Standard Recovery Diodes (Hockey PUK Version), 1400 A

B-43

FEATURES

- Wide current range
- High voltage ratings up to 3200 V
- High surge current capabilities
- Diffused junction
- Hockey PUK version
- Case style B-43
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free
RoHS COMPLIANT

TYPICAL APPLICATIONS

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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1400 A
Package	B-43
Circuit configuration	Single

MAJOR RATINGS AND CHARACTERISTICS				
PARAMETER	TEST CONDITIONS	SD1100C..C		UNITS
		04 to 20	25 to 32	
$I_{F(AV)}$		1400	1100	A
	T_{hs}	55	55	°C
$I_{F(RMS)}$		2500	2000	A
	T_{hs}	25	25	°C
I_{FSM}	50 Hz	13 000	10 500	A
	60 Hz	13 600	11 000	
I^2t	50 Hz	846	551	kA^2s
	60 Hz	772	503	
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-SD1100C..C	04	400	500	35
	08	800	900	
	12	1200	1300	
	16	1600	1700	
	20	2000	2100	
	22	2200	2300	
	25	2500	2600	
	30	3000	3100	
	32	3200	3300	

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FORWARD CONDUCTION

PARAMETER	SYMBOL	TEST CONDITIONS			SD1100C..C 04 to 20	SD1100C..C 25 to 32	UNITS
Maximum average forward current at heatsink temperature	$I_{F(AV)}$	180° conduction, half sine wave Double side (single side) cooled			1400 (795)	1100 (550)	A
					55 (85)	55 (85)	°C
Maximum RMS forward current	$I_{F(RMS)}$	25 °C heatsink temperature double side cooled			2500	2000	A
Maximum peak, one-cycle forward, non-repetitive current	I_{FSM}	t = 10 ms	No voltage reapplied	Sinusoidal half wave, initial $T_J = T_J$ maximum	13 000	10 500	
		t = 8.3 ms			13 600	11 000	
		t = 10 ms	100 % V_{RRM} reapplied		10 930	8830	
		t = 8.3 ms			11 450	9250	
Maximum I^2t for fusing	I^2t	t = 10 ms	No voltage reapplied		846	551	kA^2s
		t = 8.3 ms			772	503	
		t = 10 ms	100 % V_{RRM} reapplied		598	390	
		t = 8.3 ms			546	356	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied			8460	5510	$kA^2\sqrt{s}$
Low level value of threshold voltage	$V_{F(TO)1}$	(16.7 % x π x $I_{F(AV)} < I < \pi$ x $I_{F(AV)}$), $T_J = T_J$ maximum			0.78	0.84	V
High level value of threshold voltage	$V_{F(TO)2}$	($I > \pi$ x $I_{F(AV)}$), $T_J = T_J$ maximum			0.94	0.88	
Low level value of forward slope resistance	r_{f1}	(16.7 % x π x $I_{F(AV)} < I < \pi$ x $I_{F(AV)}$), $T_J = T_J$ maximum			0.35	0.40	mΩ
High level value of forward slope resistance	r_{f2}	($I > \pi$ x $I_{F(AV)}$), $T_J = T_J$ maximum			0.26	0.38	
Maximum forward voltage drop	V_{FM}	I_{pk} = 1500 A, $T_J = T_J$ maximum t_p = 10 ms sinusoidal wave			1.31	1.44	V

THERMAL AND MECHANICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS	SD1100C..C 04 to 20	SD1100C..C 25 to 32	UNITS
Maximum junction 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	0.076		K/W
		DC operation double side cooled	0.038		
Mounting force, ± 10 %			9800 (1000)		N (kg)
Approximate weight			83		g
Case style		See dimensions - link at the end of datasheet	B-43		

ΔR_{thJ-hs} CONDUCTION

CONDUCTION ANGLE	SINUSOIDAL CONDUCTION SINGLE SIDE	SINUSOIDAL CONDUCTION DOUBLE SIDE	RECTANGULAR CONDUCTION SINGLE SIDE	RECTANGULAR CONDUCTION DOUBLE SIDE	TEST CONDITIONS	UNITS
180°	0.007	0.007	0.005	0.005	$T_J = T_J$ maximum	K/W
120°	0.008	0.008	0.008	0.008		
90°	0.010	0.010	0.011	0.011		
60°	0.015	0.015	0.016	0.016		
30°	0.026	0.026	0.026	0.026		

Note

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

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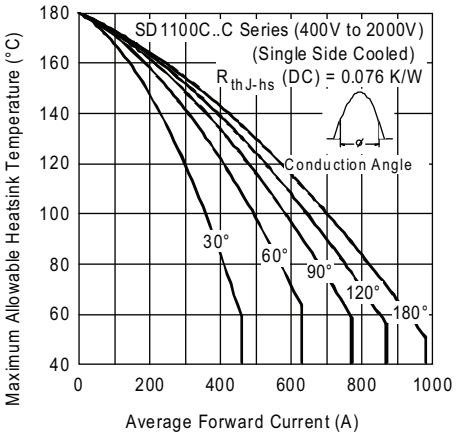

Fig. 1 - Current Ratings Characteristics

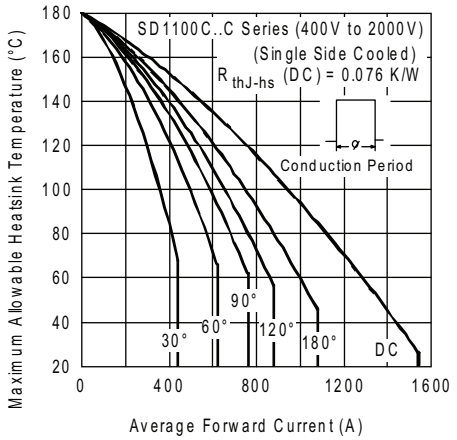

Fig. 2 - Current Ratings Characteristics

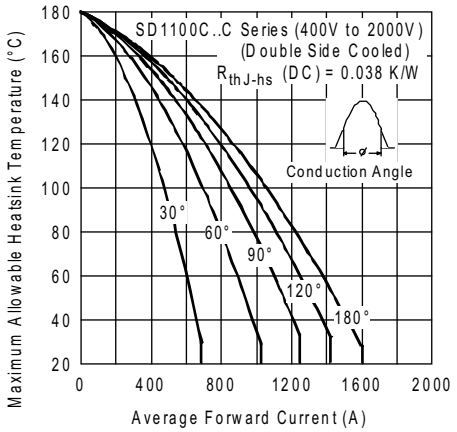

Fig. 3 - Current Ratings Characteristics

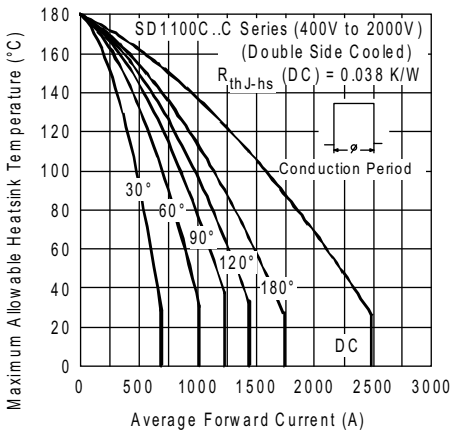

Fig. 4 - Current Ratings Characteristics

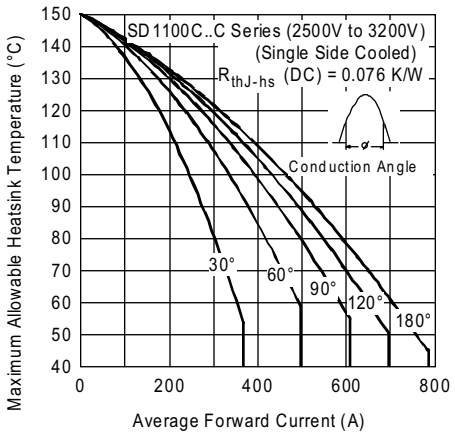

Fig. 5 - Current Ratings Characteristics

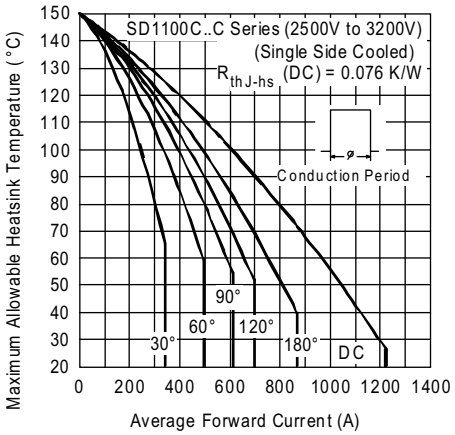

Fig. 6 - Current Ratings Characteristics

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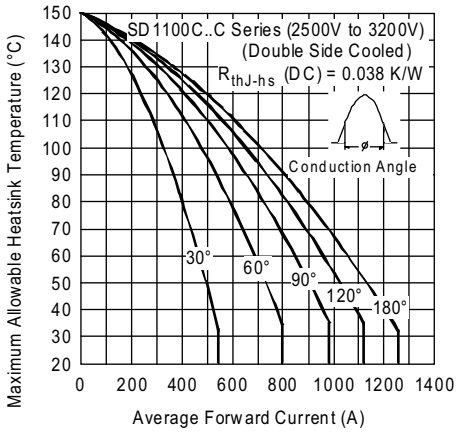

Fig. 7 - Current Ratings Characteristics

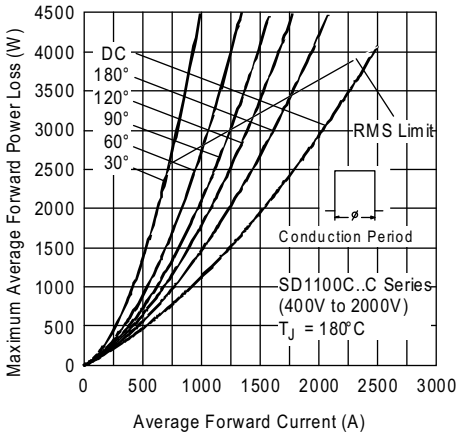

Fig. 10 - Forward Power Loss Characteristics

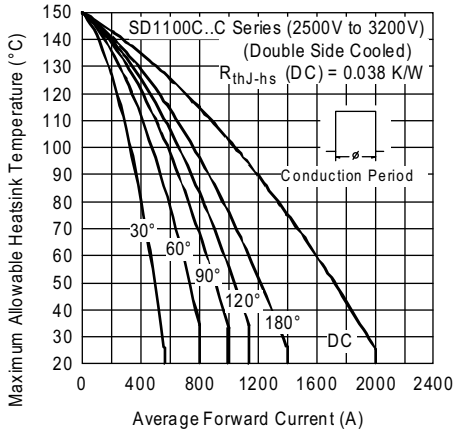

Fig. 8 - Current Ratings Characteristics

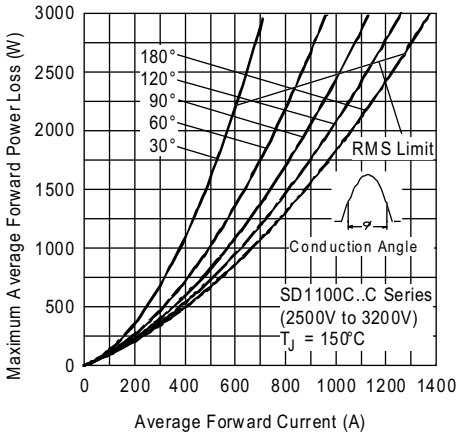

Fig. 11 - Forward Power Loss Characteristics

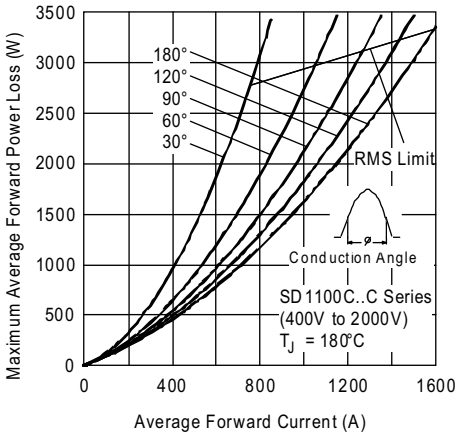

Fig. 9 - Forward Power Loss Characteristics

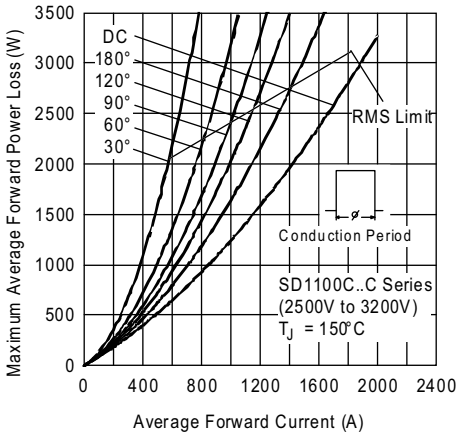

Fig. 12 - Forward Power Loss Characteristics

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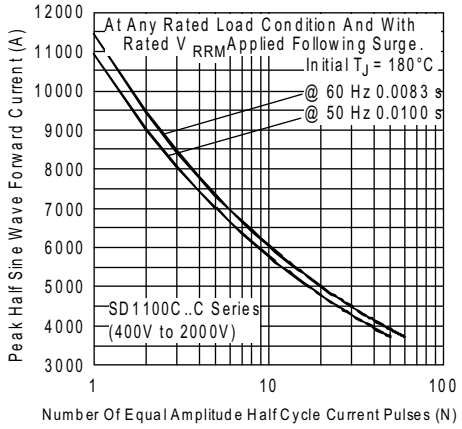

Fig. 13 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

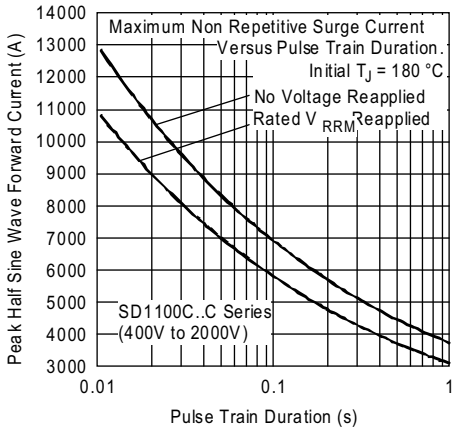

Fig. 14 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

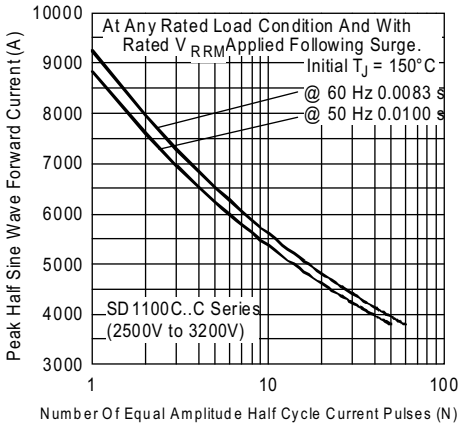

Fig. 15 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

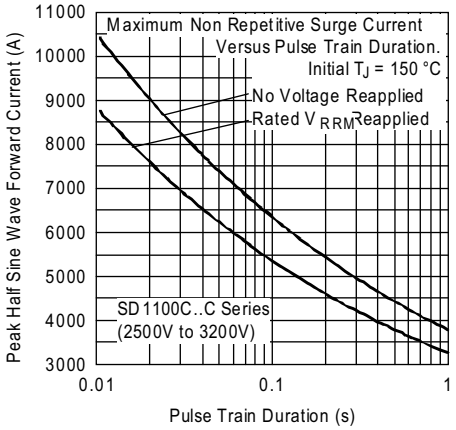

Fig. 16 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

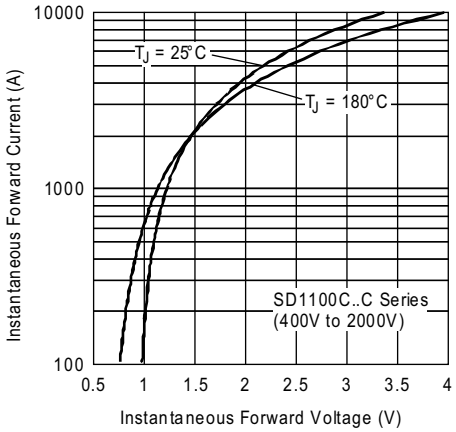

Fig. 17 - Forward Voltage Drop Characteristics

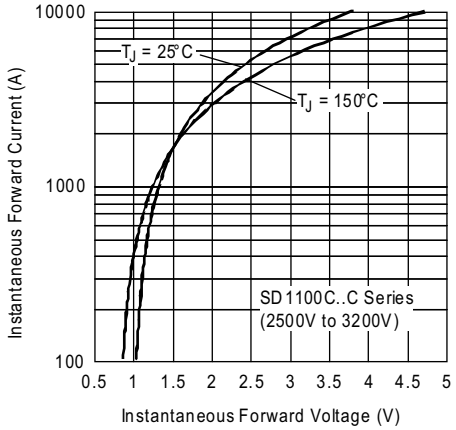

Fig. 18 - Forward Voltage Drop Characteristics

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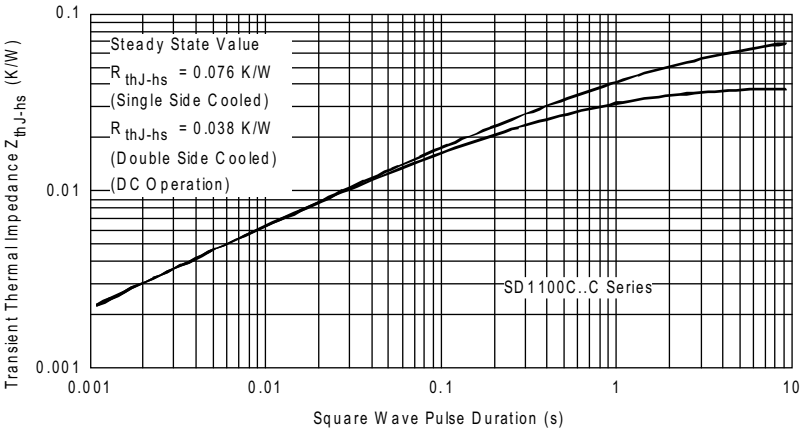

Fig. 19 - Thermal Impedance Z_{thJ-hs} Characteristics

ORDERING INFORMATION TABLE

Device code	VS-	SD	110	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 B-43

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95249

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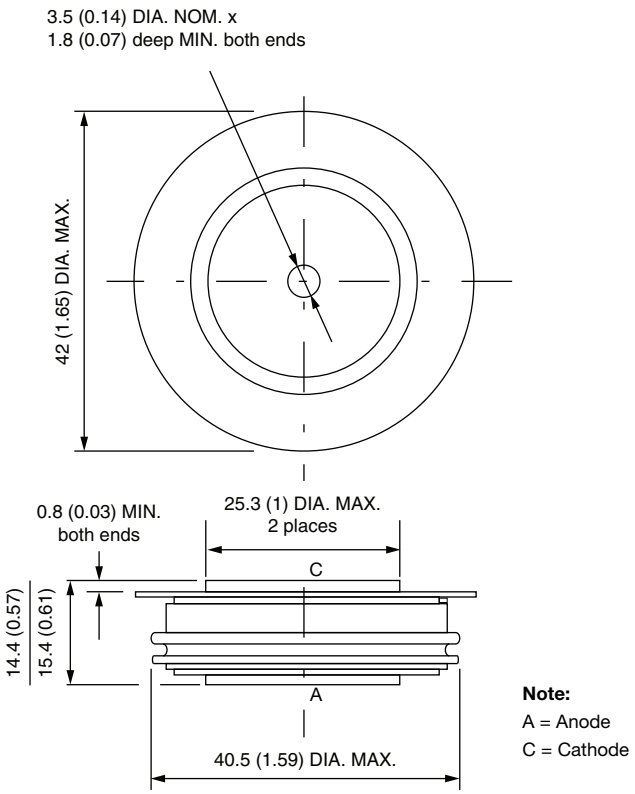
B-43

DIMENSIONS in millimeters (inches)



Note:
A = Anode
C = Cathode

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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