International IOR Rectifier

SD300C..C SERIES

STANDARD RECOVERY DIODES

Hockey Puk Version

650A

Features

- Wide current range
- High voltage ratings up to 3200V
- 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		SD300C..C		Units
		04 to 20	25 to 32	
$I_{F(AV)}$		650	540	A
	@ T_{hs}	55	55	°C
$I_{F(RMS)}$		1150	995	A
	@ T_{hs}	25	25	°C
I_{FSM}	@ 50Hz	6050	6050	A
	@ 60Hz	6335	6335	A
I^2t	@ 50Hz	183	183	KA^2s
	@ 60Hz	167	167	KA^2s
V_{RRM}	range	400 to 2000	2500 to 3200	V
T_J		- 40 to 180	- 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
SD300C..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		SD300C..C 04 to 20	SD300C..C 25 to 32	Units	Conditions		
$I_{F(AV)}$	Max. average forward current	650(380)	540(250)	A	180° conduction, half sine wave		
	@ Heatsink temperature	55(65)	55(85)	°C	Double side (single side) cooled		
$I_{F(RMS)}$	Max. RMS forward current	1150	995	A	@ 25°C heatsink temperature double side cooled		
I_{FSM}	Max. peak, one-cycle forward, non-repetitive surge current	6050	6050	A	t = 10ms	No voltage reapplied	Sinusoidal halfwave, Initial T_J = T_J max.
		6335	6335		t = 8.3ms		
		5090	5090		t = 10ms	100% V_{RRM} reapplied	
		5330	5330		t = 8.3ms		
I^2t	Maximum I^2t for fusing	183	183	KA^2s	t = 10ms	No voltage reapplied	
		167	167		t = 8.3ms		
		129	129		t = 10ms	100% V_{RRM} reapplied	
		118	118		t = 8.3ms		
$I^2\sqrt{t}$	Maximum $I^2\sqrt{t}$ for fusing	1830	1830	$KA^2\sqrt{s}$	t = 0.1 to 10ms, no voltage reapplied		
$V_{F(TO)1}$	Low level value of threshold voltage	0.95	0.95	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	1.00	1.00		(I > π x $I_{F(AV)}$),T_J = T_J max.		
r_{f1}	Low level value of forward slope resistance	0.75	0.75	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	0.72	0.72		(I > π x $I_{F(AV)}$),T_J = T_J max.		
V_{FM}	Max. forward voltage drop	2.08	2.08	V	I_{pk}= 1500A, T_J = T_J max, t_p = 10ms sinusoidal wave		

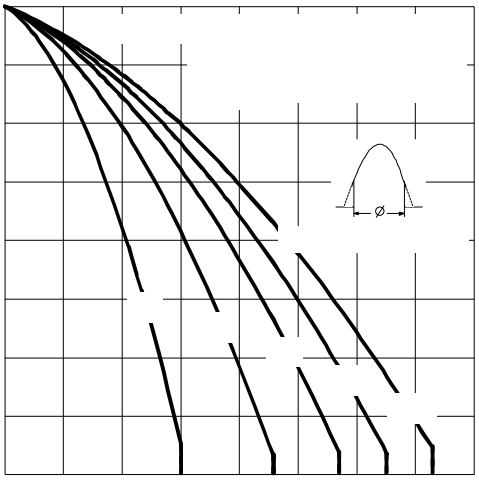


Fig. 3 - Current Ratings Characteristics

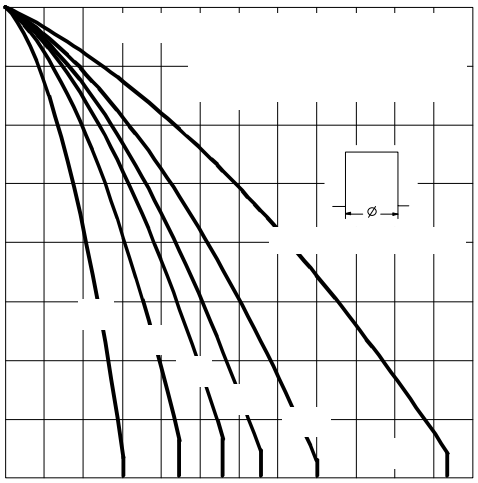


Fig. 4 - Current Ratings Characteristics

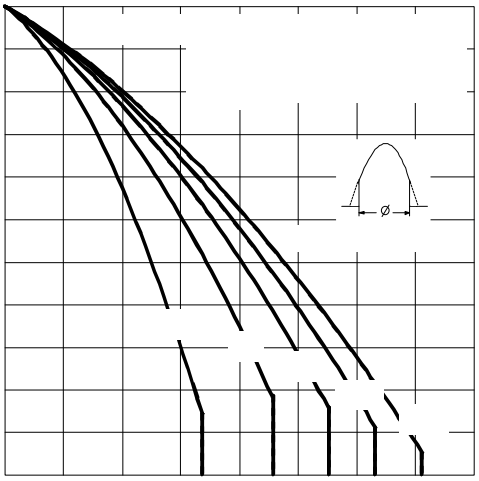


Fig. 5 - Current Ratings Characteristics

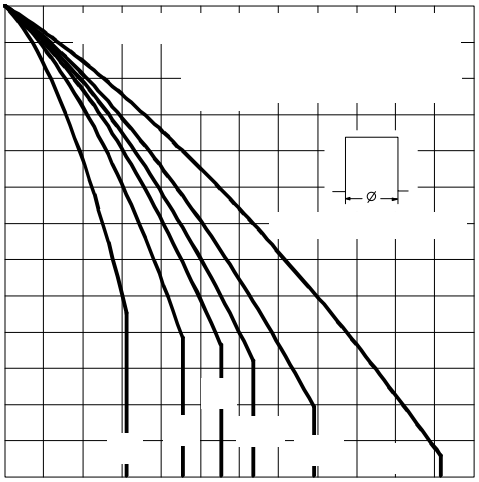
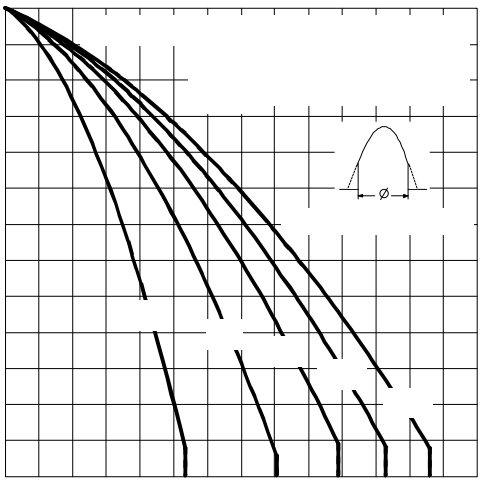
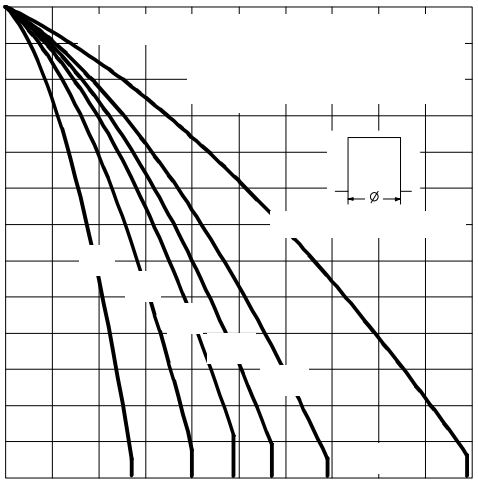


Fig. 6 - Current Ratings Characteristics





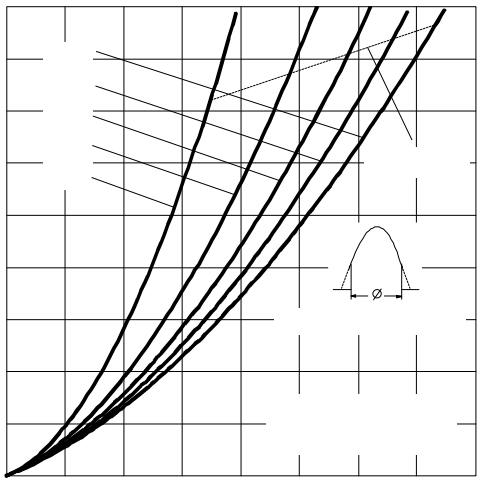


Fig. 9 - Forward Power Loss Characteristics

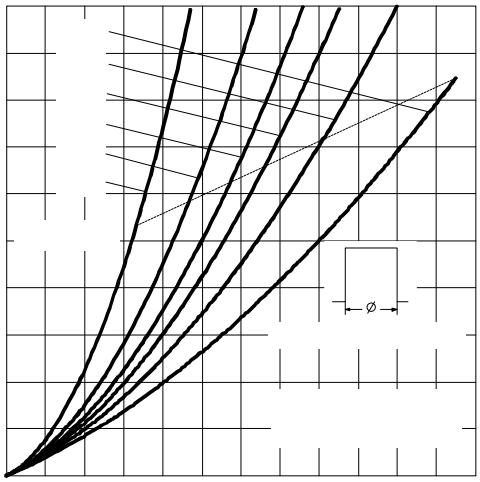


Fig. 10 - Forward Power Loss Characteristics

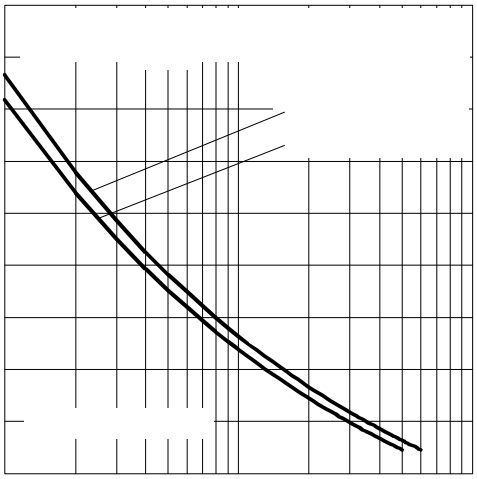


Fig. 11 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

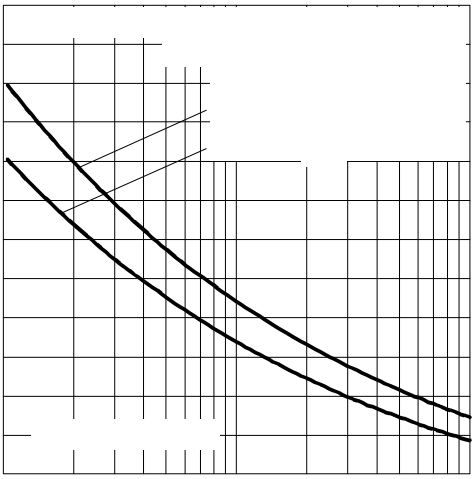
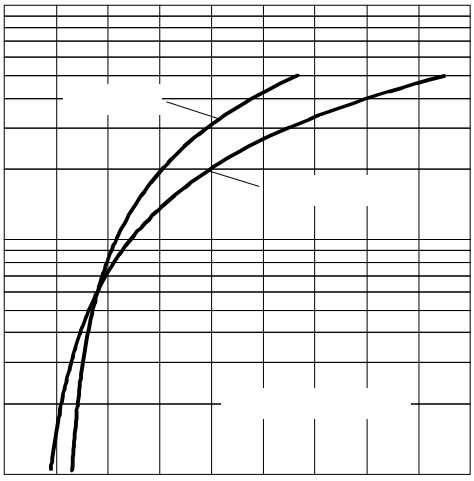


Fig. 12 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled



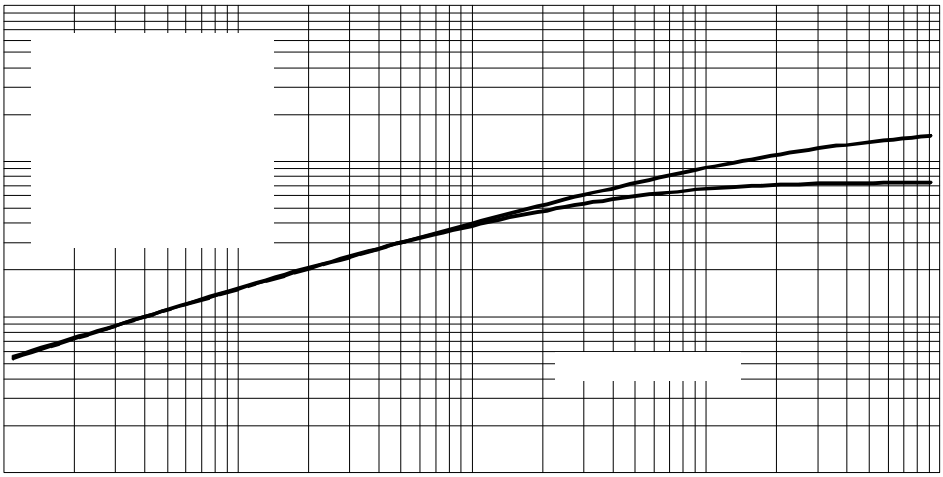


Fig. 14 - Thermal Impedance Z_{thJC} Characteristics

Thermal and Mechanical Specifications

Parameter		SD300C..C		Units	Conditions
		04 to 20	25 to 32		
T_J	Max. junction operating temperature range	-40 to 180	-40 to 150	°C	
T_{stg}	Max. storage temperature range	-55 to 200	-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

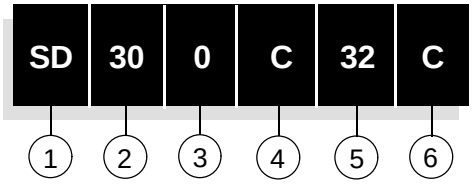
ΔR_{thJ-hs} Conduction

(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	0.017	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°	0.036	0.036	0.038	0.038		
30°	0.064	0.062	0.065	0.062		

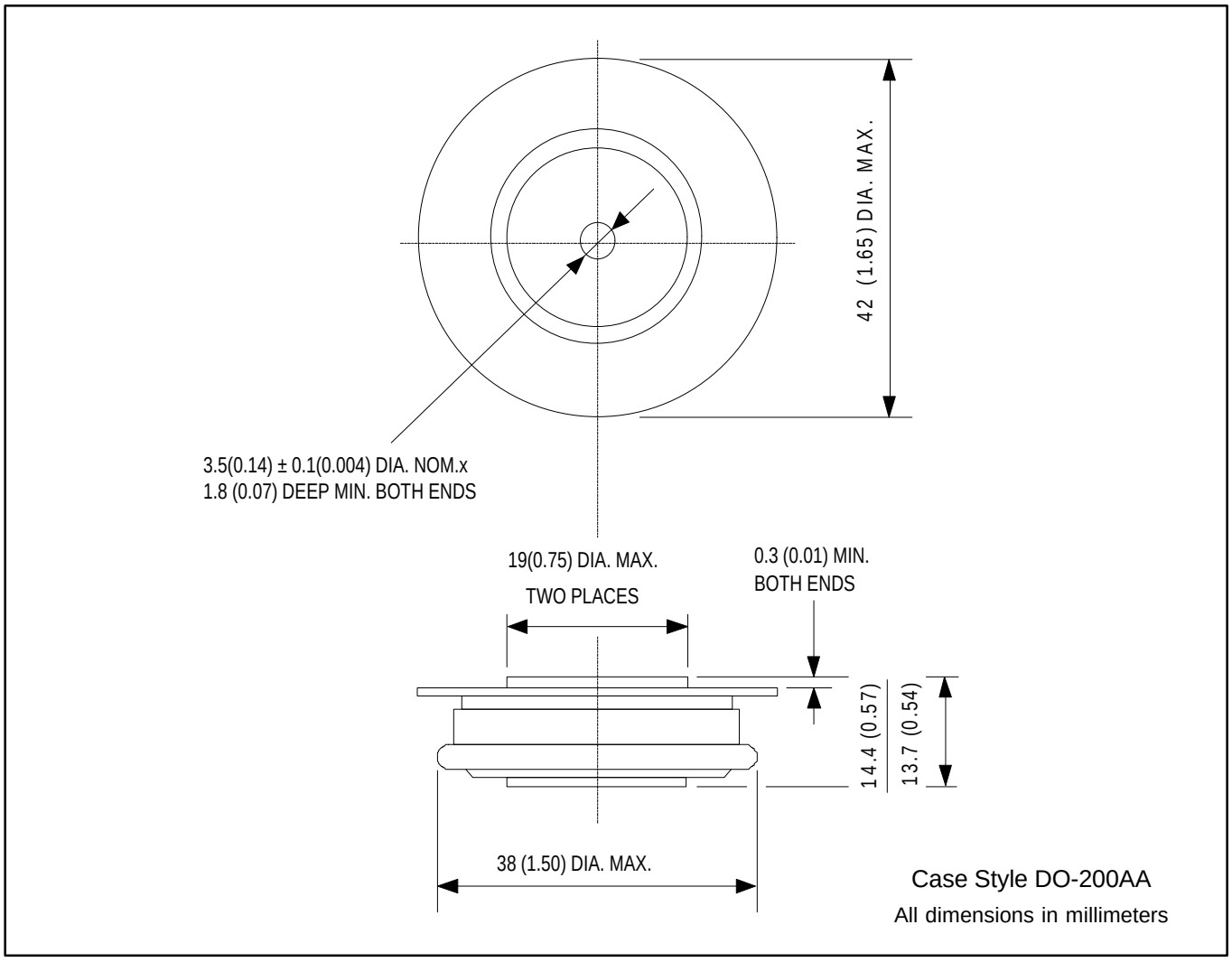
Ordering Information Table

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



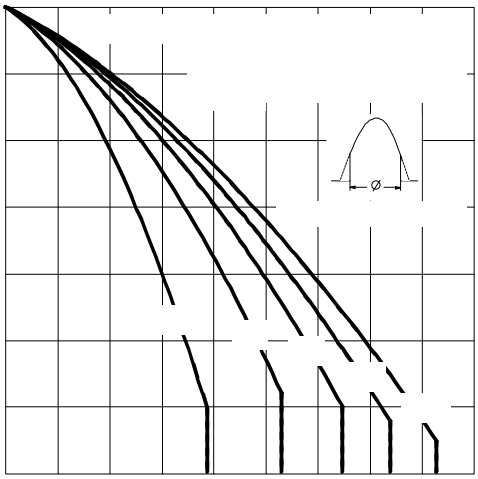


Fig. 1 - Current Ratings Characteristics

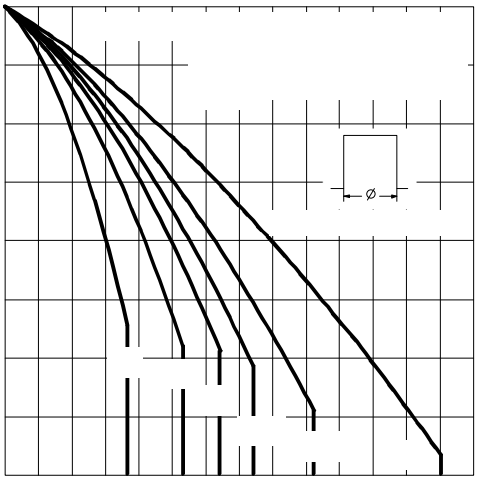


Fig. 2 - Current Ratings Characteristics