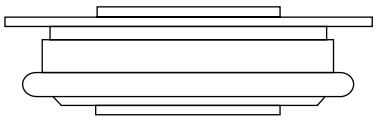
Standard Recovery Diodes (Hockey PUK Version), 650 A



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
- Lead (Pb)-free

Pb-free
RoHS COMPLIANT

TYPICAL APPLICATIONS

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

PRODUCT SUMMARY	
$I_{F(AV)}$	650 A

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^2s
	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
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	A
Maximum peak, one-cycle forward, non-repetitive surge current	I_{FSM}	t = 10 ms	No voltage reapplied	Sinusoidal half wave, initial $T_J = T_J$ maximum	6050		A
		t = 8.3 ms			6335		
		t = 10 ms	100 % V_{RRM} reapplied		5090		
		t = 8.3 ms			5330		
Maximum I^2t for fusing	I^2t	t = 10 ms	No voltage reapplied		183		kA^2s
		t = 8.3 ms			167		
		t = 10 ms	100 % V_{RRM} reapplied		129		
		t = 8.3 ms			118		
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied			1830		$kA^2\sqrt{s}$
Low level value of threshold voltage	$V_{F(TO)1}$	(16.7 % x π x $I_{F(AV)}$ < I < π x $I_{F(AV)}$), $T_J = T_J$ maximum			0.95		V
High level value of threshold voltage	$V_{F(TO)2}$	(I > π x $I_{F(AV)}$), $T_J = T_J$ maximum			1.00		
Low level values of forward slope resistance	r_{f1}	(16.7 % x π x $I_{F(AV)}$ < I < π x $I_{F(AV)}$), $T_J = T_J$ maximum			0.75		mΩ
High level values of forward slope resistance	r_{f2}	(I > π x $I_{F(AV)}$), $T_J = T_J$ maximum			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		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

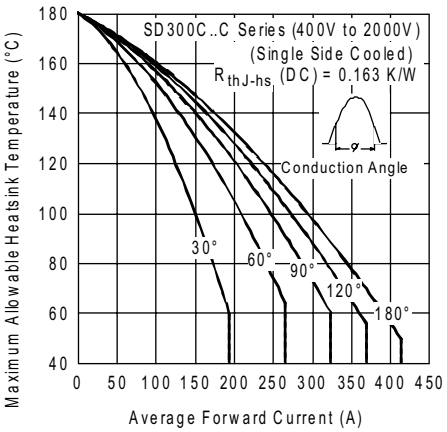


Fig. 1 - Current Ratings Characteristics

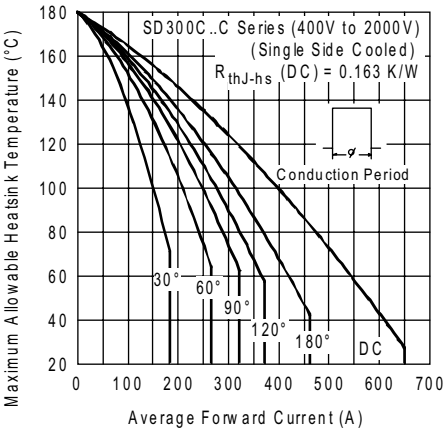


Fig. 2 - Current Ratings Characteristics

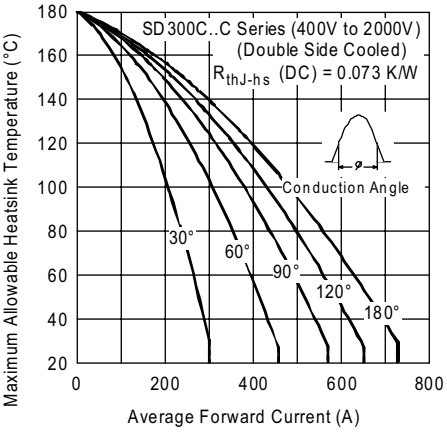


Fig. 3 - Current Ratings Characteristics

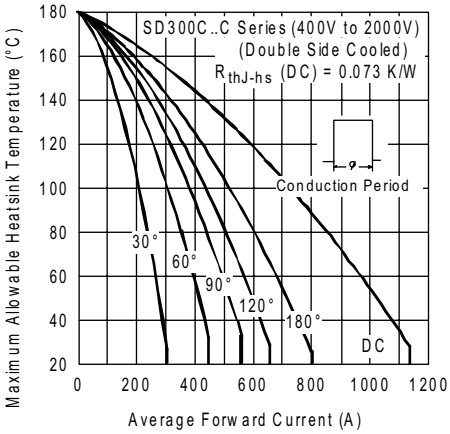


Fig. 4 - Current Ratings Characteristics

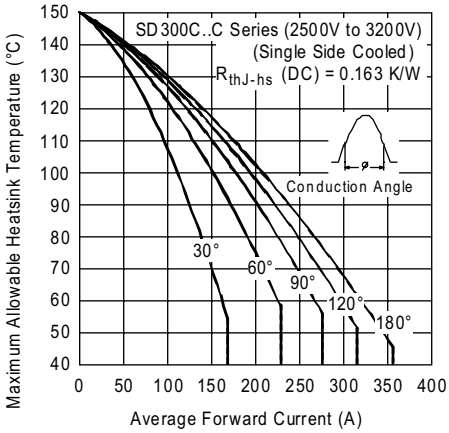


Fig. 5 - Current Ratings Characteristics

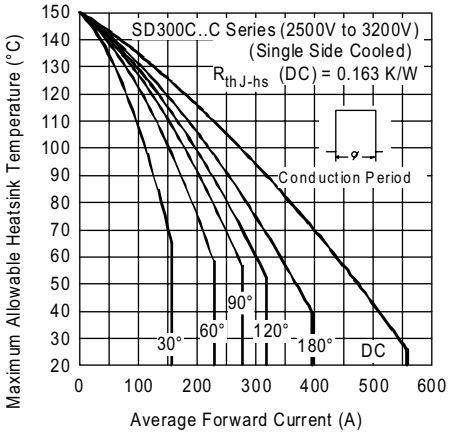


Fig. 6 - Current Ratings Characteristics

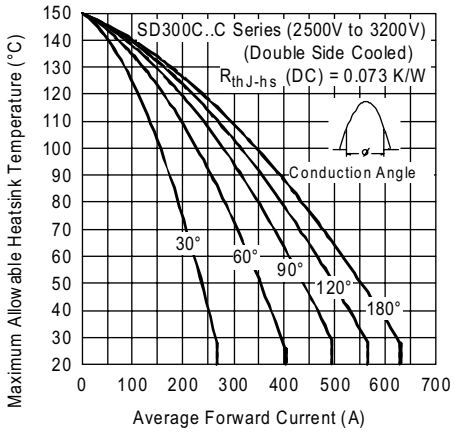


Fig. 7 - Current Ratings Characteristics

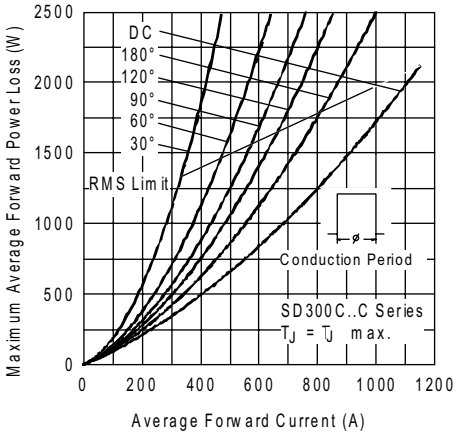


Fig. 10 - Forward Power Loss Characteristics

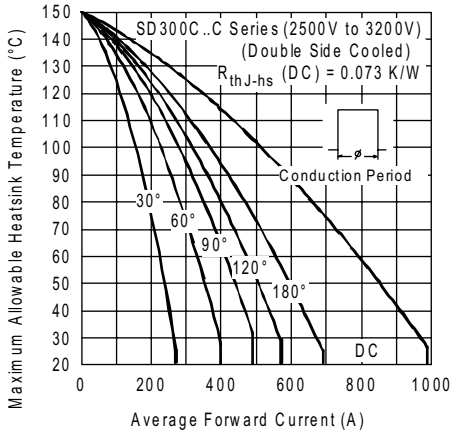


Fig. 8 - Current Ratings Characteristics

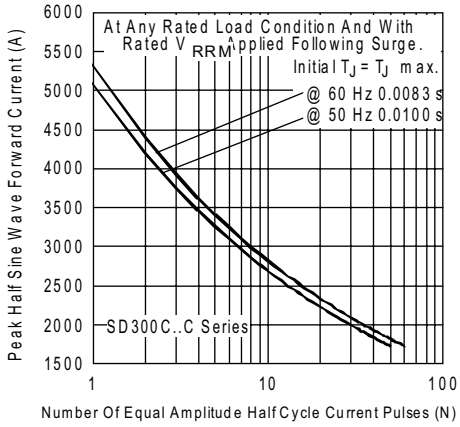


Fig. 11 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

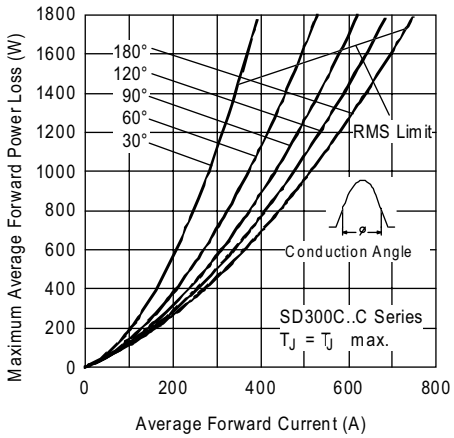


Fig. 9 - Forward Power Loss Characteristics

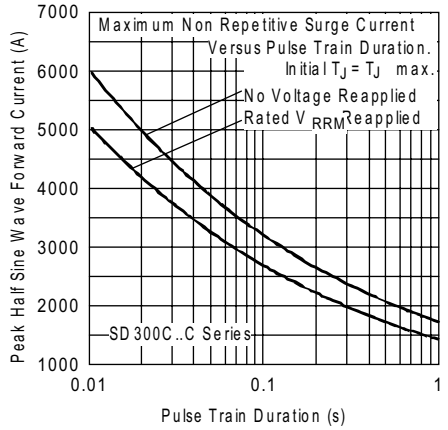


Fig. 12 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

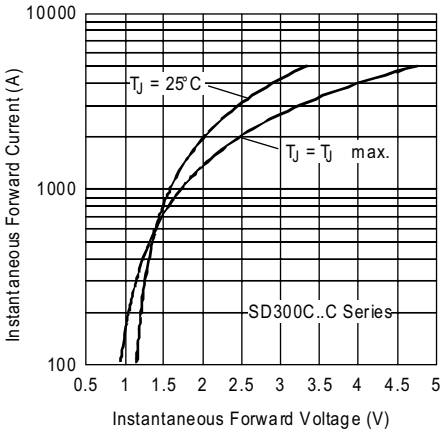


Fig. 13 - Forward Voltage Drop Characteristics

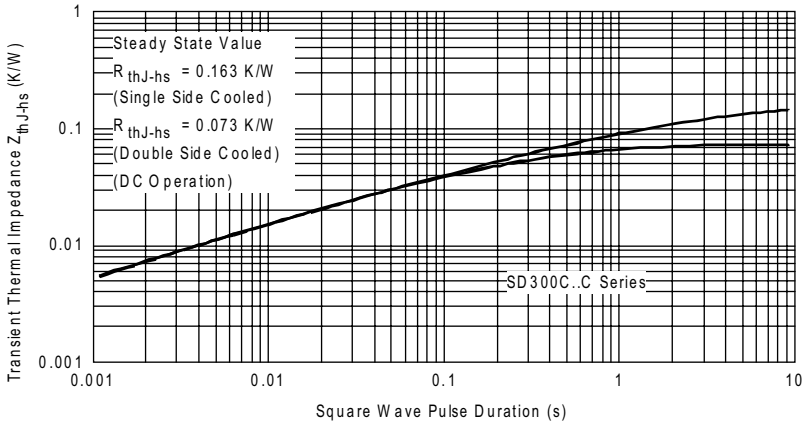


Fig. 14 - Thermal Impedance Z_{thJC} Characteristics

ORDERING INFORMATION TABLE

Device code

SD	30	0	C	32	C
1	2	3	4	5	6

- **1** - Diode
- **2** - Essential part number
- **3** - 0 = Standard recovery
- **4** - C = Ceramic PUK
- **5** - Voltage code x 100 = V_{RRM} (see Voltage Ratings table)
- **6** - C = PUK case DO-200AA

LINKS TO RELATED DOCUMENTS	
Dimensions	http://www.vishay.com/doc?95248

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