

### STANDARD RECOVERY DIODES

### Hockey Puk Version

#### Features

- Wide current range
- High voltage ratings up to 1000V
- High surge current capabilities
- Diffused junction
- Hockey Puk version
- Case style DO-200AC (K-PUK)

3800A

#### Typical Applications

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



case style DO-200AC (K-PUK)

#### Major Ratings and Characteristics

Parameters	SD3000C..K	Units
$I_{F(AV)}$	3800	A
@ $T_{hs}$	55	°C
$I_{F(RMS)}$	6230	A
@ $T_{hs}$	25	°C
$I_{FSM}$ @ 50Hz	35800	A
@ 60Hz	37500	A
$I^2t$ @ 50Hz	6410	KA <sup>2</sup> s
@ 60Hz	5850	KA <sup>2</sup> s
$V_{RRM}$ range	400 to 1000	V
$T_J$	- 40 to 180	°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. @ $T_J = 180^\circ\text{C}$ mA
SD3000C..K	04	400	500	75
	08	800	900	
	10	1000	1100	

## Forward Conduction

Parameter	SD3000C..K	Units	Conditions
$I_{F(AV)}$ Max. average forward current @ Heatsink temperature	3800 (1925)	A	180° conduction, half sine wave
	55 (85)	°C	Double side (single side) cooled
$I_{F(RMS)}$ Max. RMS forward current	6230	A	@ 25°C heatsink temperature double side cooled
$I_{FSM}$ Max. peak, one-cycle forward, non-repetitive surge current	35800	A	t = 10ms No voltage
	37500		t = 8.3ms reapplied
	30100		t = 10ms 100% $V_{RRM}$
	31500		t = 8.3ms reapplied
$I^2t$ Maximum $I^2t$ for fusing	6410	KA <sup>2</sup> s	t = 10ms No voltage
	5850		t = 8.3ms reapplied
	4530		t = 10ms 100% $V_{RRM}$
	4135		t = 8.3ms reapplied
$I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing	64100	KA <sup>2</sup> /s	t = 0.1 to 10ms, no voltage reapplied
$V_{F(TO)1}$ Low level value of threshold voltage	0.74	V	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$ , $T_J = T_J \text{ max.}$
$V_{F(TO)2}$ High level value of threshold voltage	0.86		$(I > \pi \times I_{F(AV)})$ , $T_J = T_J \text{ max.}$
$r_{f1}$ Low level value of forward slope resistance	0.08	mΩ	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$ , $T_J = T_J \text{ max.}$
$r_{f2}$ High level value of forward slope resistance	0.07		$(I > \pi \times I_{F(AV)})$ , $T_J = T_J \text{ max.}$
$V_{FM}$ Max. forward voltage drop	1.22	V	$I_{pk} = 6000\text{A}$ , $T_J = T_J \text{ max.}$ , $t_p = 10\text{ms}$ sinusoidal wave

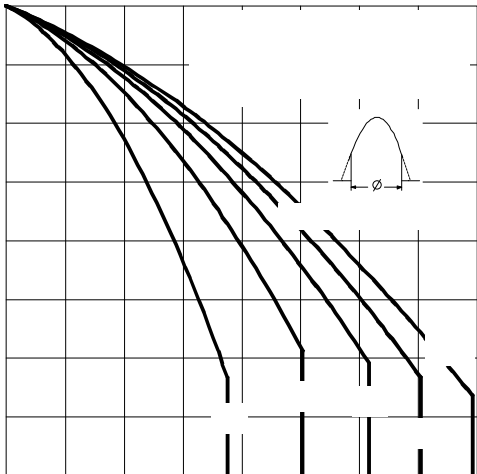


Fig. 3 - Current Ratings Characteristics

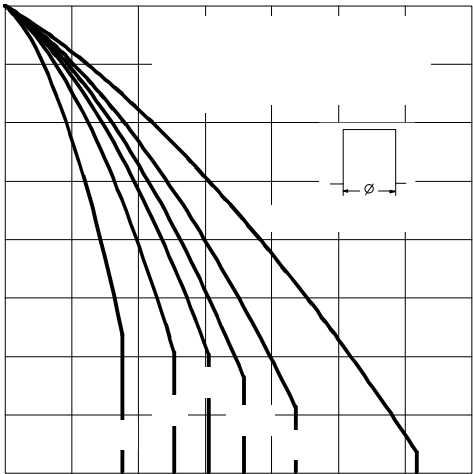


Fig. 4 - Current Ratings Characteristics

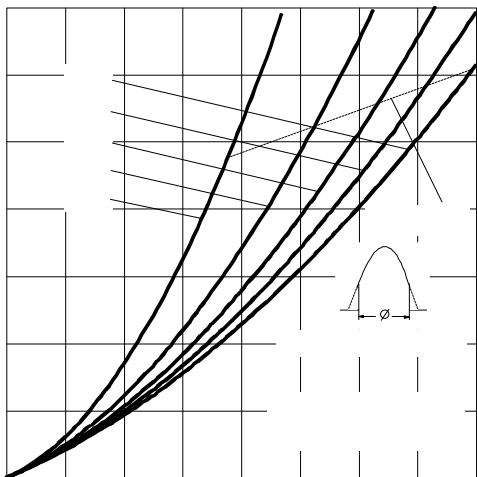


Fig. 5 - Forward Power Loss Characteristics

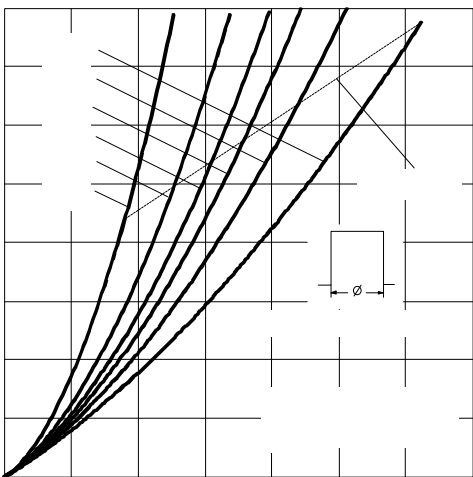


Fig. 6 - Forward Power Loss Characteristics

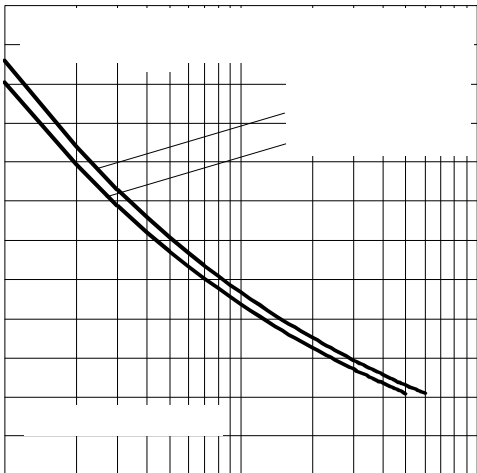


Fig. 7 - Maximum Non-Repetitive Surge Current

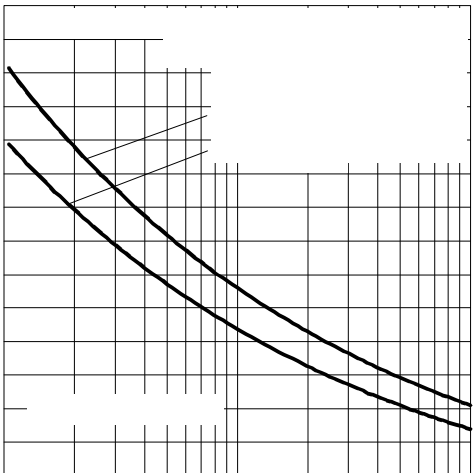


Fig. 8 - Maximum Non-Repetitive Surge Current

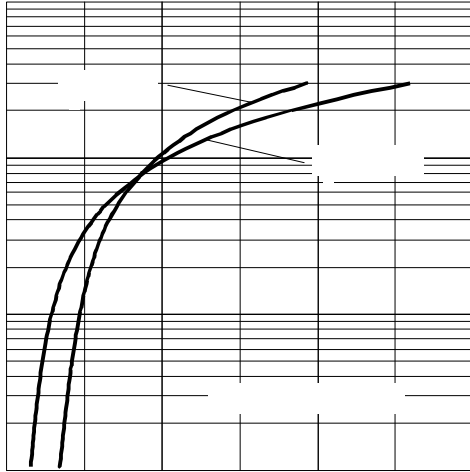


Fig. 9 - Forward Voltage Drop Characteristics

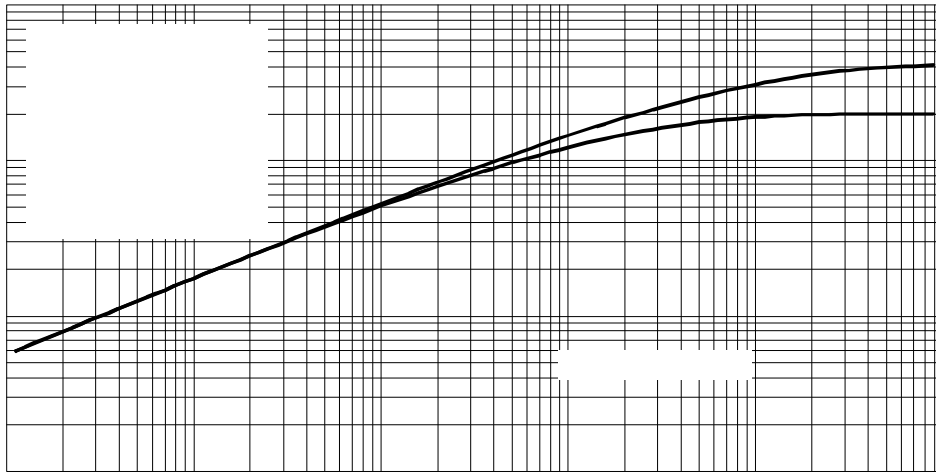


Fig. 10 - Thermal Impedance  $Z_{thJ-hs}$  Characteristics

## Thermal and Mechanical Specifications

Parameter	SD3000C..K	Units	Conditions
$T_J$ Max. junction operating temperature range	-40 to 180	°C	
$T_{stg}$ Max. storage temperature range	-55 to 200		
$R_{thJ-hs}$ Max. thermal resistance, junction to heatsink	0.042 0.020	K/W	DC operation single side cooled DC operation double side cooled
F Mounting force, $\pm 10\%$	22250 (2250)	N (Kg)	
wt Approximate weight	425	g	
Case style	DO-200AC(K-PUK)		See Outline Table

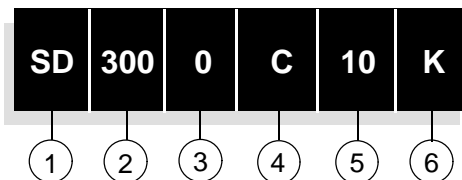
 $\Delta R_{thJ-hs}$  Conduction

(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°	0.002	0.002	0.001	0.001	K/W	$T_J = T_J \text{ max.}$
120°	0.002	0.002	0.002	0.002		
90°	0.003	0.003	0.003	0.003		
60°	0.004	0.004	0.004	0.004		
30°	0.007	0.007	0.007	0.007		

## 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** - K = Puk Case DO-200AC (K-PUK)

Outline Table

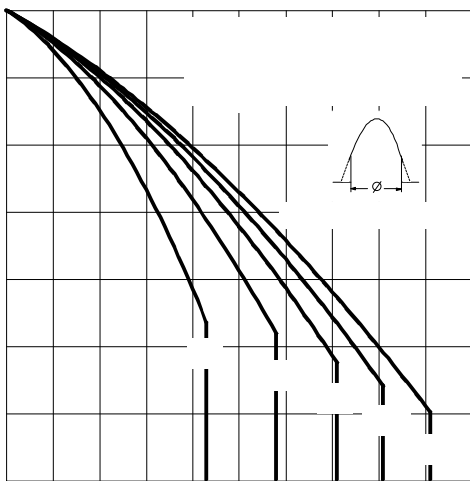
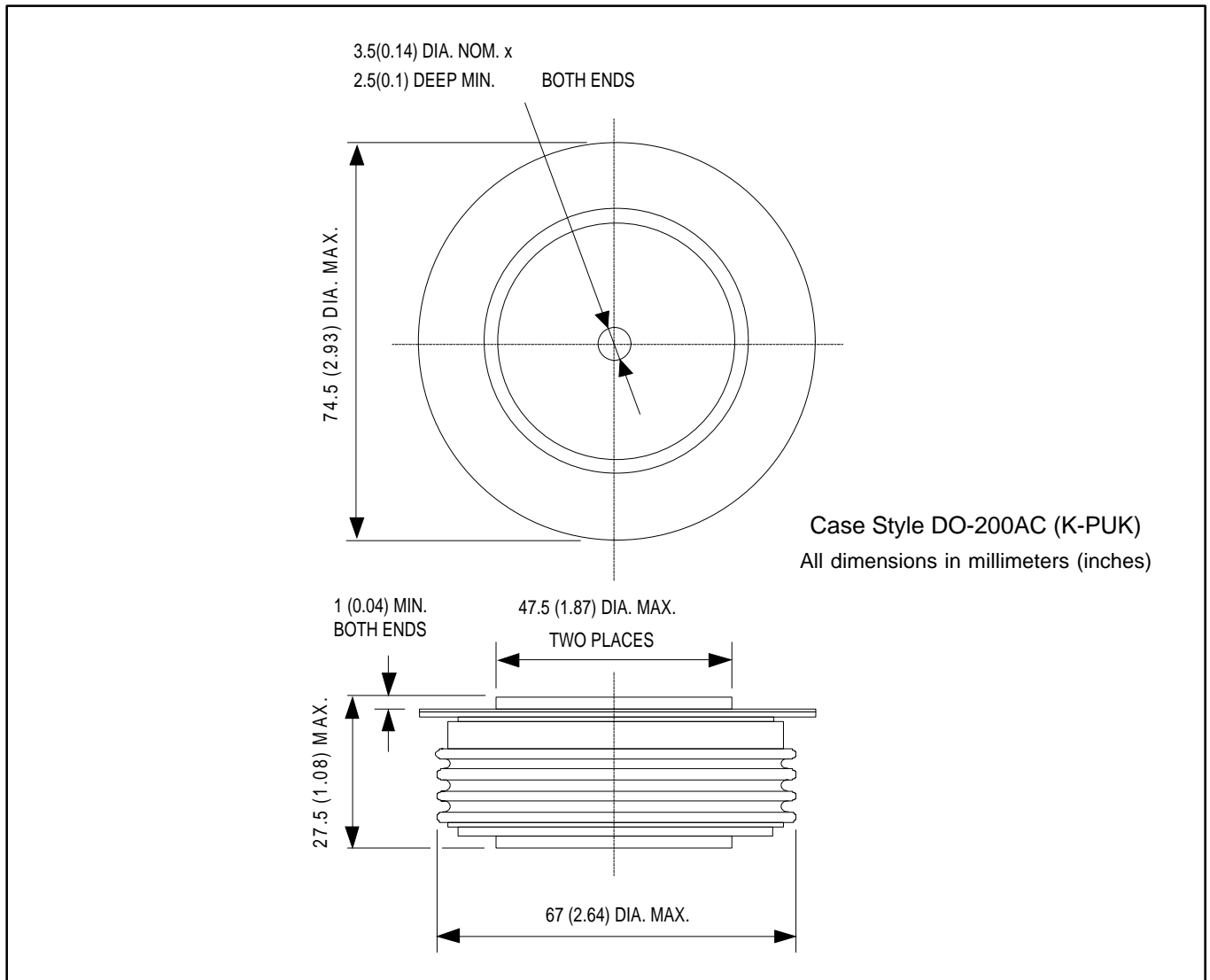


Fig. 1 - Current Ratings Characteristics

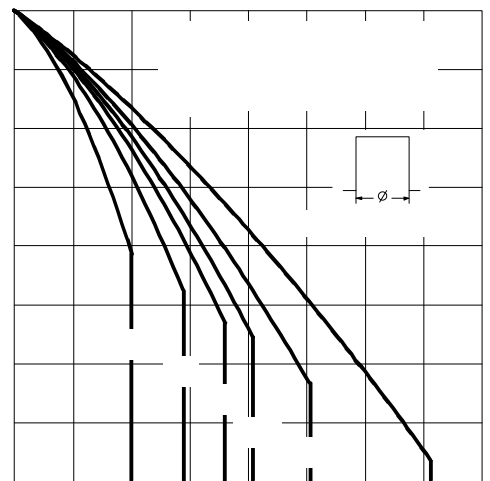


Fig. 2 - Current Ratings Characteristics