

COMPLIANT

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



K-PUK (DO-200AC)

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

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 <u>www.vishay.com/doc?99912</u>

TYPICAL APPLICATIONS

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

MAJOR RATINGS AND CHARACTERISTICS					
PARAMETER	TEST CONDITIONS	VALUES	UNITS		
1		3000	A		
I _{F(AV)}	T _{hs}	55	°C		
I _{F(RMS)}		5000	A		
	T _{hs}	25	°C		
I _{FSM}	50 Hz	31 000	Δ.		
	60 Hz	32 460	A		
l ² t	50 Hz	4810	kA ² s		
	60 Hz	4390	KA-S		
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		
	12	1200	1300			
	16	1600	1700			
VS-SD2500CK	20	2000	2100	75		
	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) 55 (85)	A °C
Maximum RMS forward current	I _{F(RMS)}		, ,	re double side cooled	5000	
	. ()	t = 10 ms	No voltage	Sinusoidal half wave, initial T _J = T _J maximum	31 000	
Maximum peak, one-cycle forward,		t = 8.3 ms	reapplied		32 460	А
non-repetitive surge current	I _{FSM}	t = 10 ms	100 % V _{RRM}		26 050	
		t = 8.3 ms	reapplied		27 300	
	l ² t	t = 10 ms	No voltage		4810	kA ² s
Maximum I ² t for fusing		t = 8.3 ms	reapplied		4390	
		t = 10 ms	100 % V _{RRM}		3400	
		t = 8.3 ms	reapplied		3100	
Maximum I ² √t for fusing	I²√t	t = 0.1 to 10 ms, no voltage reapplied			48 100	kA²√s
Low level value of threshold voltage	V _{F(TO)1}	(16.7 % x π x $I_{F(AV)}$ < I < π x $I_{F(AV)}$), $T_J = T_J$ maximum		0.76	V	
High level value of threshold voltage	V _{F(TO)2}	$(I > \pi \times I_{F(AV)}), T_J = T_J \text{ maximum}$			0.97	V
Low level value of forward slope resistance	r _{f1}	(16.7 % x π x I _{F(AV)} < I < π x I _{F(AV)}), T _J = T _J maximum			0.16	m\\/
High level value of forward slope resistance	r _{f2}	$(I > \pi \times I_{F(AV)}), T_J = T_J \text{ maximum}$			0.13	mW
Maximum forward voltage drop	V_{FM}	$I_{pk} = 4000 \text{ A}, T_J = T_J \text{ maximum}$ $t_p = 10 \text{ ms sinusoidal wave}$			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	ļ
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	F\/ VV
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)	

△R _{thJ-hs} CONDUCTION						
CONDUCTION ANGLE	SINUSOIDAL CONDUCTION		RECTANGULAR CONDUCTION		TEST CONDITIONS	LIMITO
CONDUCTION ANGLE	SINGLE SIDE	DOUBLE SIDE	SINGLE SIDE	DOUBLE SIDE	1EST CONDITIONS	UNITS
180°	0.002	0.002	0.001	0.001	$T_J = T_J$ maximum	
120°	0.002	0.002	0.002	0.002		
90°	0.003	0.003	0.003	0.003		K/W
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



40

400

www.vishay.com

180 SD2500C..K Series Maximum Allowable Heatsink Temperature (°C.) (Single Side Cooled) 160 thJ-hs (DC) = 0.042 K/W 140 120 onduction Angle 100 80 60

Fig. 1 - Current Ratings Characteristics

Average Forward Current (A)

800

1200

1600

2000

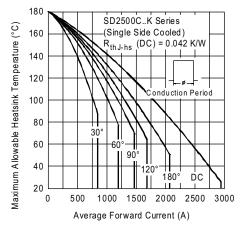


Fig. 2 - Current Ratings Characteristics

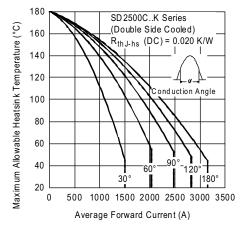


Fig. 3 - Current Ratings Characteristics

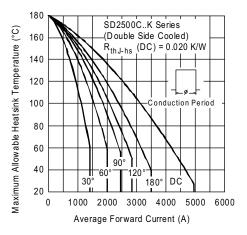


Fig. 4 - Current Ratings Characteristics

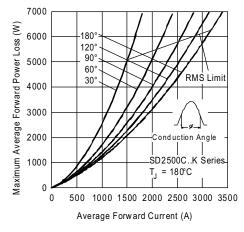


Fig. 5 - Forward Power Loss Characteristics

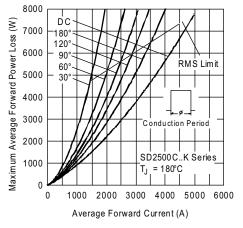


Fig. 6 - Forward Power Loss Characteristics

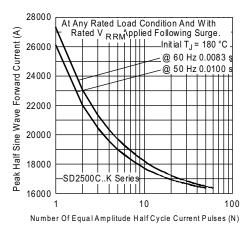


Fig. 7 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

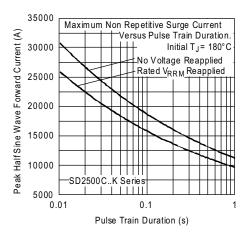


Fig. 8 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

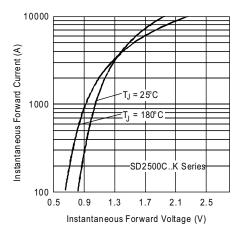


Fig. 9 - Forward Voltage Drop Characteristics

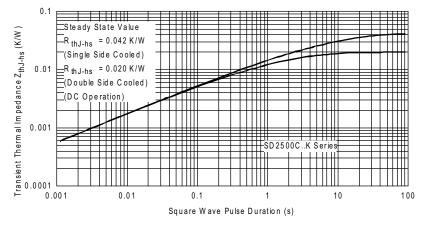
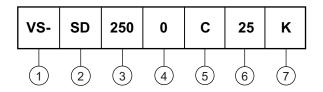


Fig. 10 - Thermal Impedance Z_{thJ-hs} Characteristics



ORDERING INFORMATION TABLE

Device code



Vishay Semiconductors product

2 - Diode

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)

67 (2.64) DIA. MAX.

Note: A = Anode C = Cathode



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