

### STANDARD RECOVERY DIODES

### Hockey Puk Version

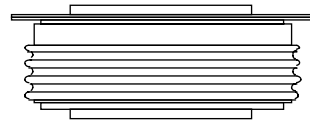
#### Features

- Wide current range
- High voltage ratings up to 1000V
- High surge current capabilities
- Diffused junction
- Hockey Puk version
- Case style DO-200AC (K-PUK)

#### Typical Applications

- Converters
- Power supplies
- High power drives
- Auxiliary system supplies for traction applications

3800A



case style DO-200AC (K-PUK)

#### Major Ratings and Characteristics

Parameters	SD3000C..K	Units	
$I_{F(AV)}$	3800	A	
@ $T_{hs}$	55	°C	
$I_{F(RMS)}$	6230	A	
@ $T_{hs}$	25	°C	
$I_{FSM}$	@ 50Hz	35800	A
	@ 60Hz	37500	A
$I^2t$	@ 50Hz	6410	KA <sup>2</sup> s
	@ 60Hz	5850	KA <sup>2</sup> s
$V_{RRM}$ range	400 to 1000	V	
$T_J$	- 40 to 180	°C	

## SD3000C..K Series

Bulletin I2090 rev.C 04/00

International  
**IRF** Rectifier

### ELECTRICAL SPECIFICATIONS

#### Voltage Ratings

Type number	Voltage Code	$V_{RRM}$ : maximum repetitive peak reverse voltage V	$V_{RSM}$ : maximum non-repetitive peak rev. voltage V	$I_{RRM}$ max. @ $T_J = 180^\circ\text{C}$ mA
SD3000C..K	04	400	500	75
	08	800	900	
	10	1000	1100	

#### Forward Conduction

Parameter	SD3000C..K	Units	Conditions
$I_{F(AV)}$ Max. average forward current @ Heatsink temperature	3800 (1925)	A	180° conduction, half sine wave
	55 (85)	°C	Double side (single side) cooled
$I_{F(RMS)}$ Max. RMS forward current	6230	A	@ 25°C heatsink temperature double side cooled
$I_{FSM}$ Max. peak, one-cycle forward, non-repetitive surge current	35800	A	t = 10ms No voltage reappplied
	37500		t = 8.3ms reappplied
	30100		t = 10ms 100% $V_{RRM}$ reappplied
	31500		t = 8.3ms reappplied
$I^2t$ Maximum $I^2t$ for fusing	6410	KA <sup>2</sup> s	t = 10ms No voltage reappplied
	5850		t = 8.3ms reappplied
	4530		t = 10ms 100% $V_{RRM}$ reappplied
	4135		t = 8.3ms reappplied
$I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing	64100	KA <sup>2</sup> √s	t = 0.1 to 10ms, no voltage reappplied
$V_{F(TO)1}$ Low level value of threshold voltage	0.74	V	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$ , $T_J = T_J \text{ max.}$
$V_{F(TO)2}$ High level value of threshold voltage	0.86		$(I > \pi \times I_{F(AV)})$ , $T_J = T_J \text{ max.}$
$r_{f1}$ Low level value of forward slope resistance	0.08	mΩ	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$ , $T_J = T_J \text{ max.}$
$r_{f2}$ High level value of forward slope resistance	0.07		$(I > \pi \times I_{F(AV)})$ , $T_J = T_J \text{ max.}$
$V_{FM}$ Max. forward voltage drop	1.22	V	$I_{pk} = 6000\text{A}$ , $T_J = T_J \text{ max.}$ , $t_p = 10\text{ms}$ sinusoidal wave

**Thermal and Mechanical Specifications**

Parameter	SD3000C..K	Units	Conditions
T <sub>J</sub> Max. junction operating temperature range	-40 to 180	°C	
T <sub>stg</sub> Max. storage temperature range	-55 to 200		
R <sub>thJ-hs</sub> Max. thermal resistance, junction to heatsink	0.042 0.020	K/W	DC operation single side cooled DC operation double side cooled
F Mounting force, ± 10%	22250 (2250)	N (Kg)	
wt Approximate weight	425	g	
Case style	DO-200AC(K-PUK)		See Outline Table

**ΔR<sub>thJ-hs</sub> Conduction**

(The following table shows the increment of thermal resistance R<sub>thJ-hs</sub> when devices operate at different conduction angles than DC)

Conduction angle	Sinusoidal conduction		Rectangular conduction		Units	Conditions
	Single Side	Double Side	Single Side	Double Side		
180°	0.002	0.002	0.001	0.001	K/W	T <sub>J</sub> = T <sub>J</sub> max.
120°	0.002	0.002	0.002	0.002		
90°	0.003	0.003	0.003	0.003		
60°	0.004	0.004	0.004	0.004		
30°	0.007	0.007	0.007	0.007		

**Ordering Information Table**

<b>Device Code</b>													
<table border="1" style="margin: auto;"> <tr> <td style="padding: 5px;"><b>SD</b></td> <td style="padding: 5px;"><b>300</b></td> <td style="padding: 5px;"><b>0</b></td> <td style="padding: 5px;"><b>C</b></td> <td style="padding: 5px;"><b>10</b></td> <td style="padding: 5px;"><b>K</b></td> </tr> <tr> <td style="text-align: center;">①</td> <td style="text-align: center;">②</td> <td style="text-align: center;">③</td> <td style="text-align: center;">④</td> <td style="text-align: center;">⑤</td> <td style="text-align: center;">⑥</td> </tr> </table>	<b>SD</b>	<b>300</b>	<b>0</b>	<b>C</b>	<b>10</b>	<b>K</b>	①	②	③	④	⑤	⑥	
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**SD3000C..K Series**

Bulletin I2090 rev. C 04/00

International  
**IRF** Rectifier

Outline Table

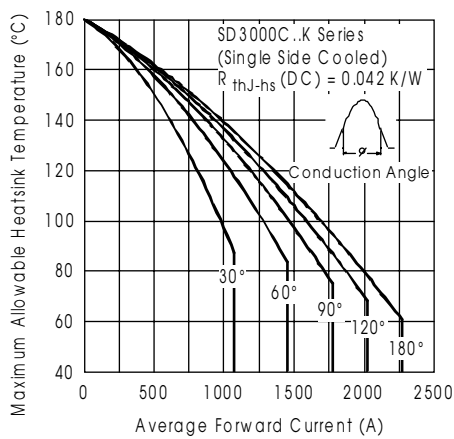
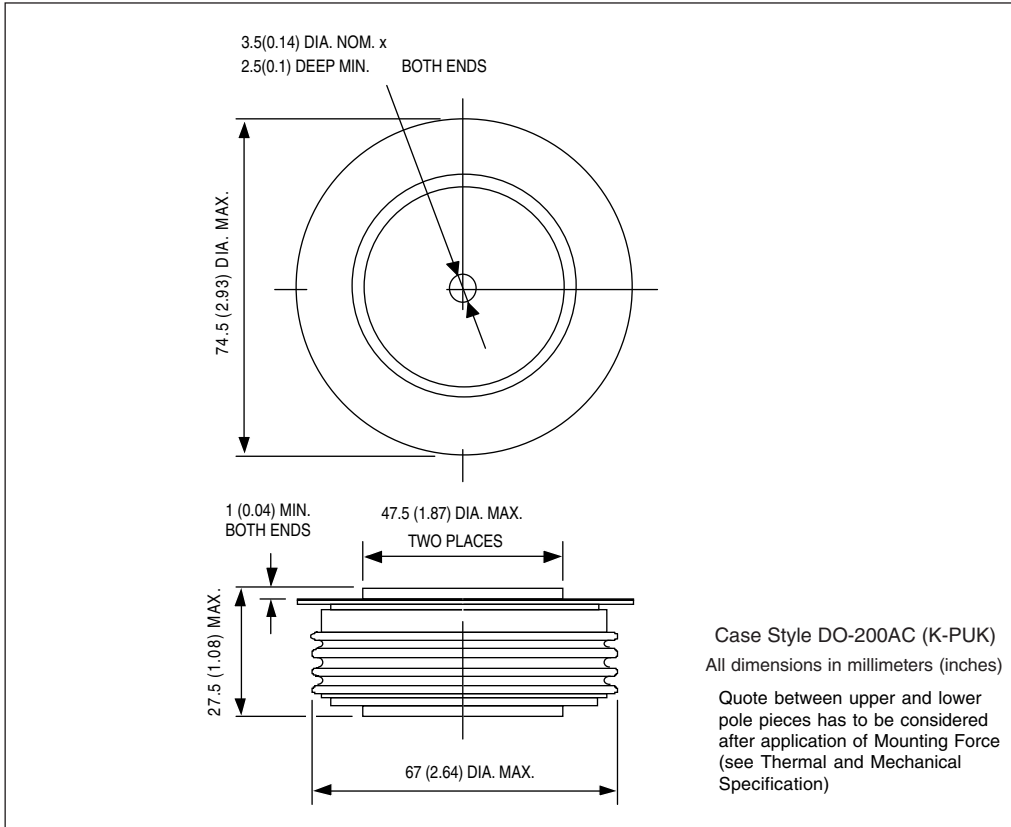


Fig. 1 - Current Ratings Characteristics

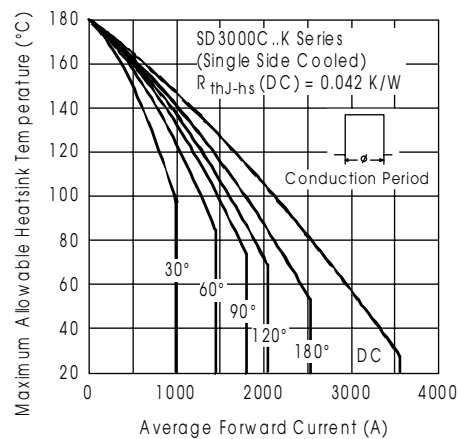


Fig. 2 - Current Ratings Characteristics

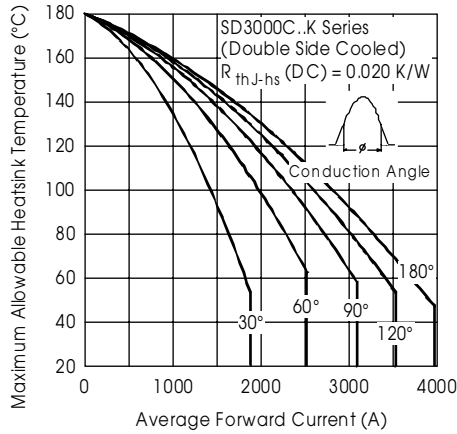


Fig. 3 - Current Ratings Characteristics

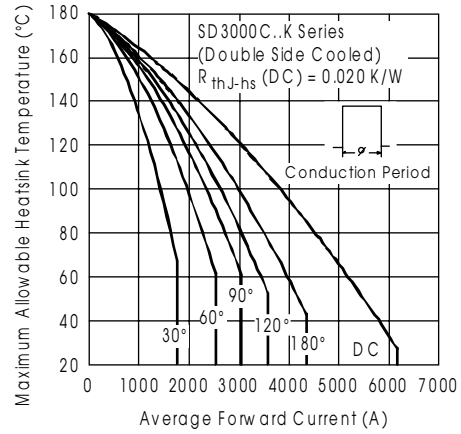


Fig. 4 - Current Ratings Characteristics

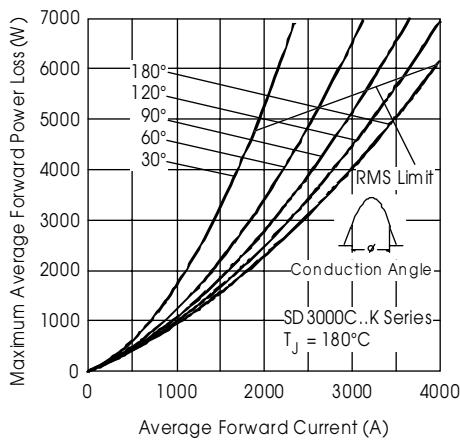


Fig. 5 - Forward Power Loss Characteristics

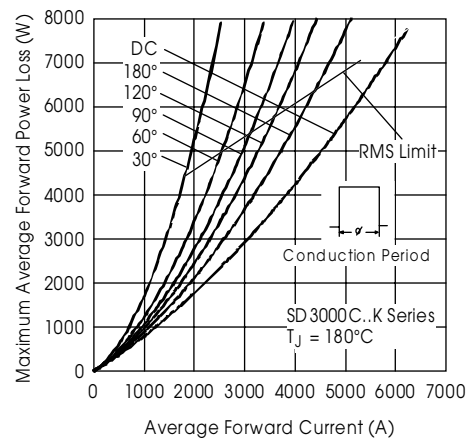


Fig. 6 - Forward Power Loss Characteristics

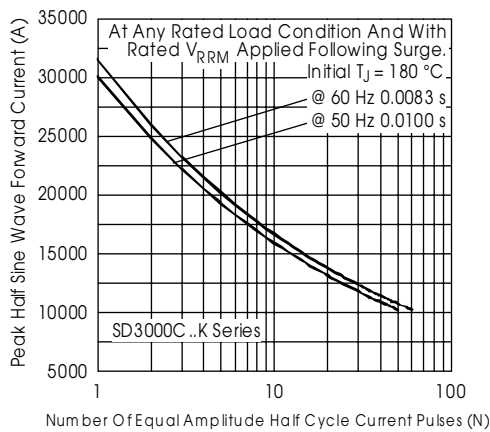


Fig. 7 - Maximum Non-Repetitive Surge Current  
Single and Double Side Cooled

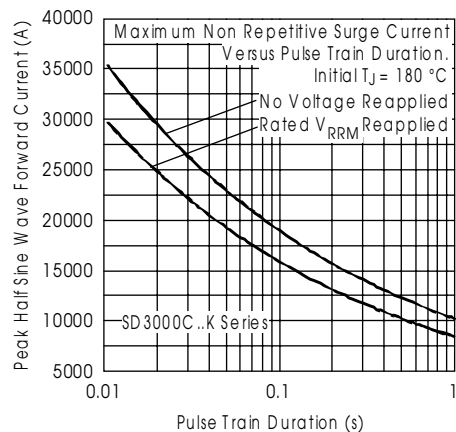


Fig. 8 - Maximum Non-Repetitive Surge Current  
Single and Double Side Cooled

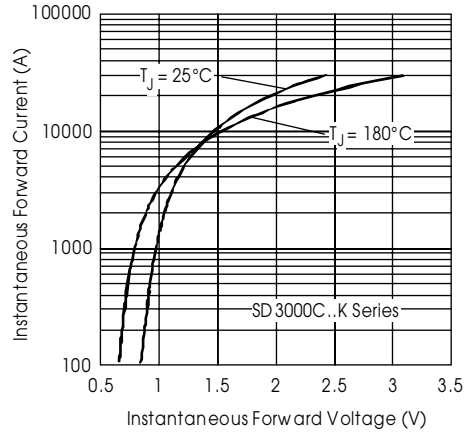


Fig. 9 - Forward Voltage Drop Characteristics

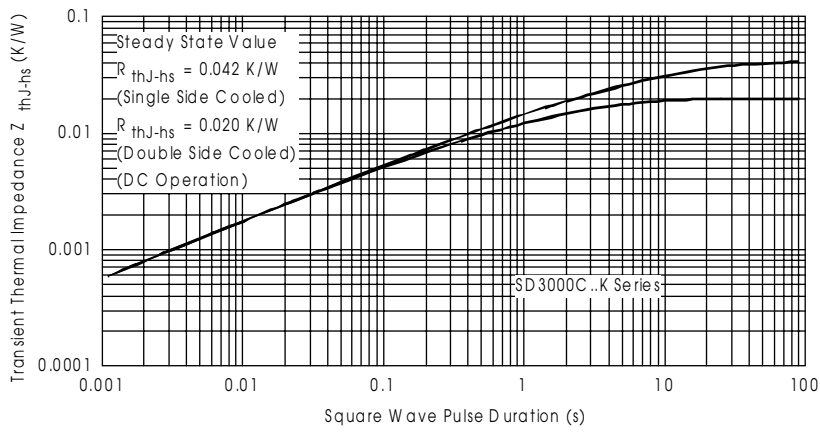


Fig. 10 - Thermal Impedance  $Z_{thJ-hs}$  Characteristics