

Standard Recovery Diodes (Hockey PUK Version), 3800 A


DO-200AC (K-PUK)

FEATURES

- Wide current range
- High voltage ratings up to 1000 V
- High surge current capabilities
- Diffused junction
- Hockey PUK version
- Case style DO-200AC (K-PUK)
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

TYPICAL APPLICATIONS

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

PRODUCT SUMMARY

$I_{F(AV)}$	3800 A
Package	DO-200AC (K-PUK)
Circuit configuration	Single diode

MAJOR RATINGS AND CHARACTERISTICS

PARAMETER	TEST CONDITIONS	VALUES	UNITS
$I_{F(AV)}$		3800	A
	T_{hs}	55	°C
$I_{F(RMS)}$		6230	A
	T_{hs}	25	°C
I_{FSM}	50 Hz	35 800	A
	60 Hz	37 500	
I^2t	50 Hz	6410	kA²s
	60 Hz	5850	
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 REVERSE VOLTAGE V	I_{RRM} MAXIMUM AT $T_J = 180$ °C mA
VS-SD3000C..K	04	400	500	75
	08	800	900	
	10	1000	1100	

FORWARD CONDUCTION							
PARAMETER	SYMBOL	TEST CONDITIONS			VALUES	UNITS	
Maximum average forward current at heatsink temperature	$I_{F(AV)}$	180° conduction, half sine wave Double side (single side) cooled			3800 (1925)	A	
					55 (85)	°C	
Maximum RMS forward current	$I_{F(RMS)}$	25 °C heatsink temperature double side cooled			6230	A	
Maximum peak, one-cycle forward, non-repetitive surge current	I_{FSM}	$t = 10 \text{ ms}$	No voltage reapplied	Sinusoidal half wave, initial $T_J = T_J$ maximum	35 800		
		$t = 8.3 \text{ ms}$	37 500				
		$t = 10 \text{ ms}$	100 % V_{RRM} reapplied		30 100		
		$t = 8.3 \text{ ms}$	31 500				
Maximum I^2t for fusing	I^2t	$t = 10 \text{ ms}$	No voltage reapplied	Sinusoidal half wave, initial $T_J = T_J$ maximum	6410	kA ² s	
		$t = 8.3 \text{ ms}$	5850				
		$t = 10 \text{ ms}$	100 % V_{RRM} reapplied		4530		
		$t = 8.3 \text{ ms}$	4135				
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	$t = 0.1 \text{ to } 10 \text{ ms}$, no voltage reapplied			64 100	kA ² √s	
Low level value of threshold voltage	$V_{F(TO)1}$	$(16.7 \% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$, $T_J = T_J$ maximum			0.74	V	
High level value of threshold voltage	$V_{F(TO)2}$	$(I > \pi \times I_{F(AV)})$, $T_J = T_J$ maximum			0.86		
Low level value of forward slope resistance	r_{f1}	$(16.7 \% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$, $T_J = T_J$ maximum			0.08	mW	
High level value of forward slope resistance	r_{f2}	$(I > \pi \times I_{F(AV)})$, $T_J = T_J$ maximum			0.07		
Maximum forward voltage drop	V_{FM}	$I_{pk} = 6000 \text{ A}$, $T_J = T_J$ maximum $t_p = 10 \text{ ms}$ sinusoidal wave			1.22	V	

THERMAL AND MECHANICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS			VALUES	UNITS
Maximum junction operating temperature range	T_J				-40 to 180	°C
Maximum storage temperature range	T_{Stg}				-55 to 200	
Maximum thermal resistance, junction to heatsink	R_{thJ-hs}	DC operation single side cooled			0.042	K/W
		DC operation double side cooled			0.020	
Mounting force, ± 10 %					22 250 (2250)	N (kg)
Approximate weight					425	g
Case style		See dimensions - link at the end of datasheet			DO-200AC (K-PUK)	

ΔR_{thJ-hs} CONDUCTION						
CONDUCTION ANGLE	SINUSOIDAL CONDUCTION		RECTANGULAR CONDUCTION		TEST CONDITIONS	UNITS
	SINGLE SIDE	DOUBLE SIDE	SINGLE SIDE	DOUBLE SIDE		
180°	0.002	0.002	0.001	0.001	$T_J = T_J$ maximum	K/W
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		

Note

- The table above shows the increment of thermal resistance R_{thJ-hs} when devices operate at different conduction angles than DC

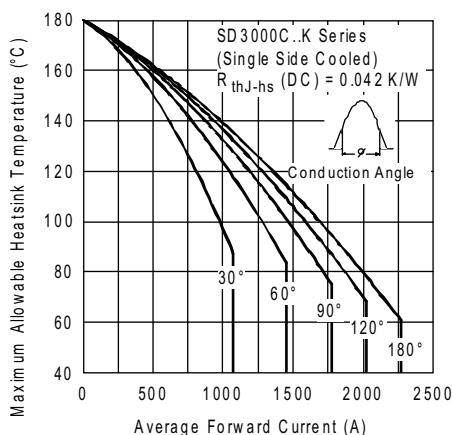


Fig. 1 - Current Ratings Characteristics

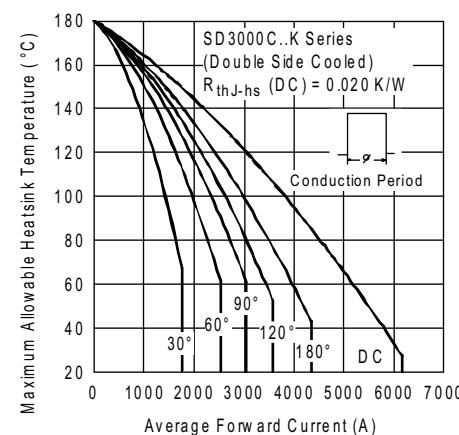


Fig. 4 - Current Ratings Characteristics

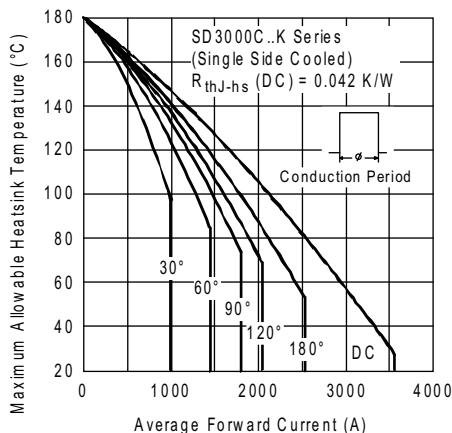


Fig. 2 - Current Ratings Characteristics

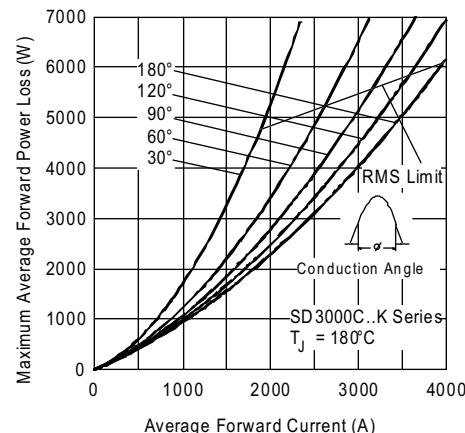


Fig. 5 - Forward Power Loss Characteristics

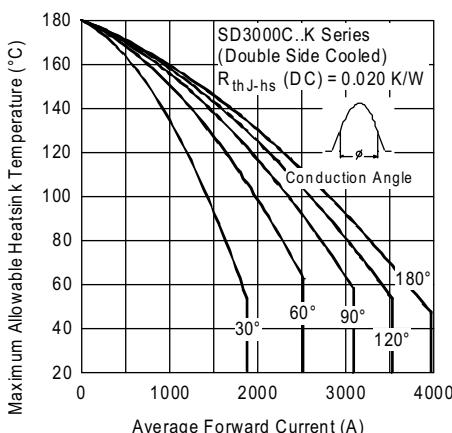


Fig. 3 - Current Ratings Characteristics

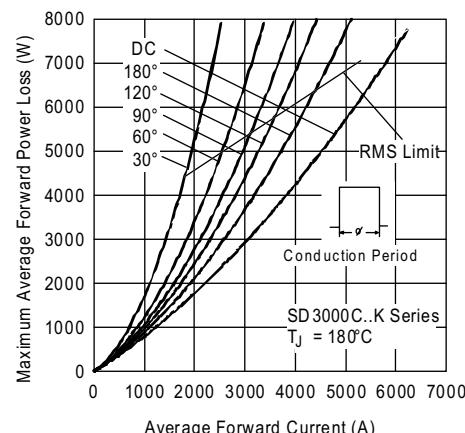


Fig. 6 - Forward Power Loss Characteristics

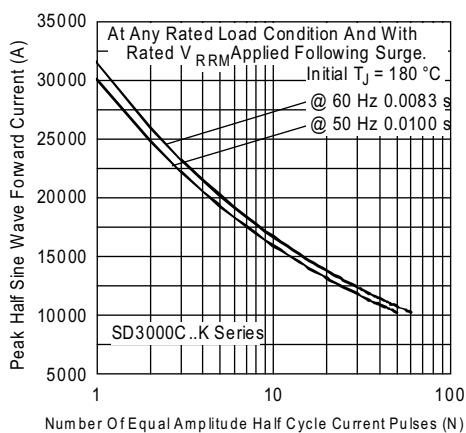


Fig. 7 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

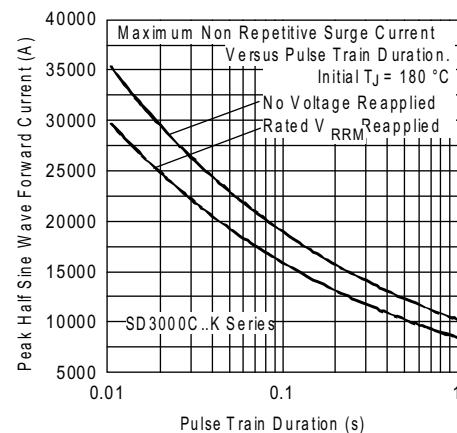


Fig. 8 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

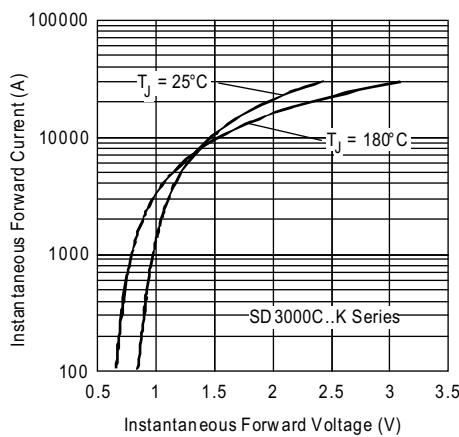


Fig. 9 - Forward Voltage Drop Characteristics

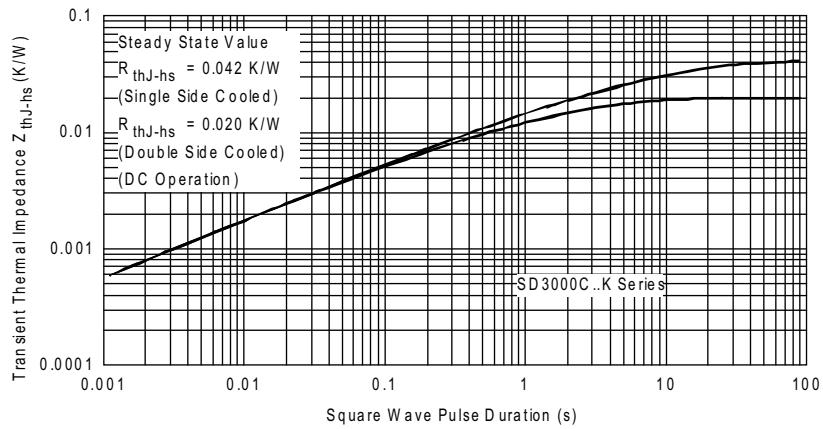
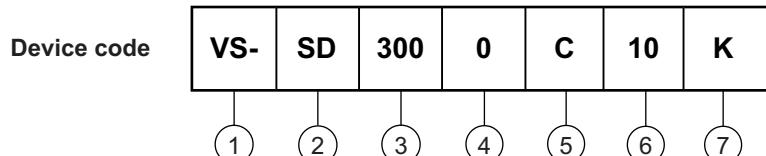


Fig. 10 - Thermal Impedance Z_{thJ-hs} Characteristics

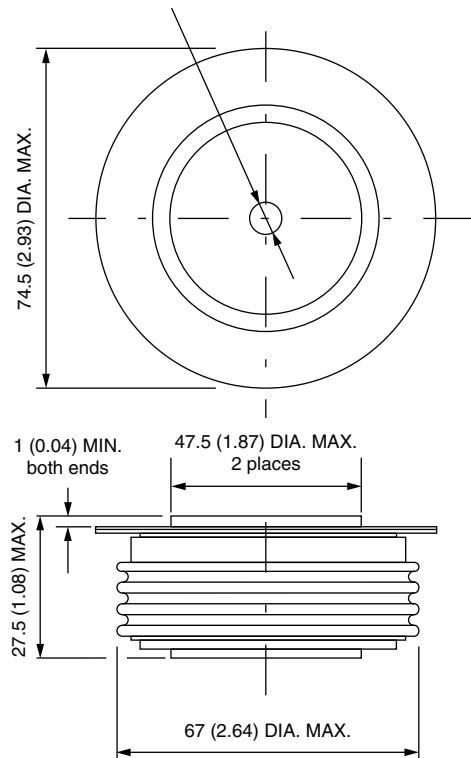
ORDERING INFORMATION TABLE


1	- Vishay Semiconductors product
2	- Diode
3	- Essential part number
4	- 0 = Standard recovery
5	- C = Ceramic PUK
6	- Voltage code x 100 = V_{RRM} (see Voltage Ratings table)
7	- K = PUK case DO-200AC (K-PUK)

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95247

DO-200AC (K-PUK)**DIMENSIONS** in millimeters (inches)

3.5 (0.14) DIA. NOM. x
1.8 (0.07) deep MIN. both ends



Quote between upper and lower pole pieces has to be considered after application of mounting force (see Thermal and Mechanical Specifications)

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