



## Standard Recovery Diodes (Hockey PUK), 2100 A



DO-200AC (K-PUK)

### FEATURES

- Wide current range
- High voltage ratings up to 4500 V
- High surge current capabilities
- Diffused junction
- Hockey PUK version
- Case style DO-200AC (K-PUK)
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?999912](http://www.vishay.com/doc?999912)


**RoHS**  
COMPLIANT

### TYPICAL APPLICATIONS

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

### PRODUCT SUMMARY

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

### 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		°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	55 (85)	55 (85)	°C
Maximum peak, one cycle forward, non-repetitive surge current	$I_{FSM}$	<div> <div> <div>t = 10 ms</div> <div>t = 8.3 ms</div> </div> <div> <div>No voltage reapplied</div> <div>50 % <math>V_{RRM}</math> reapplied</div> </div> </div> <div>Sinusoidal half wave, initial <math>T_J = T_J</math> maximum</div>	24 000 25 150 20 200 21 150	20 000 20 950 16 800 17 600	A
Maximum $I^2t$ for fusing	$I^2t$	<div> <div>t = 10 ms</div> <div>t = 8.3 ms</div> </div> <div> <div>No voltage reapplied</div> <div>50 % <math>V_{RRM}</math> reapplied</div> </div>	2890 2630 2040 1860	2000 1826 1415 1292	kA <sup>2</sup> s
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 DC operation double side cooled	0.042 0.020	K/W
Mounting force, ± 10 %			22 250 (2250)	N (kg)
Approximate weight			425	g
Case style		See dimensions - link at the end of datasheet	DO-200AC (K-PUK)	

 **$\Delta R_{thJ-hs}$  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

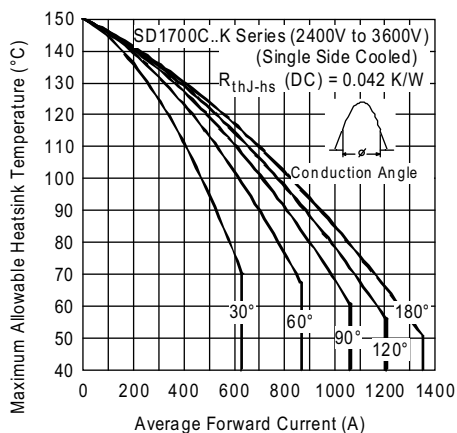


Fig. 1 - Current Ratings Characteristics

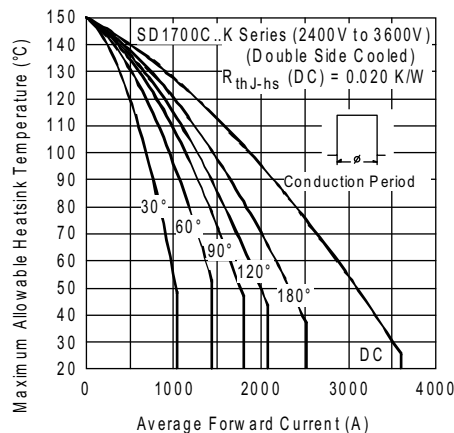


Fig. 4 - Current Ratings Characteristics

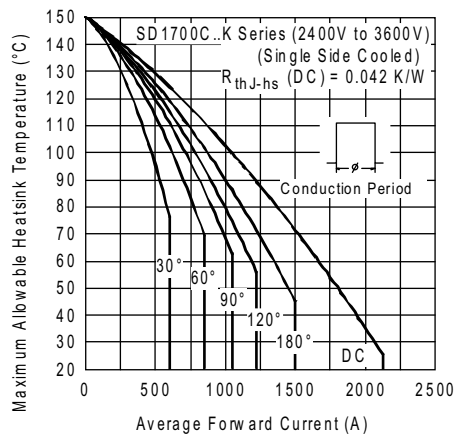


Fig. 2 - Current Ratings Characteristics

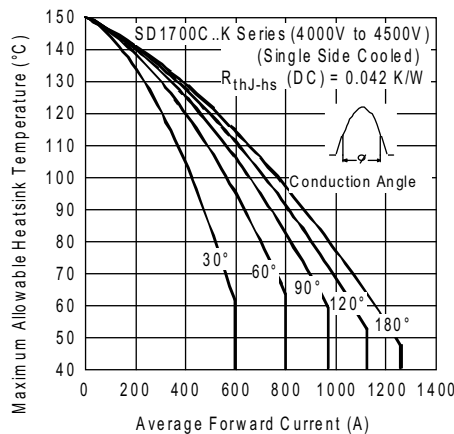


Fig. 5 - Current Ratings Characteristics

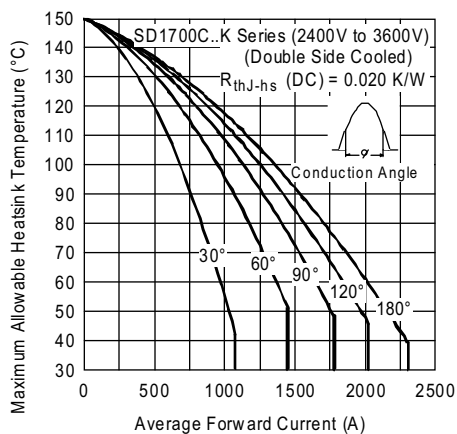


Fig. 3 - Current Ratings Characteristics

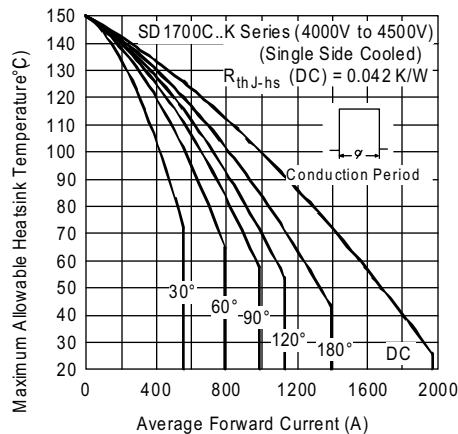


Fig. 6 - Current Ratings Characteristics

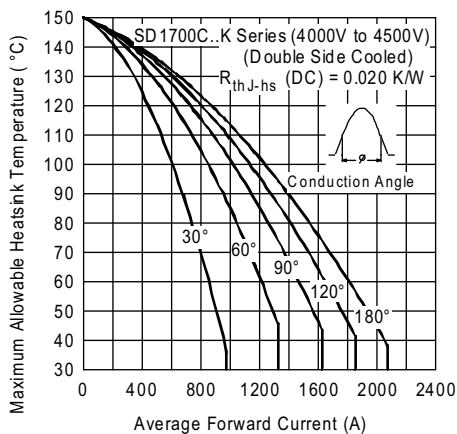


Fig. 7 - Current Ratings Characteristics

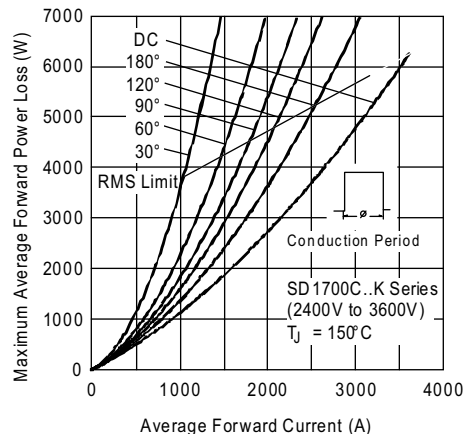


Fig. 10 - Forward Power Loss Characteristics

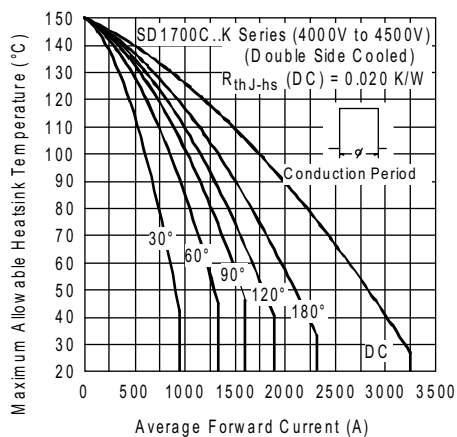


Fig. 8 - Current Ratings Characteristics

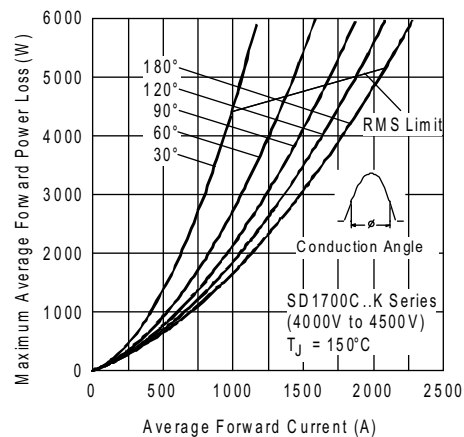


Fig. 11 - Forward Power Loss Characteristics

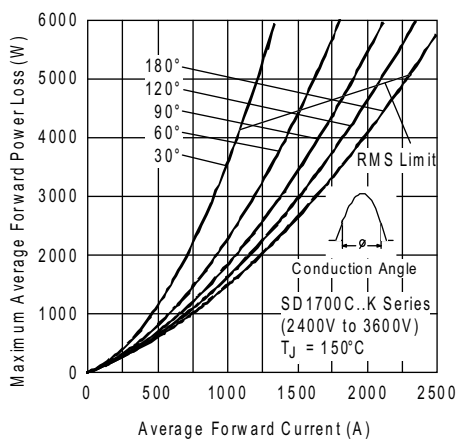


Fig. 9 - Forward Power Loss Characteristics

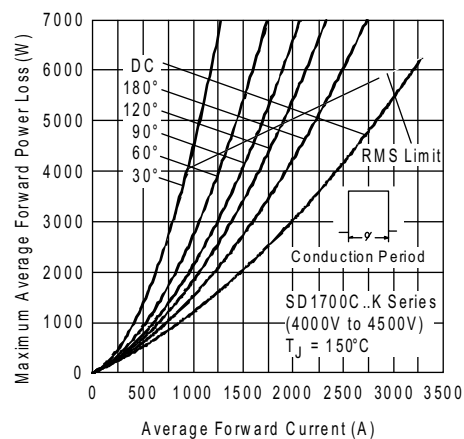


Fig. 12 - Forward Power Loss Characteristics

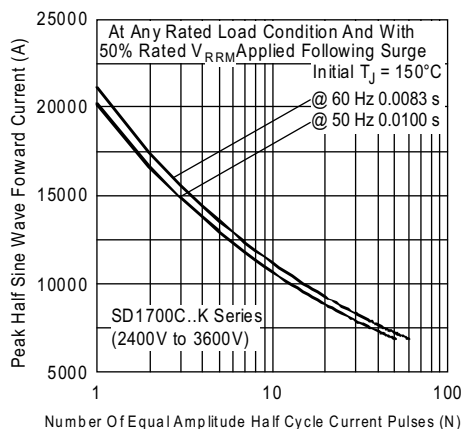


Fig. 13 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

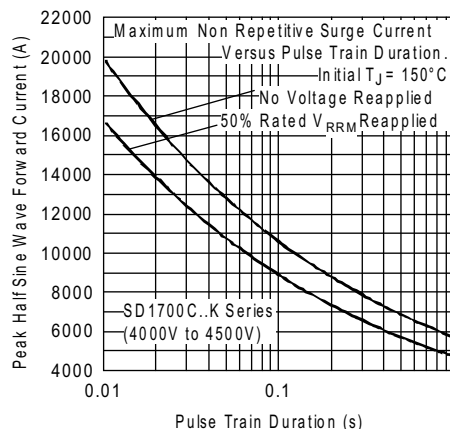


Fig. 16 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

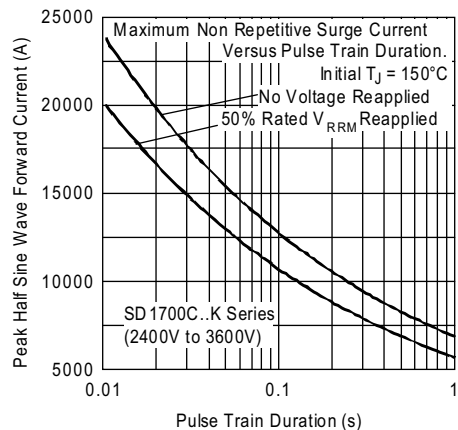


Fig. 14 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

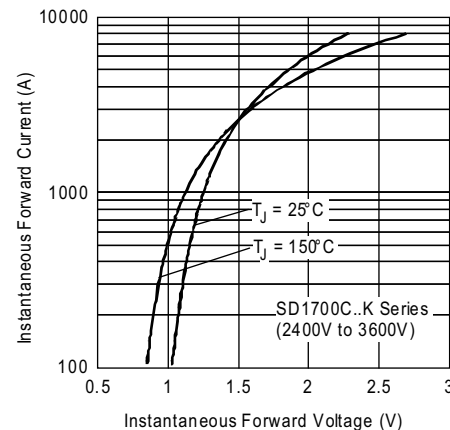


Fig. 17 - Forward Voltage Drop Characteristics

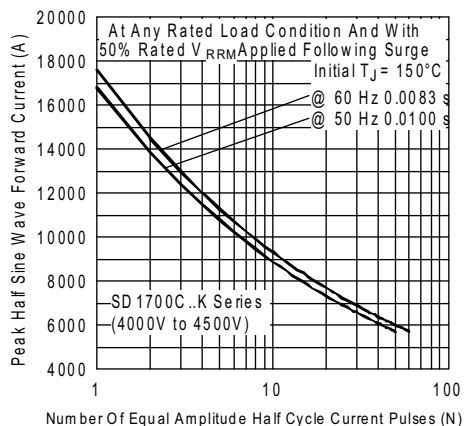


Fig. 15 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

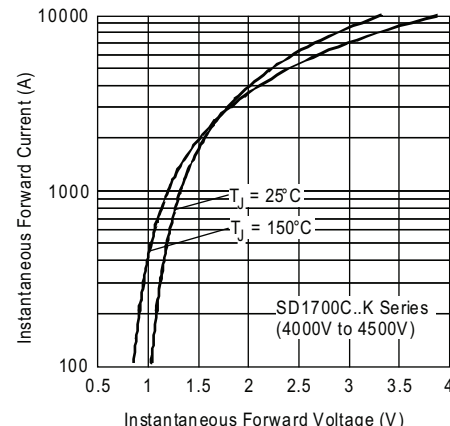
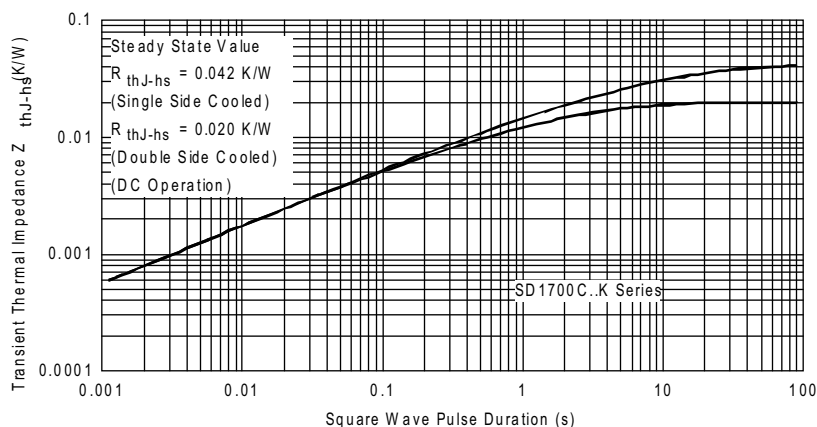


Fig. 18 - Forward Voltage Drop Characteristics


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

## ORDERING INFORMATION TABLE

Device code	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 DO-200AC (K-PUK)					

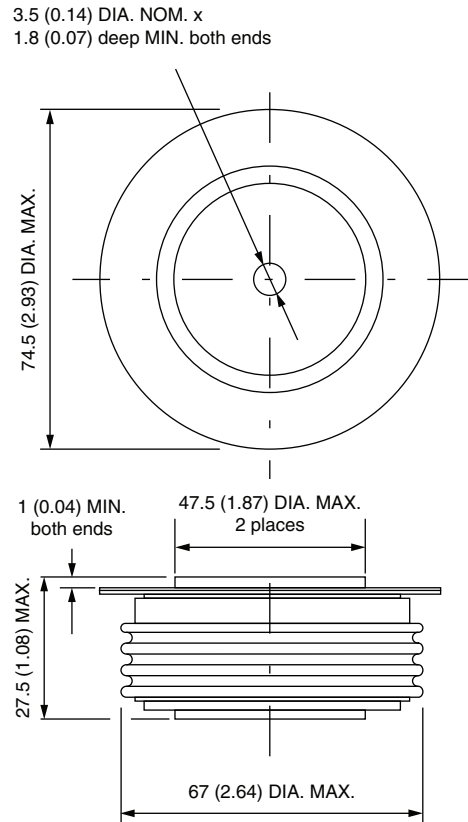
## LINKS TO RELATED DOCUMENTS

Dimensions

[www.vishay.com/doc?95247](http://www.vishay.com/doc?95247)

## DO-200AC (K-PUK)

**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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