Bulletin I2073 rev. D 04/00

International
IOR Rectifier

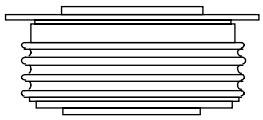
SD1100C..L SERIES

STANDARD RECOVERY DIODES **Hockey Puk Version**

1170A

Features

- Wide current range
- High voltage ratings up to 3200V
- High surge current capabilities
- Diffused junction
- Hockey Puk version
- Case style DO-200AB (B-PUK)



case style DO-200AB (B-PUK)

Typical Applications

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

Major Ratings and Characteristics

Parameters		SD1100C..L		Units
		04 to 20	25 to 32	
$I_{F(AV)}$		1170	910	A
	@ T_{hs}	55	55	°C
$I_{F(RMS)}$		2080	1660	A
	@ T_{hs}	25	25	°C
I_{FSM}	@ 50Hz	13000	10500	A
	@ 60Hz	13600	11000	A
I^2t	@ 50Hz	846	551	KA^2s
	@ 60Hz	772	503	KA^2s
V_{RRM} range		400to 2000	2500 to 3200	V
T_J		- 40 to 180	- 40 to 150	°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. @ $T_J = T_J$ max. mA
SD1100C..L	04	400	500	15
	08	800	900	
	12	1200	1300	
	16	1600	1700	
	20	2000	2100	
	25	2500	2600	
	30	3000	3100	
	32	3200	3300	

Forward Conduction

Parameter		SD1100C..L 04 to 20	SD1100C..L 25 to 32	Units	Conditions		
$I_{F(AV)}$	Max. average forward current	1170(600)	910(420)	A	180° conduction, half sine wave		
	@ Heatsink temperature	55(85)	55(85)	°C	Double side (single side) cooled		
$I_{F(RMS)}$	Max. RMS forward current	2080	1660	A	@ 25°C heatsink temperature double side cooled		
I_{FSM}	Max. peak, one-cycle forward, non-repetitive surge current	13000	10500	A	t = 10ms	No voltage reapplied	Sinusoidal halfwave, Initial $T_J = T_J$ max.
		13600	11000		t = 8.3ms		
		10930	8830		t = 10ms	100% V_{RRM} reapplied	
		11450	9250		t = 8.3ms		
I^2t	Maximum I^2t for fusing	846	551	KA^2s	t = 10ms	No voltage reapplied	
		772	503		t = 8.3ms		
		598	390		t = 10ms	100% V_{RRM} reapplied	
		546	356		t = 8.3ms		
$I^2\sqrt{t}$	Maximum $I^2\sqrt{t}$ for fusing	8460	5510	$KA^2\sqrt{s}$	t = 0.1 to 10ms, no voltage reapplied		
$V_{F(TO)1}$	Low level value of threshold voltage	0.78	0.84	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	0.94	0.88		(I > π x $I_{F(AV)}$), $T_J = T_J$ max.		
r_{f1}	Low level value of forward slope resistance	0.35	0.40	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	0.26	0.38		(I > π x $I_{F(AV)}$), $T_J = T_J$ max.		
V_{FM}	Max. forward voltage drop	1.31	1.44	V	I_{pk}= 1500A, $T_J = T_J$ max, t_p = 10ms sinusoidal wave		

Thermal and Mechanical Specifications

	Parameter	SD1100C..L		Units	Conditions
		04 to 20	25 to 32		
T_J	Max. junction operating temperature range	-40 to 180	-40 to 150	°C	
T_{stg}	Max. storage temperature range	-55 to 200	-55 to 200		
R_{thJ-hs}	Max. thermal resistance, junction	0.11		K/W	DC operation single side cooled
	to heatsink	0.05			DC operation double side cooled
F	Mounting force, ± 10%	9800		N	
		(1000)		(Kg)	
wt	Approximate weight	250		g	
	Case style	DO-200AB (B-PUK)			See Outline Table

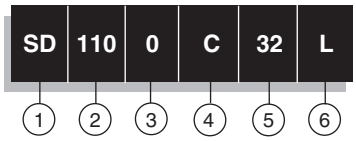
ΔR_{thJ-hs} Conduction

(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°	0.011	0.011	0.008	0.008	K/W	$T_J = T_J$ max.
120°	0.014	0.015	0.014	0.014		
90°	0.018	0.018	0.019	0.019		
60°	0.026	0.026	0.027	0.028		
30°	0.045	0.046	0.046	0.046		

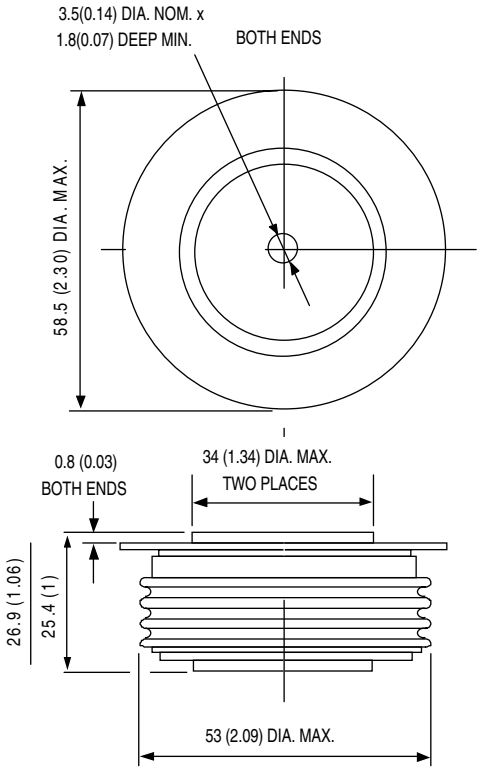
Ordering Information Table

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 - L = Puk Case DO-200AB (B-PUK)

Outline Table



Case Style DO-200AB (B-PUK)
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)

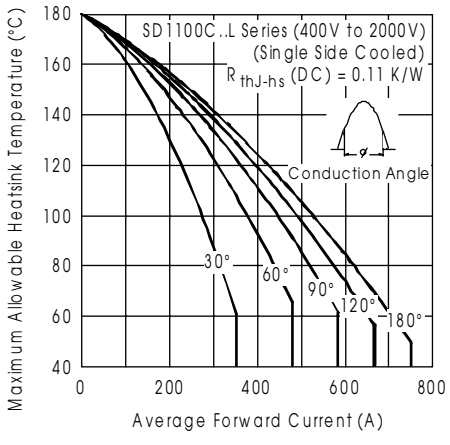


Fig. 1 - Current Ratings Characteristics

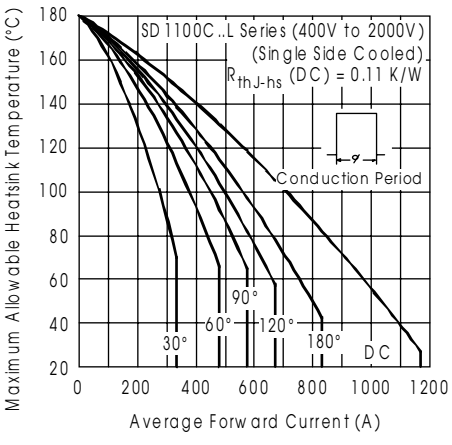


Fig. 2 - Current Ratings Characteristics

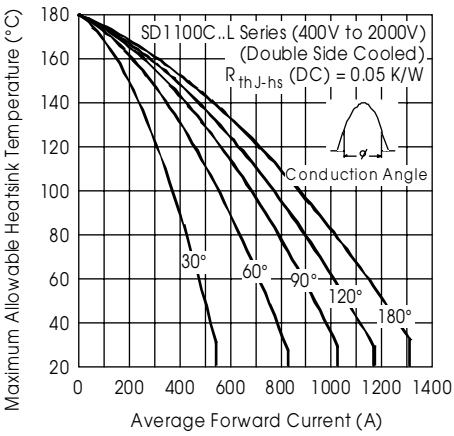


Fig. 3 - Current Ratings Characteristics

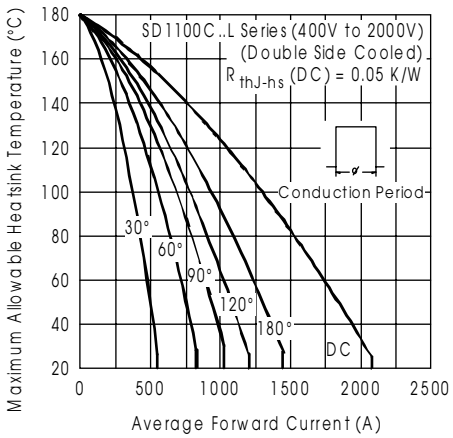


Fig. 4 - Current Ratings Characteristics

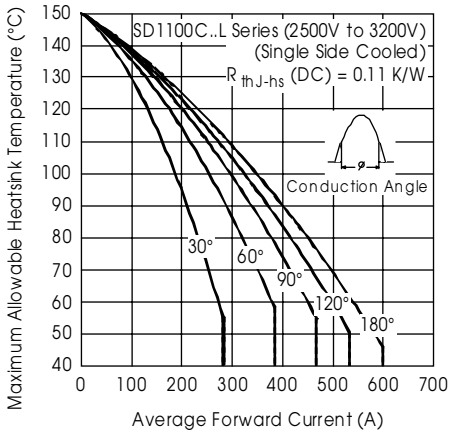


Fig. 5 - Current Ratings Characteristics

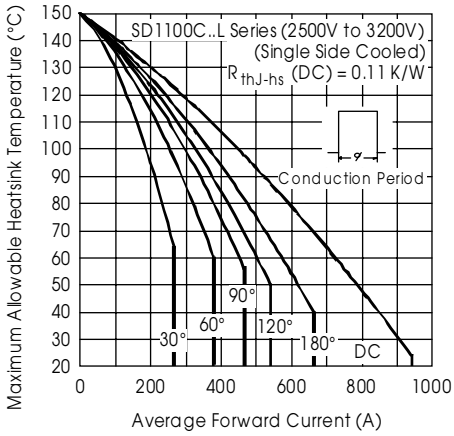


Fig. 6 - Current Ratings Characteristics

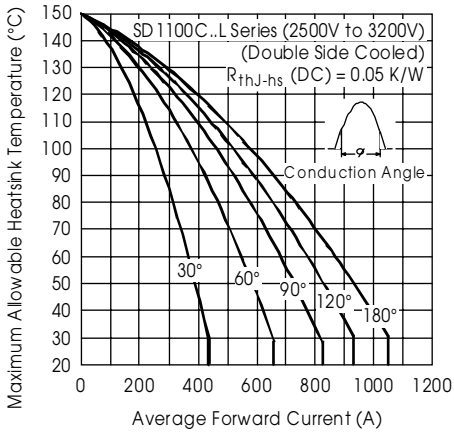


Fig. 7 - Current Ratings Characteristics

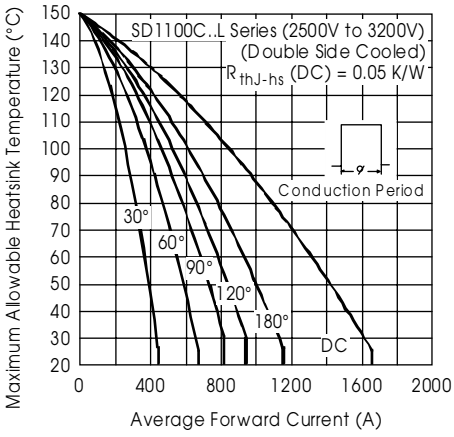


Fig. 8 - Current Ratings Characteristics

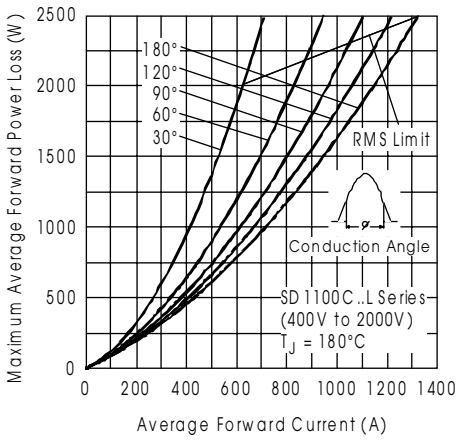


Fig. 9 - Forward Power Loss Characteristics

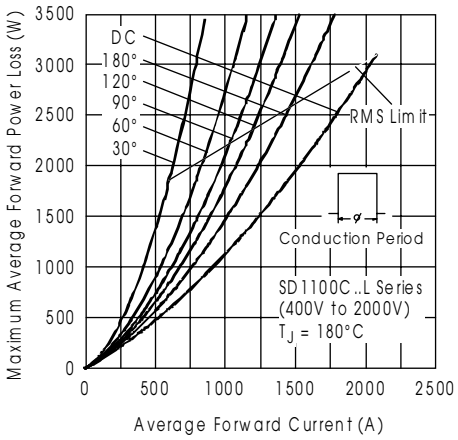


Fig. 10 - Forward Power Loss Characteristics

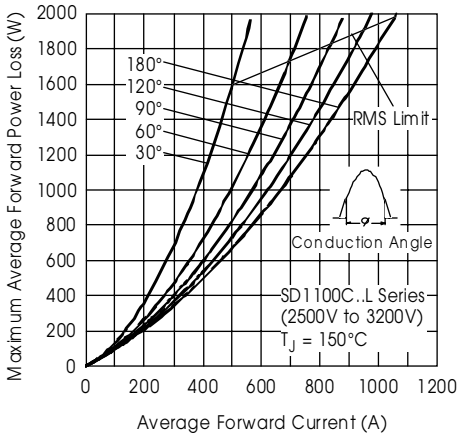


Fig. 11 - Forward Power Loss Characteristics

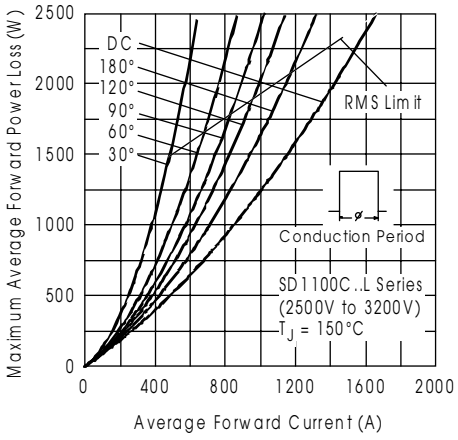


Fig. 12 - Forward Power Loss Characteristics

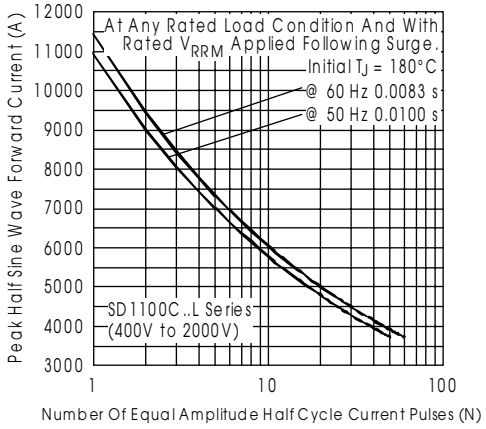


Fig. 13 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

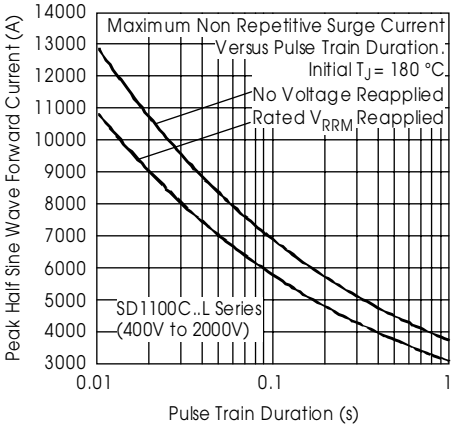


Fig. 14 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

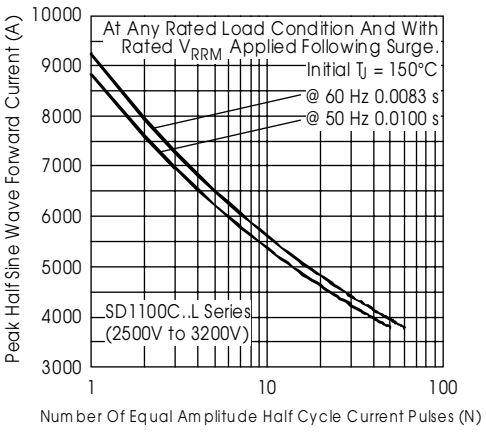


Fig. 15 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

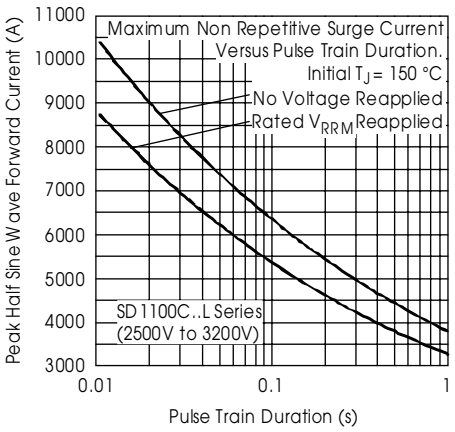


Fig. 16 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

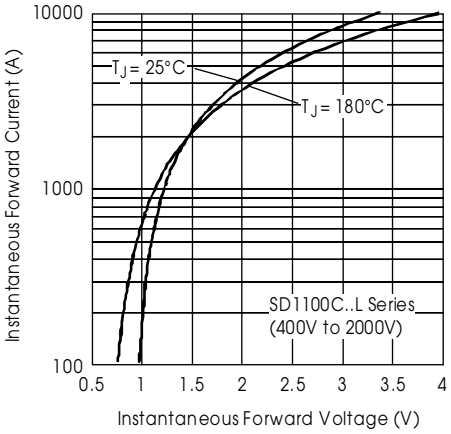


Fig. 17 - Forward Voltage Drop Characteristics

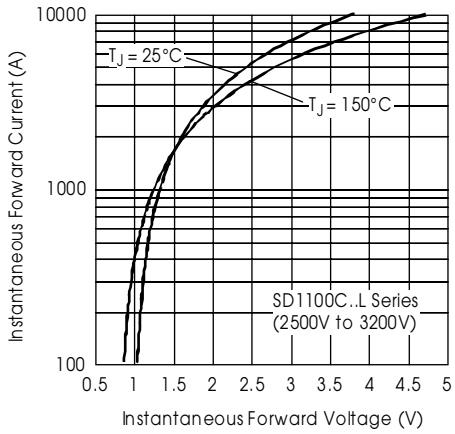


Fig. 18 - Forward Voltage Drop Characteristics

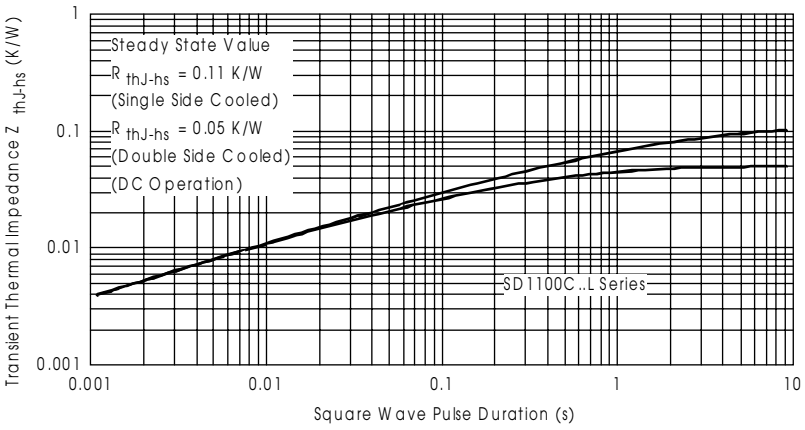


Fig. 19 - Thermal Impedance Z_{thJC} Characteristics