Bulletin I2036 rev. A 04/00

International
IOR Rectifier

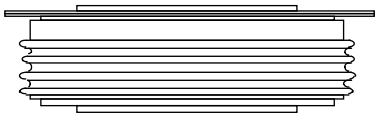
SD8500C..R SERIES

STANDARD RECOVERY DIODES **Hockey Puk Version**

9570A

Features

- Wide current range
- High voltage ratings up to 600V
- High surge current capabilities
- Diffused junction
- Hockey Puk version
- Case style B-44 (R-PUK)



case style B-44 (R-PUK)

Typical Applications

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

Major Ratings and Characteristics

Parameters		SD8500C..R	Units
$I_{F(AV)}$		9570	A
	@ T_{hs}	55	°C
$I_{F(RMS)}$		15350	A
	@ T_{hs}	25	°C
I_{FSM}	@ 50Hz	95500	A
	@ 60Hz	100000	A
I^2t	@ 50Hz	45620	KA^2s
	@ 60Hz	41640	KA^2s
V_{RRM} range		200 to 600	V
T_J		- 40 to 200	°C

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 = 200°C mA
SD8500C..R	02	200	300	200
	04	400	500	
	06	600	700	

Forward Conduction

Parameter		SD8500C..R	Units	Conditions		
$I_{F(AV)}$	Max. average forward current	9570 (5150)	A	180° conduction, half sine wave		
	@ Heatsink temperature	55 (85)	°C	Double side (single side) cooled		
$I_{F(RMS)}$	Max. RMS forward current	15350	A	@ 25°C heatsink temperature double side cooled		
I_{FSM}	Max. peak, one-cycle forward, non-repetitive surge current	95500	A	t = 10ms	No voltage reapplied	Sinusoidal halfwave, Initial T_J = T_J max.
		100000		t = 8.3ms		
		80300		t = 10ms	100% V_{RRM} reapplied	
		84100		t = 8.3ms		
I^2t	Maximum I^2t for fusing	45620	KA^2s	t = 10ms	No voltage reapplied	
		41640		t = 8.3ms		
		32260		t = 10ms	100% V_{RRM} reapplied	
		29450		t = 8.3ms		
$I^2\sqrt{t}$	Maximum $I^2\sqrt{t}$ for fusing	456200	$KA^2\sqrt{s}$	t = 0.1 to 10ms, no voltage reapplied		
$V_{F(TO)1}$	Low level value of threshold voltage	0.670	V	(16.7% x π x $I_{F(AV)}$ < I < π x $I_{F(AV)}$), T_J = T_J max.		
$V_{F(TO)2}$	High level value of threshold voltage	0.721		(I > π x $I_{F(AV)}$),T_J = T_J max.		
r_{f1}	Low level value of forward slope resistance	0.030	mΩ	(16.7% x π x $I_{F(AV)}$ < I < π x $I_{F(AV)}$), T_J = T_J max.		
r_{f2}	High level value of forward slope resistance	0.028		(I > π x $I_{F(AV)}$),T_J = T_J max.		
V_{FM}	Max. forward voltage drop	0.97	V	I_{pk}= 10000A, T_J = T_J max, t_p = 10ms sinus. wave		

Thermal and Mechanical Specifications

	Parameter	SD8500C..R	Units	Conditions
T_J	Max. junction operating temperature range	-40 to 200	°C	
T_{stg}	Max. storage temperature range	-55 to 200		
R_{thJ-hs}	Max. thermal resistance, junction to heatsink	0.02 0.01	K/W	DC operation single side cooled DC operation double side cooled
F	Mounting force, ± 10%	39200 (4000)	N (Kg)	
wt	Approximate weight	1590	g	
	Case style	B-44 (R-PUK)		See Outline Table

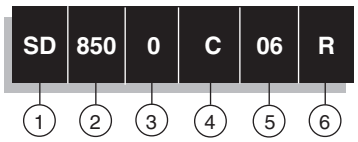
ΔR_{thJ-hs} Conduction

(The following table shows the increment of thermal resistence R_{thJ-hs} 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°	0.0009	0.0010	0.0006	0.0006	K/W	$T_J = T_J$ max.
120°	0.0010	0.0011	0.0010	0.0010		
90°	0.0013	0.0013	0.0014	0.0014		
60°	0.0019	0.0019	0.0020	0.0020		
30°	0.0033	0.0033	0.0034	0.0034		

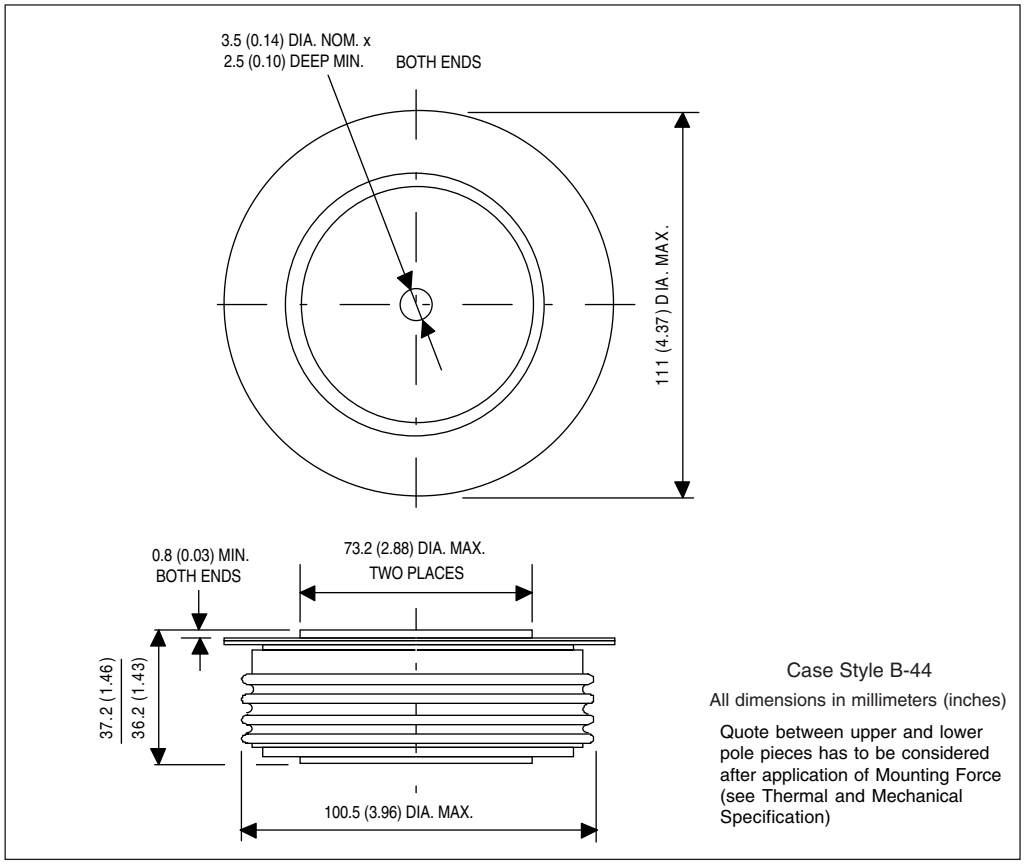
Ordering Information Table

Device Code



1 - Diode
2 - Essential part number
3 - 0 = Standard recovery
4 - C = Ceramic Puk
5 - Voltage code: code x 100 = V_{RRM} (see Voltage Ratings Table)
6 - R = Puk Case B-44 (R-PUK)

Outline Table



Case Style B-44

All dimensions in millimeters (inches)

Quote between upper and lower pole pieces has to be considered after application of Mounting Force (see Thermal and Mechanical Specification)

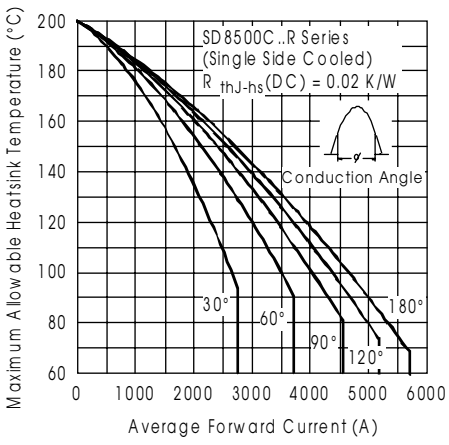


Fig. 1 - Current Ratings Characteristics

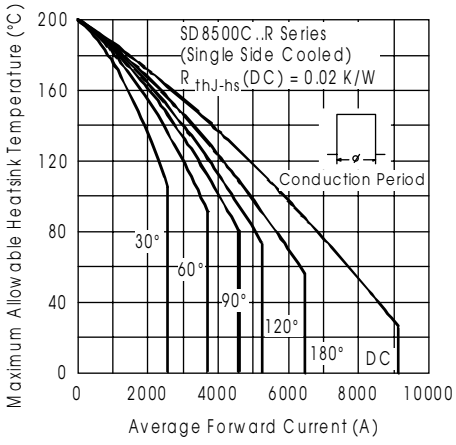


Fig. 2 - Current Ratings Characteristics

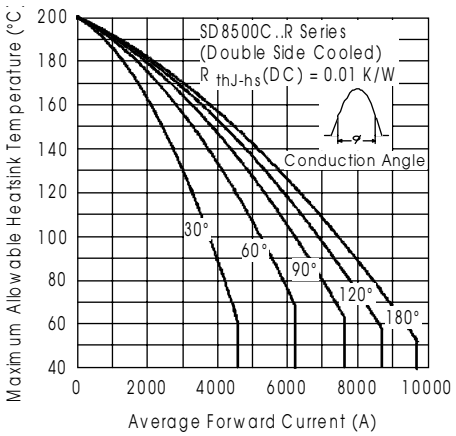


Fig. 3 - Current Ratings Characteristics

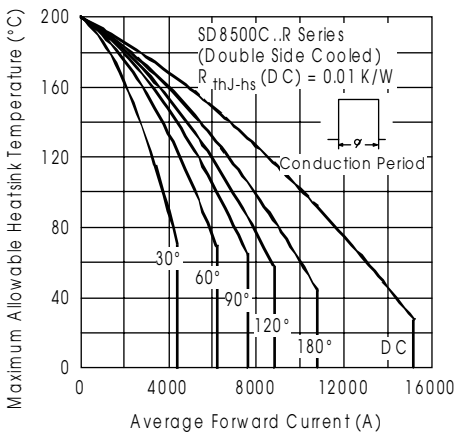


Fig. 4 - Current Ratings Characteristics

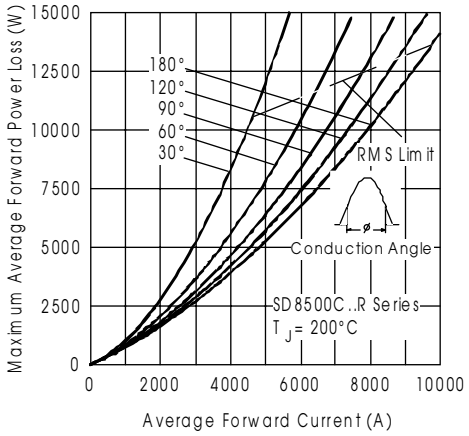


Fig. 5 - Forward Power Loss Characteristics

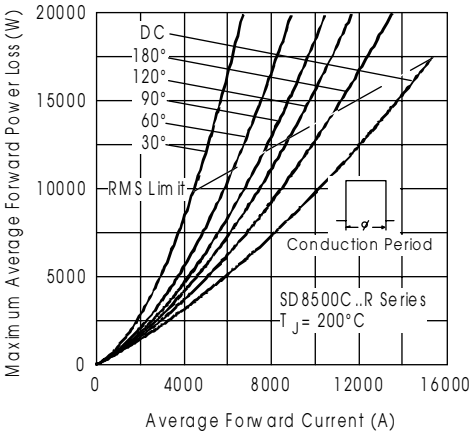


Fig. 6 - Forward Power Loss Characteristics

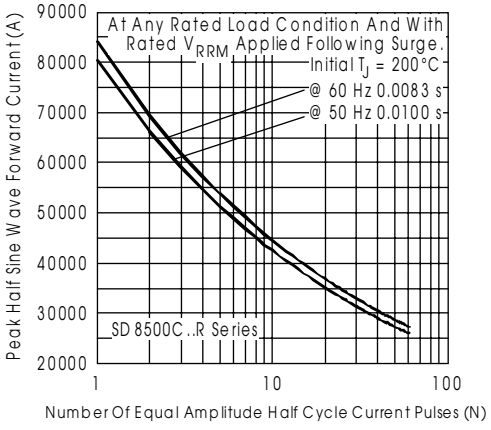


Fig. 7 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

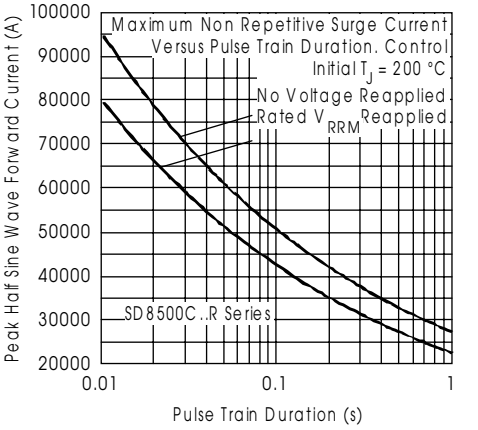


Fig. 8 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

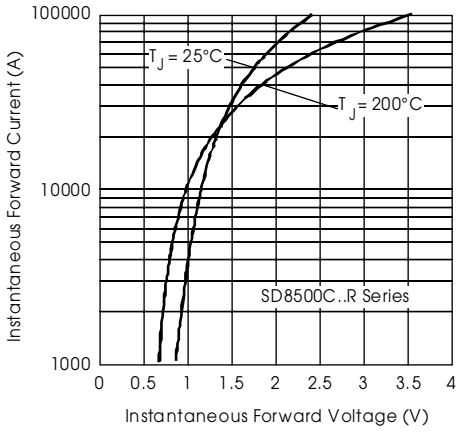


Fig. 9 - Forward Voltage Drop Characteristics

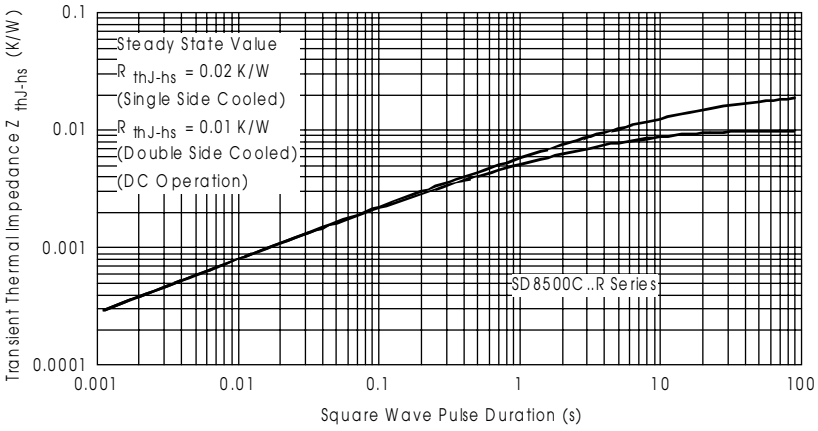


Fig. 10 - Thermal Impedance Z_{thJ-hs} Characteristics