Bulletin I2087 rev. B 04/00

International
IOR Rectifier

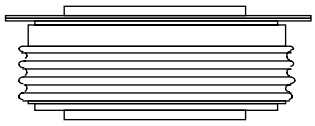
SD1700C..K SERIES

STANDARD RECOVERY DIODES **Hockey Puk Version**

2100A

Features

- Wide current range
- High voltage ratings up to 4500V
- High surge current capabilities
- Diffused junction
- Hockey Puk version
- Case style DO-200AC (K-PUK)



case style DO-200AC (K-PUK)

Typical Applications

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

Major Ratings and Characteristics

Parameters		SD1700C..K		Units
		24 to 36	40 to 45	
$I_{F(AV)}$		2080	1875	A
	@ T_{hs}	55	55	°C
$I_{F(RMS)}$		3600	3280	A
	@ T_{hs}	25	25	°C
I_{FSM}	@ 50Hz	24000	20000	A
	@ 60Hz	25150	20950	A
I^2t	@ 50Hz	2890	2000	KA^2s
	@ 60Hz	2630	1826	KA^2s
V_{RRM} range		2400 to 3600	4000 to 4500	V
T_J		- 40 to 150	- 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
SD1700C..K	24	2400	2500	75
	30	3000	3100	
	36	3600	3700	
	40	4000	4100	
	45	4500	4600	

Forward Conduction

Parameter		SD1700C..K 24 to 36	SD1700C..K 40 to 45	Units	Conditions		
$I_{F(AV)}$	Max. average forward current	2080(1000)	1875(920)	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	3600	3280	A	@ 25°C heatsink temperature double side cooled		
I_{FSM}	Max. peak, one-cycle forward, non-repetitive surge current	24000	20000	A	t = 10ms	No voltage reapplied	Sinusoidal halfwave, Initial $T_J = T_J$ max.
		25150	20950		t = 8.3ms		
		20200	16800		t = 10ms	50% V_{RRM} reapplied	
		21150	17600		t = 8.3ms		
I^2t	Maximum I^2t for fusing	2890	2000	KA^2s	t = 10ms	No voltage reapplied	
		2630	1826		t = 8.3ms		
		2040	1415		t = 10ms	50% V_{RRM} reapplied	
		1860	1292		t = 8.3ms		
$I^2\sqrt{t}$	Maximum $I^2\sqrt{t}$ for fusing	28900	20000	$KA^2\sqrt{s}$	t = 0.1 to 10ms, no voltage reapplied		
$V_{F(TO)1}$	Low level value of threshold voltage	0.89	0.88	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	1.02	0.99		(I > π x $I_{F(AV)}$),$T_J = T_J$ max.		
r_{f1}	Low level value of forward slope resistance	0.23	0.31	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	0.21	0.29		(I > π x $I_{F(AV)}$),$T_J = T_J$ max.		
V_{FM}	Max. forward voltage drop	1.81	2.11	V	I_{pk}= 4000A, $T_J = T_J$ max, t_p = 10ms sinusoidal wave		

Thermal and Mechanical Specifications

Parameter		SD1700C..K		Units	Conditions
		24 to 36	40 to 45		
T_J	Max. junction operating temperature range	-40 to 150	-40 to 150	°C	
T_{stg}	Max. storage temperature range	-55 to 200	-55 to 200		
R_{thJ-hs}	Max. thermal resistance, junction to heatsink	0.042		K/W	DC operation single side cooled
		0.020			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_{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°	0.002	0.002	0.001	0.001	K/W	$T_J = T_J$ 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		

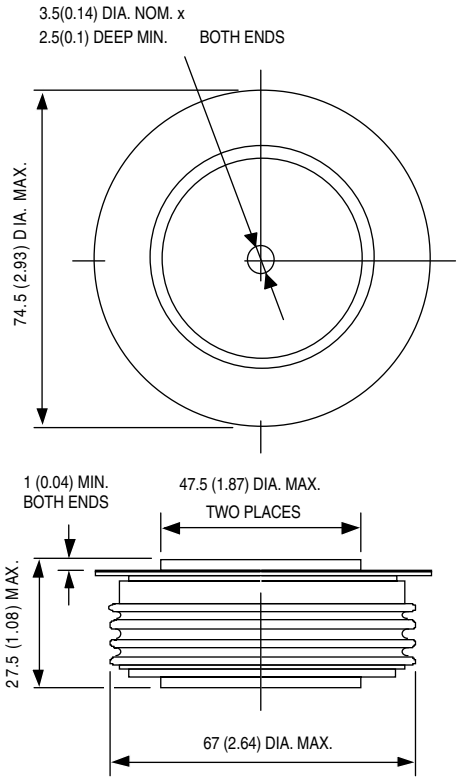
Ordering Information Table

Device Code

SD	170	0	C	45	K
1	2	3	4	5	6

1 - Diode
2 - Voltage Code x 100 = V_{RRM} (See Voltage Ratings table)
3 - 0 = Standard Recovery
4 - C = Ceramic Puk
5 - 24 to 36 = 2400V
40 to 45 = 4000V
6 - K = Puk Case DO-200AC (K-PUK)

Outline Table



Case Style DO-200AC (K-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)

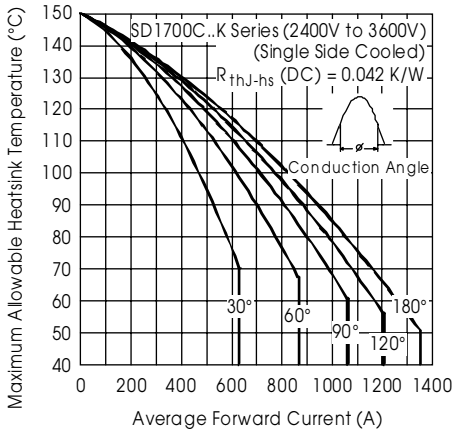


Fig. 1 - Current Ratings Characteristics

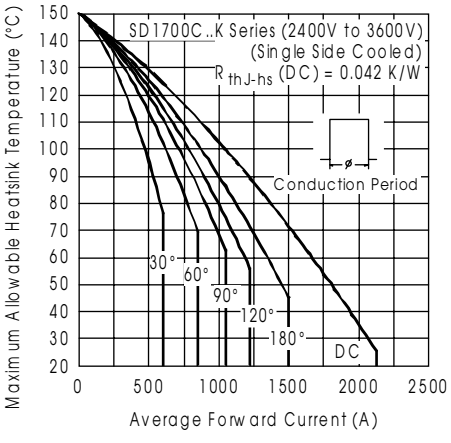


Fig. 2 - Current Ratings Characteristics

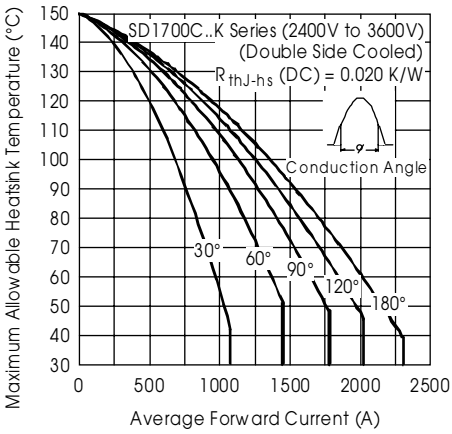


Fig. 3 - Current Ratings Characteristics

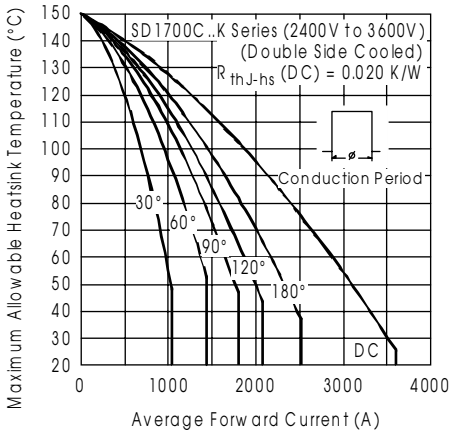


Fig. 4 - Current Ratings Characteristics

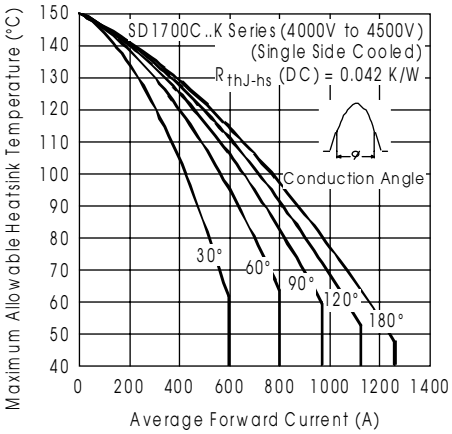


Fig. 5 - Current Ratings Characteristics

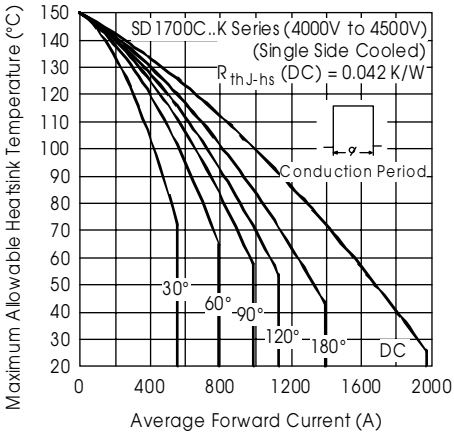


Fig. 6 - Current Ratings Characteristics

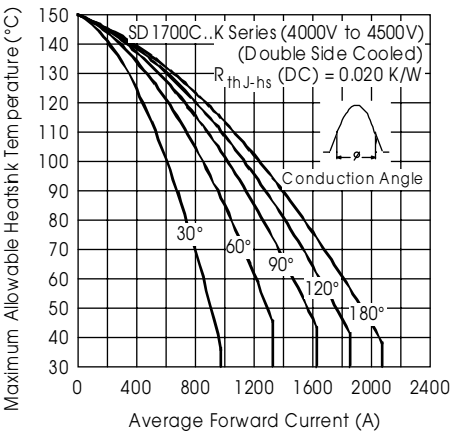


Fig. 7 - Current Ratings Characteristics

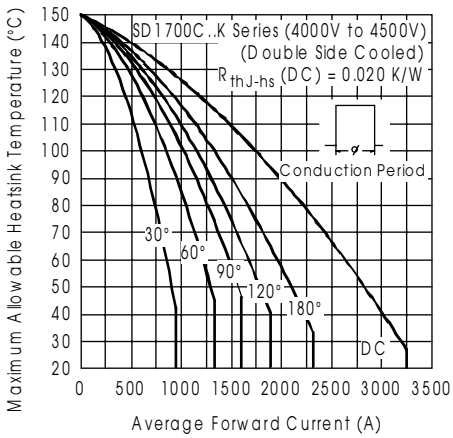


Fig. 8 - Current Ratings Characteristics

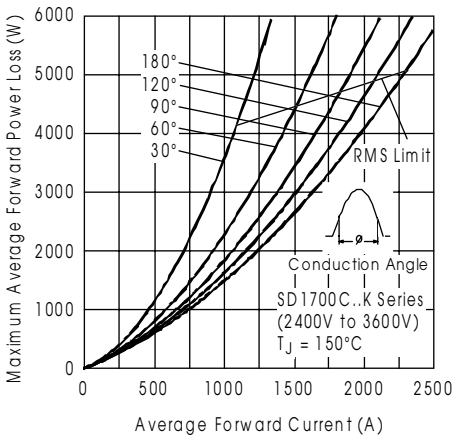


Fig. 9 - Forward Power Loss Characteristics

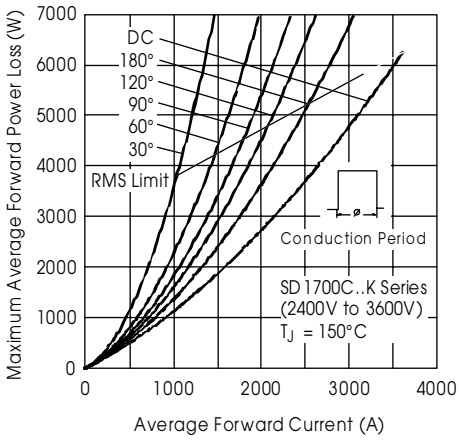


Fig. 10 - Forward Power Loss Characteristics

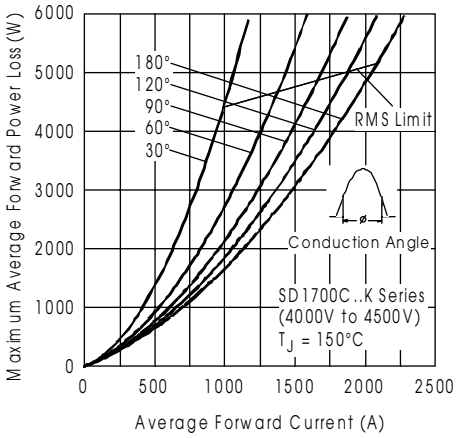


Fig. 11 - Forward Power Loss Characteristics

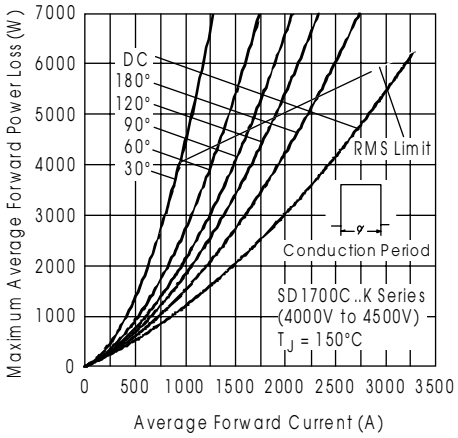


Fig. 12 - Forward Power Loss Characteristics

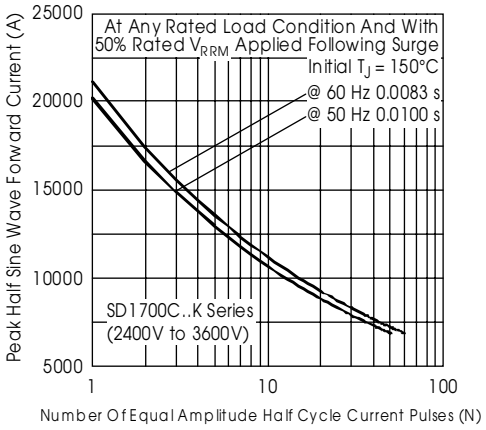


Fig. 13 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

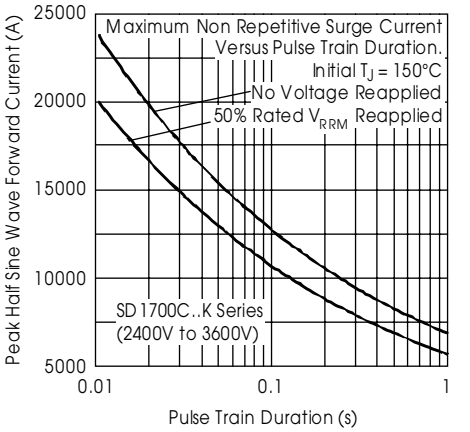


Fig. 14 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

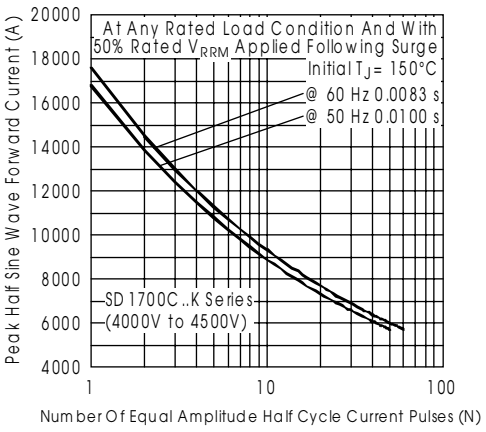


Fig. 15 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

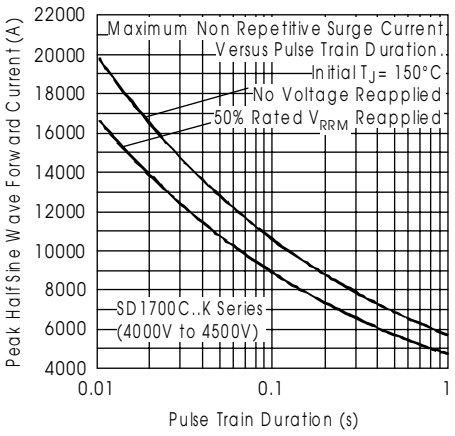


Fig. 16 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

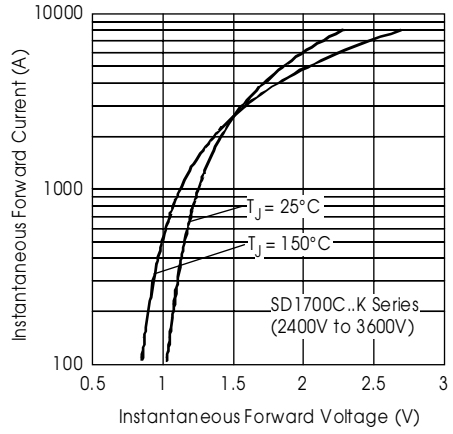


Fig. 17 - Forward Voltage Drop Characteristics

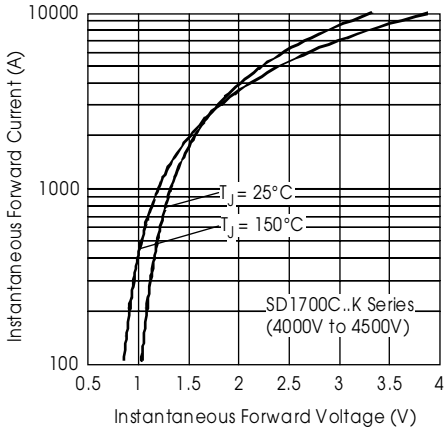


Fig. 18 - Forward Voltage Drop Characteristics

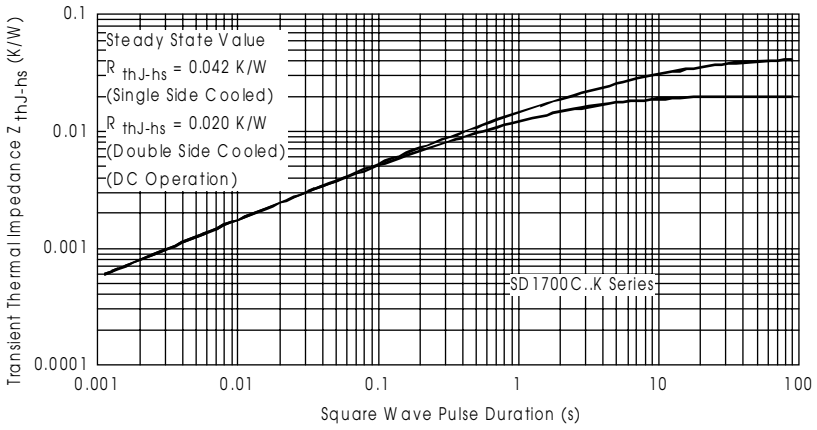


Fig. 19 - Thermal Impedance Z_{thJC} Characteristics

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