

SD3000C..K SERIES

STANDARD RECOVERY DIODES

Hockey Puk Version

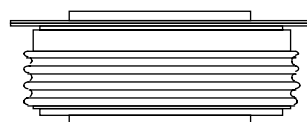
Features

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

Typical Applications

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

3800A



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 ² s
@ 60Hz	5850	KA ² s
V_{RRM} range	400 to 1000	V
T_J	- 40 to 180	°C

SD3000C..K Series

Bulletin I2090 rev.C 04/00

International
IRF Rectifier**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	Sinusoidal halfwave, Initial T _J = T _J max.	
		37500		t = 8.3ms	reapplied		
		30100		t = 10ms	100% V _{RRM}		
		31500		t = 8.3ms	reapplied		
I^2t	Maximum I ² t for fusing	6410	KA ² 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 √t for fusing	64100	KA ² /s	t = 0.1 to 10ms, no voltage reapplied			
$V_{F(TO)1}$	Low level value of threshold voltage	0.74	V	(16.7% × π × I _{F(AV)}) < I < π × I _{F(AV)} , T _J = T _J max.			
$V_{F(TO)2}$	High level value of threshold voltage	0.86		(I > π × I _{F(AV)}), T _J = T _J max.			
r_{f1}	Low level value of forward slope resistance	0.08	mΩ	(16.7% × π × I _{F(AV)}) < I < π × I _{F(AV)} , T _J = T _J max.			
r_{f2}	High level value of forward slope resistance	0.07		(I > π × I _{F(AV)}), T _J = T _J max.			
V_{FM}	Max. forward voltage drop	1.22	V	I _{pk} = 6000A, T _J = T _J max, t _p = 10ms sinusoidal wave			

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, ± 10%	22250 (2250)	N (Kg)	
wt Approximate weight	425	g	
Case style	DO-200AC(K-PUK)		See Outline Table

ΔR_{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 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					
SD	300	0	C	10	K
①	②	③	④	⑤	⑥
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)				

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Outline Table

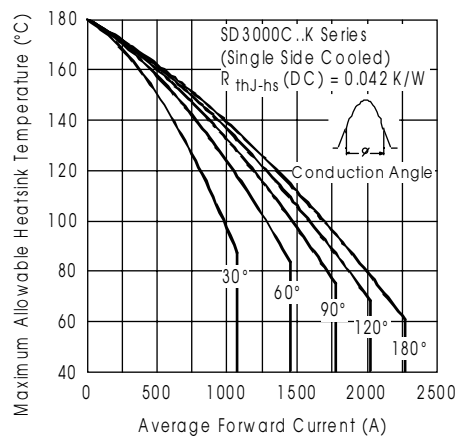
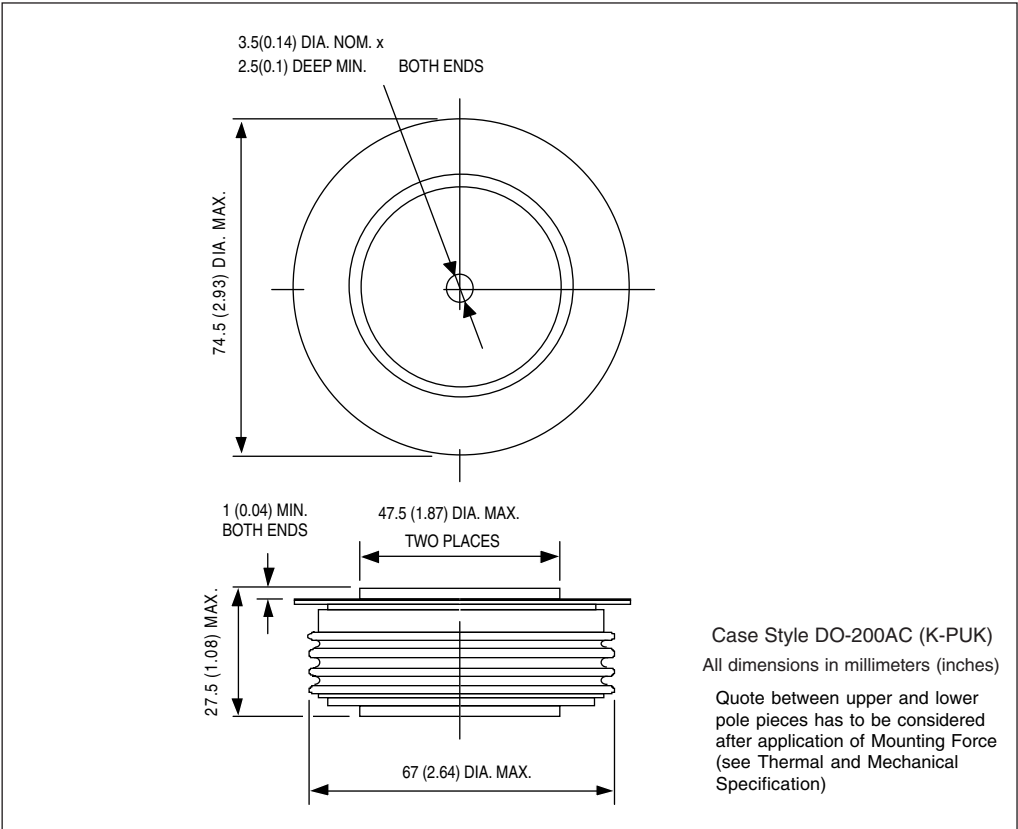


Fig. 1 - Current Ratings Characteristics

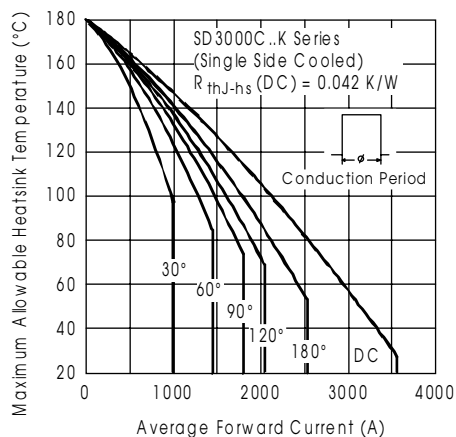


Fig. 2 - Current Ratings Characteristics

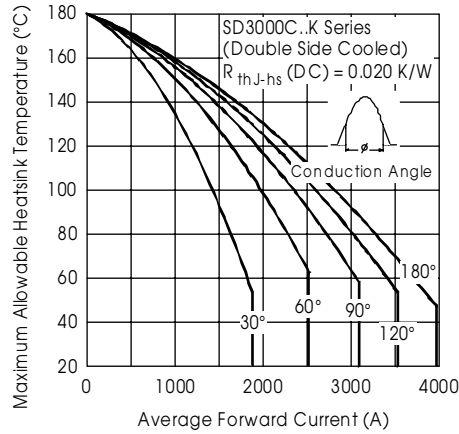


Fig. 3 - Current Ratings Characteristics

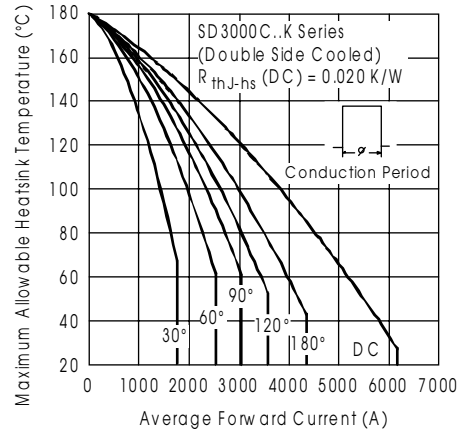


Fig. 4 - Current Ratings Characteristics

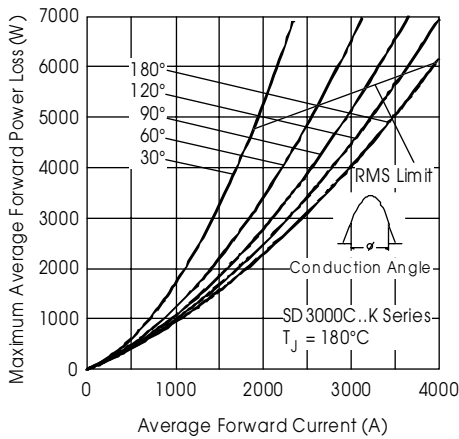


Fig. 5 - Forward Power Loss Characteristics

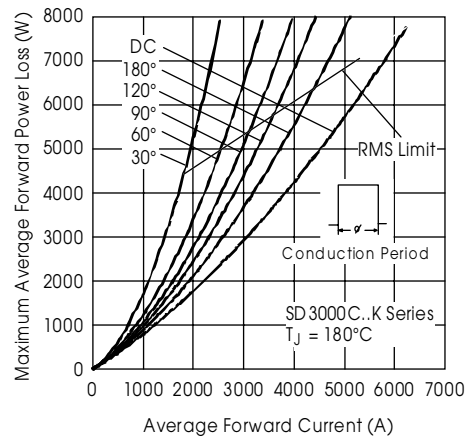


Fig. 6 - Forward Power Loss Characteristics

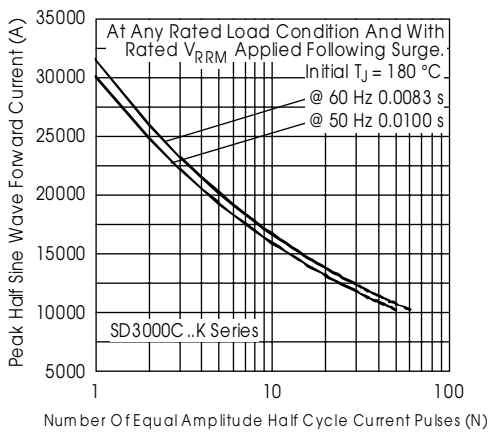


Fig. 7 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

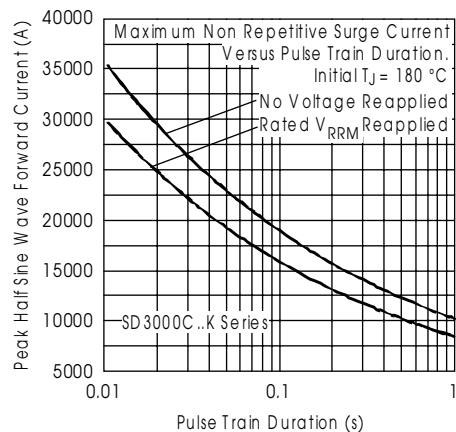


Fig. 8 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

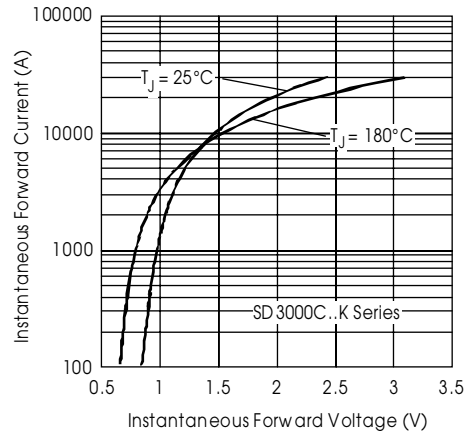
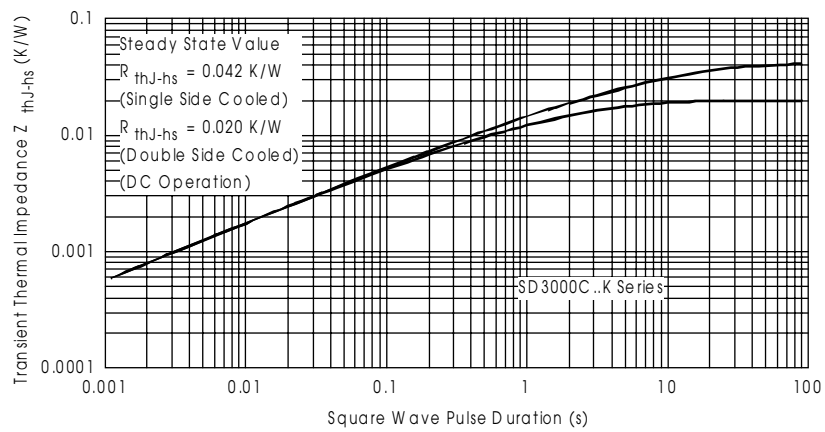


Fig. 9 - Forward Voltage Drop Characteristics

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