

## Standard Recovery Diodes, (Hockey PUK Version), 3000 A


**K-PUK (DO-200AC)**

### FEATURES

- Wide current range
- High voltage ratings up to 2500 V
- High surge current capabilities
- Diffused junction
- Hockey PUK version
- Case style K-PUK (DO-200AC)
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

### TYPICAL APPLICATIONS

- Converters
- Power supplies
- Machine tool controls
- High power drives
- Medium traction applications

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	3000 A
Package	K-PUK (DO-200AC)
Circuit configuration	Single

MAJOR RATINGS AND CHARACTERISTICS			
PARAMETER	TEST CONDITIONS	VALUES	UNITS
$I_{F(AV)}$		3000	A
	$T_{hs}$	55	°C
$I_{F(RMS)}$		5000	A
	$T_{hs}$	25	°C
$I_{FSM}$	50 Hz	31 000	A
	60 Hz	32 460	
$I^2t$	50 Hz	4810	kA²s
	60 Hz	4390	
$V_{RRM}$	Range	1200 to 2500	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-SD2500C..K	12	1200	1300	75
	16	1600	1700	
	20	2000	2100	
	24	2400	2500	
	25	2500	2600	

<b>FORWARD CONDUCTION</b>							
PARAMETER	SYMBOL	TEST CONDITIONS			VALUES	UNITS	
Maximum average forward current at heatsink temperature	I <sub>F(AV)</sub>	180° conduction, half sine wave Double side (single side) cooled			3000 (1550)	A	
					55 (85)	°C	
Maximum RMS forward current	I <sub>F(RMS)</sub>	25 °C heatsink temperature double side cooled			5000	A	
Maximum peak, one-cycle forward, non-repetitive surge current	I <sub>FSM</sub>	t = 10 ms	No voltage reapplied	Sinusoidal half wave, initial T <sub>J</sub> = T <sub>J</sub> maximum	31 000		
		t = 8.3 ms	100 % V <sub>RRM</sub> reapplied		32 460		
		t = 10 ms	No voltage reapplied		26 050		
		t = 8.3 ms	100 % V <sub>RRM</sub> reapplied		27 300		
Maximum I <sup>2</sup> t for fusing	I <sup>2</sup> t	t = 10 ms	No voltage reapplied	kA <sup>2</sup> s	4810	kA <sup>2</sup> s	
		t = 8.3 ms	100 % V <sub>RRM</sub> reapplied		4390		
		t = 10 ms	No voltage reapplied		3400		
		t = 8.3 ms	100 % V <sub>RRM</sub> reapplied		3100		
Maximum I <sup>2</sup> /t for fusing	I <sup>2</sup> /t	t = 0.1 to 10 ms, no voltage reapplied			48 100		
Low level value of threshold voltage	V <sub>F(TO)1</sub>	(16.7 % x π x I <sub>F(AV)</sub> < I < π x I <sub>F(AV)</sub> , T <sub>J</sub> = T <sub>J</sub> maximum)			0.76	V	
High level value of threshold voltage	V <sub>F(TO)2</sub>	(I > π x I <sub>F(AV)</sub> , T <sub>J</sub> = T <sub>J</sub> maximum)			0.97		
Low level value of forward slope resistance	r <sub>f1</sub>	(16.7 % x π x I <sub>F(AV)</sub> < I < π x I <sub>F(AV)</sub> , T <sub>J</sub> = T <sub>J</sub> maximum)			0.16	mW	
High level value of forward slope resistance	r <sub>f2</sub>	(I > π x I <sub>F(AV)</sub> , T <sub>J</sub> = T <sub>J</sub> maximum)			0.13		
Maximum forward voltage drop	V <sub>FM</sub>	I <sub>pk</sub> = 4000 A, T <sub>J</sub> = T <sub>J</sub> maximum t <sub>p</sub> = 10 ms sinusoidal wave			1.41	V	

<b>THERMAL AND MECHANICAL SPECIFICATIONS</b>						
PARAMETER	SYMBOL	TEST CONDITIONS			VALUES	UNITS
Maximum junction operating temperature range	T <sub>J</sub>				-40 to +180	°C
Maximum storage temperature range	T <sub>Stg</sub>				-55 to +200	
Maximum thermal resistance, junction to heatsink	R <sub>thJ-hs</sub>	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			K-PUK (DO-200AC)	

<b>ΔR<sub>thJ-hs</sub> CONDUCTION</b>						
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 <sub>J</sub> = T <sub>J</sub> 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<sub>thJ-hs</sub> when devices operate at different conduction angles than DC

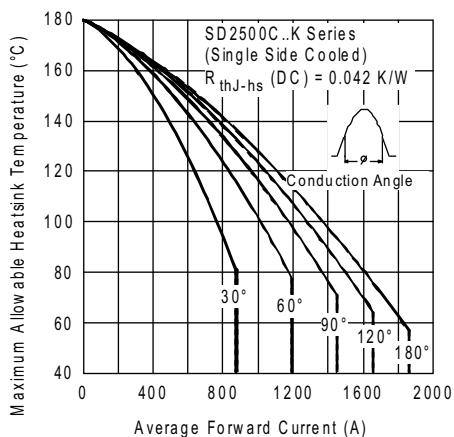


Fig. 1 - Current Ratings Characteristics

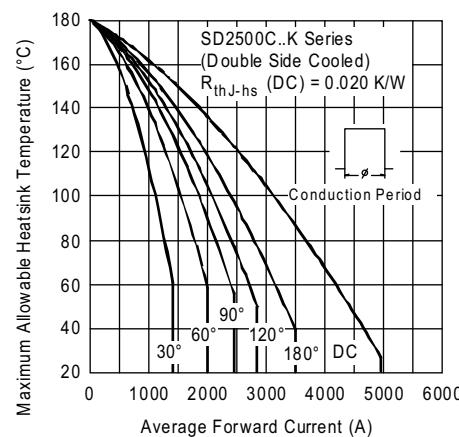


Fig. 4 - Current Ratings Characteristics

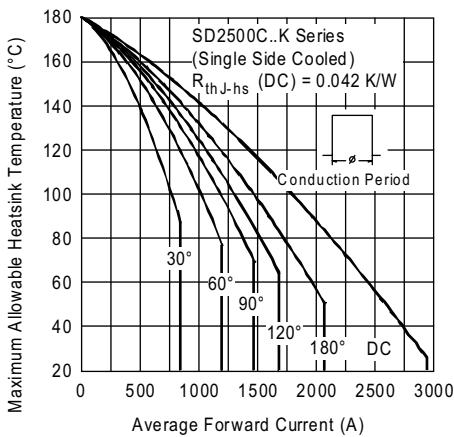


Fig. 2 - Current Ratings Characteristics

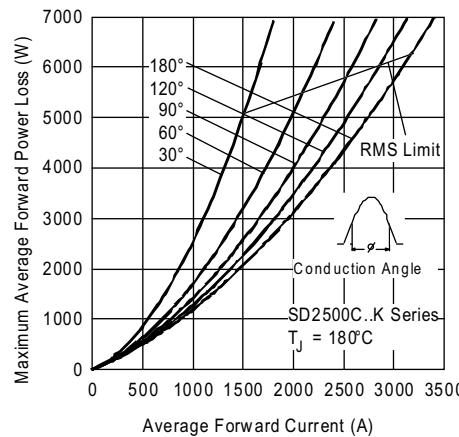


Fig. 5 - Forward Power Loss Characteristics

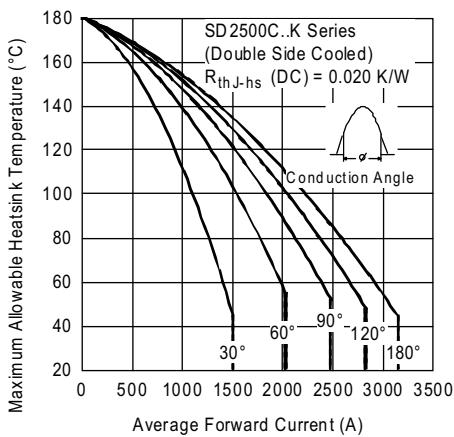


Fig. 3 - Current Ratings Characteristics

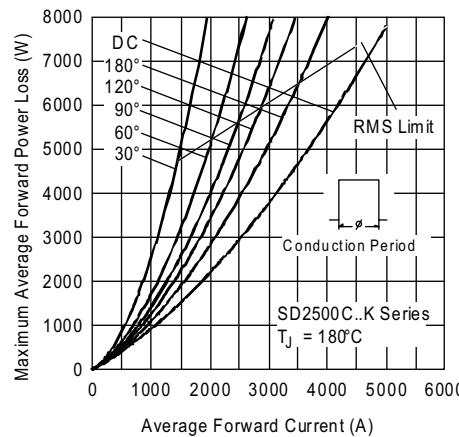


Fig. 6 - Forward Power Loss Characteristics

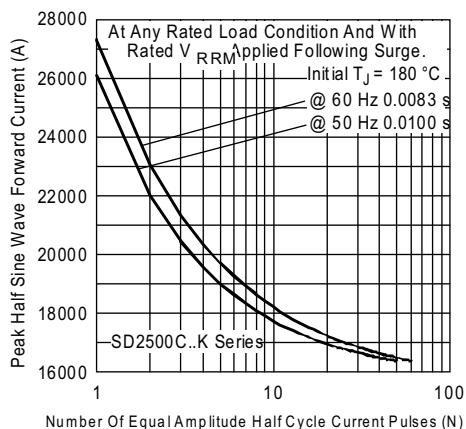


Fig. 7 - Maximum Non-Repetitive Surge Current  
Single and Double Side Cooled

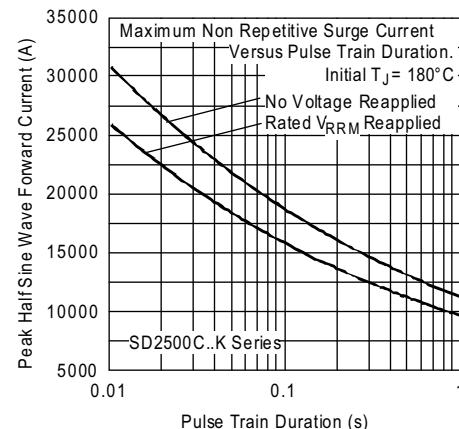


Fig. 8 - Maximum Non-Repetitive Surge Current  
Single and Double Side Cooled

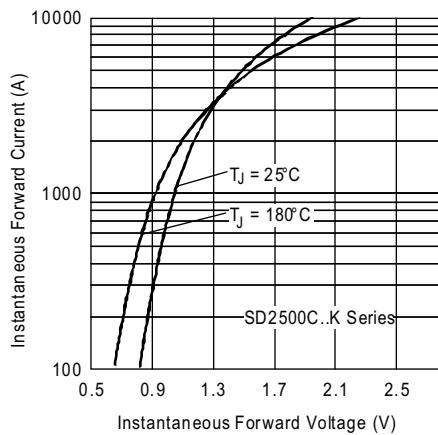


Fig. 9 - Forward Voltage Drop Characteristics

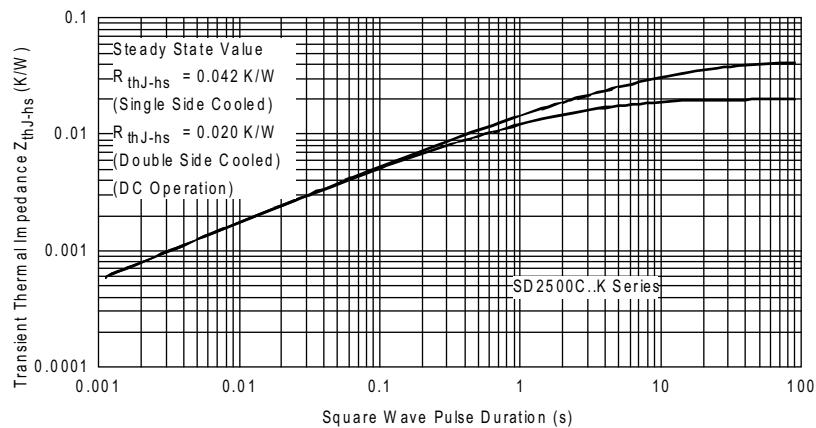


Fig. 10 - Thermal Impedance  $Z_{thJ-hs}$  Characteristics

**ORDERING INFORMATION TABLE**

Device code	VS-	SD	250	0	C	25	K
	1	2	3	4	5	6	7

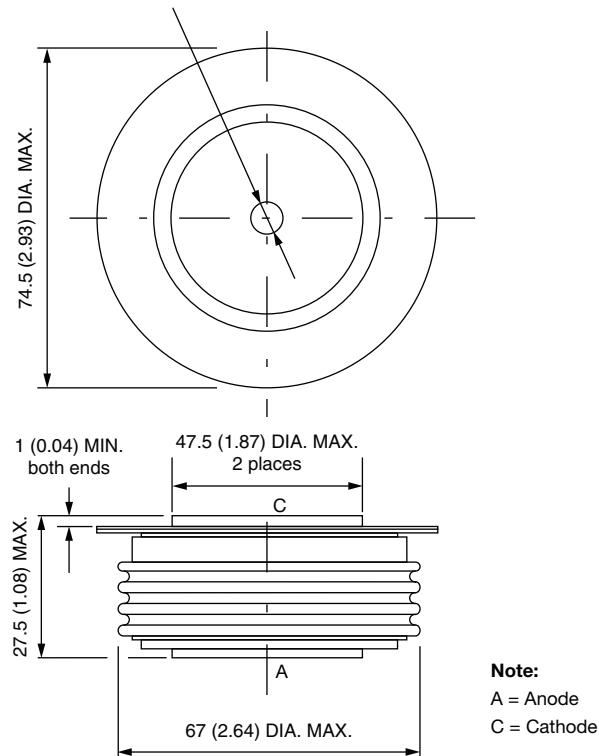
- 1** - Vishay Semiconductors product
- 2** - Diode
- 3** - Essential part number
- 4** - 0 = standard recovery
- 5** - C = ceramic PUK
- 6** - Voltage code x 100 =  $V_{RRM}$  (see Voltage Ratings table)
- 7** - K = PUK case K-PUK (DO-200AC)

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95247">www.vishay.com/doc?95247</a>

## K-PUK (DO-200AC)

**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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