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	

FORWARD CONDUCTION

PARAMETER	SYMBOL	TEST CONDITIONS			SD1100C..C		UNITS
					04 to 20	25 to 32	
Maximum average forward current at heatsink temperature	$I_{F(AV)}$	180° conduction, half sine wave			1400 (795)	1100 (550)	A
		Double side (single side) cooled			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 < π 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 > π 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 < π x $I_{F(AV)}$), $T_J = T_J$ maximum			0.35	0.40	mΩ
High level value of forward slope resistance	r_{f2}	(I > π 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		UNITS
			04 to 20	25 to 32	
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		RECTANGULAR CONDUCTION		TEST CONDITIONS	UNITS
	SINGLE SIDE	DOUBLE SIDE	SINGLE SIDE	DOUBLE SIDE		
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

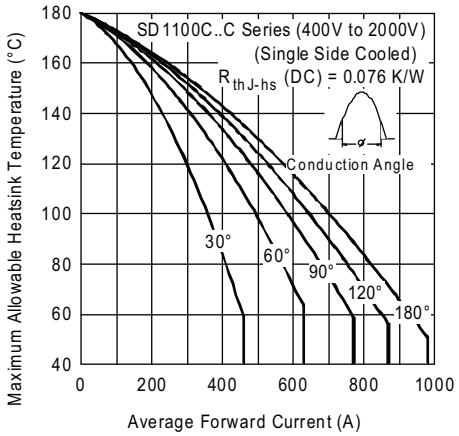


Fig. 1 - Current Ratings Characteristics

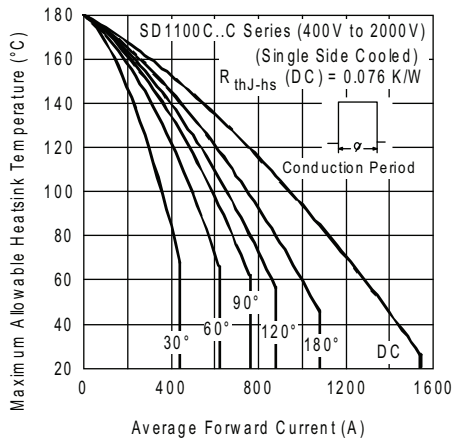


Fig. 2 - Current Ratings Characteristics

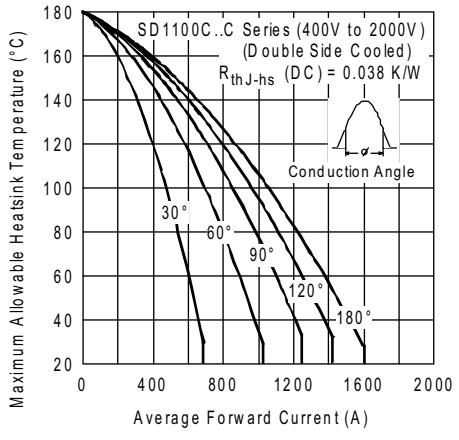


Fig. 3 - Current Ratings Characteristics

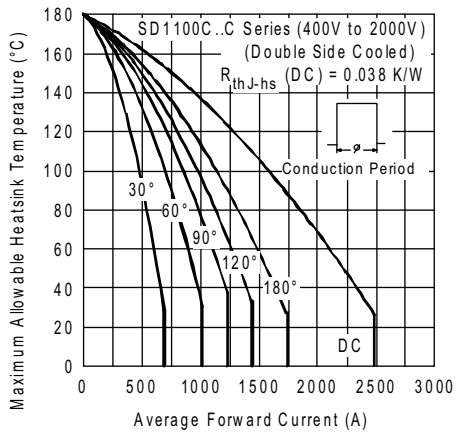


Fig. 4 - Current Ratings Characteristics

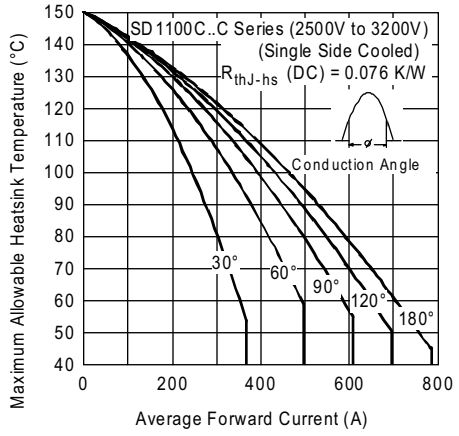


Fig. 5 - Current Ratings Characteristics

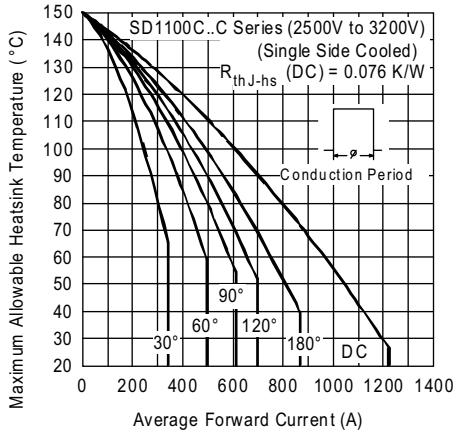


Fig. 6 - Current Ratings Characteristics

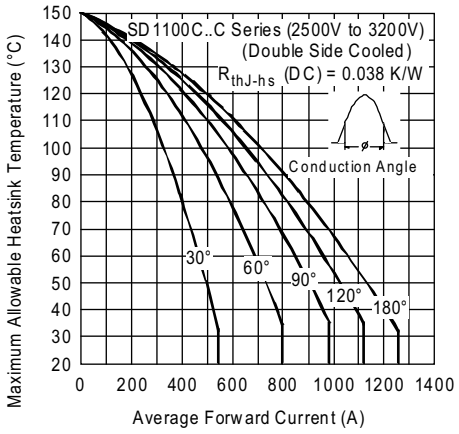


Fig. 7 - Current Ratings Characteristics

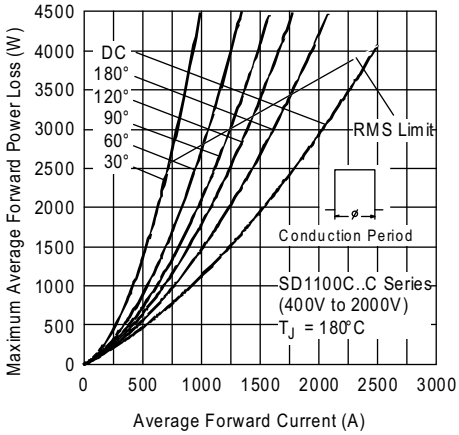


Fig. 10 - Forward Power Loss Characteristics

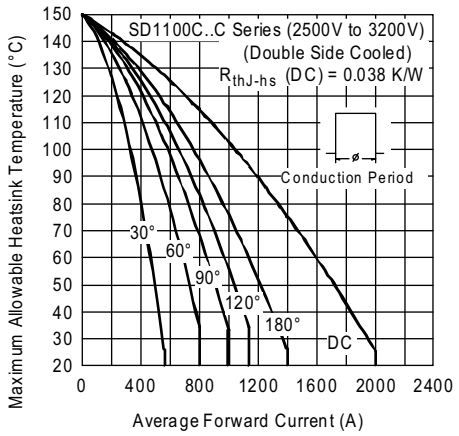


Fig. 8 - Current Ratings Characteristics

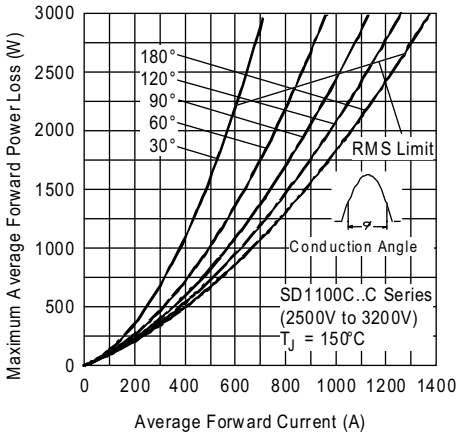


Fig. 11 - Forward Power Loss Characteristics

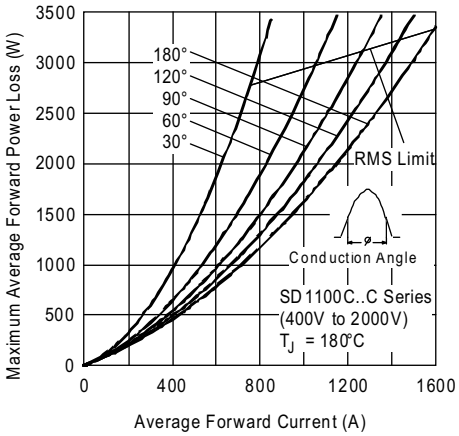


Fig. 9 - Forward Power Loss Characteristics

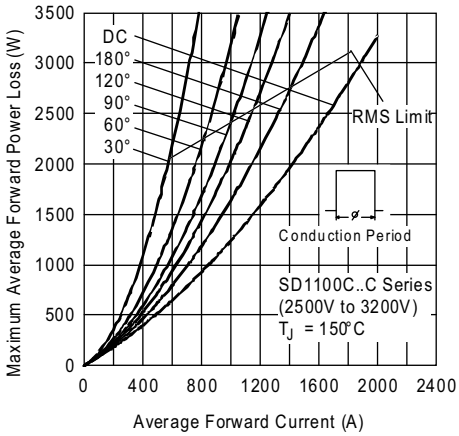


Fig. 12 - Forward Power Loss Characteristics

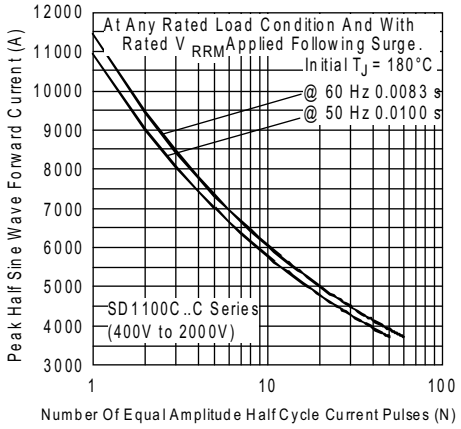


Fig. 13 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

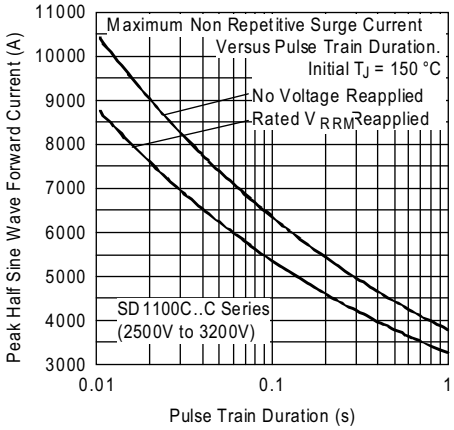


Fig. 16 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

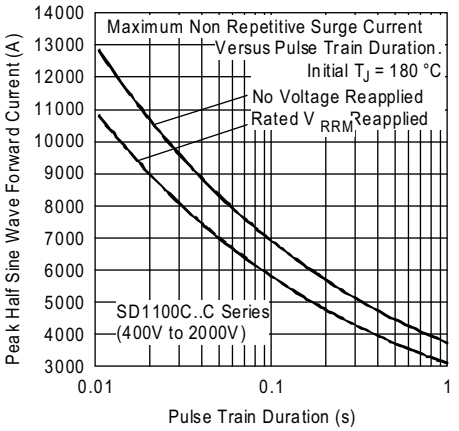


Fig. 14 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

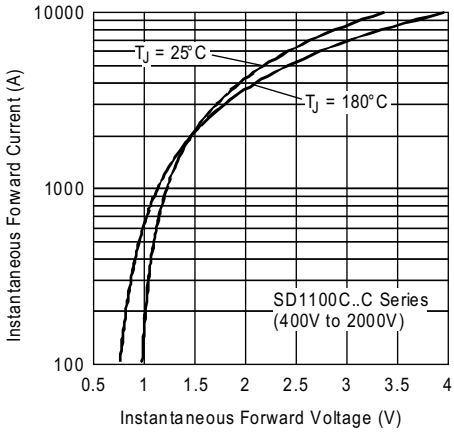


Fig. 17 - Forward Voltage Drop Characteristics

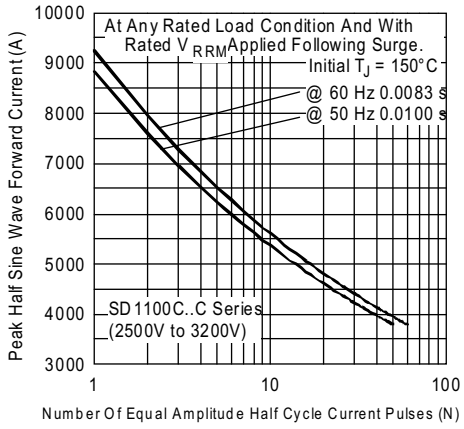


Fig. 15 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

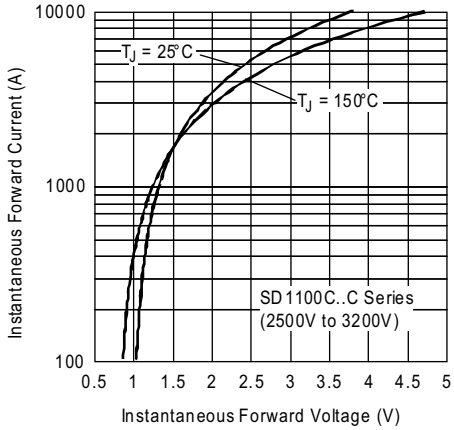


Fig. 18 - Forward Voltage Drop Characteristics

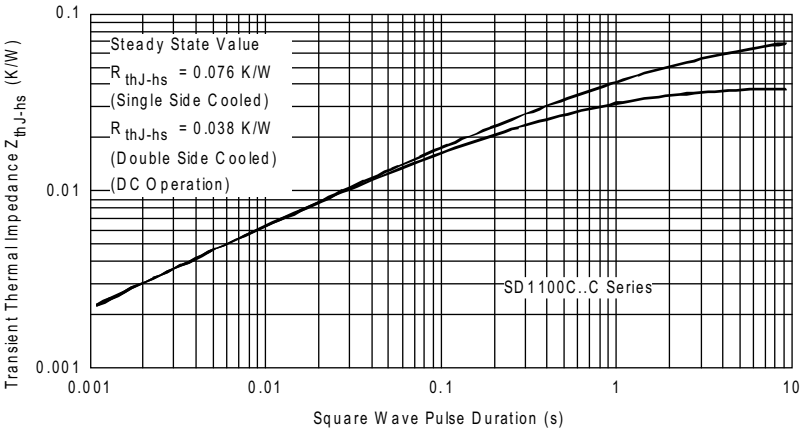


Fig. 19 - Thermal Impedance $Z_{thJ\text{-}hs}$ Characteristics

ORDERING INFORMATION TABLE

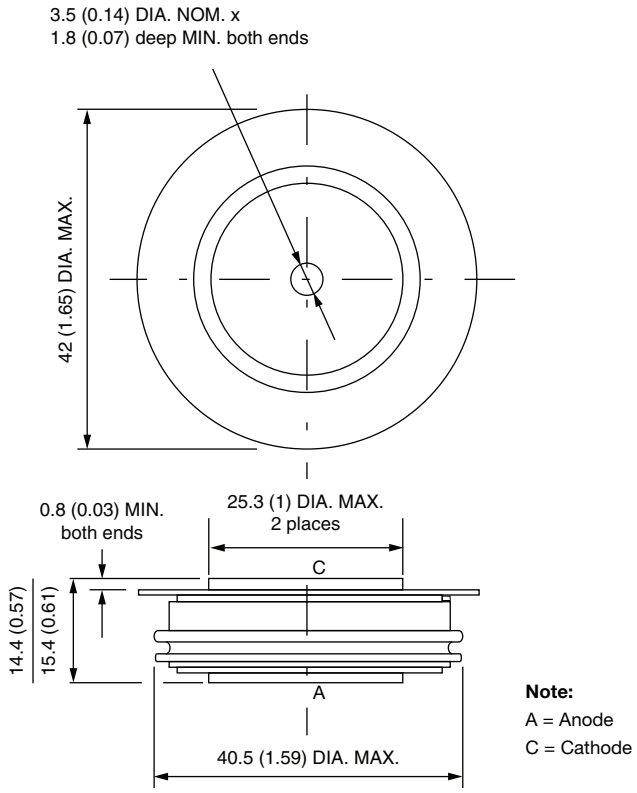
Device code	VS-	SD	110	0	C	32	C
	1	2	3	4	5	6	7

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

B-43

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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