International IOR Rectifier

SD700C..L SERIES

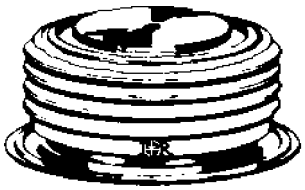
STANDARD RECOVERY DIODES

Hockey Puk Version

700A

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)



case style DO-200AB (B-PUK)

Typical Applications

- Converters
- Power supplies
- High power drives
- Auxiliary system supplies for traction applications

Major Ratings and Characteristics

Parameters		SD700C..L	Units
$I_{F(AV)}$		700	A
	@ T_{hs}	55	°C
$I_{F(RMS)}$		1310	A
	@ T_{hs}	25	°C
I_{FSM}	@ 50Hz	7500	A
	@ 60Hz	7850	A
I^2t	@ 50Hz	281	KA^2s
	@ 60Hz	257	KA^2s
V_{RRM} range		3000 to 4500	V
T_J		- 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
SD700C..L	30	3000	3100	50
	36	3600	3700	
	40	4000	4100	
	45	4500	4600	

Forward Conduction

Parameter		SD700C..L	Units	Conditions		
$I_{F(AV)}$	Max. average forward current	700 (345)	A	180° conduction, half sine wave		
	@ Heatsink temperature	55 (85)	°C	Double side (single side) cooled		
$I_{F(RMS)}$	Max. RMS forward current	1310	A	@ 25°C heatsink temperature double side cooled		
I_{FSM}	Max. peak, one-cycle forward, non-repetitive surge current	7500	A	t = 10ms	No voltage reapplied	Sinusoidal halfwave, Initial T_J = T_J max.
		7850		t = 8.3ms		
		6310		t = 10ms	50% V_{RRM} reapplied	
		6600		t = 8.3ms		
I^2t	Maximum I^2t for fusing	281	KA^2s	t = 10ms	No voltage reapplied	
		257		t = 8.3ms		
		199		t = 10ms	50% V_{RRM} reapplied	
		182		t = 8.3ms		
$I^2\sqrt{t}$	Maximum $I^2\sqrt{t}$ for fusing	2810	$KA^2\sqrt{s}$	t = 0.1 to 10ms, no voltage reapplied		
$V_{F(TO)1}$	Low level value of threshold voltage	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	0.99		(I > π x $I_{F(AV)}$),T_J = T_J max.		
r_{f1}	Low level value of forward slope resistance	0.78	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	0.73		(I > π x $I_{F(AV)}$),T_J = T_J max.		
V_{FM}	Max. forward voltage drop	1.66	V	I_{pk}= 1000A, T_J = T_J max, t_p = 10ms sinusoidal wave		

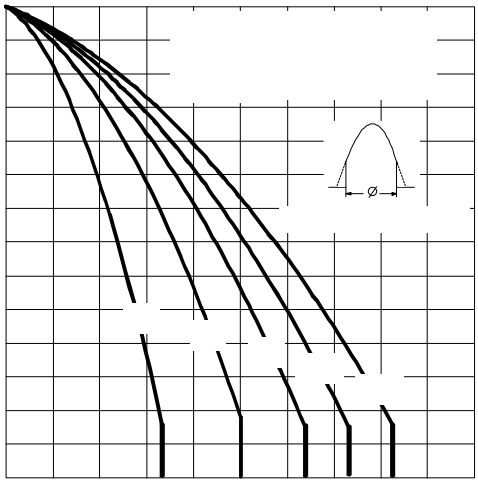


Fig. 3 - Current Ratings Characteristics

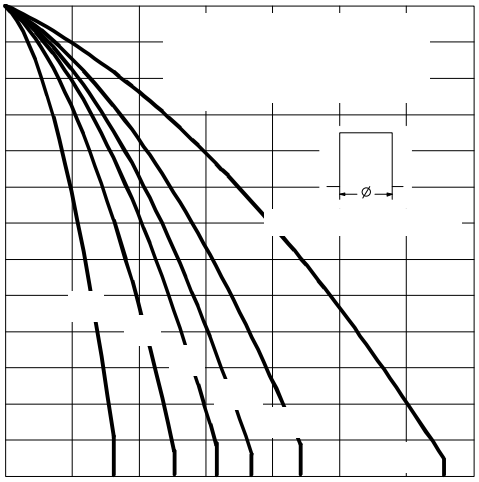


Fig. 4 - Current Ratings Characteristics

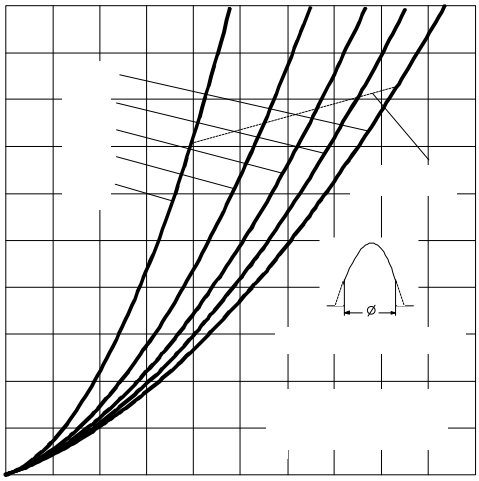


Fig. 5 - Forward Power Loss Characteristics

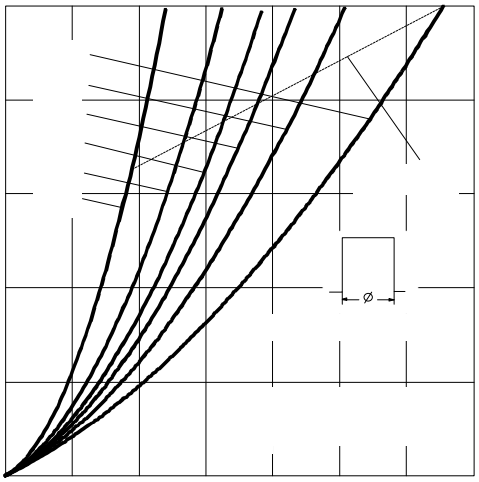


Fig. 6 - Forward Power Loss Characteristics

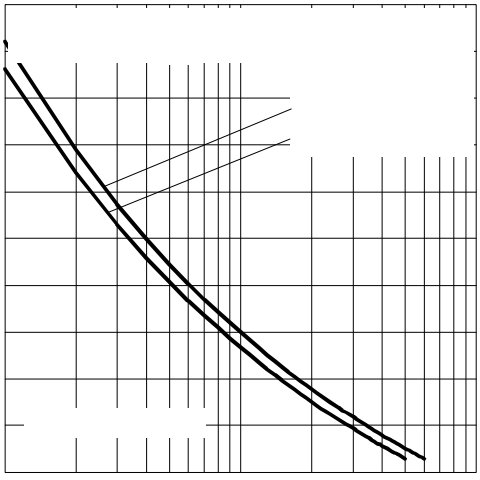


Fig. 7 - Maximum Non-Repetitive Surge Current

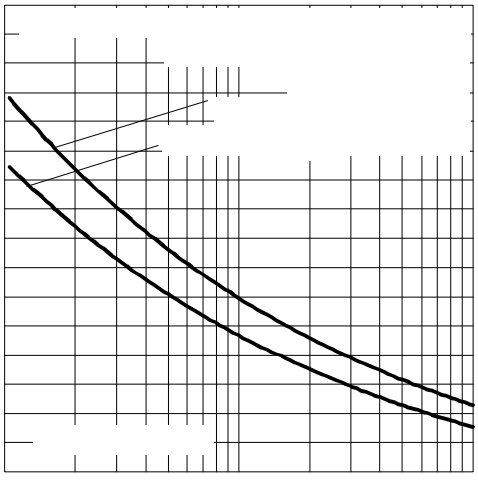


Fig. 8 - Maximum Non-Repetitive Surge Current

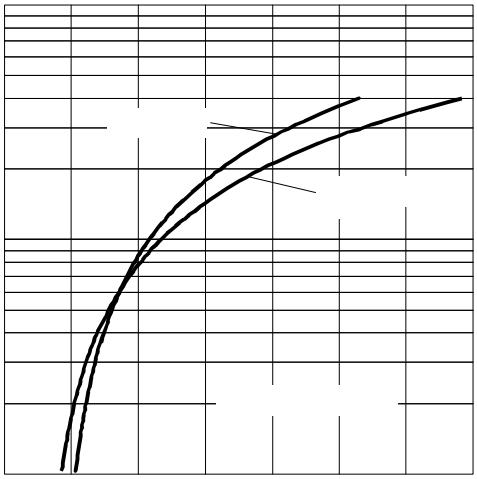


Fig. 9 - Forward Voltage Drop Characteristics

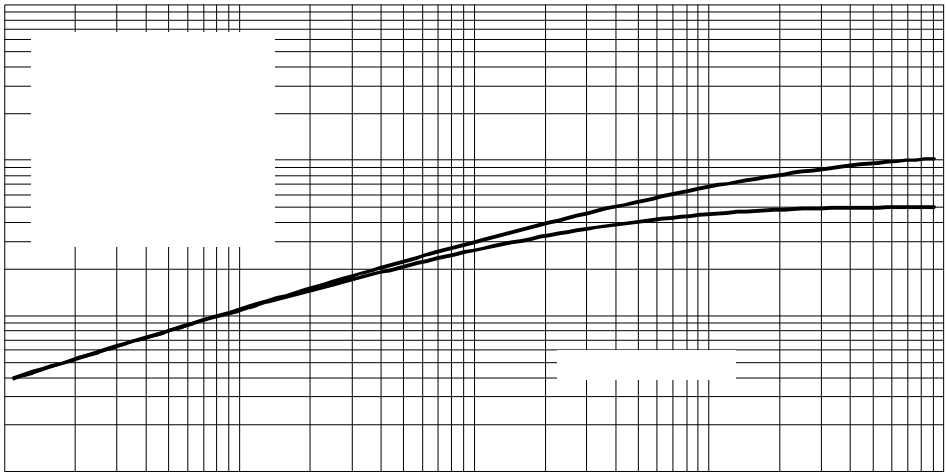


Fig. 10 - Thermal Impedance $Z_{thJ\text{-}hs}$ Characteristics

Thermal and Mechanical Specifications

	Parameter	SD700C..L	Units	Conditions
T_J	Max. junction operating temperature range	-40 to 150	°C	
T_{stg}	Max. storage temperature range	-55 to 200		
R_{thJ-hs}	Max. thermal resistance, junction to heatsink	0.11 0.05	K/W	DC operation single side cooled DC operation double side cooled
F	Mounting force, ± 10%	9800 (1000)	N (Kg)	
wt	Approximate weight	250	g	
	Case style	DO-200AB(B-PUK)		See Outline Table

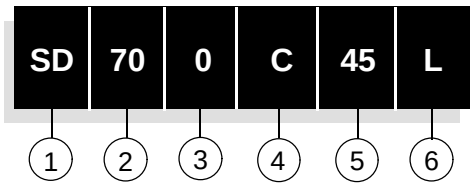
ΔR_{thJ-hs} Conduction

(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		

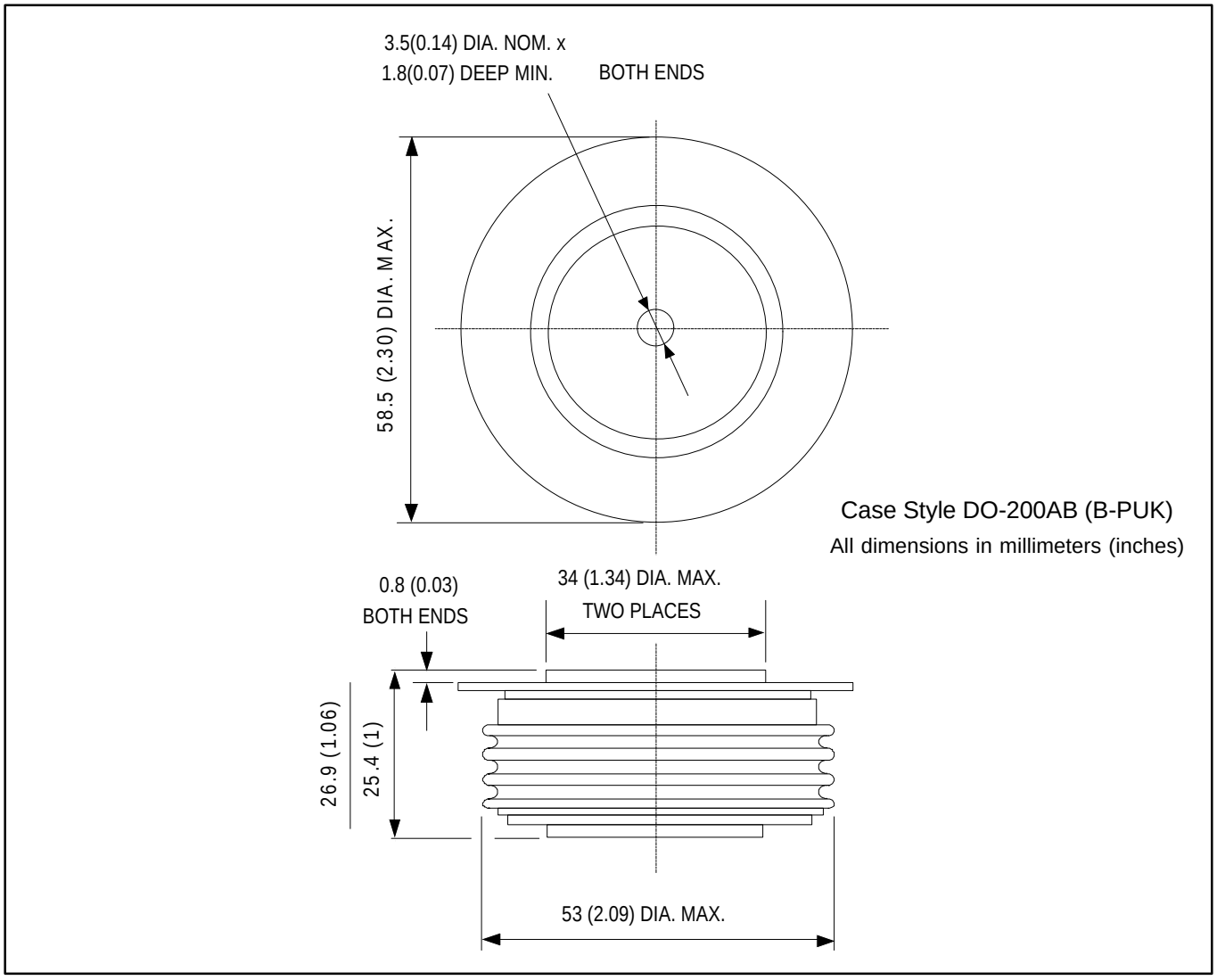
Ordering Information Table

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



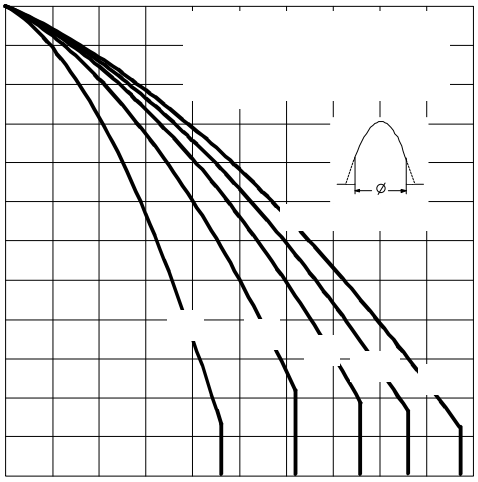


Fig. 1 - Current Ratings Characteristics

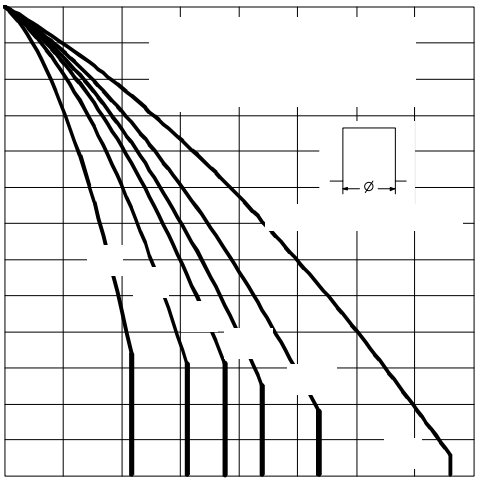


Fig. 2 - Current Ratings Characteristics