

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


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 ² 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		
Maximum peak, one-cycle forward, non-repetitive surge current	I _{FSM}	t = 10 ms	No voltage reapplied	Sinusoidal half wave, initial T _J = T _J maximum	31 000	A	
		t = 8.3 ms			32 460		
		t = 10 ms	100 % V _{RRM} reapplied		26 050		
		t = 8.3 ms			27 300		
Maximum I ² t for fusing	I ² t	t = 10 ms	No voltage reapplied			4810	kA ² s
		t = 8.3 ms				4390	
		t = 10 ms	100 % V _{RRM} reapplied			3400	
		t = 8.3 ms				3100	
Maximum I ² √t for fusing	I ² √t	t = 0.1 to 10 ms, no voltage reapplied			48 100	kA ² √s	
Low level value of threshold voltage	V _{F(TO)1}	(16.7 % × π × I _{F(AV)}) < I < π × I _{F(AV)} , T _J = T _J maximum			0.76	V	
High level value of threshold voltage	V _{F(TO)2}	(I > π × I _{F(AV)}), T _J = T _J maximum			0.97		
Low level value of forward slope resistance	r _{f1}	(16.7 % × π × I _{F(AV)}) < I < π × I _{F(AV)} , T _J = T _J maximum			0.16	mW	
High level value of forward slope resistance	r _{f2}	(I > π × 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)	

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

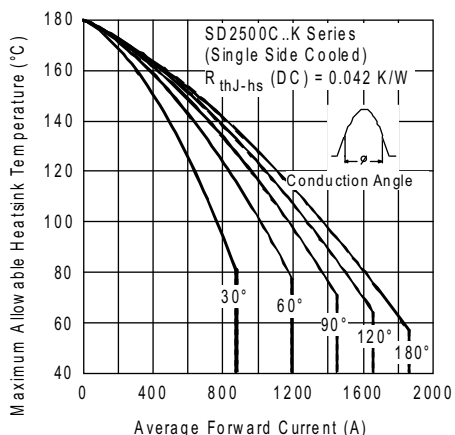


Fig. 1 - Current Ratings Characteristics

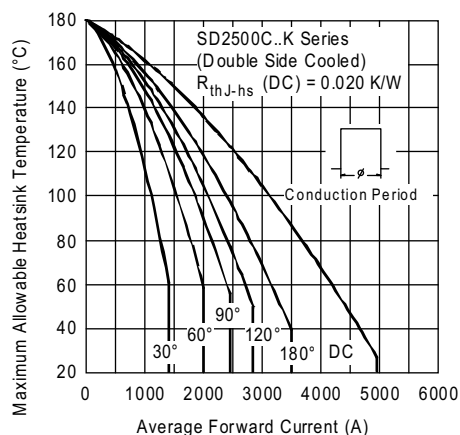


Fig. 4 - Current Ratings Characteristics

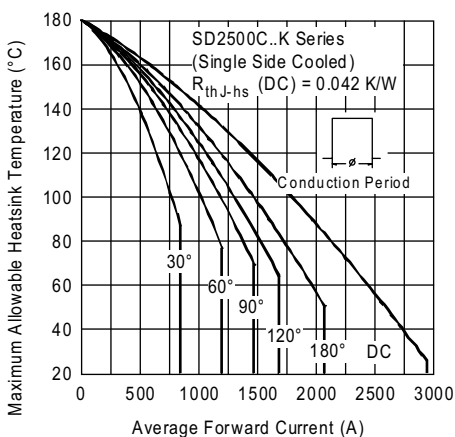


Fig. 2 - Current Ratings Characteristics

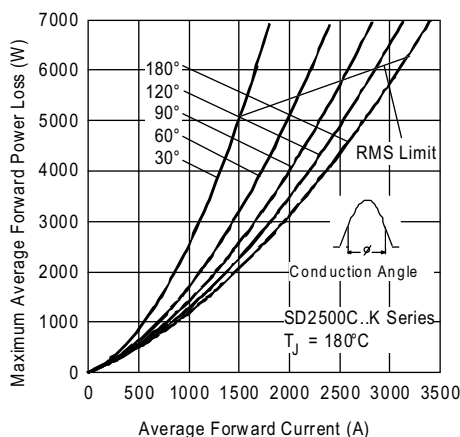


Fig. 5 - Forward Power Loss Characteristics

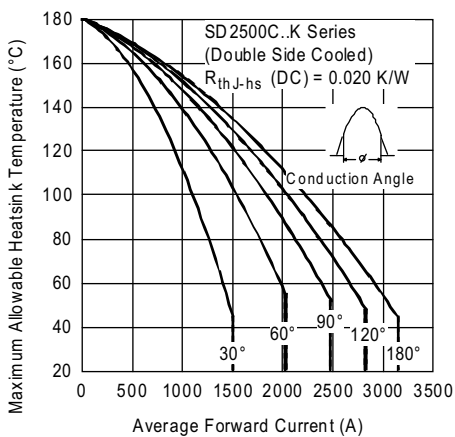


Fig. 3 - Current Ratings Characteristics

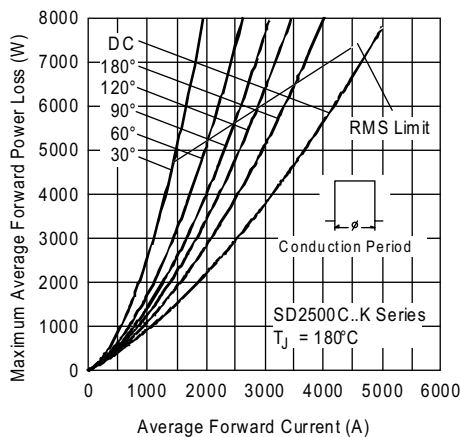


Fig. 6 - Forward Power Loss Characteristics

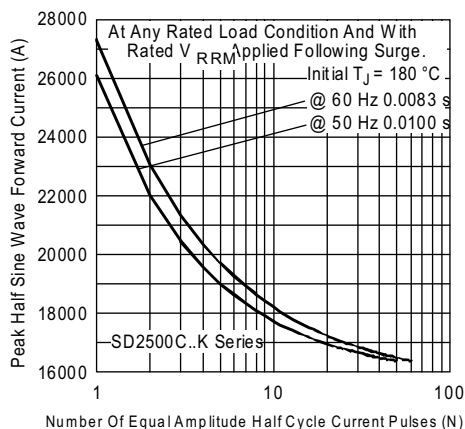


Fig. 7 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

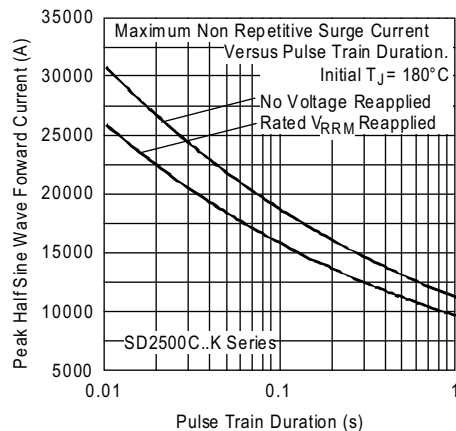


Fig. 8 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

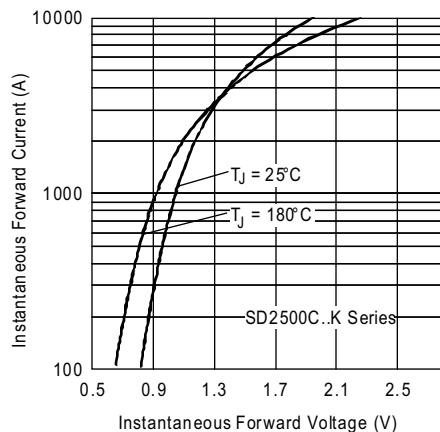


Fig. 9 - Forward Voltage Drop Characteristics

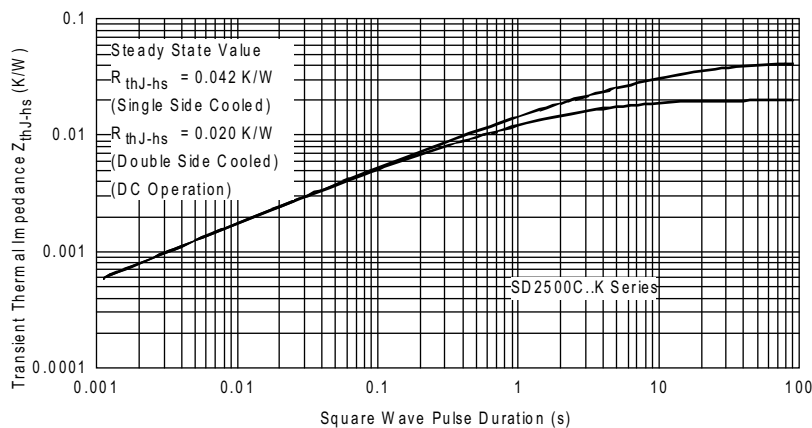


Fig. 10 - Thermal Impedance Z_{thJ-hs} Characteristics



ORDERING INFORMATION TABLE

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

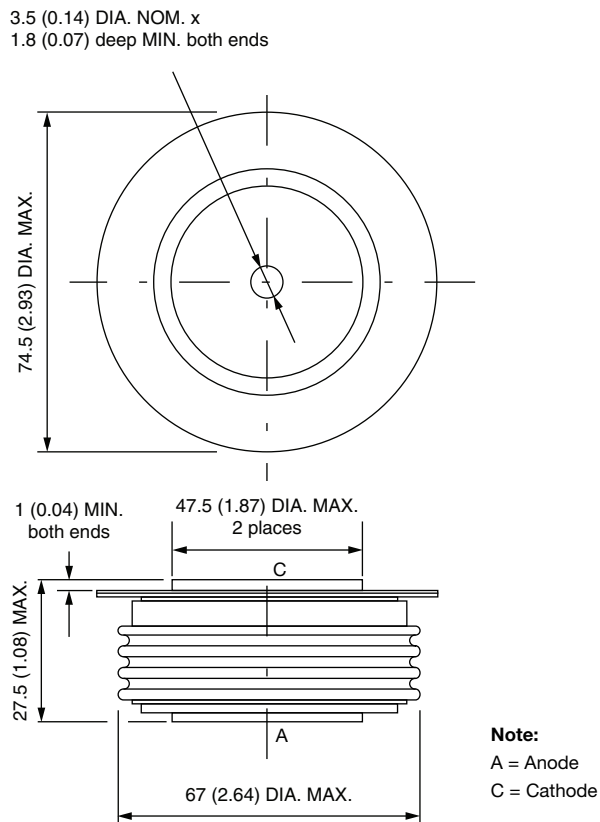
- | | | |
|---|---|--|
| 1 | - | Vishay Semiconductors product |
| 2 | - | Diode |
| 3 | - | Essential part number |
| 4 | - | 0 = standard recovery |
| 5 | - | C = ceramic PUK |
| 6 | - | Voltage code x 100 = V_{RRM} (see Voltage Ratings table) |
| 7 | - | K = PUK case K-PUK (DO-200AC) |

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



K-PUK (DO-200AC)

DIMENSIONS in millimeters (inches)



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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