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***DISCRETE POWER DIODES and THYRISTORS***  
***DATA BOOK***

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### 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 <sup>2</sup> s
@ 60Hz	311	KA <sup>2</sup> s
$V_{RRM}$ range	400 to 2400	V
$T_J$	- 40 to 190	°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
SD400C..C	04	400	500	15
	08	800	900	
	12	1200	1300	
	16	1600	1700	
	20	2000	2100	
	24	2400	2500	

## 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 100% $V_{RRM}$
	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 100% $V_{RRM}$
	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	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$ , $T_J = T_J$ 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

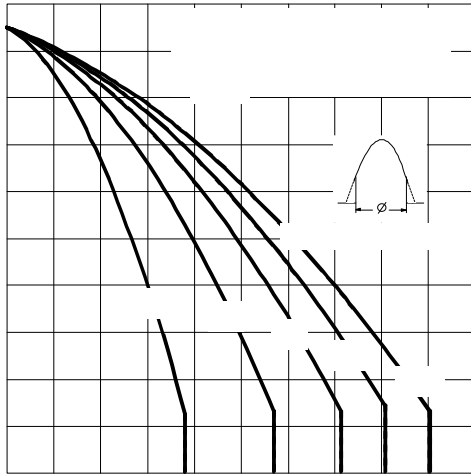


Fig. 3 - Current Ratings Characteristics

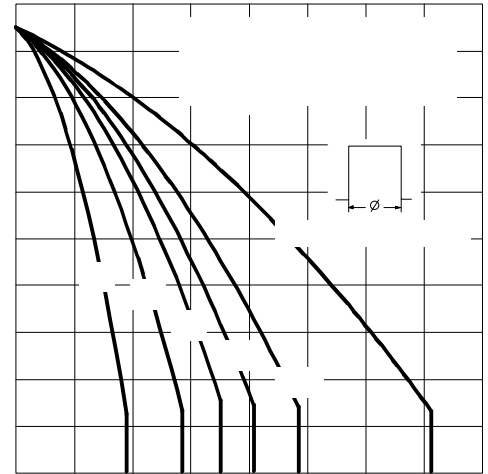


Fig. 4 - Current Ratings Characteristics

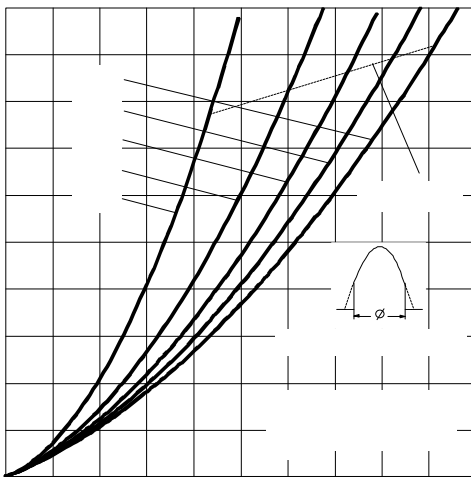


Fig. 5 - Forward Power Loss Characteristics

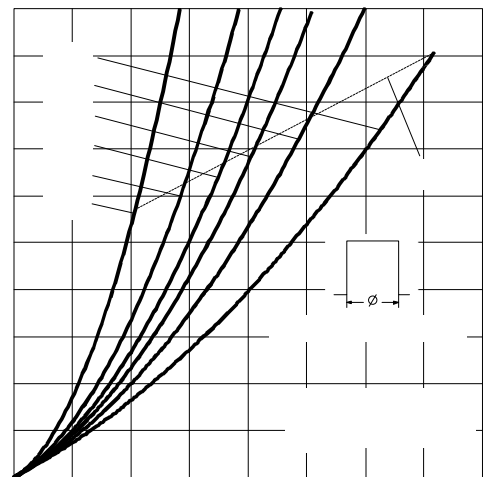


Fig. 6 - Forward Power Loss Characteristics

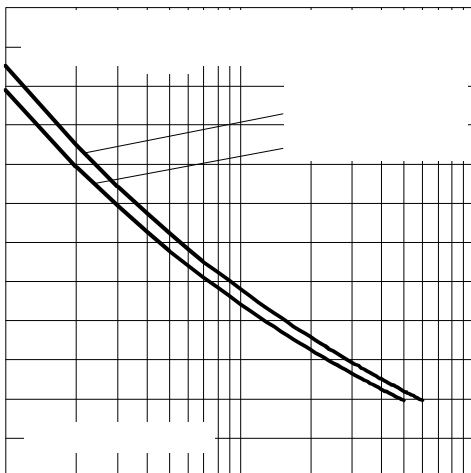


Fig. 7 - Maximum Non-Repetitive Surge Current

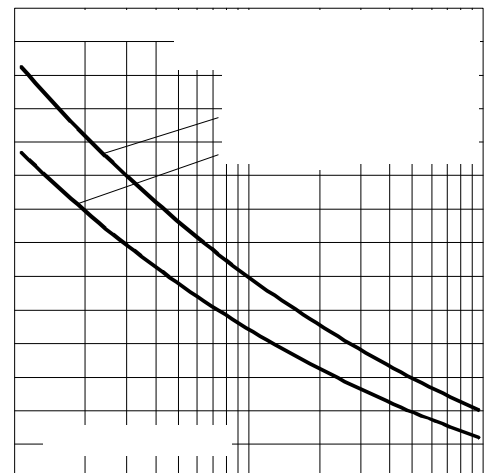


Fig. 8 - Maximum Non-Repetitive Surge Current

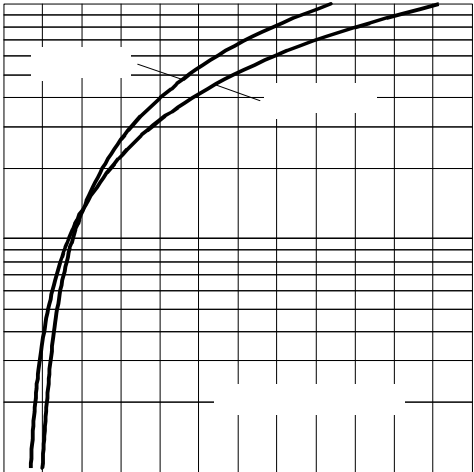


Fig. 9 - Forward Voltage Drop Characteristics

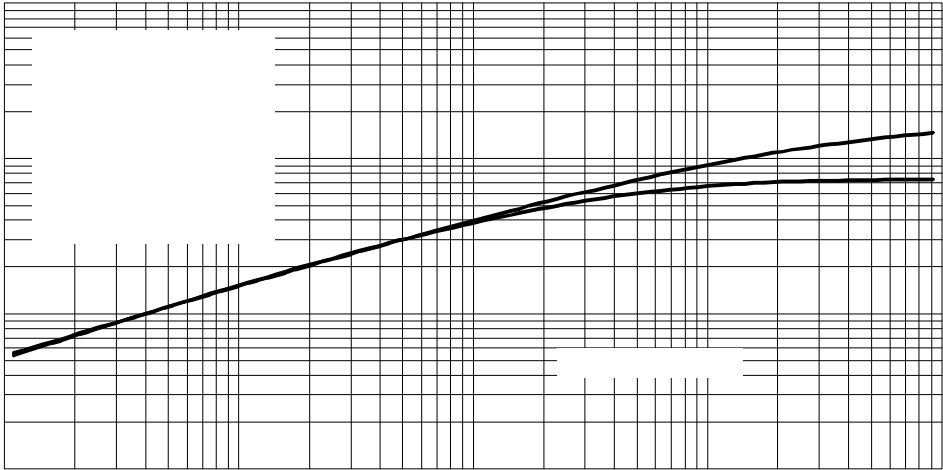


Fig. 10 - Thermal Impedance  $Z_{thJC}$  Characteristics

## 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 operation single side cooled DC operation double side cooled
F Mounting force, $\pm 10\%$	4900 (500)	N (Kg)	
wt Approximate weight	70	g	
Case style	DO-200AA		See Outline Table

 $\Delta R_{thJ-hs}$  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													
<table border="1" style="margin: auto;"> <tr> <td style="background-color: black; color: white; padding: 5px;">SD</td> <td style="background-color: black; color: white; padding: 5px;">40</td> <td style="background-color: black; color: white; padding: 5px;">0</td> <td style="background-color: black; color: white; padding: 5px;">C</td> <td style="background-color: black; color: white; padding: 5px;">24</td> <td style="background-color: black; color: white; padding: 5px;">C</td> </tr> <tr> <td style="text-align: center;">①</td> <td style="text-align: center;">②</td> <td style="text-align: center;">③</td> <td style="text-align: center;">④</td> <td style="text-align: center;">⑤</td> <td style="text-align: center;">⑥</td> </tr> </table>	SD	40	0	C	24	C	①	②	③	④	⑤	⑥	
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												

Outline Table

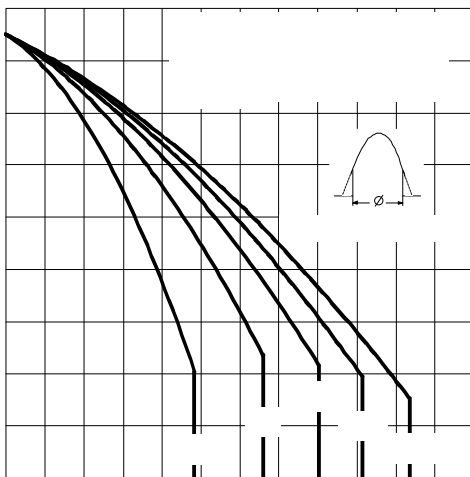
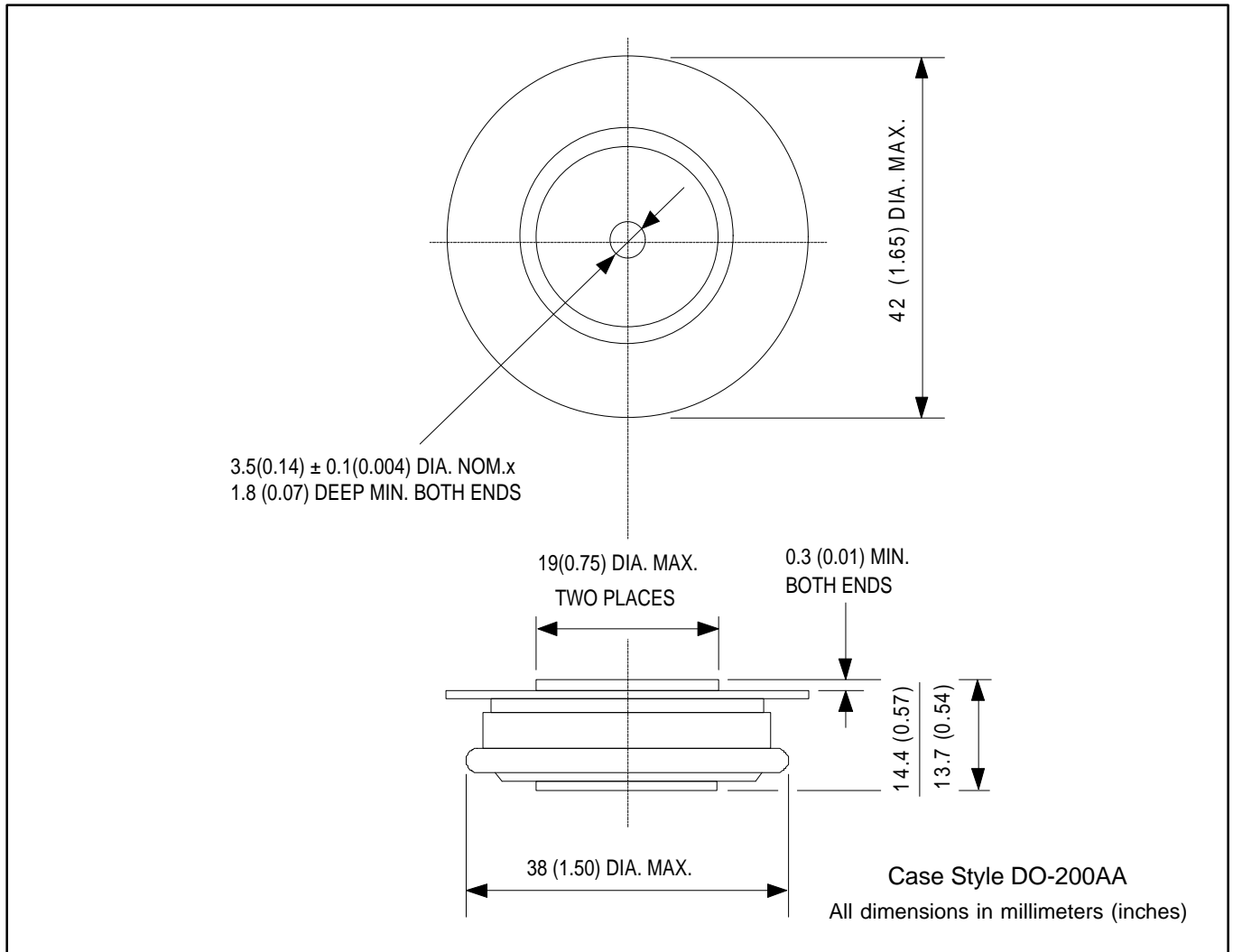


Fig. 1 - Current Ratings Characteristics

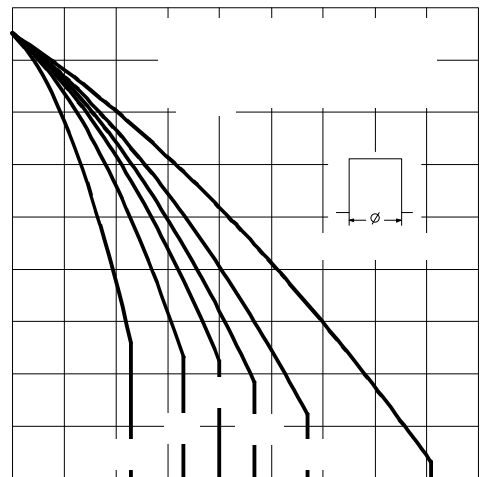


Fig. 2 - Current Ratings Characteristics