

## Diode Modules

## PSKD 95

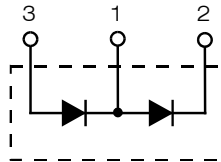
$$I_{FRMS} = 2x 180 A$$

$$I_{FAVM} = 2x 120 A$$

$$V_{RRM} = 800-1800 V$$

Preliminary Data Sheet

$V_{RSM}$ V	$V_{RRM}$ V	Type
900	800	PSKD 95/08
1300	1200	PSKD 95/12
1500	1400	PSKD 95/14
1700	1600	PSKD 95/16
1900	1800	PSKD 95/18



Symbol	Test Conditions	Maximum Ratings	
$I_{FRMS}$	$T_{VJ} = T_{VJM}$	180 A	
$I_{FAVM}$	$T_C = 105^\circ C$ ; 180° sine	120 A	
$I_{FSM}$	$T_{VJ} = 45^\circ C$ ; $V_R = 0$	$t = 10$ ms (50 Hz), sine	2800 A
		$t = 8.3$ ms (60 Hz), sine	3300 A
	$T_{VJ} = T_{VJM}$ ; $V_R = 0$	$t = 10$ ms (50 Hz), sine	2500 A
		$t = 8.3$ ms (60 Hz), sine	2750 A
$\int i^2 dt$	$T_{VJ} = 45^\circ C$ ; $V_R = 0$	$t = 10$ ms (50 Hz), sine	39 200 A <sup>2</sup> s
		$t = 8.3$ ms (60 Hz), sine	45 000 A <sup>2</sup> s
	$T_{VJ} = T_{VJM}$ ; $V_R = 0$	$t = 10$ ms (50 Hz), sine	31 200 A <sup>2</sup> s
		$t = 8.3$ ms (60 Hz), sine	31 300 A <sup>2</sup> s
$T_{VJ}$		-40...+150 °C	
$T_{VJM}$		150 °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)		2.5-4/22-35 Nm/lb.in.
	Terminal connection torque (M5)		2.5-4/22-35 Nm/lb.in.
Weight	Typical including screws		90 g

### 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

### Applications

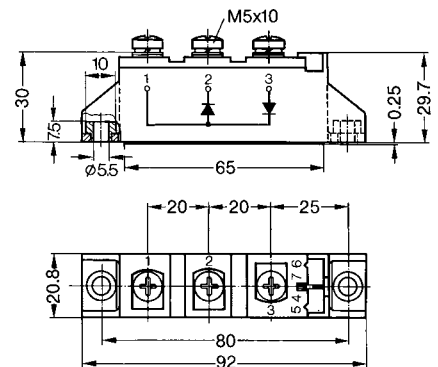
- Supplies for DC power equipment
- DC supply for PWM inverter
- Field supply for DC motors
- Battery DC power supplies

### Advantages

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

Symbol	Test Conditions	Characteristic Values	
$I_R$	$T_{VJ} = T_{VJM}$ ; $V_R = V_{RRM}$	15 mA	
$V_F$	$I_F = 300$ A; $T_{VJ} = 25^\circ C$	1.43 V	
$V_{T0}$	For power-loss calculations only	0.75 V	
$r_T$	$T_{VJ} = T_{VJM}$	1.95 mΩ	
$Q_S$	$T_{VJ} = 125^\circ C$ ; $I_F = 50$ A, $-di/dt = 6$ A/μs	170 μC	
$I_{RM}$		45 A	
$R_{thJC}$	per diode; DC current per module	} other values see Fig. 6/7	0.26 K/W
			0.13 K/W
$R_{thJK}$	per diode; DC current per module	}	0.46 K/W
			0.23 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 <sup>2</sup>	

### Dimensions in mm (1 mm = 0.0394")



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

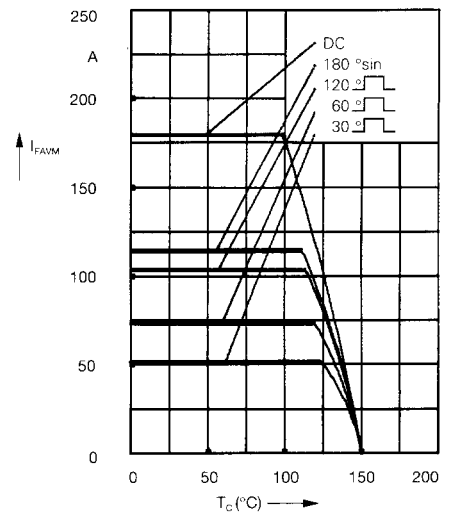
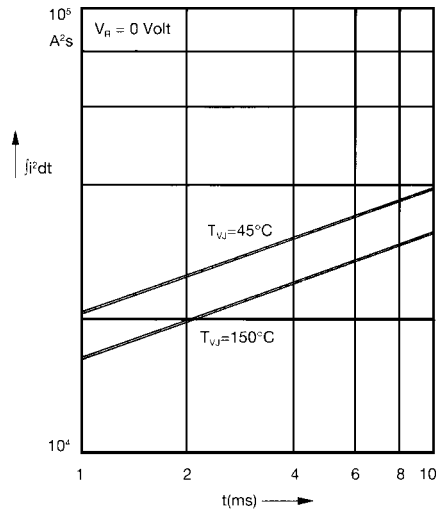
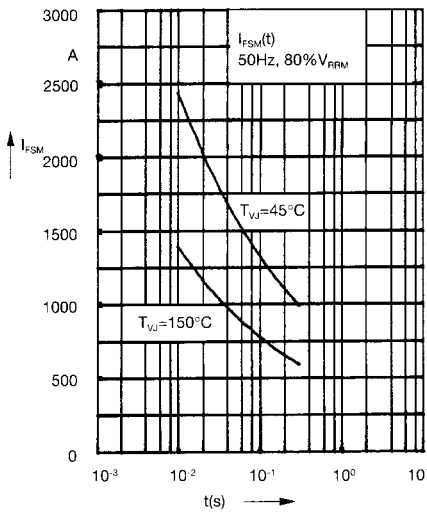


Fig. 1 Surge overload current  
 $I_{FSM}$ : Crest value,  $t$ : duration

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

Fig. 2a Maximum forward current at case temperature

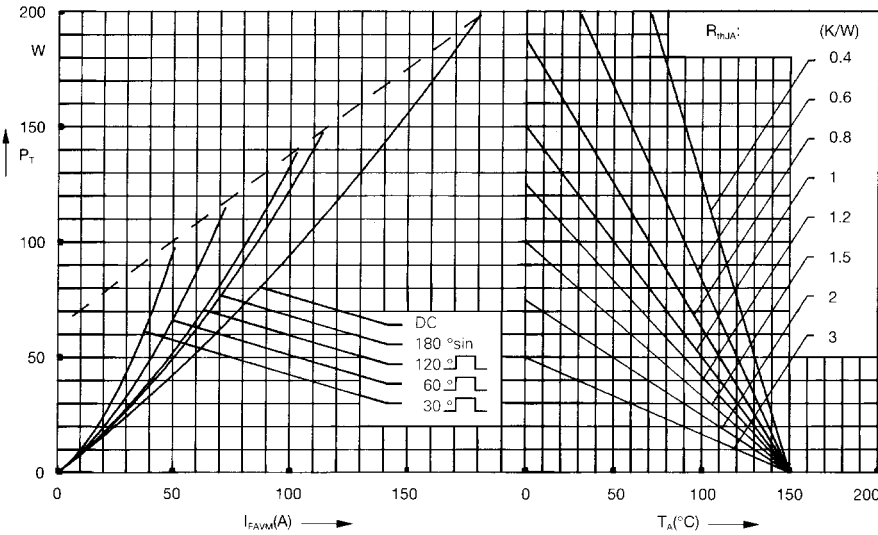


Fig. 3 Power dissipation versus forward current and ambient temperature (per diode)

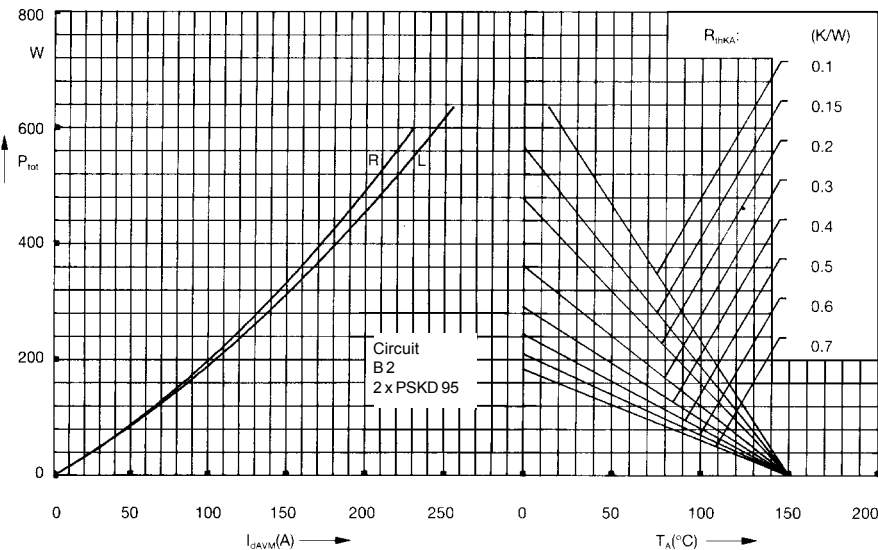


Fig. 4 Single phase rectifier bridge:  
 Power dissipation versus direct output current and ambient temperature  
 R = resistive load  
 L = inductive load

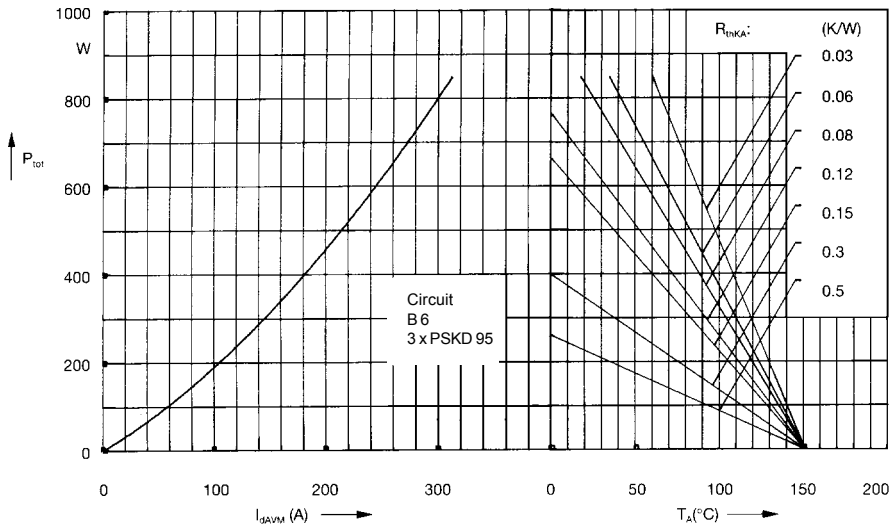


Fig. 5 Three phase rectifier bridge: Power dissipation versus direct output current and ambient temperature

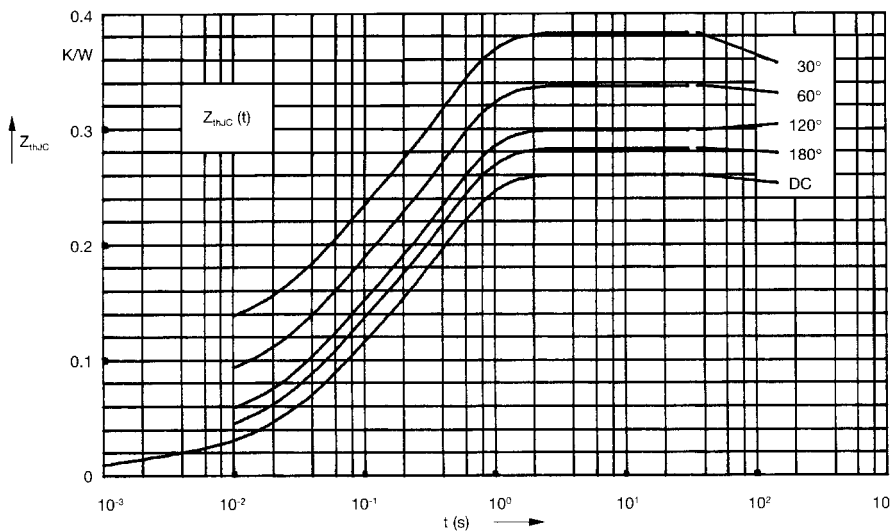


Fig. 6 Transient thermal impedance junction to case (per diode)

$R_{thJC}$  for various conduction angles  $d$ :

$d$	$R_{thJC}$ (K/W)
DC	0.26
180°	0.28
120°	0.30
60°	0.34
30°	0.38

Constants for  $Z_{thJC}$  calculation:

$i$	$R_{thi}$ (K/W)	$t_i$ (s)
1	0.013	0.0012
2	0.072	0.047
3	0.175	0.394

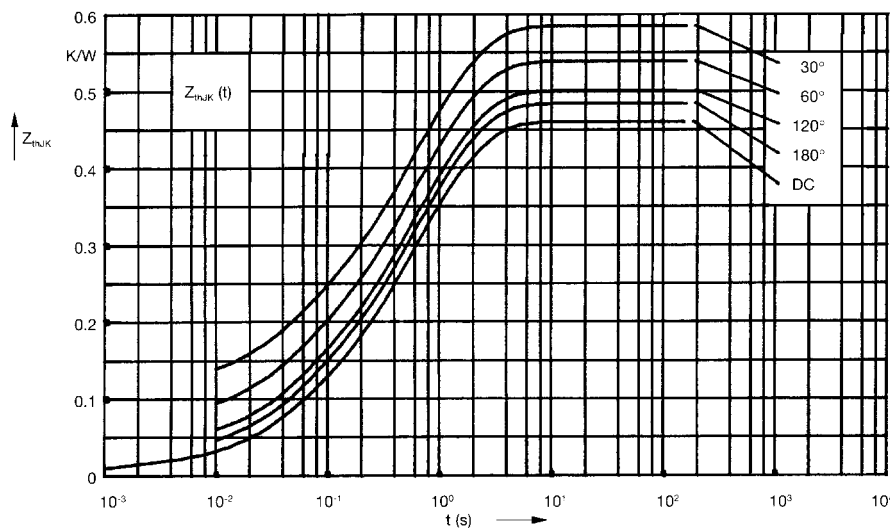


Fig. 7 Transient thermal impedance junction to heatsink (per diode)

$R_{thJK}$  for various conduction angles  $d$ :

$d$	$R_{thJK}$ (K/W)
DC	0.46
180°	0.48
120°	0.50
60°	0.54
30°	0.58

Constants for  $Z_{thJK}$  calculation:

$i$	$R_{thi}$ (K/W)	$t_i$ (s)
1	0.013	0.0012
2	0.072	0.047
3	0.175	0.394
4	0.2	1.32