



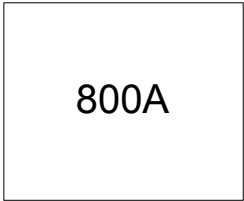
# SD400C..C SERIES

**STANDARD RECOVERY DIODES**

**Hockey Puk Version**

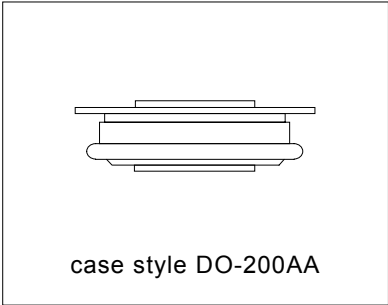
**Features**

- Wide current range
- High voltage ratings up to 2400V
- High surge current capabilities
- Diffused junction
- Hockey Puk version
- Case style DO-200AA



**Typical Applications**

- Converters
- Power supplies
- Machine tool controls
- High power drives
- Medium traction applications



**Major Ratings and Characteristics**

Parameters	SD400C..C	Units
$I_{F(AV)}$	800	A
	@ $T_{hs}$	55 °C
$I_{F(RMS)}$	1435	A
	@ $T_{hs}$	25 °C
$I_{FSM}$	@ 50Hz	8250 A
	@ 60Hz	8640 A
$I^2t$	@ 50Hz	340 KA <sup>2</sup> s
	@ 60Hz	311 KA <sup>2</sup> s
$V_{RRM}$ range	400 to 2400	V
$T_J$	- 40 to 190	°C

## SD400C..C Series

Bulletin I2084 rev. D 11/01

International  
 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. @ $T_J = 150^\circ\text{C}$ mA
SD400C..C	04	400	500	15
	08	800	900	
	12	1200	1300	
	16	1600	1700	
	20	2000	2100	
	25	2500	2600	
	28	2800	2900	
	32	3200	3300	

#### Forward Conduction

Parameter	SD400C..C	Units	Conditions
$I_{F(AV)}$ Max. average forward current @ Heatsink temperature	800 (425)	A	180° conduction, half sine wave
	55 (85)	°C	Double side (single side) cooled
$I_{F(RMS)}$ Max. RMS forward current	1435	A	@ 25°C heatsink temperature double side cooled
$I_{FSM}$ Max. peak, one-cycle forward, non-repetitive surge current	8250	A	t = 10ms No voltage
	8640		t = 8.3ms reapplied
	6940		t = 10ms 50% $V_{RRM}$
	7265		t = 8.3ms reapplied
$I^2t$ Maximum $I^2t$ for fusing	340	KA <sup>2</sup> s	t = 10ms No voltage
	311		t = 8.3ms reapplied
	241		t = 10ms 50% $V_{RRM}$
	220		t = 8.3ms reapplied
$I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing	3400	KA <sup>2</sup> √s	t = 0.1 to 10ms, no voltage reapplied
$V_{F(TO)1}$ Low level value of threshold voltage	0.80	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	0.83		$(I > \pi \times I_{F(AV)})$ , $T_J = T_J \text{ max.}$
$r_{f1}$ Low level value of forward slope resistance	0.55	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	0.53		$(I > \pi \times I_{F(AV)})$ , $T_J = T_J \text{ max.}$
$V_{FM}$ Max. forward voltage drop	1.86	V	$I_{pk} = 1930\text{A}$ , $T_J = T_J \text{ max.}$ , $t_p = 10\text{ms}$ sinusoidal wave

**Thermal and Mechanical Specifications**

Parameter	SD400C..C	Units	Conditions
T <sub>J</sub> Max. junction operating temperature range	-40 to 190	°C	
T <sub>stg</sub> Max. storage temperature range	-55 to 200		
R <sub>thJ-hs</sub> Max. thermal resistance, junction to heatsink	0.163 0.073	K/W	DC operation single side cooled DC operation double side cooled
F Mounting force, ± 10%	4900 (500)	N (Kg)	
wt Approximate weight	70	g	
Case style	DO-200AA		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°	0.017	0.018	0.011	0.012	K/W	T <sub>J</sub> = T <sub>J</sub> max.
120°	0.020	0.020	0.020	0.020		
90°	0.025	0.025	0.027	0.027		
60°	0.037	0.036	0.038	0.038		
30°	0.064	0.062	0.065	0.062		

**Ordering Information Table**

**Device Code**

<b>SD</b>	<b>40</b>	<b>0</b>	<b>C</b>	<b>24</b>	<b>C</b>
①	②	③	④	⑤	⑥

- 1** - Diode
- 2** - Essential part number
- 3** - 0 = Standard recovery
- 4** - C = Ceramic Puk
- 5** - Voltage code: code x 100 = V<sub>RRM</sub> (see Voltage Ratings Table)
- 6** - C = Puk Case DO-200AA

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## Outline Table

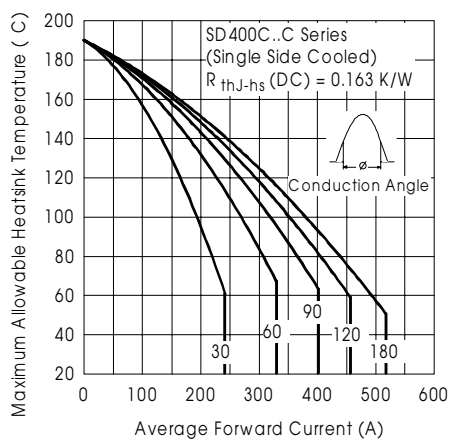
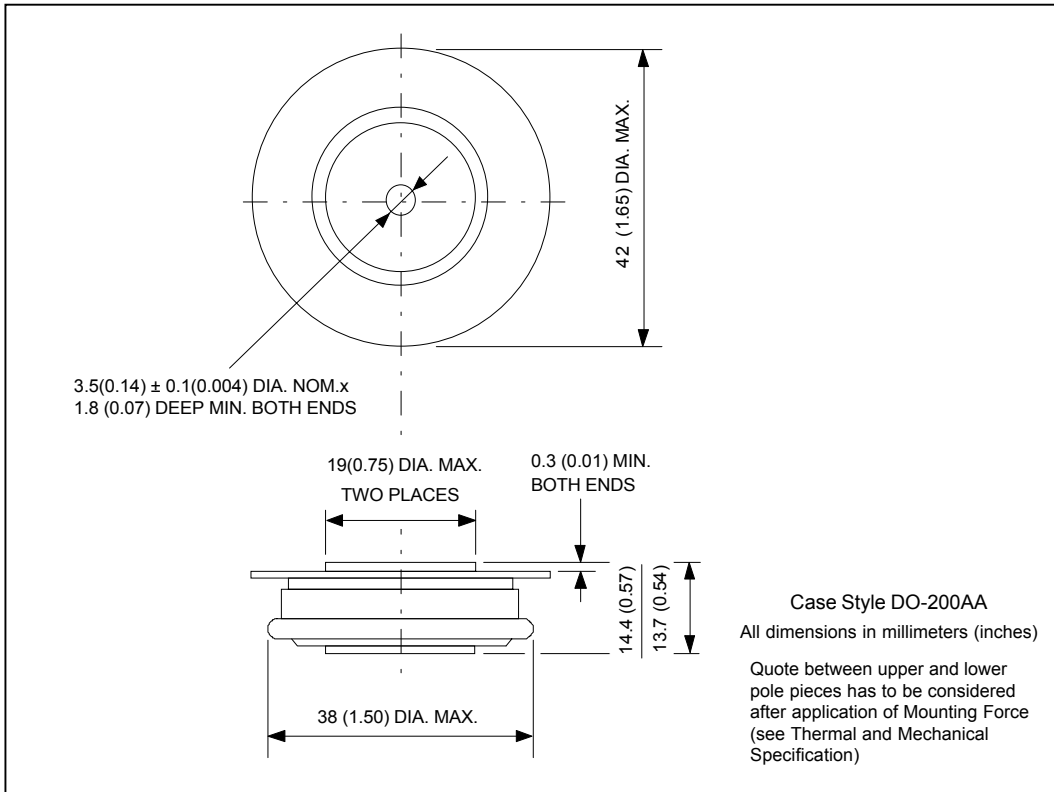


Fig. 1 - Current Ratings Characteristics

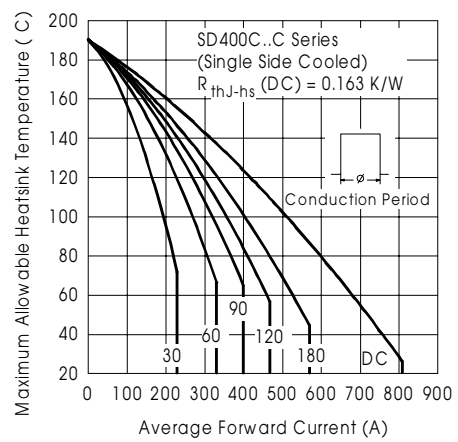


Fig. 2 - Current Ratings Characteristics

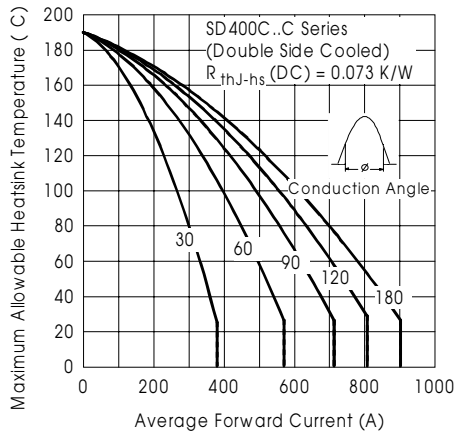


Fig. 3 - Current Ratings Characteristics

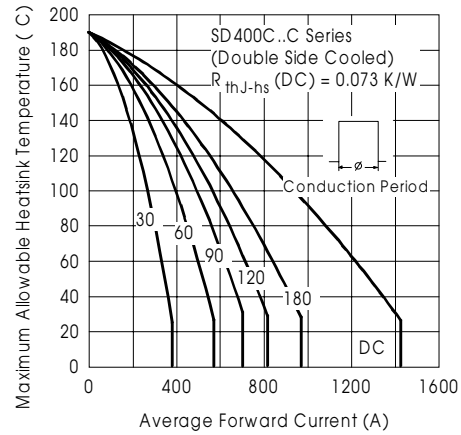


Fig. 4 - Current Ratings Characteristics

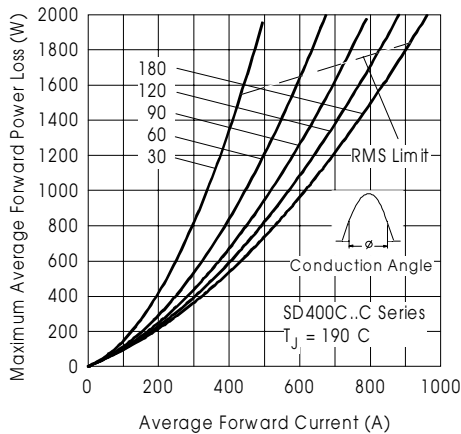


Fig. 5 - Forward Power Loss Characteristics

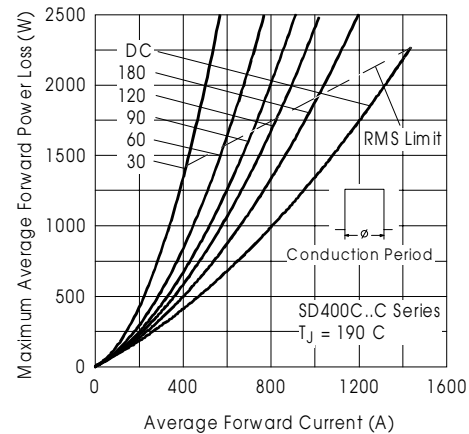


Fig. 6 - Forward Power Loss Characteristics

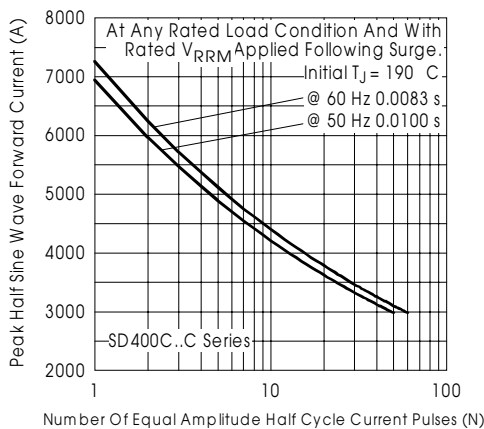


Fig. 7 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

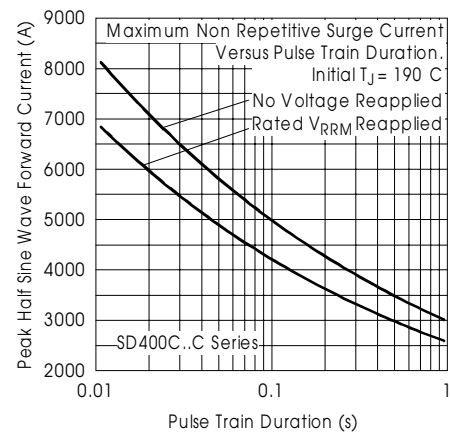


Fig. 8 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

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**IR** Rectifier

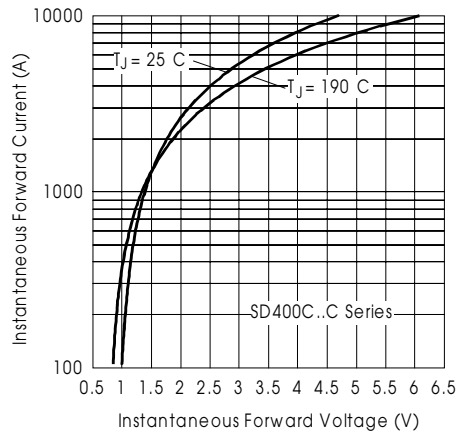


Fig. 9 - Forward Voltage Drop Characteristics

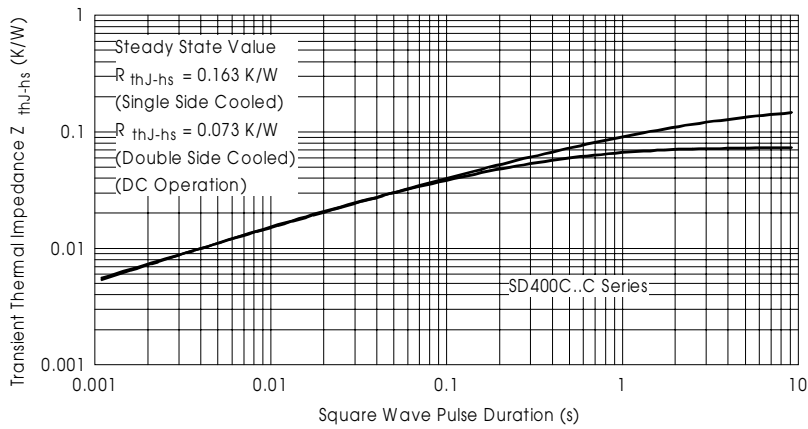


Fig. 10 - Thermal Impedance  $Z_{thjC}$  Characteristics

Data and specifications subject to change without notice.  
This product has been designed and qualified for Industrial Level.  
Qualification Standards can be found on IR's Web site.

International  
**IR** Rectifier

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