



## 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	kA <sup>2</sup> s
	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 $T_J = 180\text{ °C}$ mA
VS-SD2500C..K	12	1200	1300	75
	16	1600	1700	
	20	2000	2100	
	24	2400	2500	
	25	2500	2600	



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		3000 (1550)	A
				55 (85)	°C
Maximum RMS forward current	$I_{F(RMS)}$	25 °C heatsink temperature double side cooled		5000	A
Maximum peak, one-cycle forward, non-repetitive surge current	$I_{FSM}$	t = 10 ms	No voltage reapplied	31 000	
		t = 8.3 ms	No voltage reapplied	32 460	
		t = 10 ms	100 % $V_{RRM}$ reapplied	26 050	
		t = 8.3 ms	100 % $V_{RRM}$ reapplied	27 300	
Maximum $I^2t$ for fusing	$I^2t$	t = 10 ms	No voltage reapplied	4810	kA <sup>2</sup> s
		t = 8.3 ms	No voltage reapplied	4390	
		t = 10 ms	100 % $V_{RRM}$ reapplied	3400	
		t = 8.3 ms	100 % $V_{RRM}$ reapplied	3100	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied		48 100	kA <sup>2</sup> √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		0.76	V
High level value of threshold voltage	$V_{F(TO)2}$	(I $> \pi \times I_{F(AV)}$ ), $T_J = T_J$ maximum		0.97	
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		0.16	mW
High level value of forward slope resistance	$r_{f2}$	(I $> \pi \times I_{F(AV)}$ ), $T_J = T_J$ maximum		0.13	
Maximum forward voltage drop	$V_{FM}$	$I_{pk} = 4000$ A, $T_J = T_J$ maximum $t_p = 10$ ms sinusoidal wave		1.41	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		K-PUK (DO-200AC)	

$\Delta R_{thJ-hs}$ 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

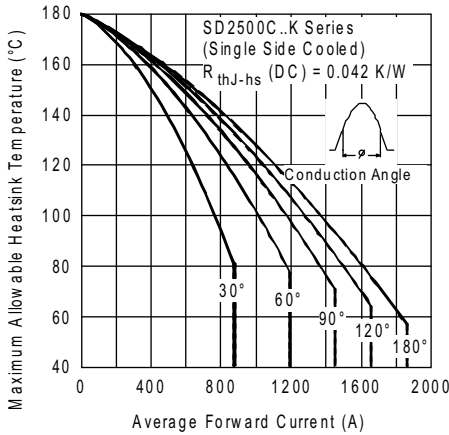


Fig. 1 - Current Ratings Characteristics

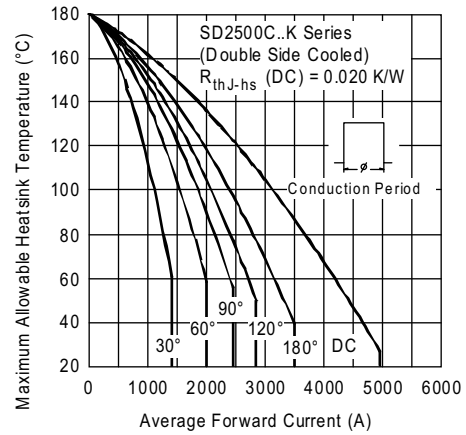


Fig. 4 - Current Ratings Characteristics

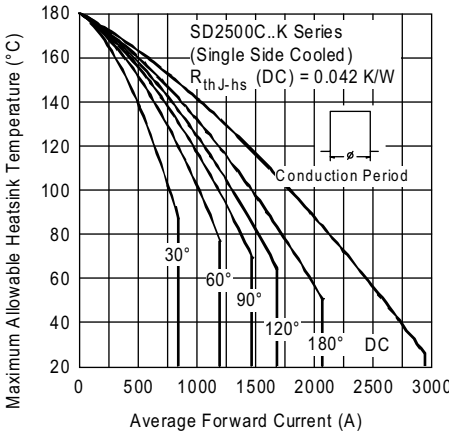


Fig. 2 - Current Ratings Characteristics

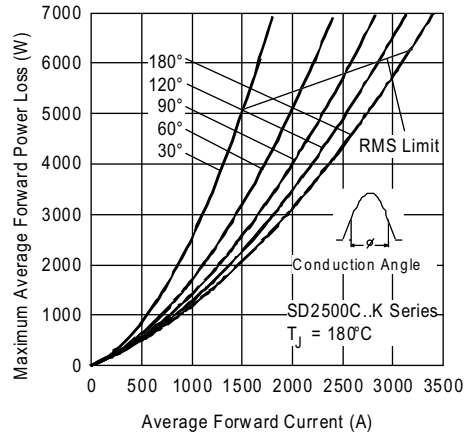


Fig. 5 - Forward Power Loss Characteristics

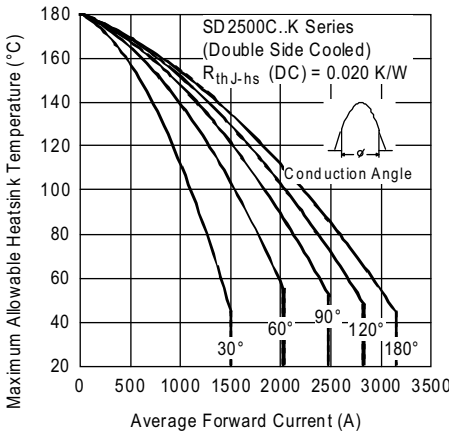


Fig. 3 - Current Ratings Characteristics

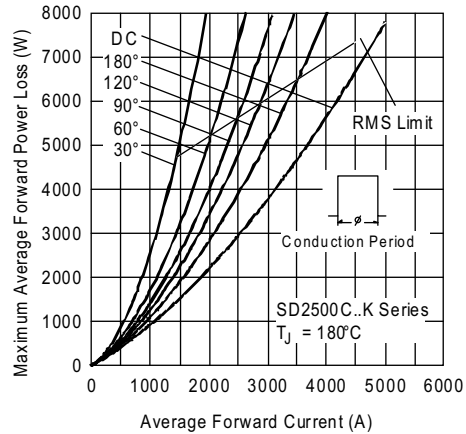


Fig. 6 - Forward Power Loss Characteristics

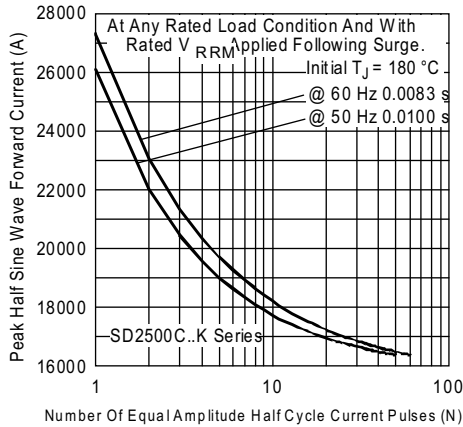


Fig. 7 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

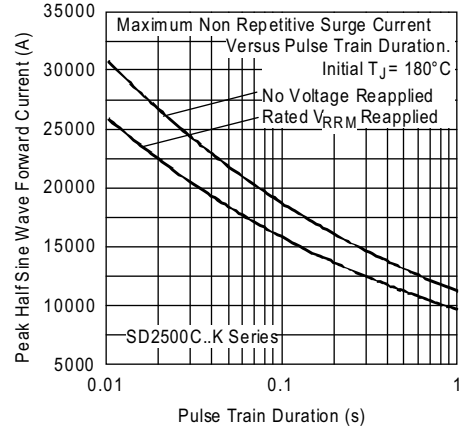


Fig. 8 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

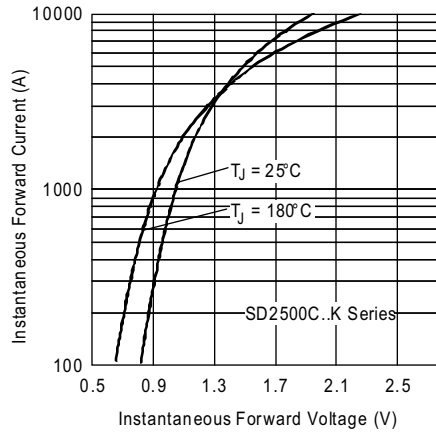


Fig. 9 - Forward Voltage Drop Characteristics

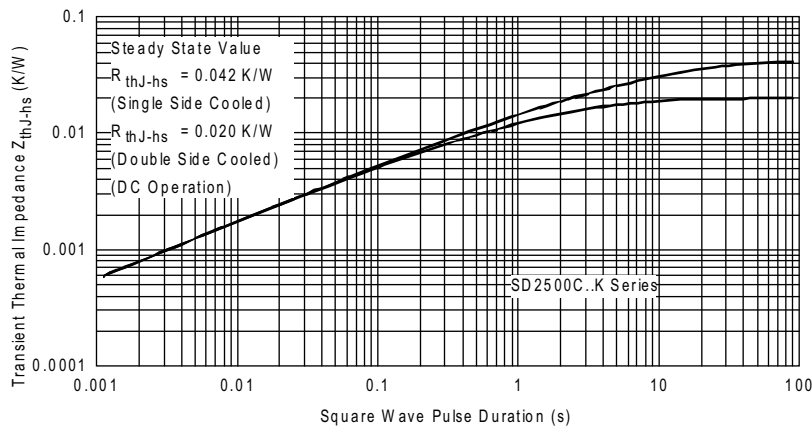
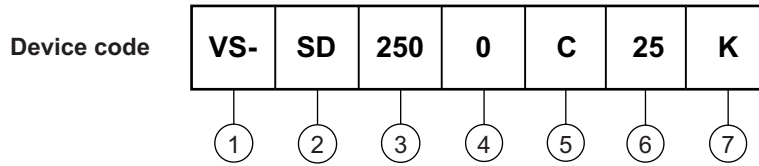


Fig. 10 - Thermal Impedance  $Z_{thJ-hs}$  Characteristics



## 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 K-PUK (DO-200AC)

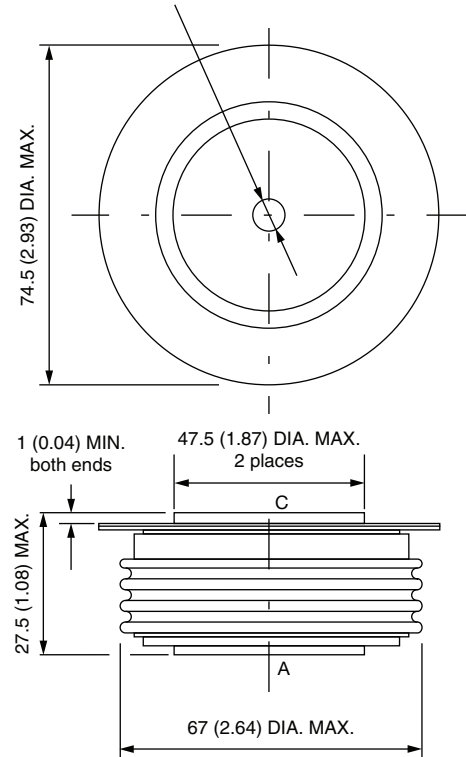
LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95247">www.vishay.com/doc?95247</a>



## K-PUK (DO-200AC)

**DIMENSIONS** in millimeters (inches)

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



**Note:**

A = Anode

C = Cathode

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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