

Standard Recovery Diodes, (Hockey PUK), 2100 A



K-PUK (DO-200AC)

FEATURES

- Wide current range
- High voltage ratings up to 4500 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

$I_{F(AV)}$	2100 A
Package	K-PUK (DO-200AC)
Circuit configuration	Single

MAJOR RATINGS AND CHARACTERISTICS

PARAMETER	TEST CONDITIONS	SD1700C..K		UNITS
		24 to 36	40 to 45	
$I_{F(AV)}$		2080	1875	A
	T_{hs}	55	55	°C
$I_{F(RMS)}$		3600	3280	A
	T_{hs}	25	25	°C
I_{FSM}	50 Hz	24 000	20 000	A
	60 Hz	25 150	20 950	
I^2t	50 Hz	2890	2000	kA ² s
	60 Hz	2630	1826	
V_{RRM}	Range	2400 to 3600	4000 to 4500	V
T_J		-40 to +150	-40 to +150	°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 $T_J = T_J$ MAXIMUM mA
VS-SD1700C..K	24	2400	2500	75
	30	3000	3100	
	36	3600	3700	
	40	4000	4100	
	45	4500	4600	

**FORWARD CONDUCTION**

PARAMETER	SYMBOL	TEST CONDITIONS	SD1700C..K		UNITS
			24 to 36	40 to 45	
Maximum average forward current at heatsink temperature	$I_{F(AV)}$	180° conduction, half sine wave Double side (single side) cooled	2080 (1000)	1875 (920)	A
Maximum RMS forward current	$I_{F(RMS)}$	25 °C heatsink temperature double side cooled	3600	3280	°C
Maximum peak, one cycle forward, non-repetitive surge current	I_{FSM}	t = 10 ms	24 000	20 000	A
		t = 8.3 ms	25 150	20 950	
		t = 10 ms	20 200	16 800	
		t = 8.3 ms	21 150	17 600	
Maximum I^2t for fusing	I^2t	t = 10 ms	2890	2000	kA ² s
		t = 8.3 ms	2630	1826	
		t = 10 ms	2040	1415	
		t = 8.3 ms	1860	1292	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied	28 900	20 000	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	0.89	0.88	V
High level value of threshold voltage	$V_{F(TO)2}$	$(I > \pi \times I_{F(AV)})$, $T_J = T_J$ maximum	1.02	0.99	
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	0.23	0.31	mΩ
High level value of forward slope resistance	r_{f2}	$(I > \pi \times I_{F(AV)})$, $T_J = T_J$ maximum	0.21	0.29	
Maximum forward voltage drop	V_{FM}	$I_{pk} = 4000$ A, $T_J = T_J$ maximum, $t_p = 10$ ms sinusoidal wave	1.81	2.11	V

THERMAL AND MECHANICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction operating temperature range	T_J		-40 to +150	°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

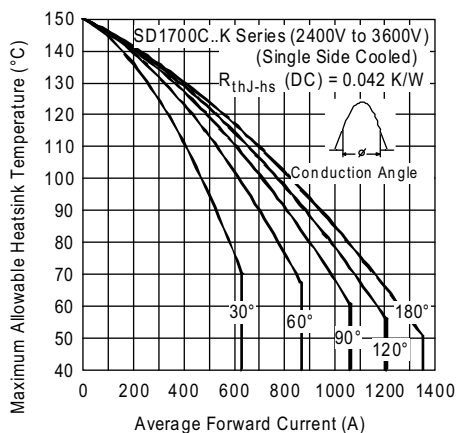


Fig. 1 - Current Ratings Characteristics

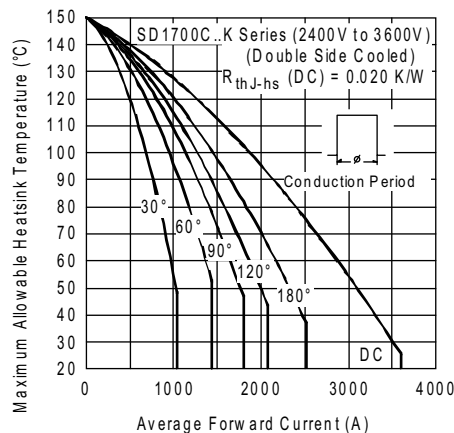


Fig. 4 - Current Ratings Characteristics

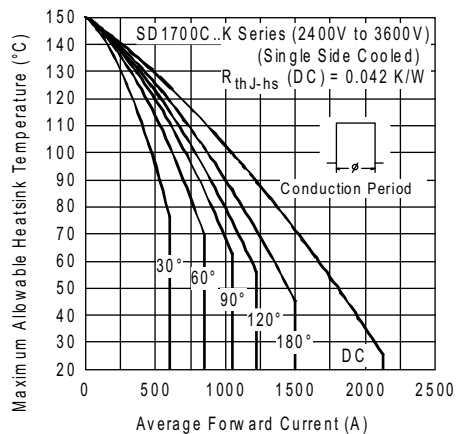


Fig. 2 - Current Ratings Characteristics

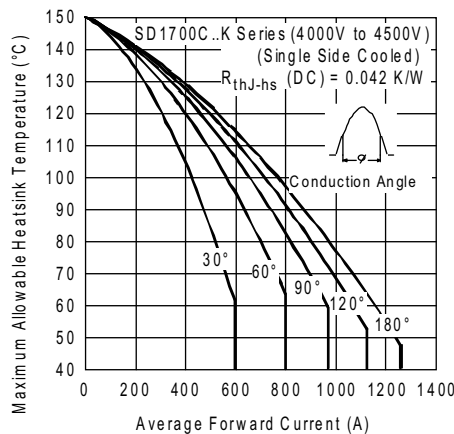


Fig. 5 - Current Ratings Characteristics

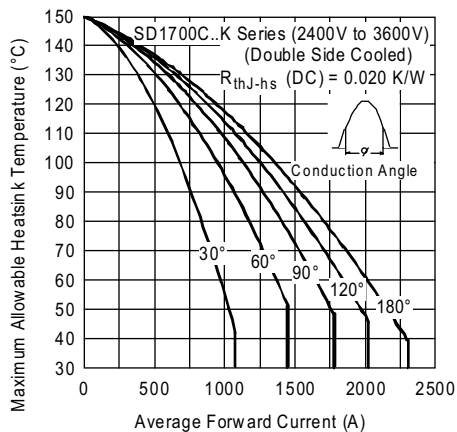


Fig. 3 - Current Ratings Characteristics

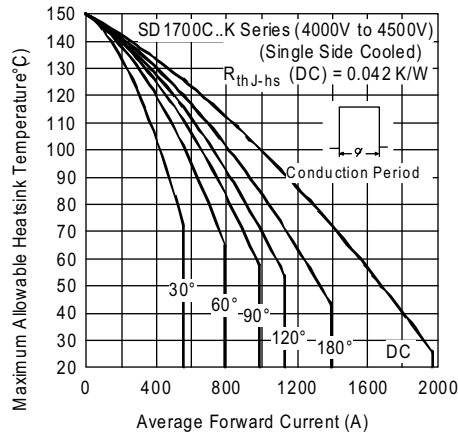


Fig. 6 - Current Ratings Characteristics

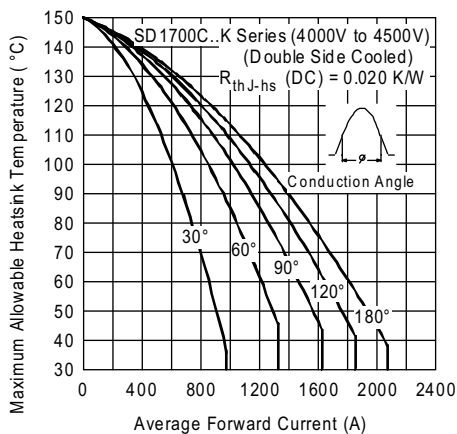


Fig. 7 - Current Ratings Characteristics

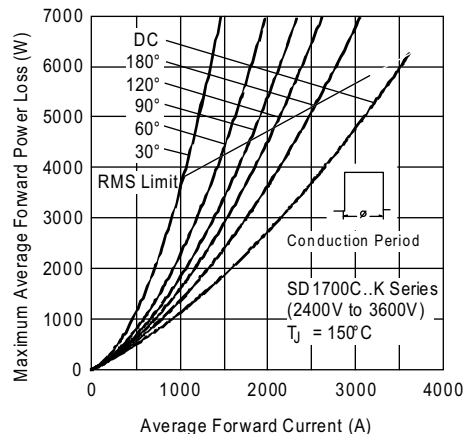


Fig. 10 - Forward Power Loss Characteristics

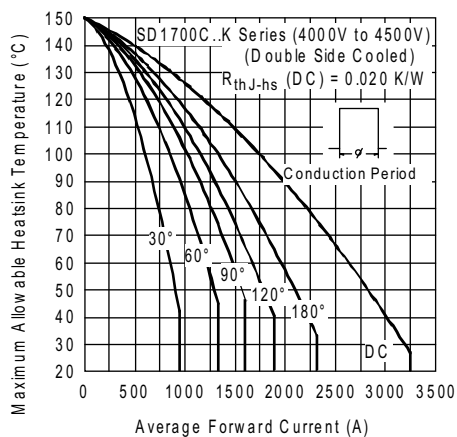


Fig. 8 - Current Ratings Characteristics

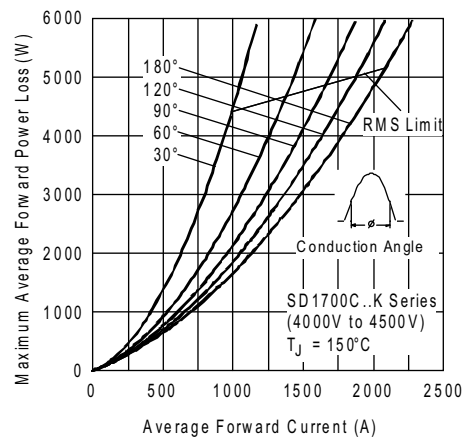


Fig. 11 - Forward Power Loss Characteristics

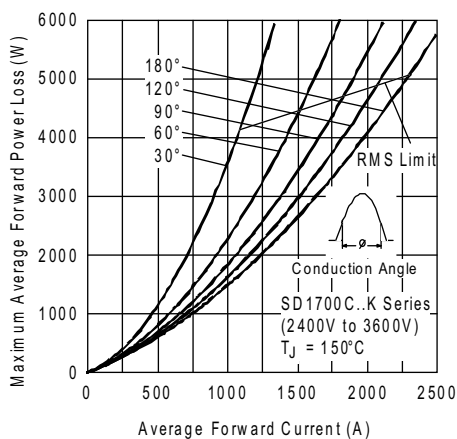


Fig. 9 - Forward Power Loss Characteristics

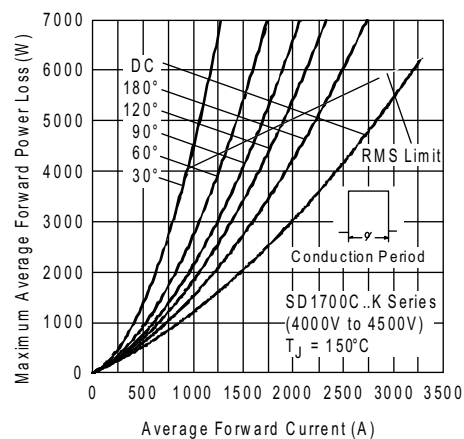


Fig. 12 - Forward Power Loss Characteristics

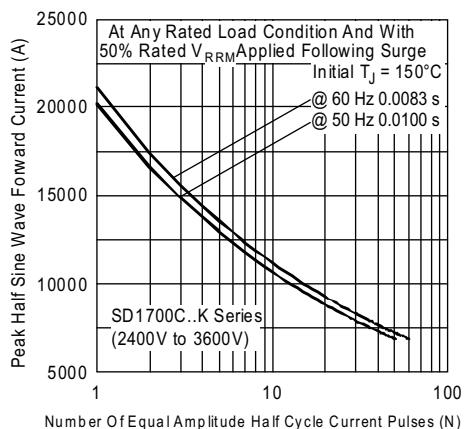


Fig. 13 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

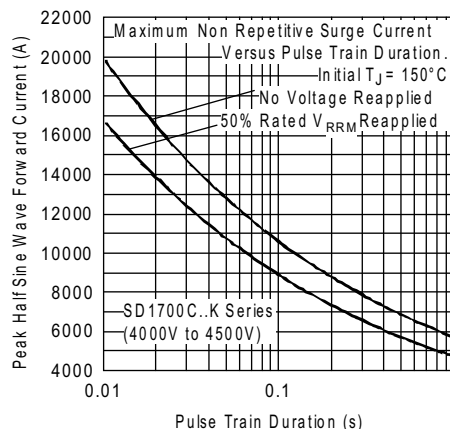


Fig. 16 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

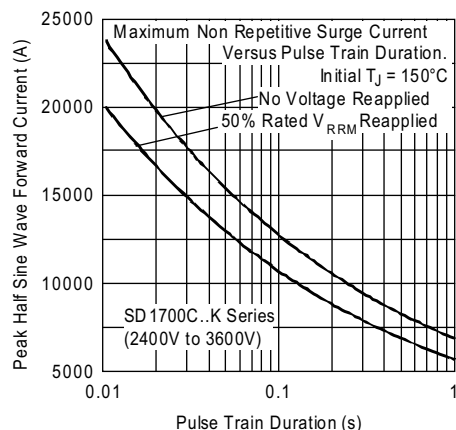


Fig. 14 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

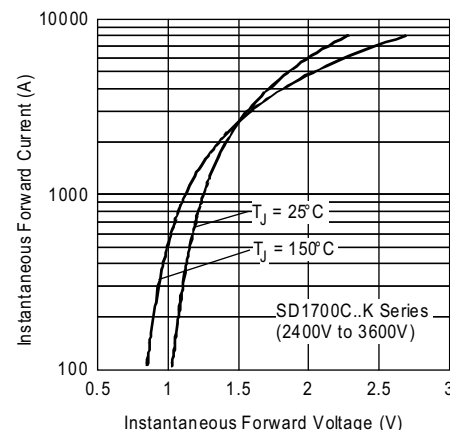


Fig. 17 - Forward Voltage Drop Characteristics

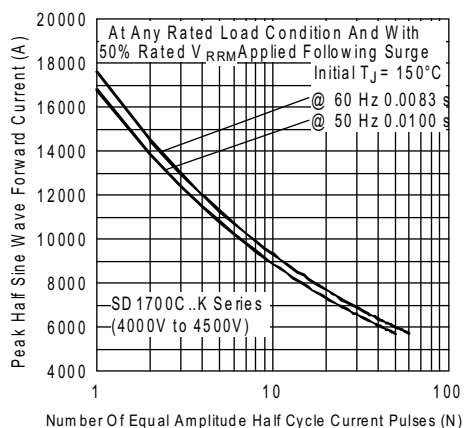


Fig. 15 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

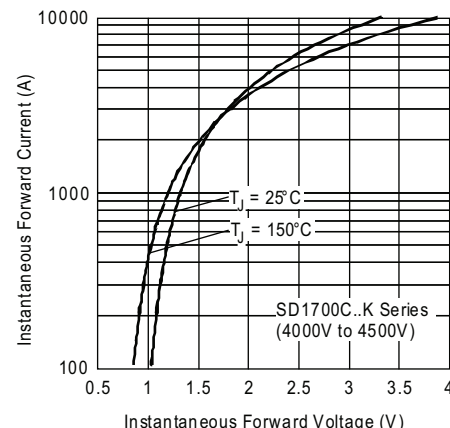


Fig. 18 - Forward Voltage Drop Characteristics

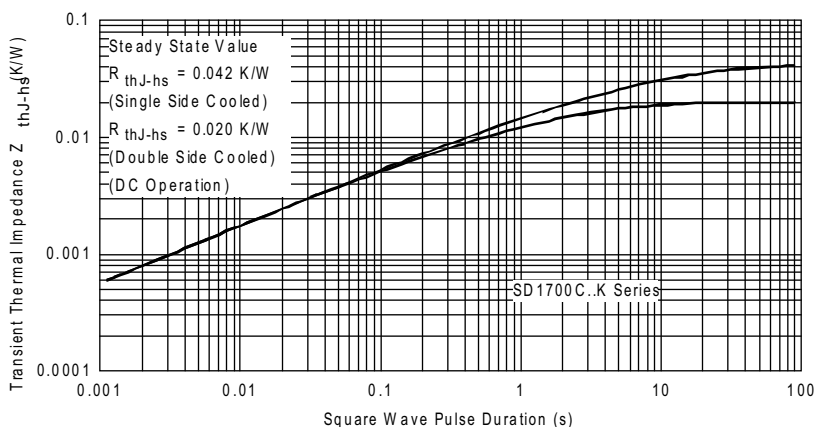


Fig. 19 - Thermal Impedance Z_{thJC} Characteristics

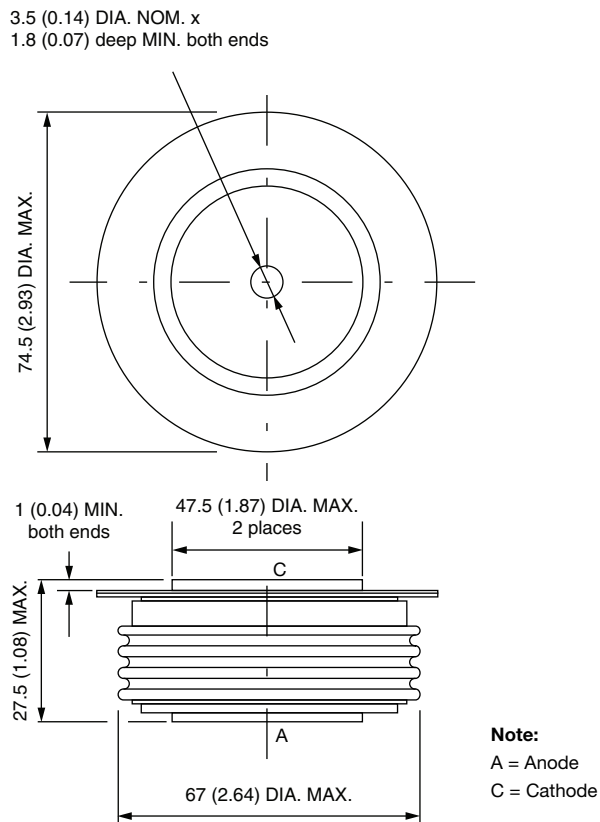
ORDERING INFORMATION TABLE

Device code	VS-	SD	170	0	C	45	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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