

Standard Recovery Diodes (Hockey PUK Version), 650 A



DO-200AA

FEATURES

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

PRODUCT SUMMARY

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

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 ² 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 t = 8.3 ms No voltage reapplied 100 % V_{RRM} reapplied Sinusoidal half wave, initial $T_J = T_J$ maximum	6050	6050	A
			6335	6335	
			5090	5090	
			5330	5330	
Maximum I^2t for fusing	I^2t	t = 10 ms t = 8.3 ms No voltage reapplied 100 % V_{RRM} reapplied Sinusoidal half wave, initial $T_J = T_J$ maximum	183	183	kA ² s
			167	167	
			129	129	
			118	118	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied	1830	1830	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	0.95	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	DO-200AA		

 ΔR_{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

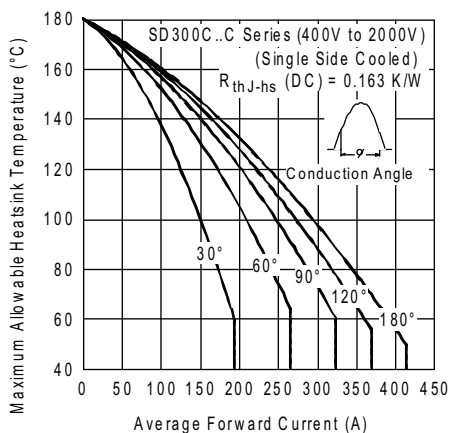


Fig. 1 - Current Ratings Characteristics

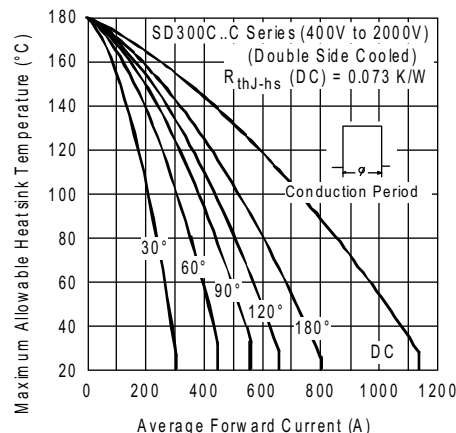


Fig. 4 - Current Ratings Characteristics

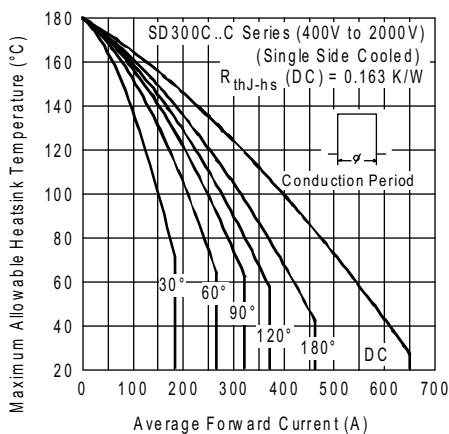


Fig. 2 - Current Ratings Characteristics

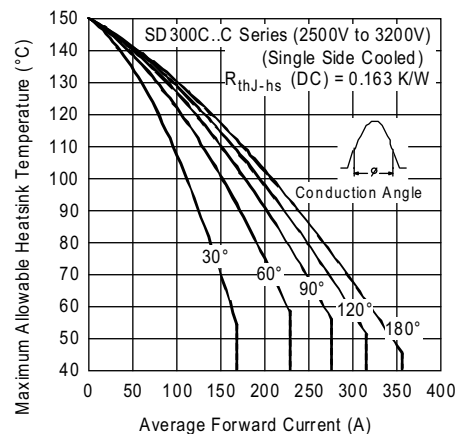


Fig. 5 - Current Ratings Characteristics

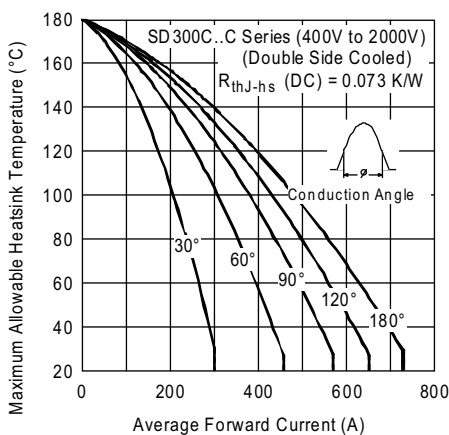


Fig. 3 - Current Ratings Characteristics

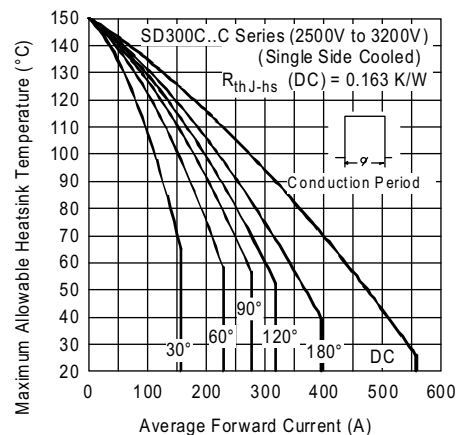


Fig. 6 - Current Ratings Characteristics

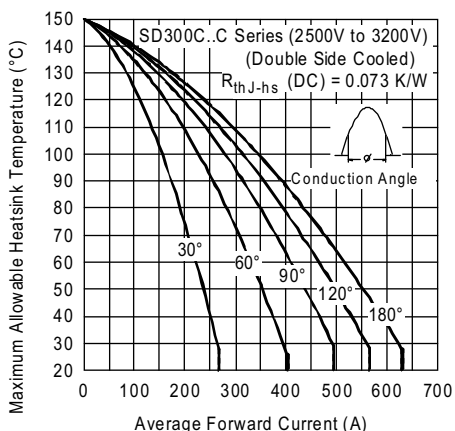


Fig. 7 - Current Ratings Characteristics

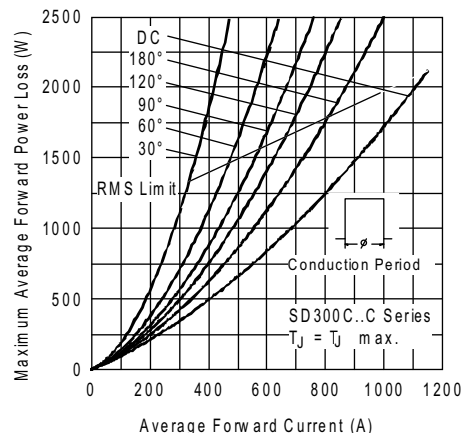


Fig. 10 - Forward Power Loss Characteristics

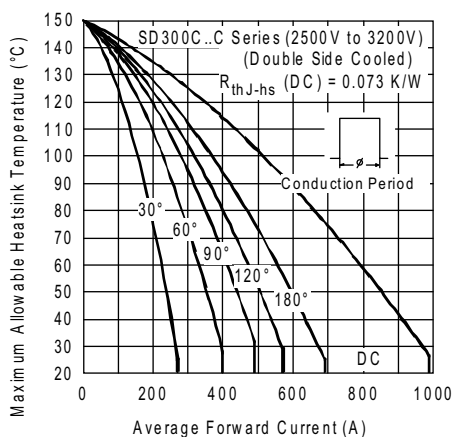


Fig. 8 - Current Ratings Characteristics

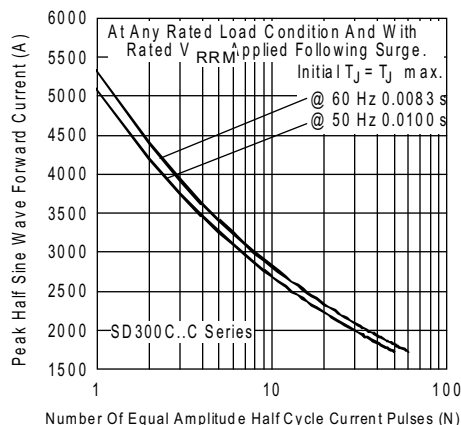


Fig. 11 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

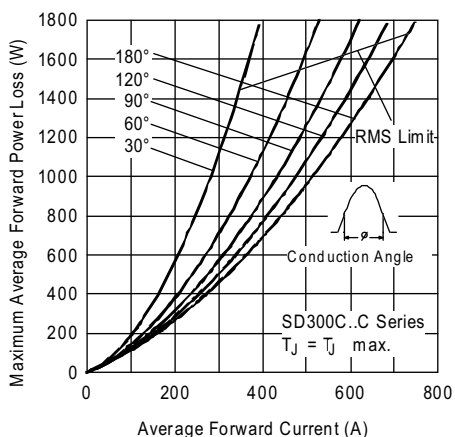


Fig. 9 - Forward Power Loss Characteristics

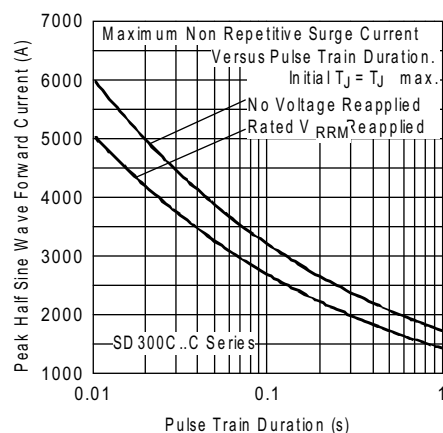


Fig. 12 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

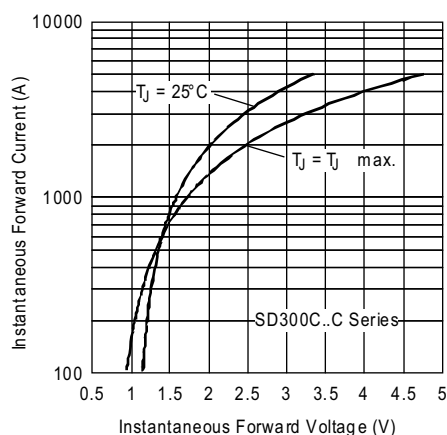
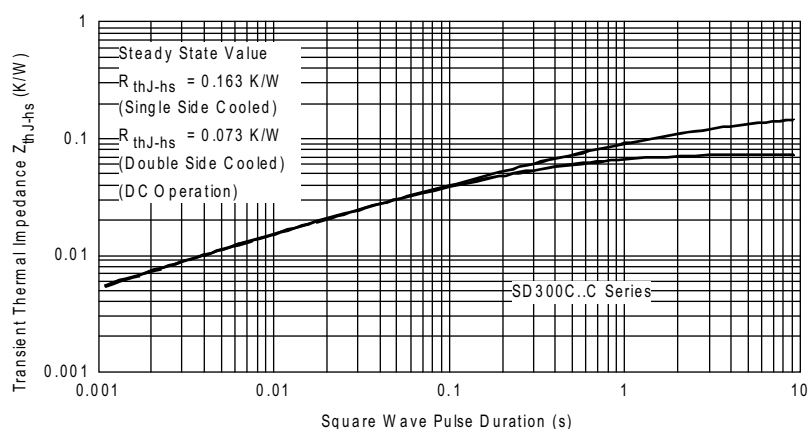


Fig. 13 - Forward Voltage Drop Characteristics


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 DO-200AA						

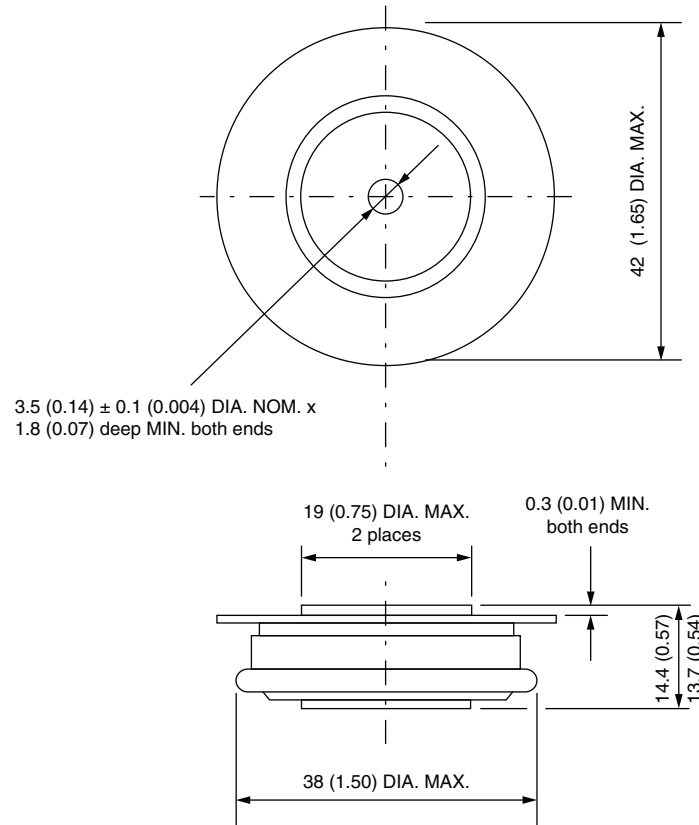
LINKS TO RELATED DOCUMENTS

Dimensions

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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