



# 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	
				55 (85)	55 (85)	°C	
Maximum RMS forward current	$I_{F(RMS)}$	25 °C heatsink temperature double side cooled		1150	995		
Maximum peak, one-cycle forward, non-repetitive surge current	$I_{FSM}$	t = 10 ms	No voltage reappplied	Sinusoidal half wave, initial $T_J = T_J$ maximum	6050	6050	A
		t = 8.3 ms			6335	6335	
		t = 10 ms	100 % $V_{RRM}$ reappplied		5090	5090	
		t = 8.3 ms			5330	5330	
Maximum $I^2t$ for fusing	$I^2t$	t = 10 ms	No voltage reappplied		183	183	kA <sup>2</sup> s
		t = 8.3 ms			167	167	
		t = 10 ms	100 % $V_{RRM}$ reappplied		129	129	
		t = 8.3 ms			118	118	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reappplied		1830	1830	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)		0.95	0.95	V	
High level value of threshold voltage	$V_{F(TO)2}$	(I $> \pi \times I_{F(AV)}$ , $T_J = T_J$ maximum)		1.00	1.00		
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)		0.75	0.75	mW	
High level values of forward slope resistance	$r_{f2}$	(I $> \pi \times I_{F(AV)}$ , $T_J = T_J$ maximum)		0.72	0.72		
Maximum forward voltage drop	$V_{FM}$	$I_{pk} = 1500$ A, $T_J = T_J$ maximum; $t_p = 10$ ms sinusoidal wave		2.08	2.08	V	

THERMAL AND MECHANICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS		SD300C..C		UNITS
				04 to 20	25 to 32	
Maximum operating temperature range	$T_J$			-40 to 180	-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		0.163		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

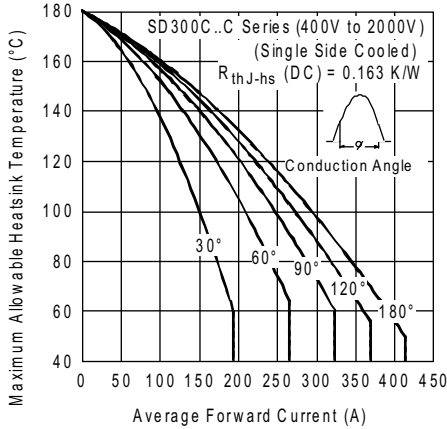


Fig. 1 - Current Ratings Characteristics

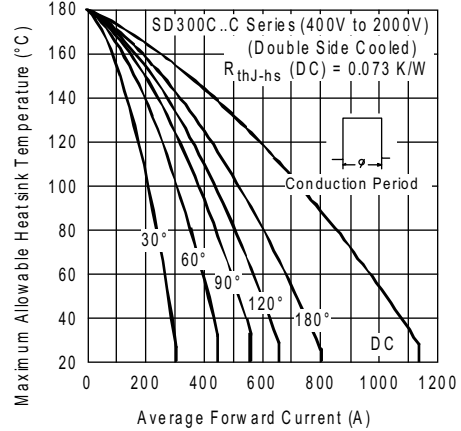


Fig. 4 - Current Ratings Characteristics

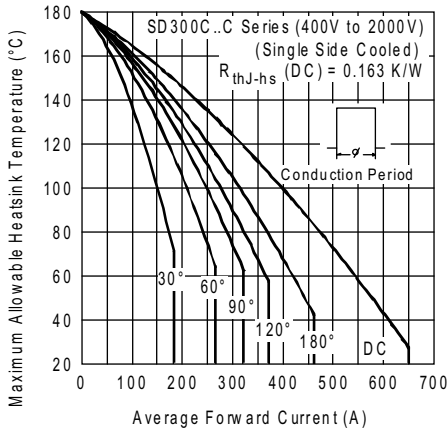


Fig. 2 - Current Ratings Characteristics

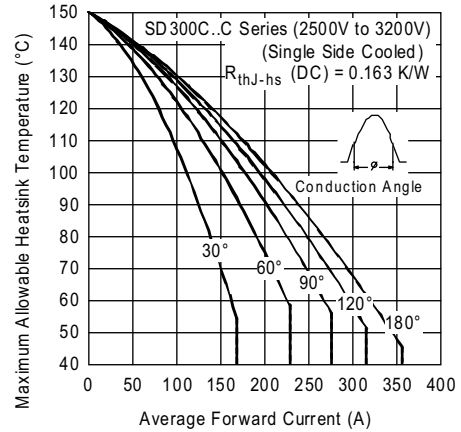


Fig. 5 - Current Ratings Characteristics

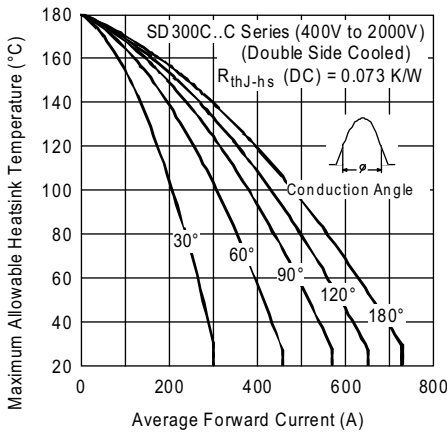


Fig. 3 - Current Ratings Characteristics

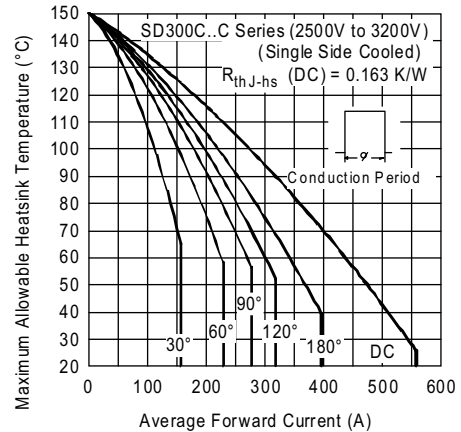


Fig. 6 - Current Ratings Characteristics

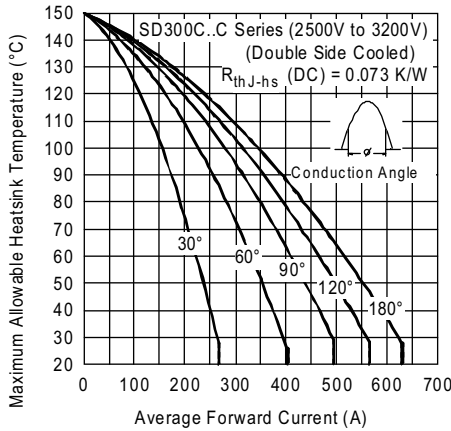


Fig. 7 - Current Ratings Characteristics

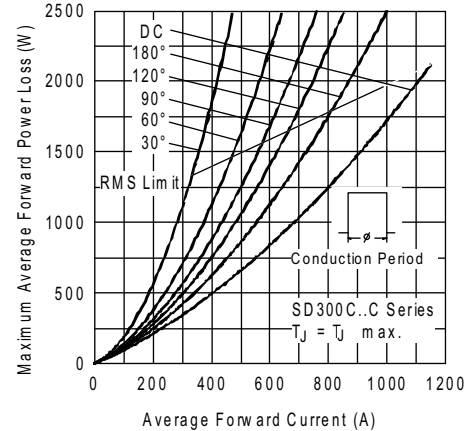


Fig. 10 - Forward Power Loss Characteristics

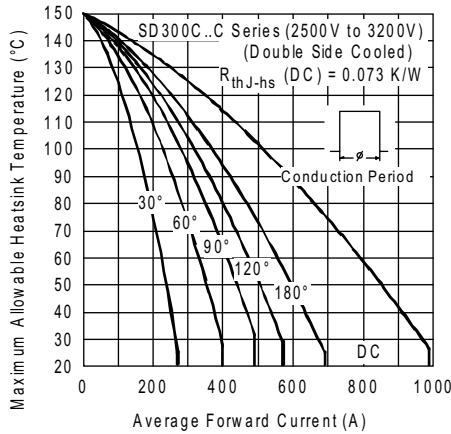


Fig. 8 - Current Ratings Characteristics

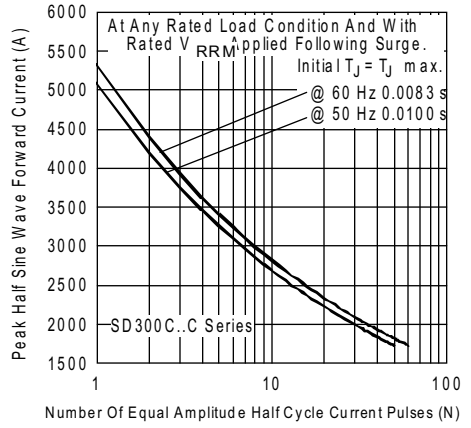


Fig. 11 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

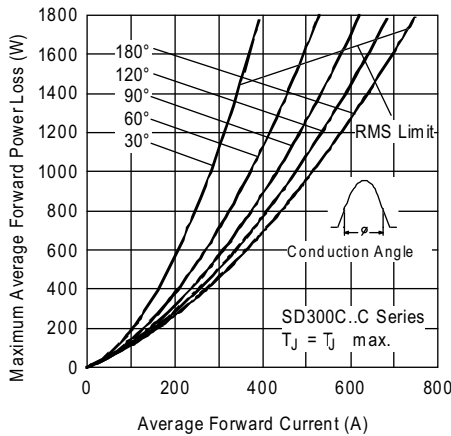


Fig. 9 - Forward Power Loss Characteristics

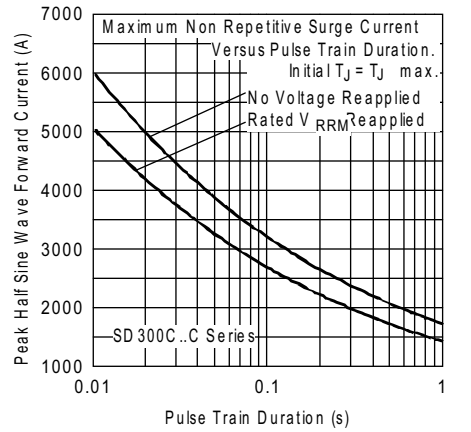


Fig. 12 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

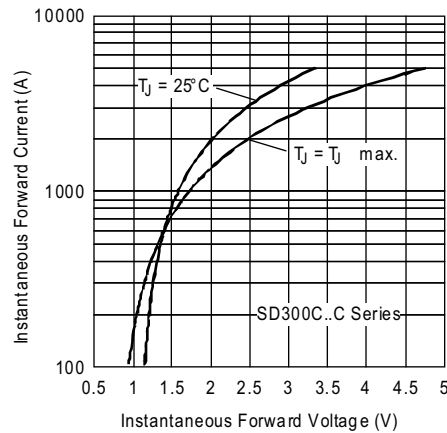


Fig. 13 - Forward Voltage Drop Characteristics

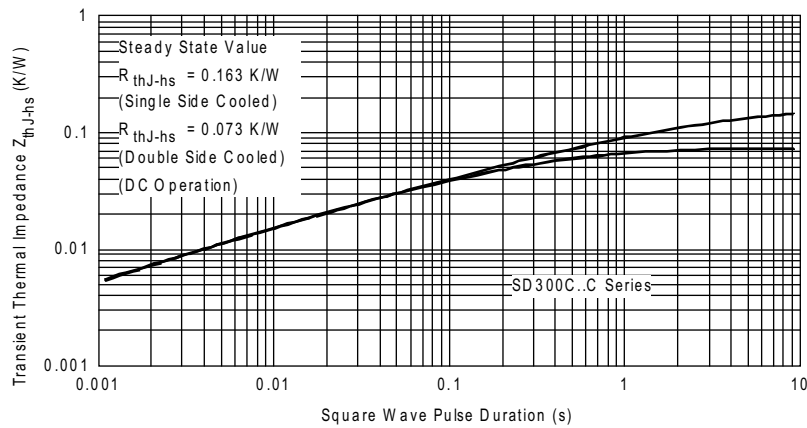


Fig. 14 - Thermal Impedance  $Z_{thJC}$  Characteristics

**ORDERING INFORMATION TABLE**

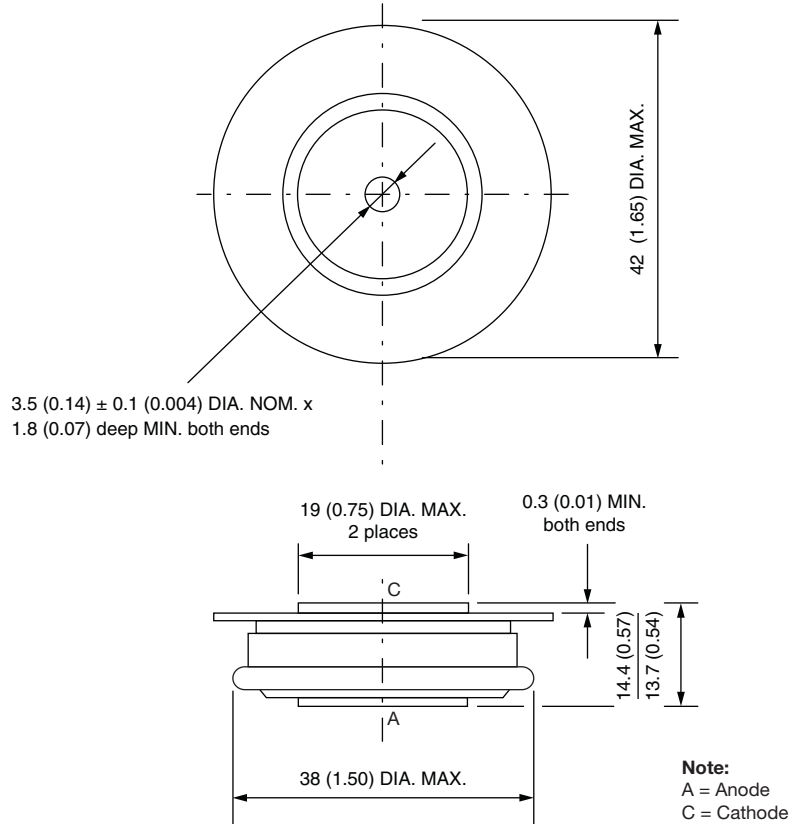
Device code	<b>VS-</b>	<b>SD</b>	<b>30</b>	<b>0</b>	<b>C</b>	<b>32</b>	<b>C</b>
	①	②	③	④	⑤	⑥	⑦
	<b>1</b>	-	Vishay Semiconductors product				
	<b>2</b>	-	Diode				
	<b>3</b>	-	Essential part number				
	<b>4</b>	-	0 = standard recovery				
	<b>5</b>	-	C = ceramic PUK				
	<b>6</b>	-	Voltage code x 100 = $V_{RRM}$ (see Voltage Ratings table)				
	<b>7</b>	-	C = PUK case A-PUK (DO-200AA)				

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95248">www.vishay.com/doc?95248</a>



## 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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