



# 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](http://www.vishay.com/doc?99912)



RoHS  
COMPLIANT

### TYPICAL APPLICATIONS

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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	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 <sup>2</sup> 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
				55 (85)	55 (85)	°C
Maximum RMS forward current	$I_{F(RMS)}$	25 °C heatsink temperature double side cooled		3600	3280	A
Maximum peak, one cycle forward, non-repetitive surge current	$I_{FSM}$	t = 10 ms	No voltage reapplied	24 000	20 000	
		t = 8.3 ms	50 % $V_{RRM}$ reapplied	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	No voltage reapplied	2890	2000	kA <sup>2</sup> s
		t = 8.3 ms	50 % $V_{RRM}$ reapplied	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 <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)		0.89	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)	

$\Delta R_{thJ-hs}$ 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

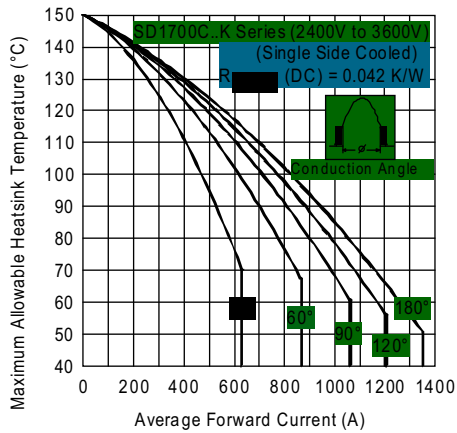


Fig. 1 - Current Ratings Characteristics

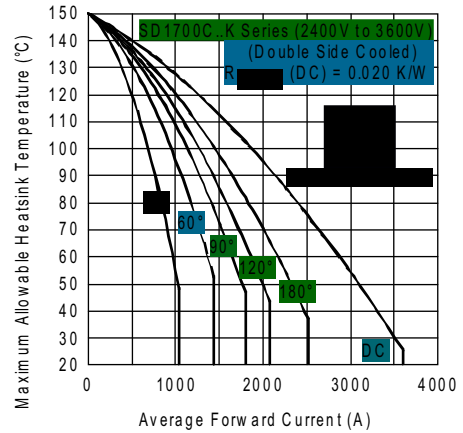


Fig. 4 - Current Ratings Characteristics

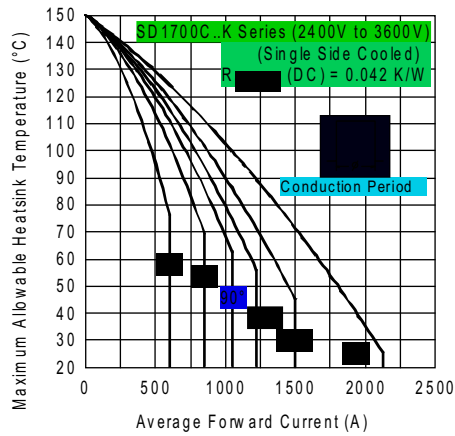


Fig. 2 - Current Ratings Characteristics

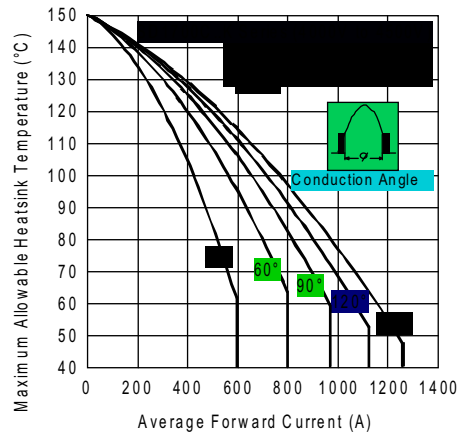


Fig. 5 - Current Ratings Characteristics

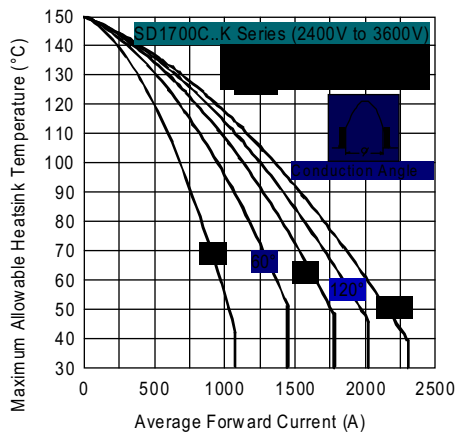


Fig. 3 - Current Ratings Characteristics

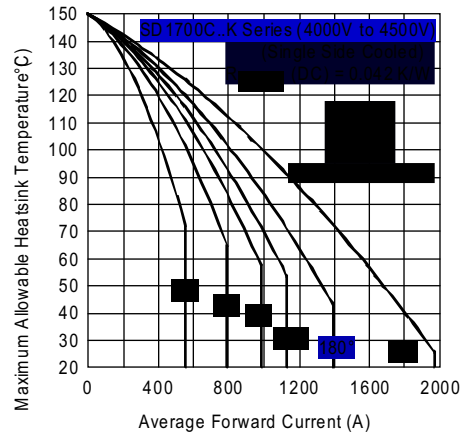


Fig. 6 - Current Ratings Characteristics

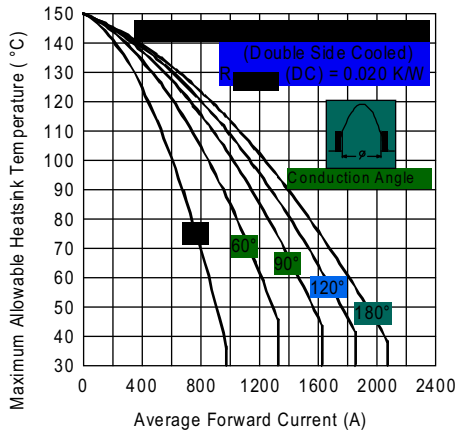


Fig. 7 - Current Ratings Characteristics

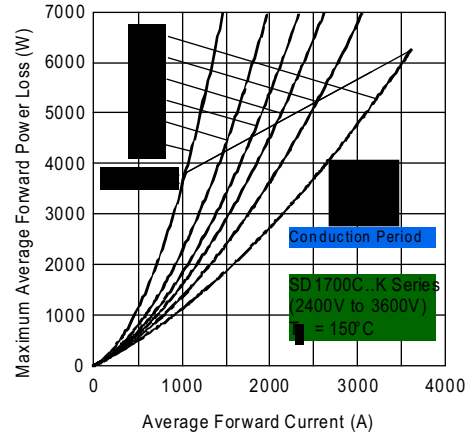


Fig. 10 - Forward Power Loss Characteristics

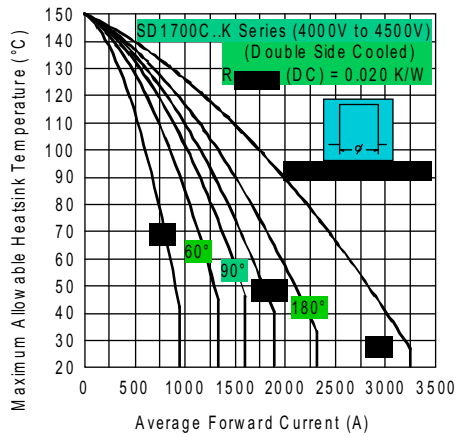


Fig. 8 - Current Ratings Characteristics

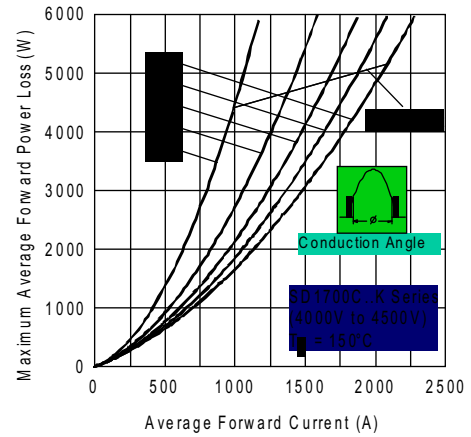


Fig. 11 - Forward Power Loss Characteristics

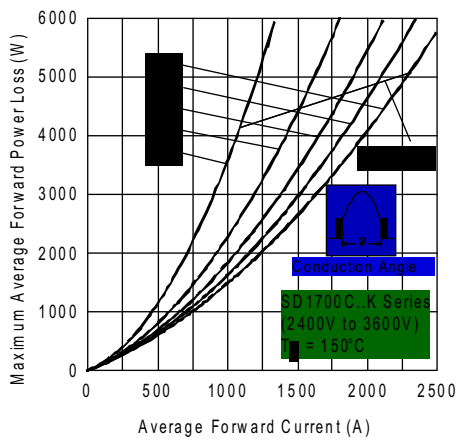


Fig. 9 - Forward Power Loss Characteristics

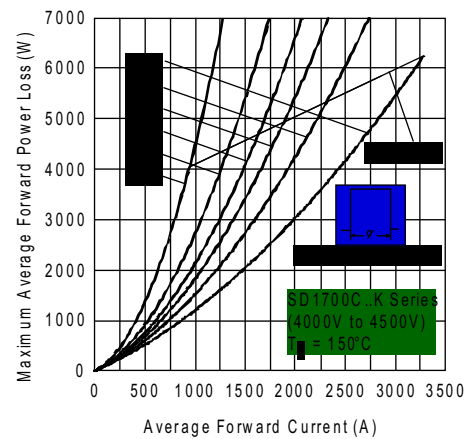


Fig. 12 - Forward Power Loss Characteristics

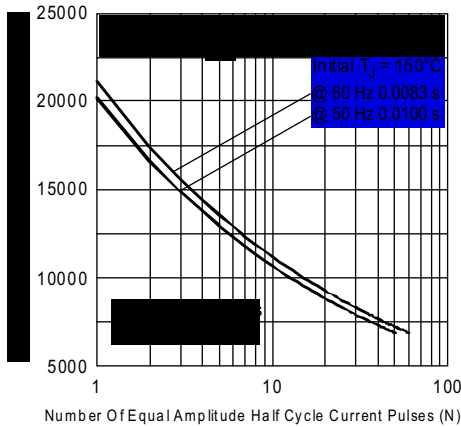


Fig. 13 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

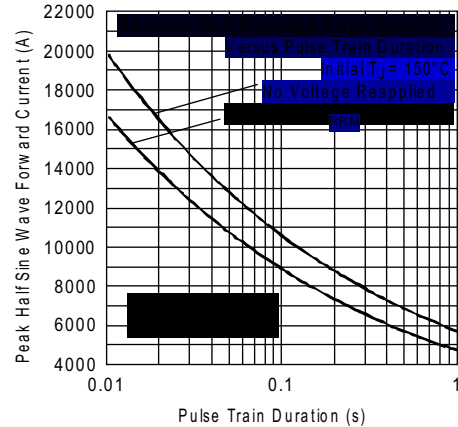


Fig. 16 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

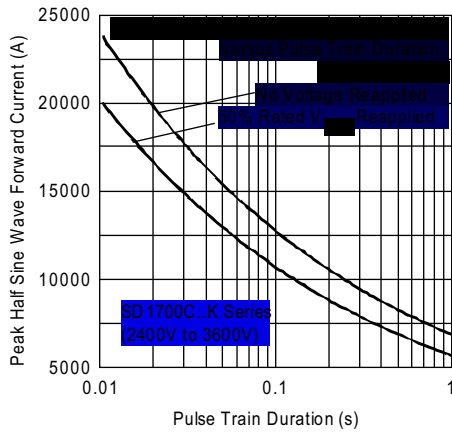


Fig. 14 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

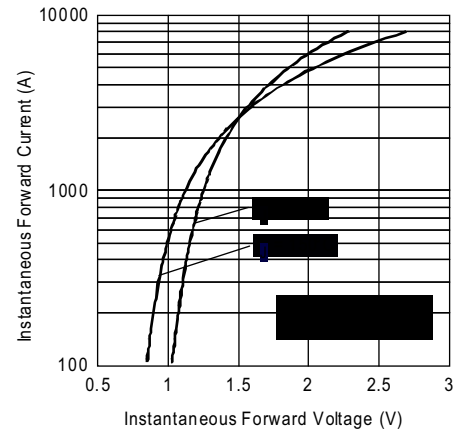


Fig. 17 - Forward Voltage Drop Characteristics

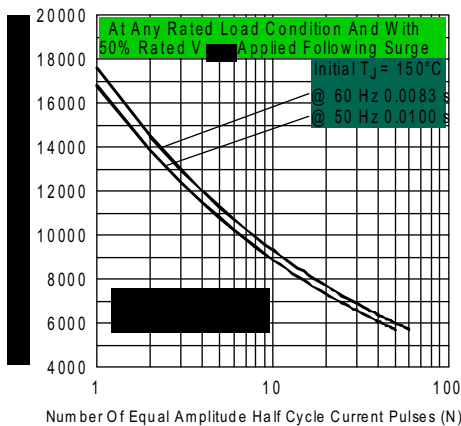


Fig. 15 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

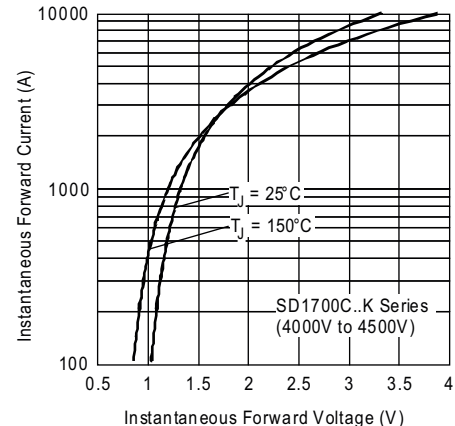


Fig. 18 - Forward Voltage Drop Characteristics

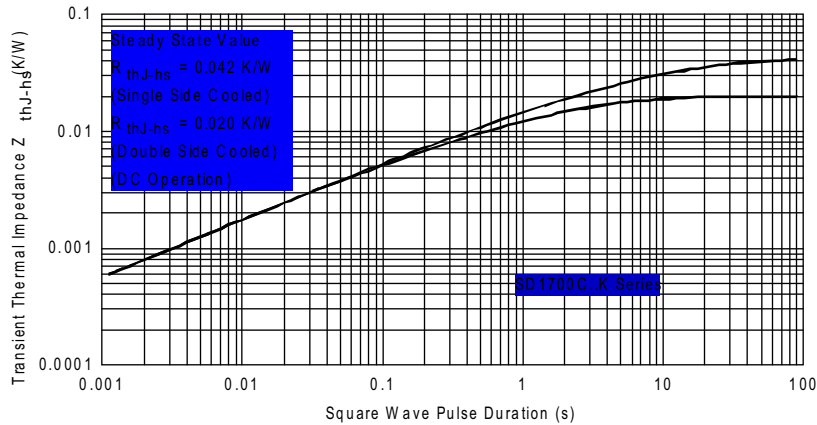


Fig. 19 - Thermal Impedance  $Z_{thJC}$  Characteristics

**ORDERING INFORMATION TABLE**

Device code	<b>VS-</b>	<b>SD</b>	<b>170</b>	<b>0</b>	<b>C</b>	<b>45</b>	<b>K</b>		
	①	②	③	④	⑤	⑥	⑦		
	<b>1</b>	-	Vishay Semiconductors product	<b>2</b>	-	Diode	<b>3</b>	-	Essential part number
	<b>4</b>	-	0 = standard recovery	<b>5</b>	-	C = ceramic PUK	<b>6</b>	-	Voltage code x 100 = $V_{RRM}$ (see Voltage Ratings table)
	<b>7</b>	-	K = PUK case K-PUK (DO-200AC)						

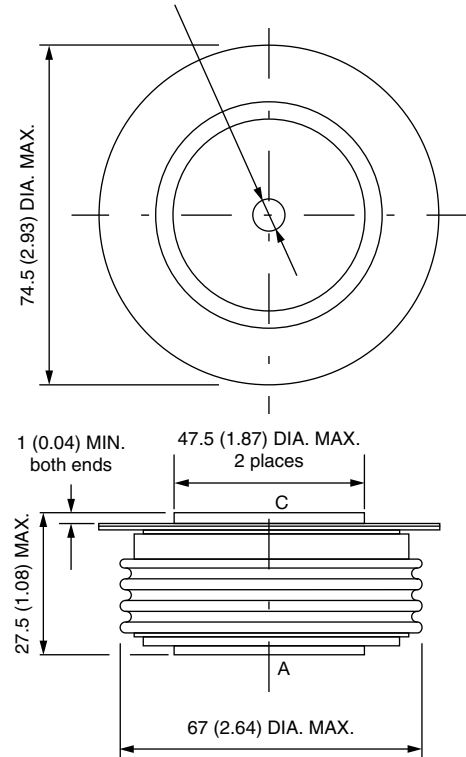
LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95247">www.vishay.com/doc?95247</a>



## 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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