DISCRETE POWER DIODES and THYRISTORS

DATA BOOK

International
IOR Rectifier

SD800C..L SERIES

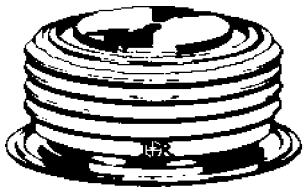
STANDARD RECOVERY DIODES

Hockey Puk Version

1200A

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
- Machine tool controls
- High power drives
- Medium traction applications

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^2s
	@ 60Hz	845	680	KA^2s
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 24 to 36	SD800C..L 40 to 45	Units	Conditions		
$I_{F(AV)}$	Max. average forward current	1180(550)	1065(490)	A	180° conduction, half sine wave		
	@ Heatsink temperature	55(85)	55(85)	°C	Double side (single side) cooled		
$I_{F(RMS)}$	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 reapplied	Sinusoidal halfwave, Initial T_J = T_J max.
		14240	12800		t = 8.3ms		
		11440	10250		t = 10ms	50% V_{RRM} reapplied	
		11980	10750		t = 8.3ms		
I^2t	Maximum I^2t for fusing	925	745	KA^2s	t = 10ms	No voltage reapplied	
		845	680		t = 8.3ms		
		654	526		t = 10ms	50% V_{RRM} reapplied	
		597	480		t = 8.3ms		
$I^2\sqrt{t}$	Maximum $I^2\sqrt{t}$ for fusing	9250	7450	$KA^2\sqrt{s}$	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% 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	1.10	1.18		(I > π x $I_{F(AV)}$),T_J = T_J max.		
r_{f1}	Low level value of forward slope resistance	0.38	0.44	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	0.34	0.41		(I > π x $I_{F(AV)}$),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		

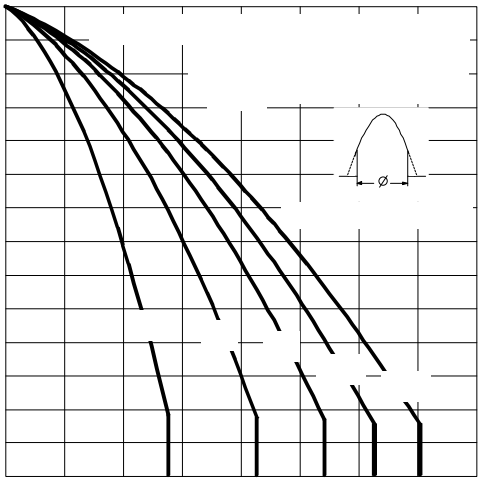


Fig. 3 - Current Ratings Characteristics

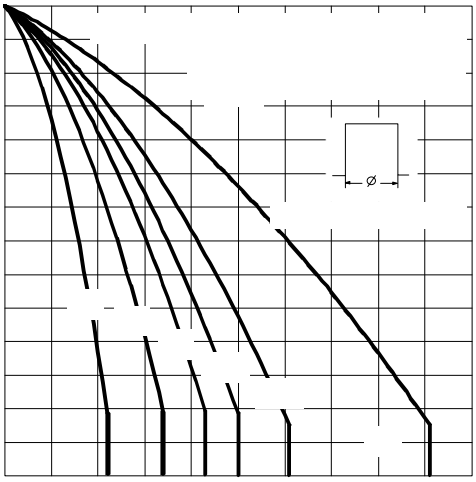


Fig. 4 - Current Ratings Characteristics

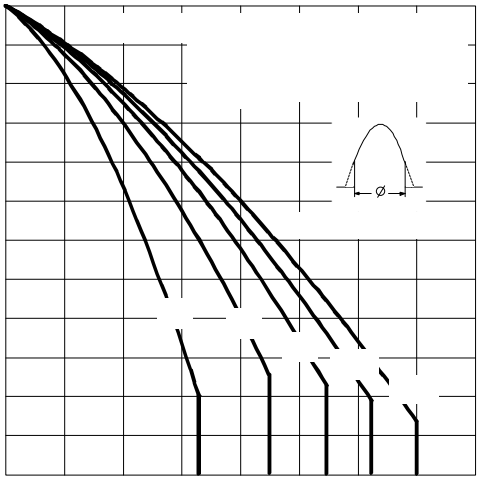


Fig. 5 - Current Ratings Characteristics

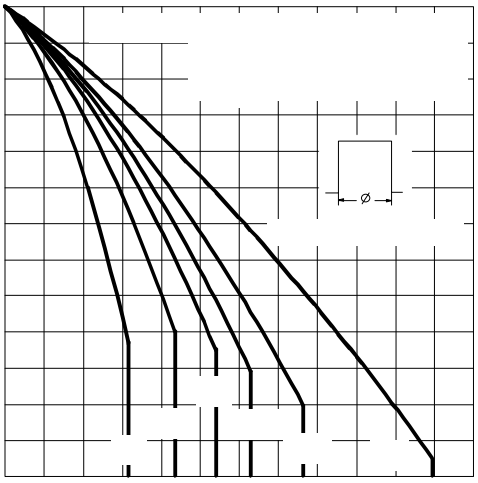
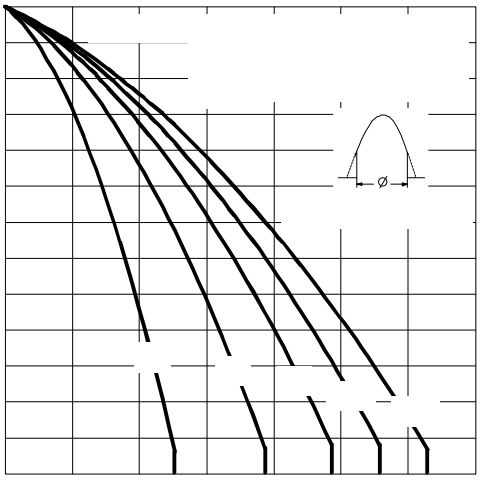
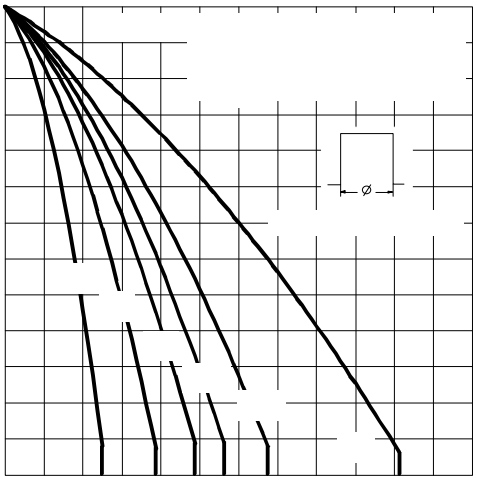


Fig. 6 - Current Ratings Characteristics





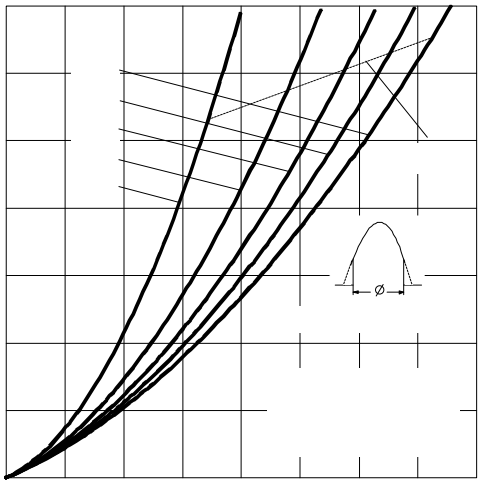


Fig. 9 - Forward Power Loss Characteristics

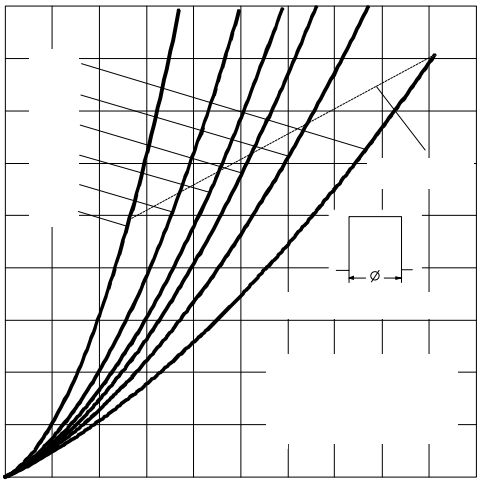


Fig. 10 - Forward Power Loss Characteristics

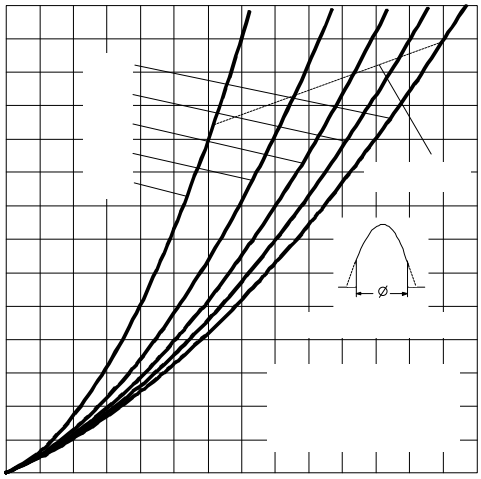


Fig. 11 - Forward Power Loss Characteristics

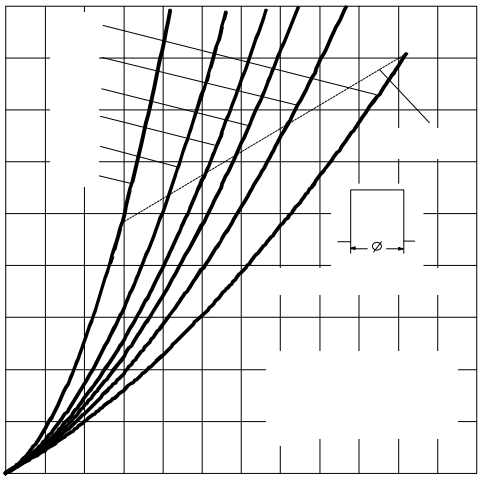
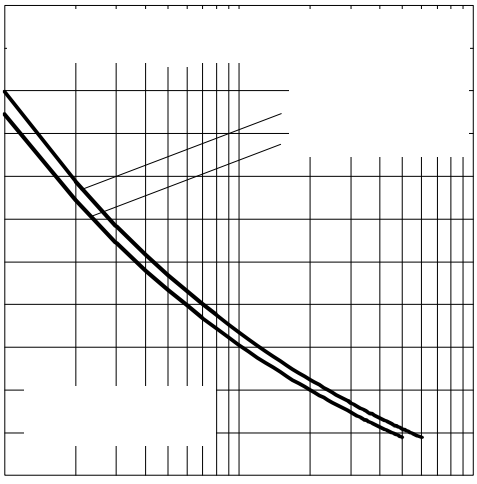
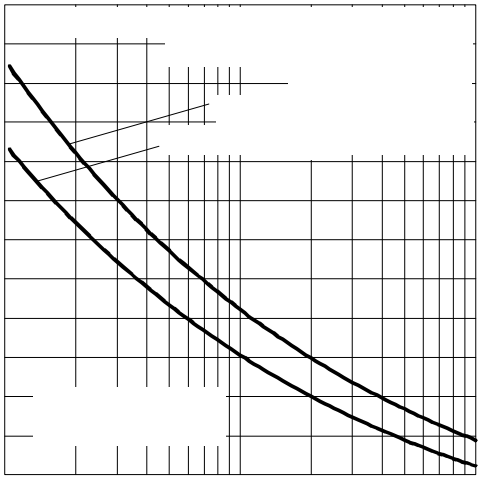


Fig. 12 - Forward Power Loss Characteristics





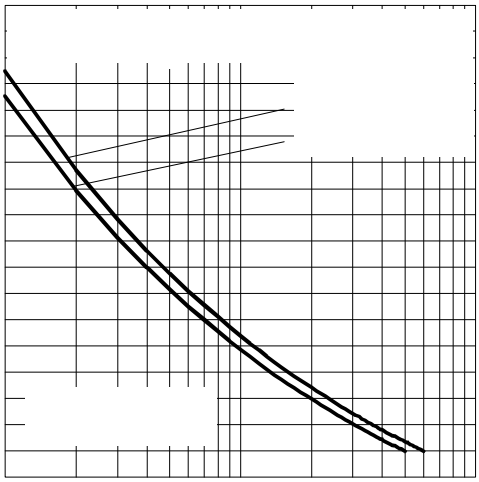


Fig. 15 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

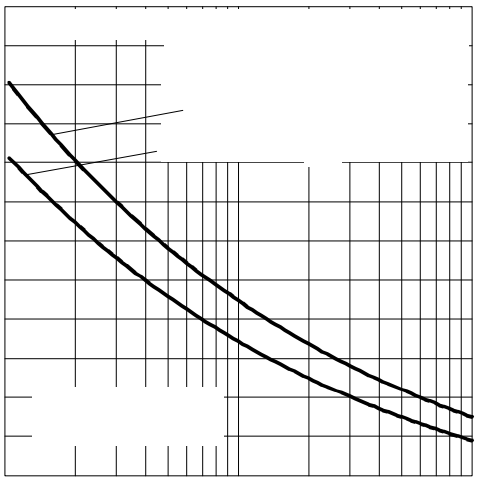


Fig. 16 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

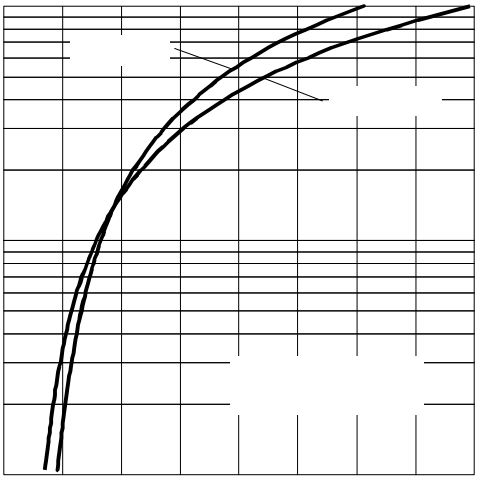


Fig. 17 - Forward Voltage Drop Characteristics

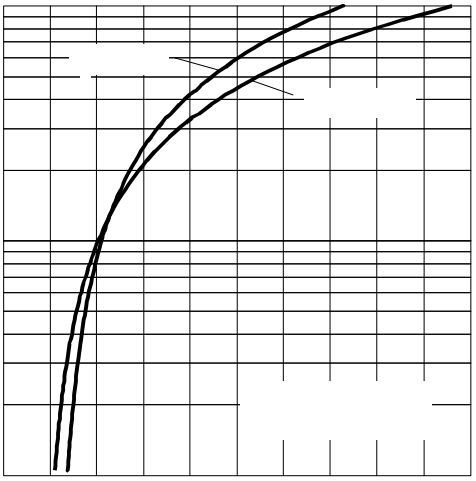
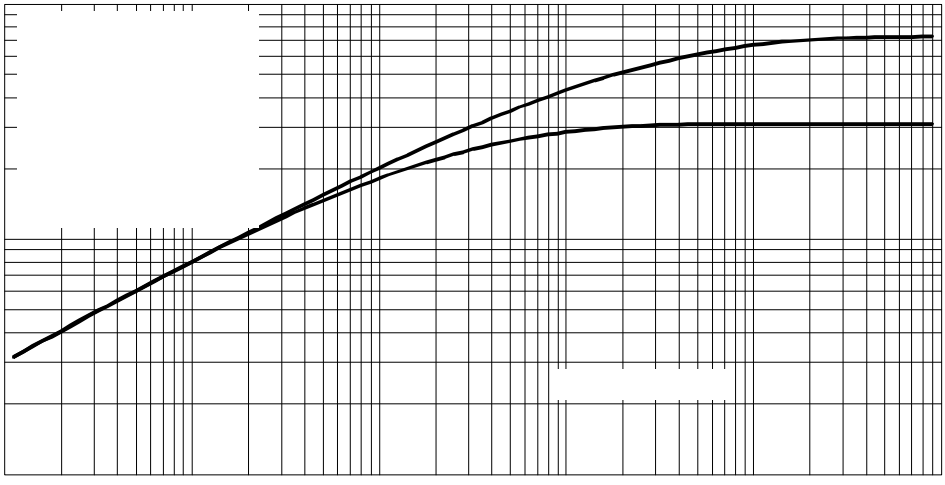


Fig. 18 - Forward Voltage Drop Characteristics



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, ± 10%	14700 (1500)		N (Kg)	
wt	Approximate weight	255		g	
	Case style	DO-200AB (B-PUK)			See Outline Table

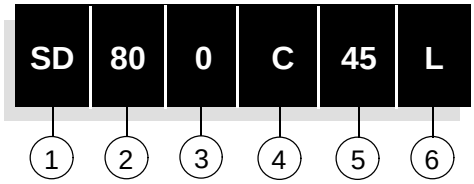
ΔR_{thJ-hs} Conduction

(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°	0.009	0.009	0.006	0.006	K/W	$T_J = T_J$ 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		

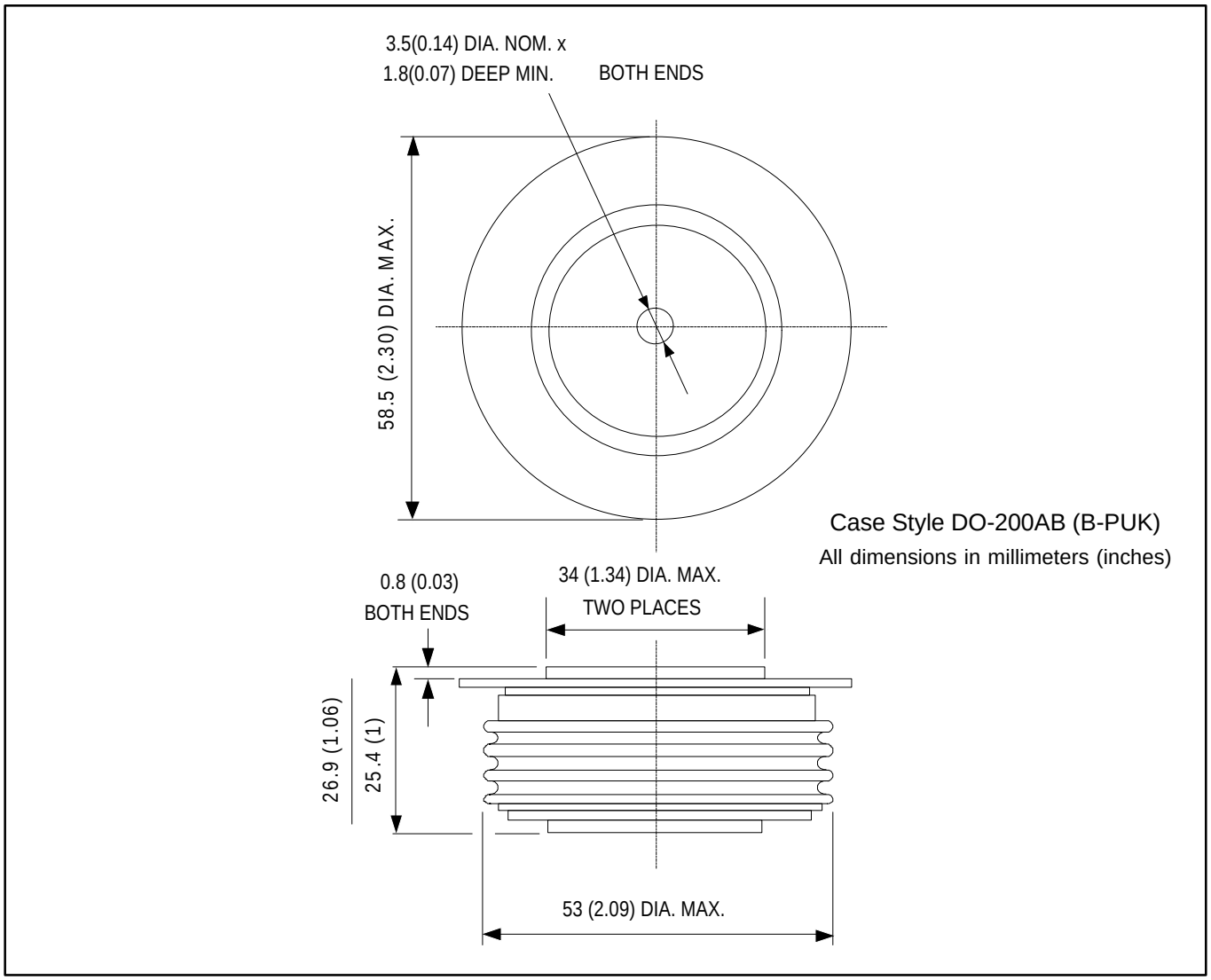
Ordering Information Table

Device Code



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



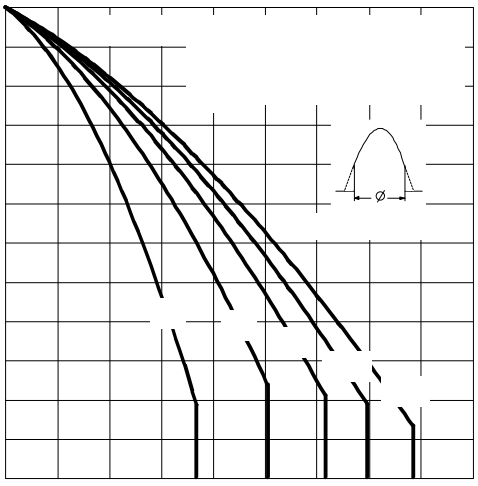


Fig. 1 - Current Ratings Characteristics

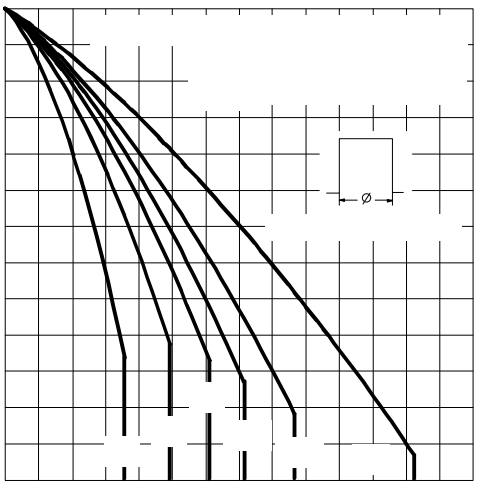


Fig. 2 - Current Ratings Characteristics