

SD400C..C SERIES

STANDARD RECOVERY DIODES

Hockey Puk Version

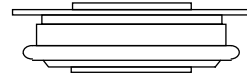
Features

- 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

800A



case style DO-200AA

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 ² s
@ 60Hz	311	KA ² s
V_{RRM} range	400 to 2400	V
T_J	- 40 to 190	°C

SD400C..C Series

Bulletin I2084 rev.C 04/00

International
IR 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. @ $T_J = T_J$ max. 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 ² 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 ² √s	t = 0.1 to 10ms, no voltage reapplied
$V_{F(TO)1}$ Low level value of threshold voltage	0.80	V	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}), T_J = T_J$ max.
$V_{F(TO)2}$ High level value of threshold voltage	0.83		$(I > \pi \times I_{F(AV)}), T_J = T_J$ max.
r_{f1} Low level value of forward slope resistance	0.55	mΩ	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}), T_J = T_J$ max.
r_{f2} High level value of forward slope resistance	0.53		$(I > \pi \times I_{F(AV)}), T_J = T_J$ max.
V_{FM} Max. forward voltage drop	1.86	V	$I_{pk} = 1930A, T_J = T_J$ max, $t_p = 10ms$ sinusoidal wave

Thermal and Mechanical Specifications

Parameter	SD400C..C	Units	Conditions
T_J Max. junction operating temperature range	-40 to 190	°C	
T_{stg} Max. storage temperature range	-55 to 200		
R_{thJ-hs} Max. thermal resistance, junction to heatsink	0.163 0.073	K/W	DC operationsingle side cooled DC operationdouble side cooled
F Mounting force, $\pm 10\%$	4900 (500)	N (Kg)	
wt Approximate weight	70	g	
Case style	DO-200AA		See Outline Table

ΔR_{thJ-hs} Conduction

(The following table shows the increment of thermal resistance 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°	0.017	0.018	0.011	0.012	K/W	$T_J = T_J \text{ max.}$
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					
SD	40	0	C	24	C
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_{RRM} (see Voltage Ratings Table)				
6	- C = Puk Case DO-200AA				

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Outline Table

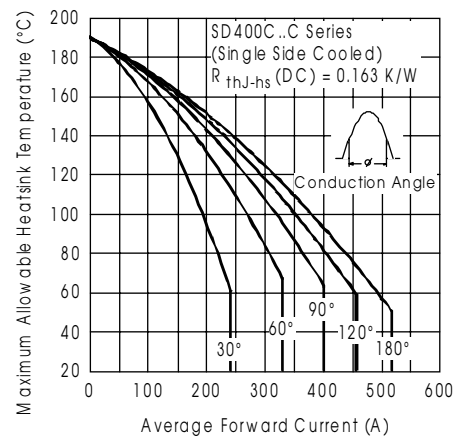
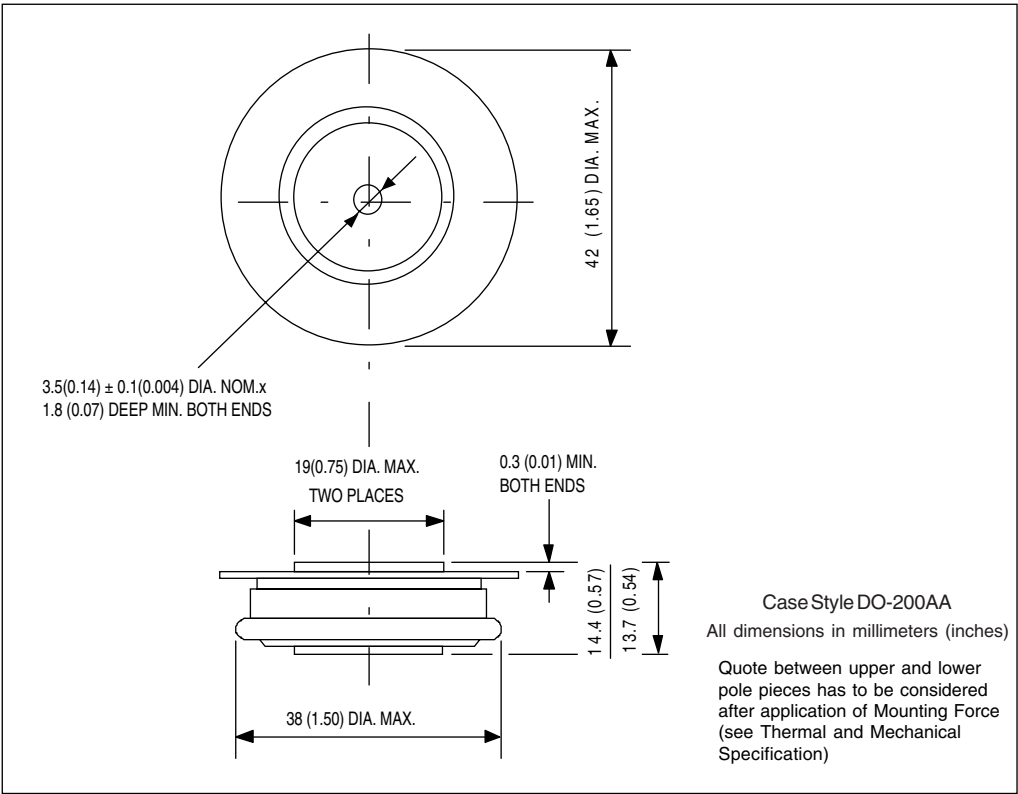


Fig. 1 - Current Ratings Characteristics

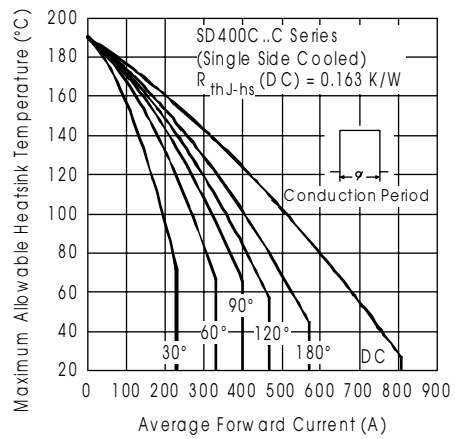


Fig. 2 - Current Ratings Characteristics

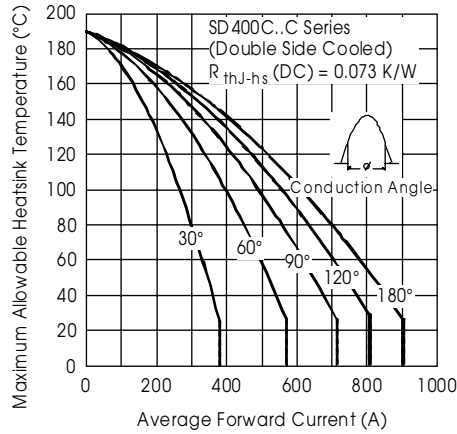


Fig. 3 - Current Ratings Characteristics

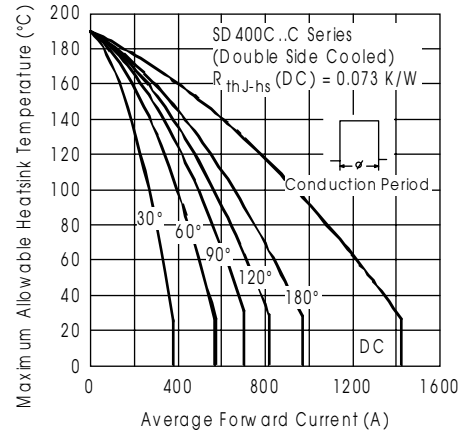


Fig. 4 - Current Ratings Characteristics

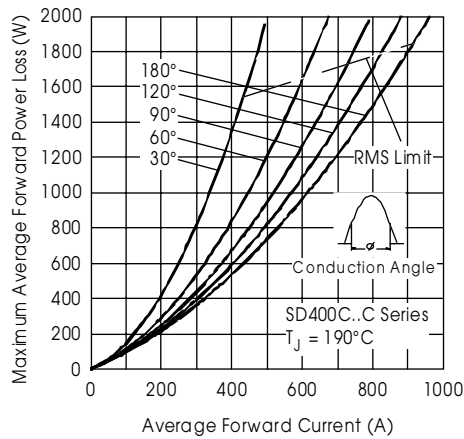


Fig. 5 - Forward Power Loss Characteristics

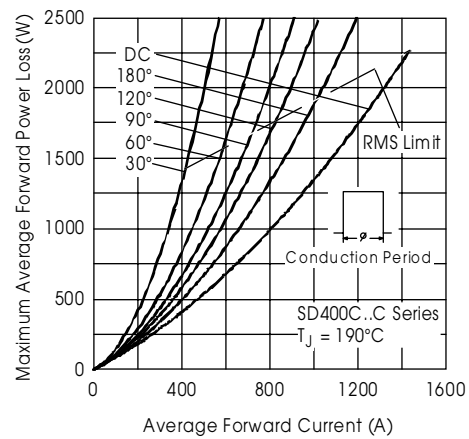


Fig. 6 - Forward Power Loss Characteristics

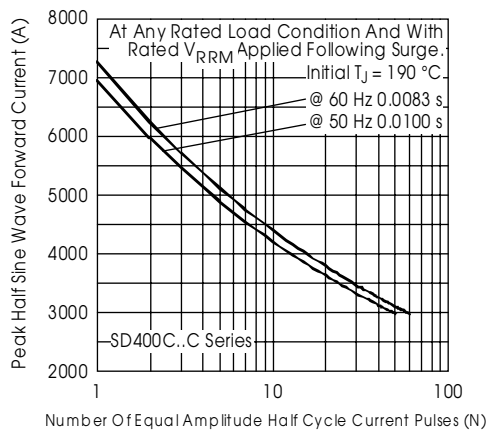


Fig. 7 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

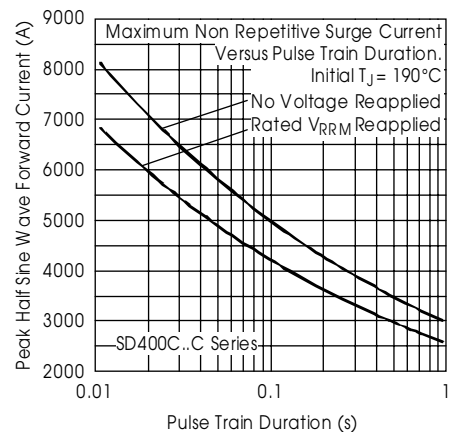


Fig. 8 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

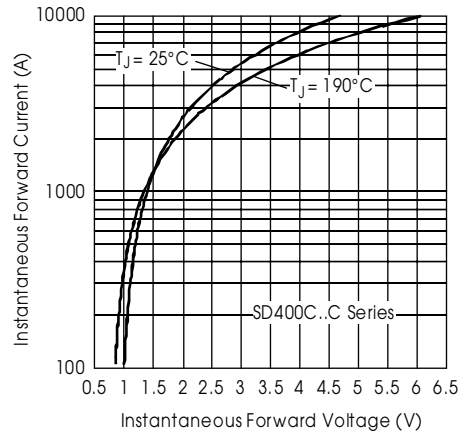


Fig. 9 - Forward Voltage Drop Characteristics

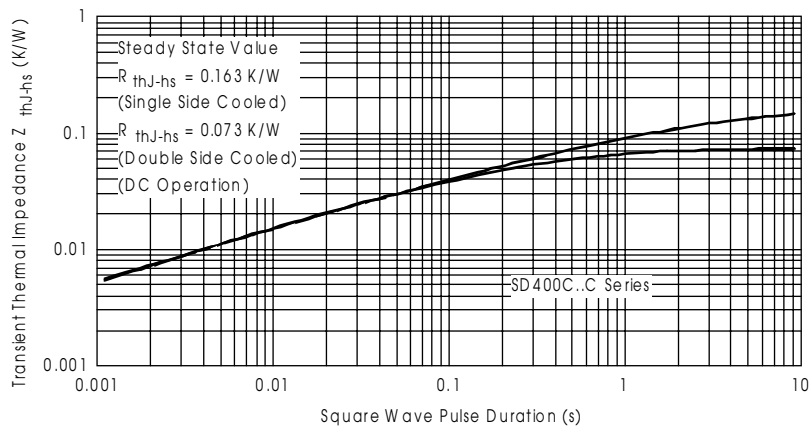


Fig. 10 - Thermal Impedance Z_{thJC} Characteristics