072	0.062
3	0.265	0.375
4	0.2	1.32

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