DISCRETE POWER DIODES and THYRISTORS

DATA BOOK

Bulletin I2084/B

International
IOR Rectifier

SD400C..C SERIES

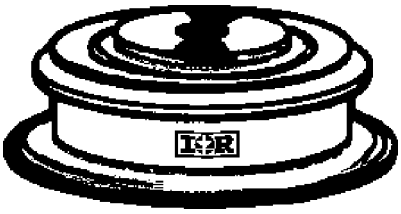
STANDARD RECOVERY DIODES

Hockey Puk Version

800A

Features

- Wide current range
- High voltage ratings up to 2400V
- High surge current capabilities
- Diffused junction
- Hockey Puk version
- Case style DO-200AA



case style DO-200AA

Typical Applications

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

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^2s
	@ 60Hz	311	KA^2s
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	800(425)	A	180° conduction, half sine wave		
	@ Heatsink temperature	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 reapplied	Sinusoidal halfwave, Initial $T_J = T_J$ max.
		8640		t = 8.3ms		
		6940		t = 10ms	100% V_{RRM} reapplied	
		7265		t = 8.3ms		
I^2t	Maximum I^2t for fusing	340	KA^2s	t = 10ms	No voltage reapplied	
		311		t = 8.3ms		
		241		t = 10ms	100% V_{RRM} reapplied	
		220		t = 8.3ms		
$I^2\sqrt{t}$	Maximum $I^2\sqrt{t}$ for fusing	3400	$KA^2\sqrt{s}$	t = 0.1 to 10ms, no voltage reapplied		
$V_{F(TO)1}$	Low level value of threshold voltage	0.80	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	0.83		(I > π x $I_{F(AV)}$),$T_J = T_J$ max.		
r_{f1}	Low level value of forward slope resistance	0.55	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	0.53		(I > π x $I_{F(AV)}$),$T_J = T_J$ max.		
V_{FM}	Max. forward voltage drop	1.86	V	I_{pk}= 1930A, $T_J = T_J$ max, t_p = 10ms sinusoidal wave		

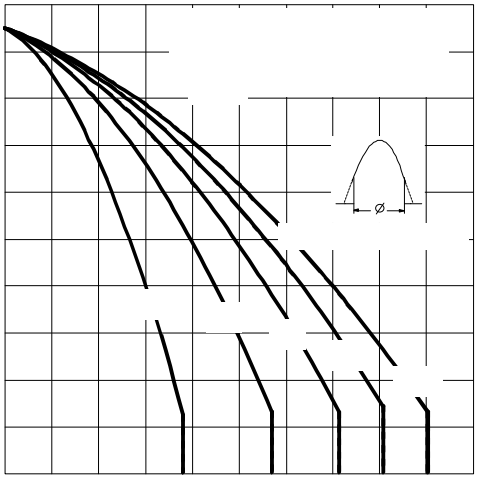


Fig. 3 - Current Ratings Characteristics

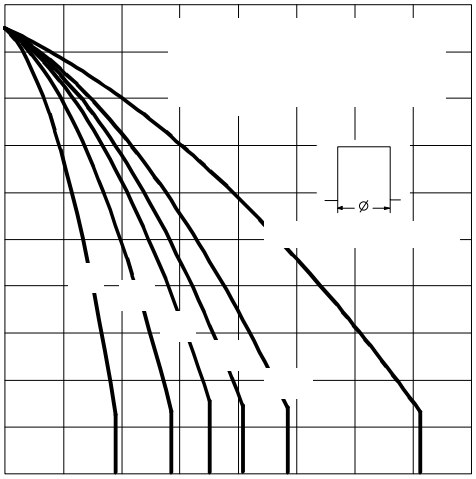


Fig. 4 - Current Ratings Characteristics

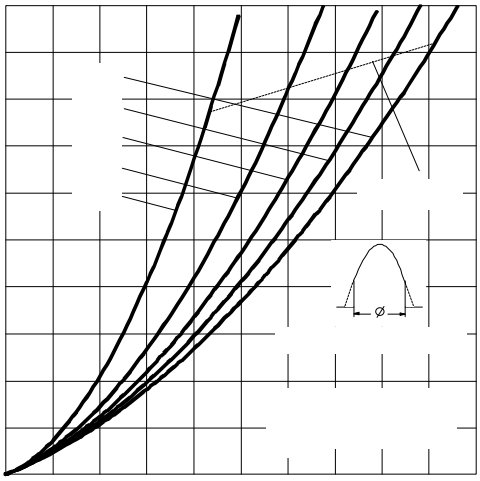


Fig. 5 - Forward Power Loss Characteristics

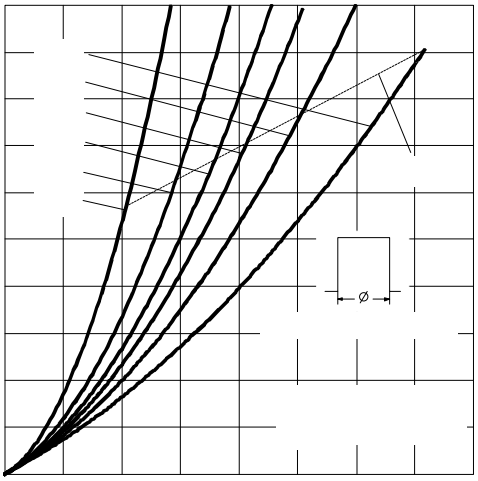
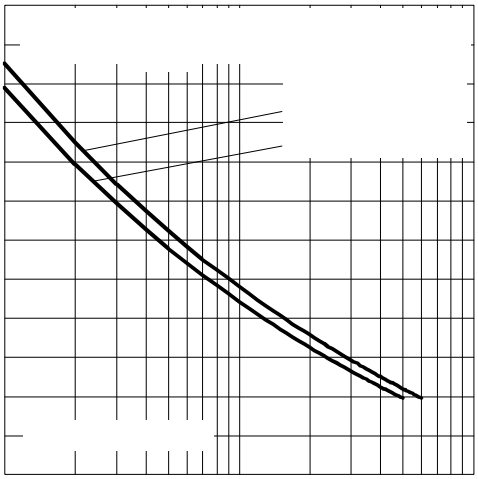
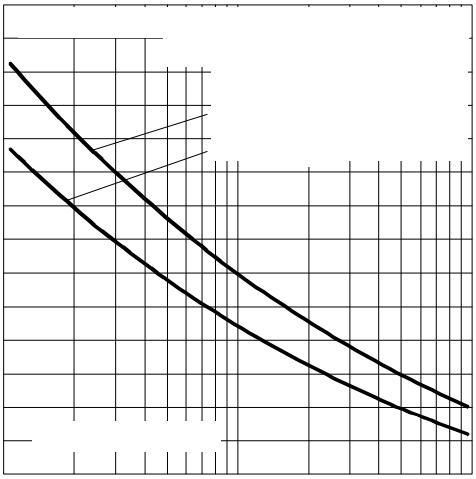


Fig. 6 - Forward Power Loss Characteristics





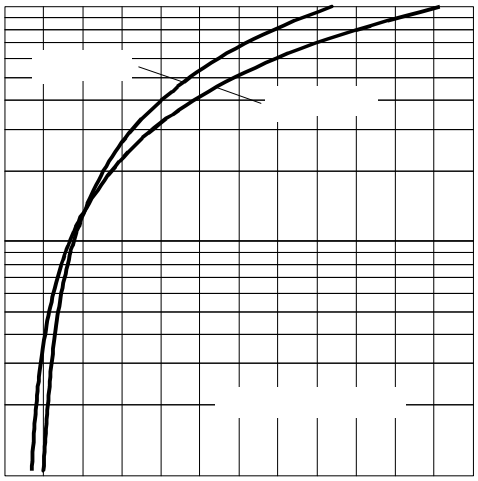


Fig. 9 - Forward Voltage Drop Characteristics

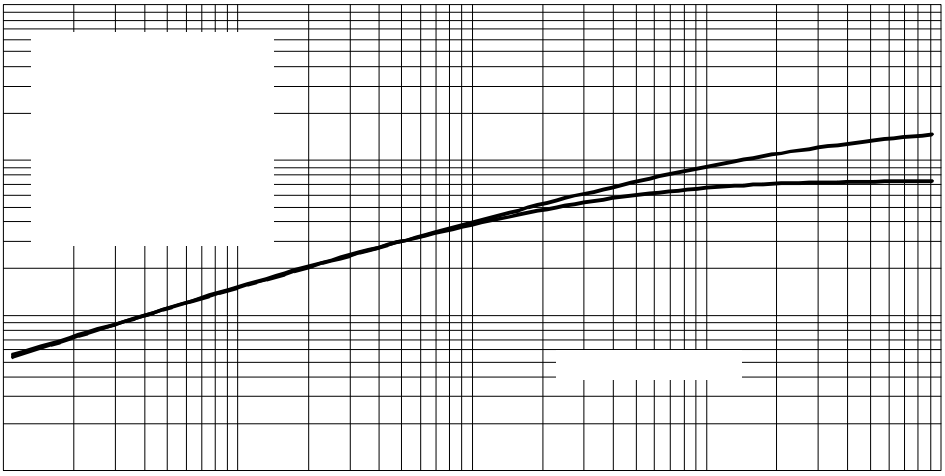


Fig. 10 - Thermal Impedance Z_{thJC} Characteristics

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	0.163	K/W	DC operation single side cooled
	to heatsink	0.073		DC operation double side cooled
F	Mounting force, ± 10%	4900	N	
		(500)	(Kg)	
wt	Approximate weight	70	g	
	Case style	DO-200AA		See Outline Table

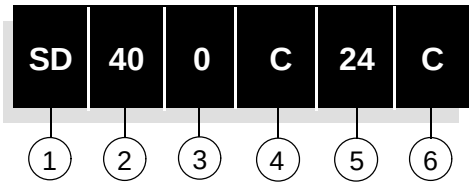
ΔR_{thJ-hs} Conduction

(The following table shows the increment of thermal 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°	0.017	0.018	0.011	0.012	K/W	$T_J = T_J$ 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		

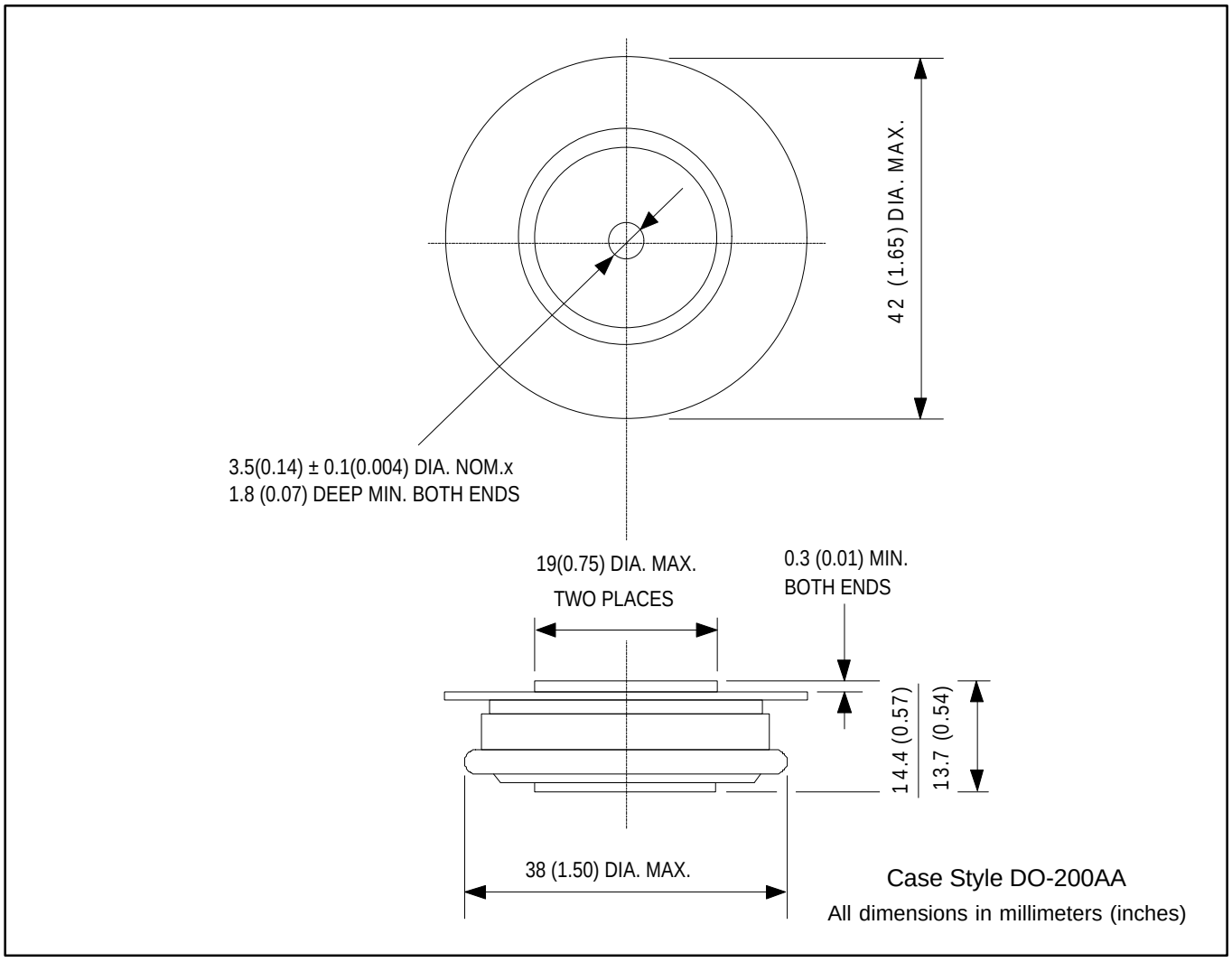
Ordering Information Table

Device Code



- **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



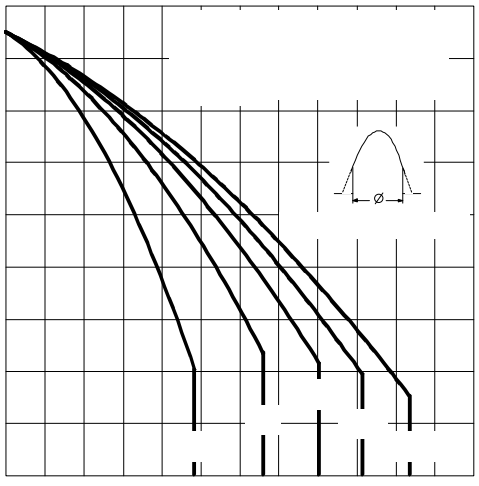


Fig. 1 - Current Ratings Characteristics

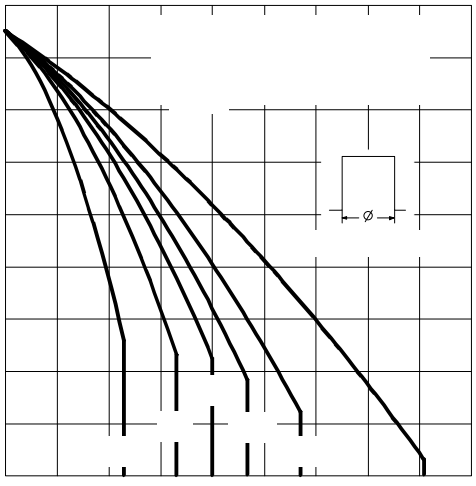


Fig. 2 - Current Ratings Characteristics