

## Standard Recovery Diodes, (Hockey PUK Version), 650 A



A-PUK (DO-200AA)

### FEATURES

- Wide current range
- High voltage ratings up to 3200 V
- High surge current capabilities
- Diffused junction
- Hockey PUK version
- Case style A-PUK (DO-200AA)
- 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

$I_{F(AV)}$	650 A
Package	A-PUK (DO-200AA)
Circuit configuration	Single

### MAJOR RATINGS AND CHARACTERISTICS

PARAMETER	TEST CONDITIONS	SD300C..C		UNITS
		04 to 20	25 to 32	
$I_{F(AV)}$		650	540	A
	$T_{hs}$	55	55	°C
$I_{F(RMS)}$		1150	995	A
	$T_{hs}$	25	25	°C
$I_{FSM}$	50 Hz	6050	6050	A
	60 Hz	6335	6335	
$I^2t$	50 Hz	183	183	kA <sup>2</sup> s
	60 Hz	167	167	
$V_{RRM}$	Range	400 to 2000	2500 to 3200	V
$T_J$		-40 to +180	-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-SD300C..C	04	400	500	15
	08	800	900	
	12	1200	1300	
	16	1600	1700	
	20	2000	2100	
	25	2500	2600	
	28	2800	2900	
	32	3200	3300	

**FORWARD CONDUCTION**

PARAMETER	SYMBOL	TEST CONDITIONS	SD300C..C		UNITS
			04 to 20	25 to 32	
Maximum average forward current at heatsink temperature	$I_{F(AV)}$	180° conduction, half sine wave Double side (single side) cooled	650 (380)	540 (250)	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	$I_{FSM}$	t = 10 ms	Sinusoidal half wave, initial $T_J = T_J$ maximum	6050	A
		t = 8.3 ms		6050	
		t = 10 ms		6335	
		t = 8.3 ms		6335	
Maximum $I^2t$ for fusing	$I^2t$	t = 10 ms	Sinusoidal half wave, initial $T_J = T_J$ maximum	5090	kA <sup>2</sup> s
		t = 8.3 ms		5090	
		t = 10 ms		5330	
		t = 8.3 ms		5330	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied	183	183	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)	167	167	V
High level value of threshold voltage	$V_{F(TO)2}$	( $I > \pi \times I_{F(AV)}$ , $T_J = T_J$ maximum)	129	129	
Low level values 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)	118	118	mW
High level values of forward slope resistance	$r_{f2}$	( $I > \pi \times I_{F(AV)}$ , $T_J = T_J$ maximum)	1830	1830	
Maximum forward voltage drop	$V_{FM}$	$I_{pk} = 1500$ A, $T_J = T_J$ maximum; $t_p = 10$ ms sinusoidal wave	0.95	0.95	V

**THERMAL AND MECHANICAL SPECIFICATIONS**

PARAMETER	SYMBOL	TEST CONDITIONS	SD300C..C		UNITS
			04 to 20	25 to 32	
Maximum operating temperature range	T <sub>J</sub>		-40 to 180	-40 to 150	°C
Maximum storage temperature range	T <sub>Stg</sub>		-55 to 200		
Maximum thermal resistance, junction to heatsink	R <sub>thJ-hs</sub>	DC operation single side cooled	0.163		K/W
		DC operation double side cooled	0.073		
Mounting force, ± 10 %			4900 (500)		N (kg)
Approximate weight			70		g
Case style		See dimensions - link at the end of datasheet	A-PUK (DO-200AA)		

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

CONDUCTION ANGLE	SINUSOIDAL CONDUCTION		RECTANGULAR CONDUCTION		TEST CONDITIONS	UNITS
	SINGLE SIDE	DOUBLE SIDE	SINGLE SIDE	DOUBLE SIDE		
180°	0.017	0.017	0.011	0.012	$T_J = T_J$ maximum	K/W
120°	0.020	0.020	0.020	0.020		
90°	0.025	0.025	0.027	0.027		
60°	0.036	0.036	0.038	0.038		
30°	0.064	0.062	0.065	0.062		

**Note**

- The table above shows the increment of thermal resistance  $R_{thJ-hs}$  when devices operate at different conduction angles than DC

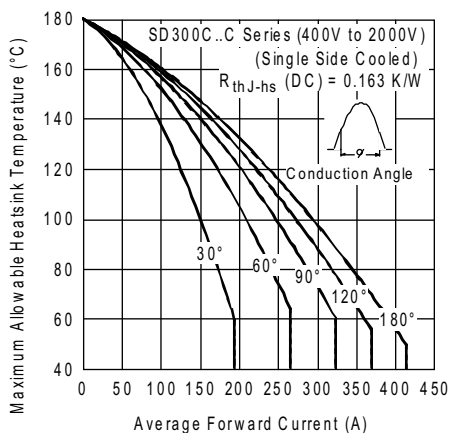


Fig. 1 - Current Ratings Characteristics

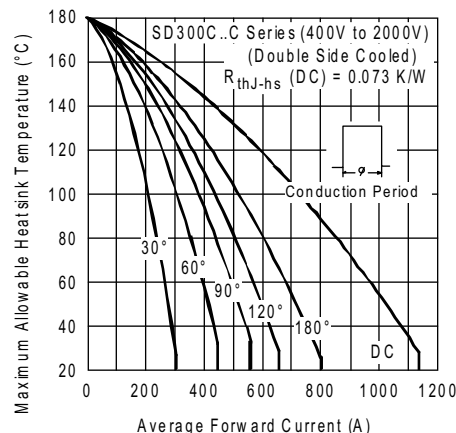


Fig. 4 - Current Ratings Characteristics

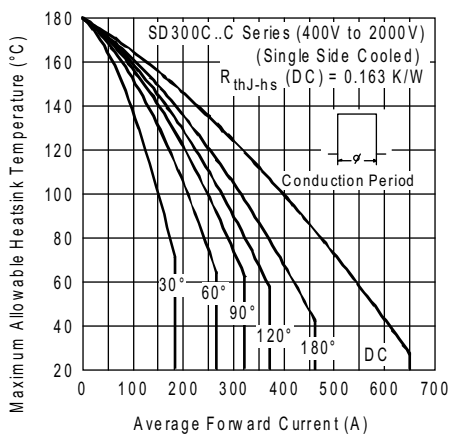


Fig. 2 - Current Ratings Characteristics

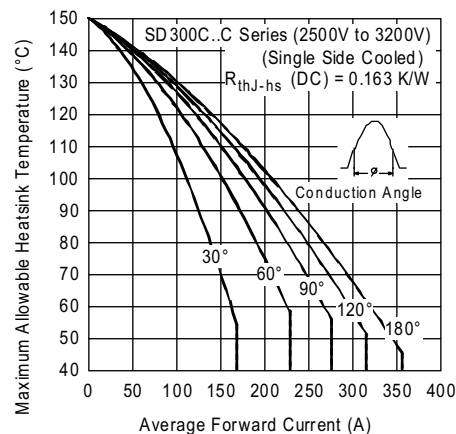


Fig. 5 - Current Ratings Characteristics

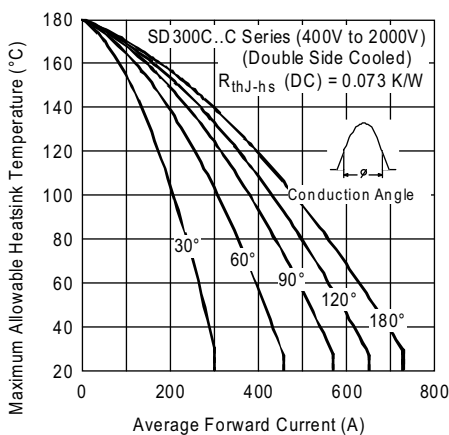


Fig. 3 - Current Ratings Characteristics

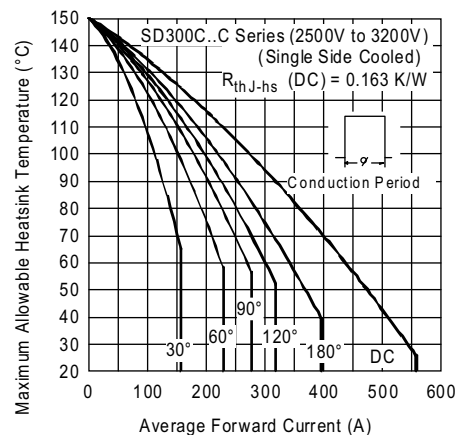


Fig. 6 - Current Ratings Characteristics

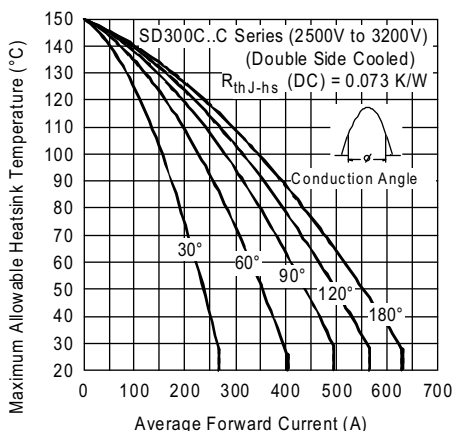


Fig. 7 - Current Ratings Characteristics

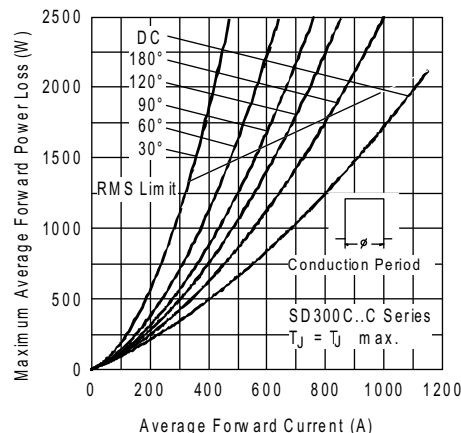


Fig. 10 - Forward Power Loss Characteristics

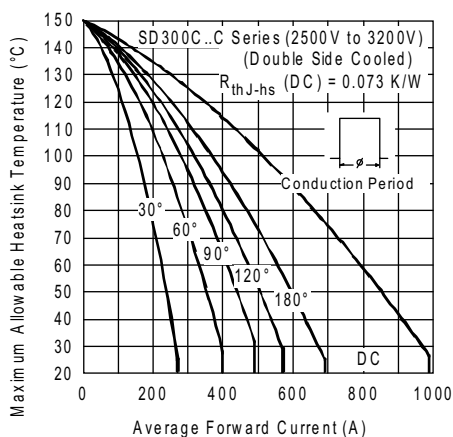


Fig. 8 - Current Ratings Characteristics

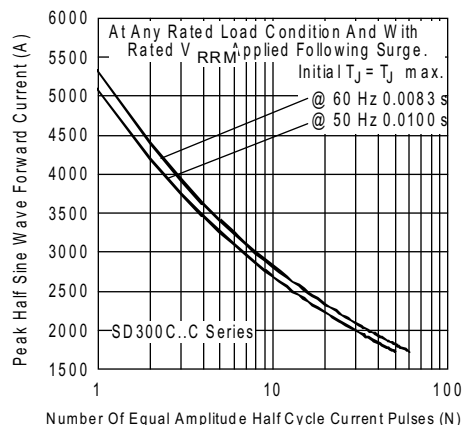


Fig. 11 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

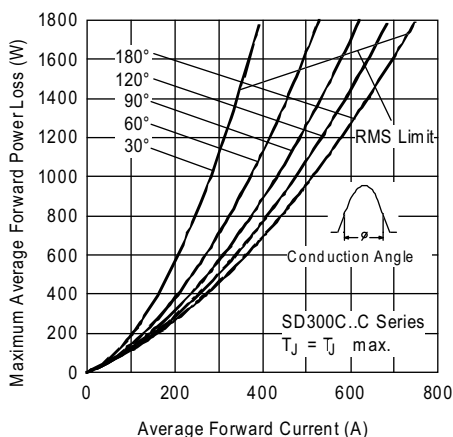


Fig. 9 - Forward Power Loss Characteristics

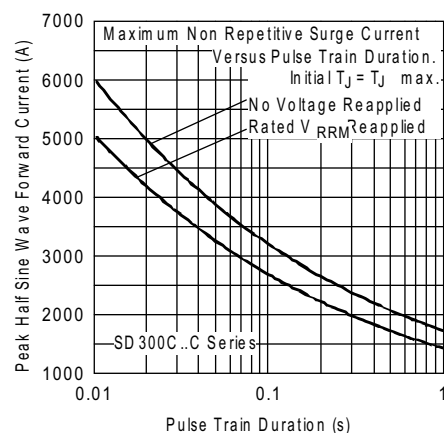


Fig. 12 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

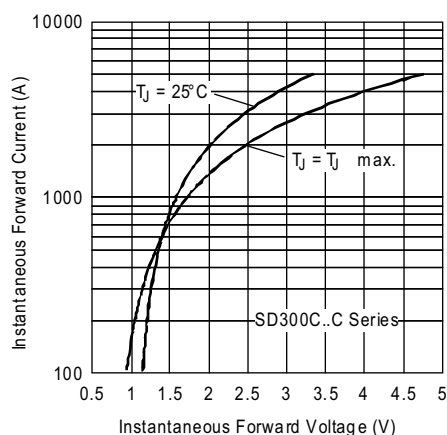
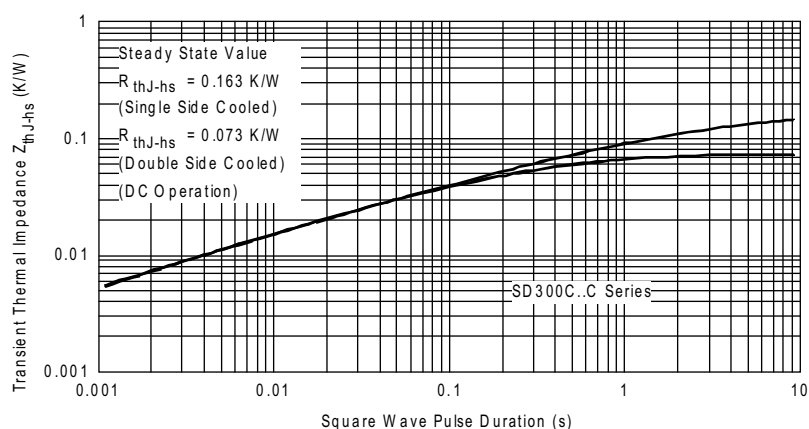


Fig. 13 - Forward Voltage Drop Characteristics


Fig. 14 - Thermal Impedance  $Z_{thJC}$  Characteristics

## ORDERING INFORMATION TABLE

Device code	VS-	SD	30	0	C	32	C
	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	C = PUK case A-PUK (DO-200AA)						

## LINKS TO RELATED DOCUMENTS

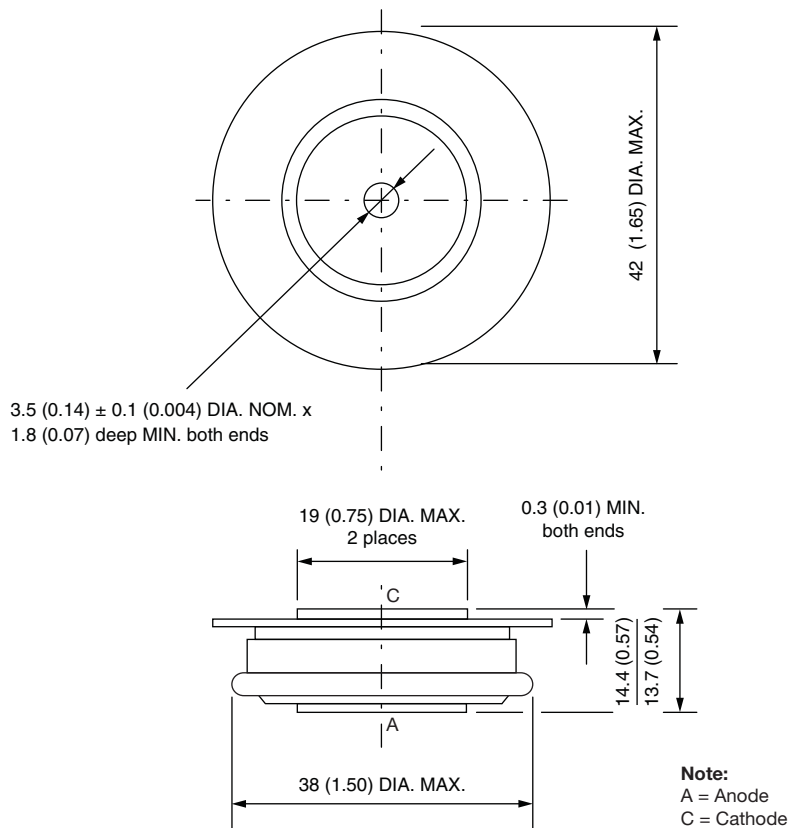
Dimensions

[www.vishay.com/doc?95248](http://www.vishay.com/doc?95248)



## DO-200AA

**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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