

---

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

---

## STANDARD RECOVERY DIODES

## Hockey Puk Version

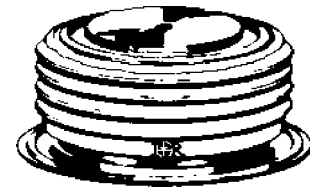
### Features

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

1200A

### Typical Applications

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



case style DO-200AB (B-PUK)

### Major Ratings and Characteristics

Parameters	SD800C..L		Units	
	24 to 36	40 to 45		
$I_{F(AV)}$	1180	1065	A	
@ $T_{hs}$	55	55	°C	
$I_{F(RMS)}$	2280	2040	A	
@ $T_{hs}$	25	25	°C	
$I_{FSM}$	@ 50Hz	13600	12200	A
	@ 60Hz	14240	12800	A
$I^2t$	@ 50Hz	925	745	KA <sup>2</sup> s
	@ 60Hz	845	680	KA <sup>2</sup> s
$V_{RRM}$ 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
SD800C..L	24	2400	2500	50
	30	3000	3100	
	36	3600	3700	
	40	4000	4100	
	45	4500	4600	

## Forward Conduction

Parameter	SD800C..L		Units	Conditions		
	24 to 36	40 to 45				
$I_{F(AV)}$ Max. average forward current @ Heatsink temperature	1180(550)	1065(490)	A	180° conduction, half sine wave Double side (single side) cooled		
	55(85)	55(85)	°C			
$I_{F(RMS)}$ Max. RMS forward current	2280	2040	A	@ 25°C heatsink temperature double side cooled		
$I_{FSM}$ Max. peak, one-cycle forward, non-repetitive surge current	13600	12200	A	t = 10ms	No voltage	Sinusoidal halfwave, Initial $T_J = T_J$ max.
	14240	12800		t = 8.3ms	reapplied	
	11440	10250		t = 10ms	50% $V_{RRM}$	
	11980	10750		t = 8.3ms	reapplied	
$I^2t$ Maximum $I^2t$ for fusing	925	745	KA <sup>2</sup> s	t = 10ms	No voltage	
	845	680		t = 8.3ms	reapplied	
	654	526		t = 10ms	50% $V_{RRM}$	
	597	480		t = 8.3ms	reapplied	
$I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing	9250	7450	KA <sup>2</sup> /s	t = 0.1 to 10ms, no voltage reapplied		
$V_{F(TO)1}$ Low level value of threshold voltage	0.90	1.06	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	1.10	1.18		$(I > \pi \times I_{F(AV)})$ , $T_J = T_J$ max.		
$r_{f1}$ Low level value of forward slope resistance	0.38	0.44	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	0.34	0.41		$(I > \pi \times I_{F(AV)})$ , $T_J = T_J$ max.		
$V_{FM}$ Max. forward voltage drop	1.66	1.95	V	$I_{pk} = 2000A$ , $T_J = T_J$ max, $t_p = 10ms$ sinusoidal wave		

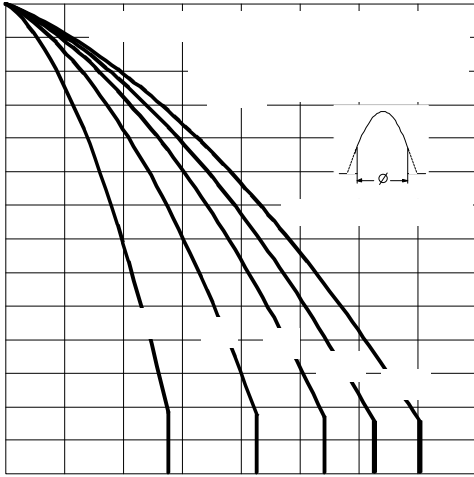


Fig. 3 - Current Ratings Characteristics

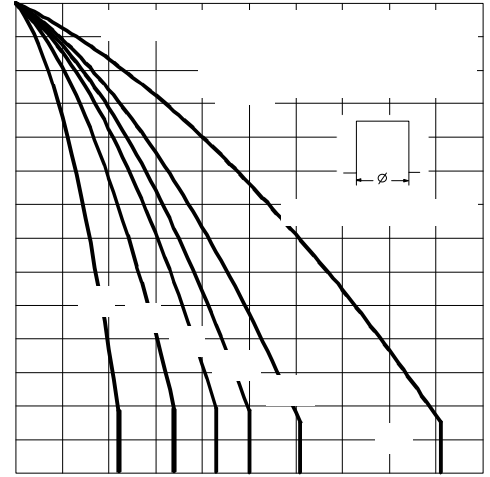


Fig. 4 - Current Ratings Characteristics

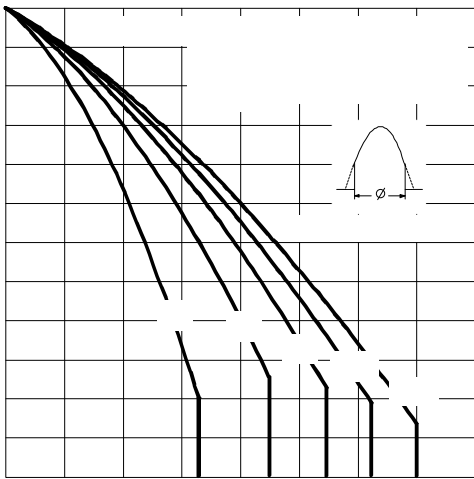


Fig. 5 - Current Ratings Characteristics

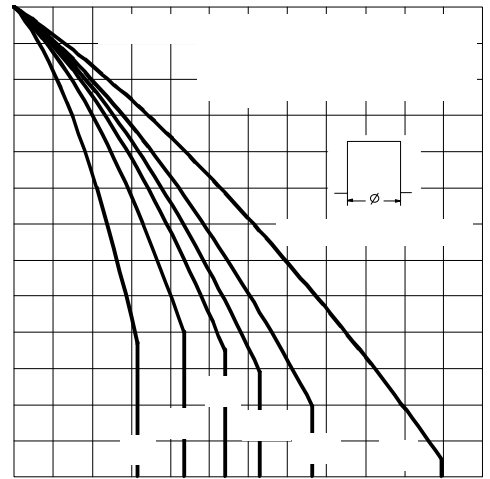


Fig. 6 - Current Ratings Characteristics

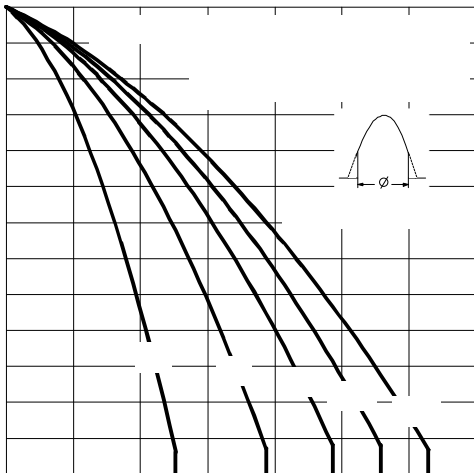


Fig. 7 - Current Ratings Characteristics

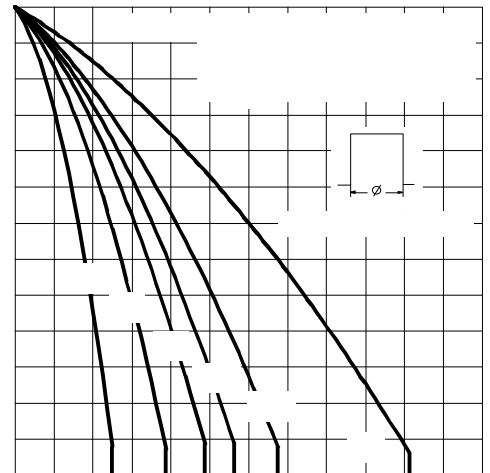


Fig. 8 - Current Ratings Characteristics

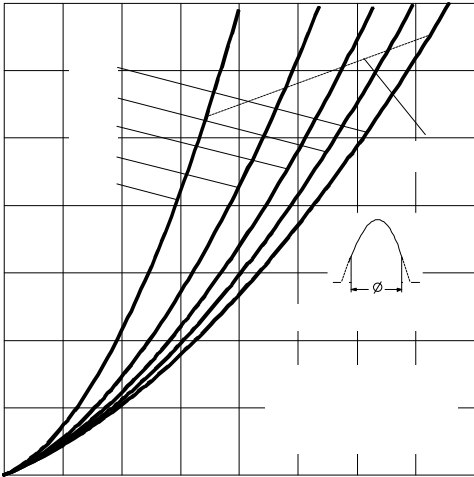


Fig. 9 - Forward Power Loss Characteristics

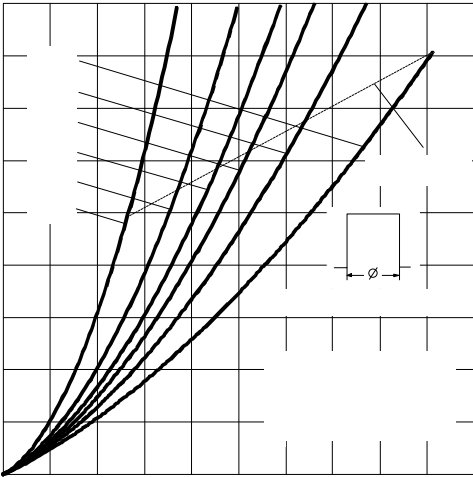


Fig. 10 - Forward Power Loss Characteristics

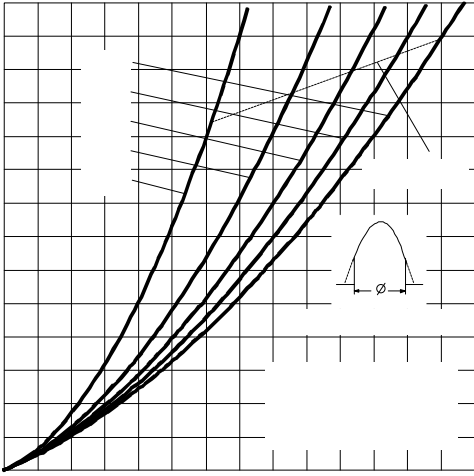


Fig. 11 - Forward Power Loss Characteristics

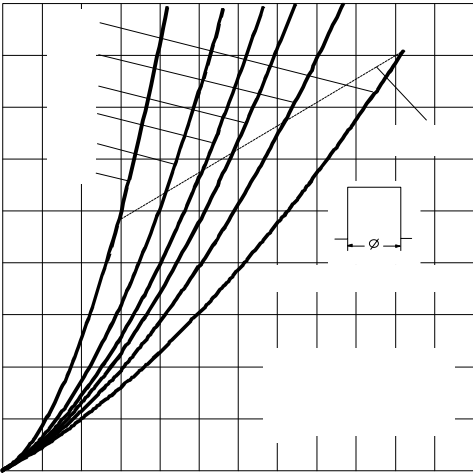


Fig. 12 - Forward Power Loss Characteristics

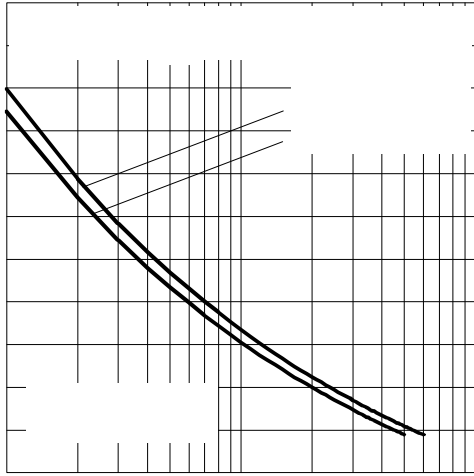


Fig. 13 - Maximum Non-Repetitive Surge Current

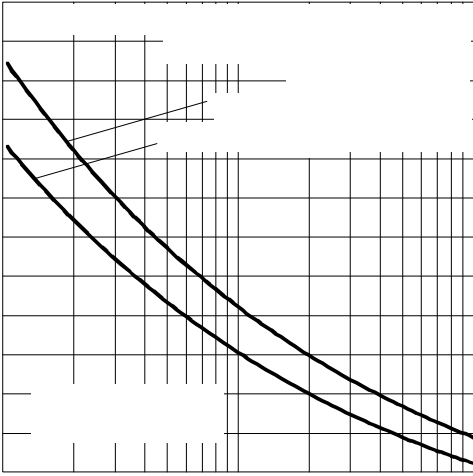


Fig. 14 - Maximum Non-Repetitive Surge Current

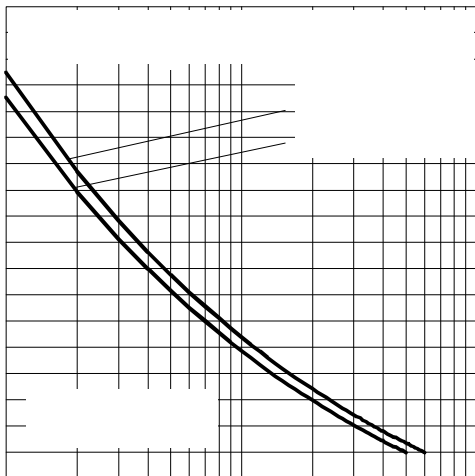


Fig. 15 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

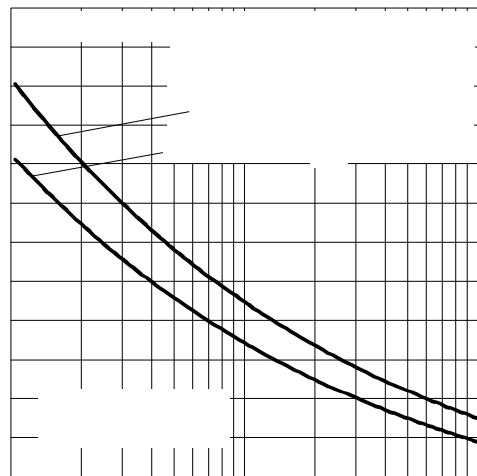


Fig. 16 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

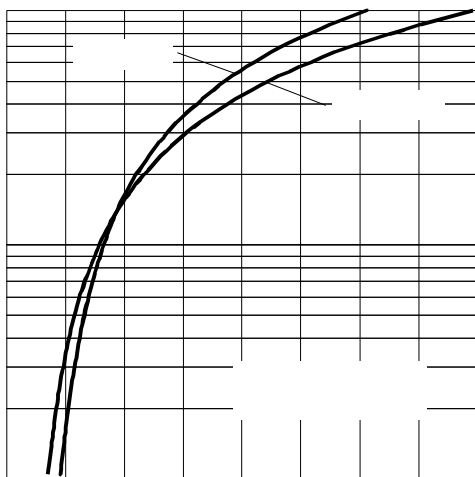


Fig. 17 - Forward Voltage Drop Characteristics

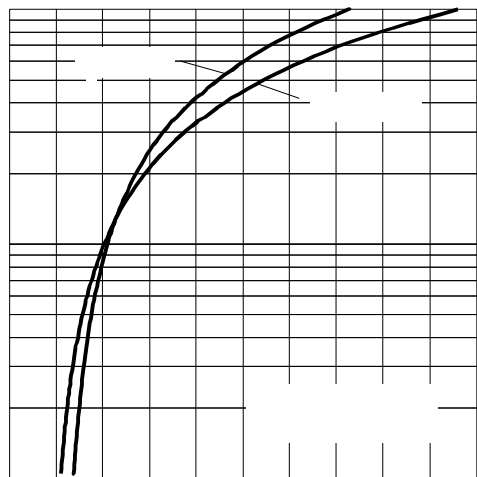


Fig. 18 - Forward Voltage Drop Characteristics

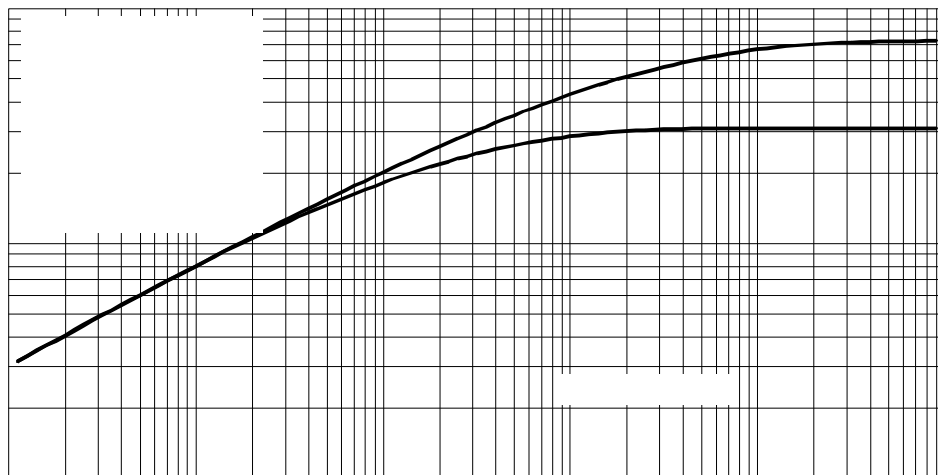


Fig. 19 - Thermal Impedance  $Z_{thJC}$  Characteristics

## Thermal and Mechanical Specifications

Parameter	SD800C..L		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	0.073 0.031		K/W	DC operation single side cooled DC operation double side cooled
F Mounting force, $\pm 10\%$	14700 (1500)		N (Kg)	
wt Approximate weight	255		g	
Case style	DO-200AB (B-PUK)			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°	0.009	0.009	0.006	0.006	K/W	$T_J = T_J \text{ max.}$
120°	0.011	0.011	0.011	0.011		
90°	0.014	0.014	0.015	0.015		
60°	0.020	0.020	0.021	0.021		
30°	0.036	0.036	0.036	0.036		

## 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;">80</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;">45</td> <td style="background-color: black; color: white; padding: 5px;">L</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	80	0	C	45	L	①	②	③	④	⑤	⑥	
SD	80	0	C	45	L								
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	- L = Puk Case DO-200AB (B-PUK)												

Outline Table

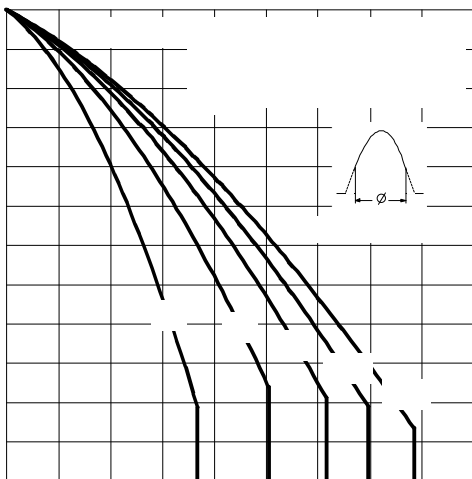
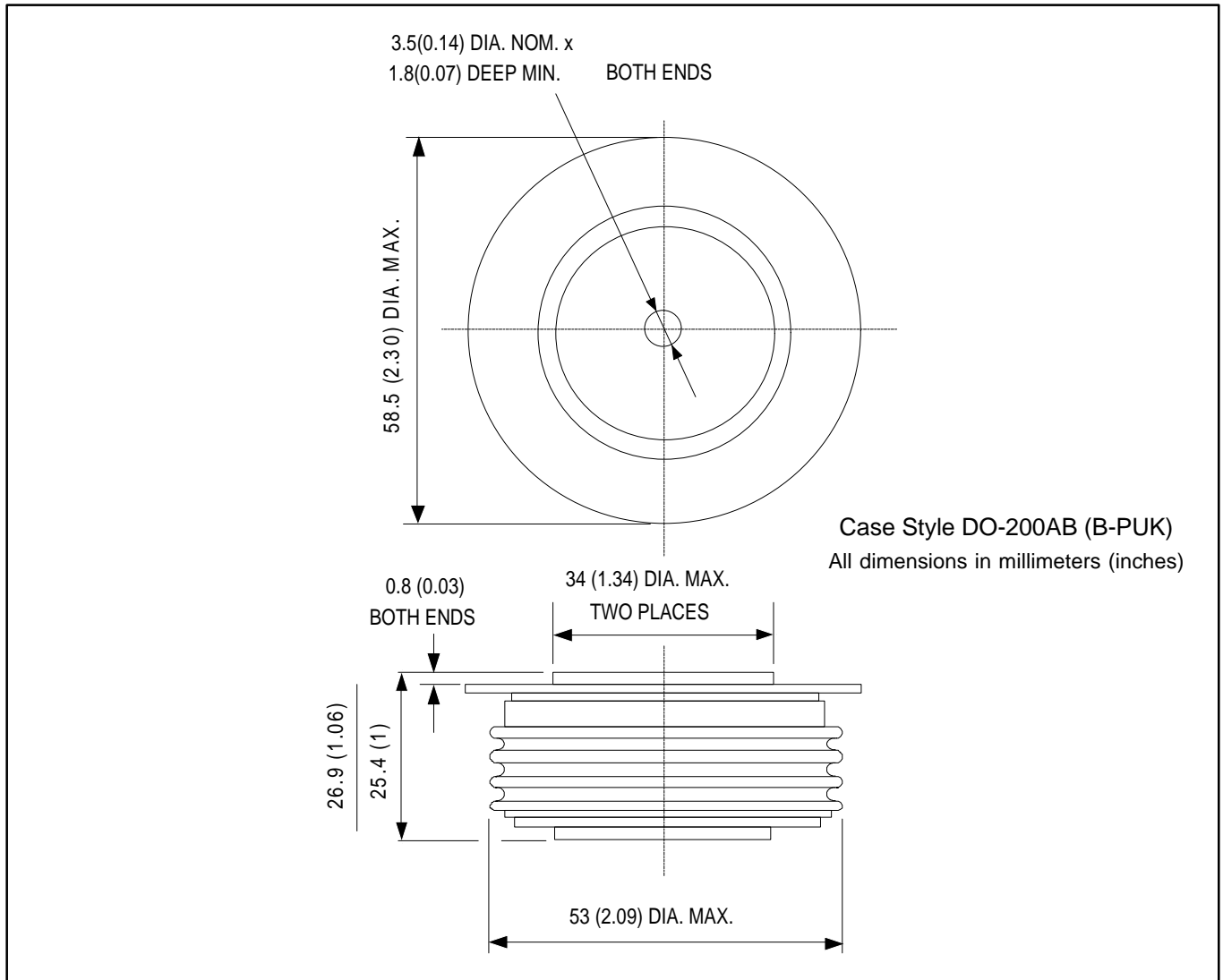


Fig. 1 - Current Ratings Characteristics

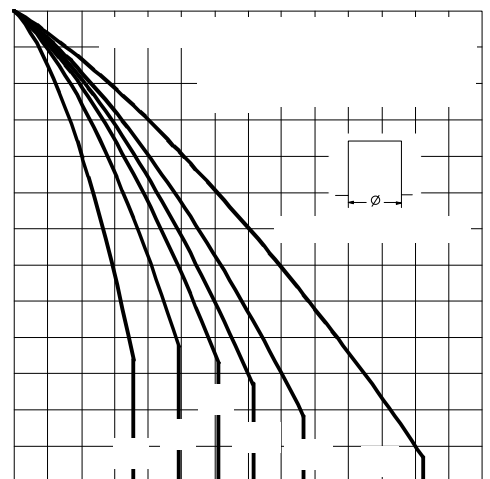


Fig. 2 - Current Ratings Characteristics