

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


RoHS
COMPLIANT

TYPICAL APPLICATIONS

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

PRODUCT SUMMARY

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

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 ² s
	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	
	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 Double side (single side) cooled	1400 (795)	1100 (550)	A
Maximum RMS forward current	$I_{F(RMS)}$	25 °C heatsink temperature double side cooled	2500	2000	°C
Maximum peak, one-cycle forward, non-repetitive current	I_{FSM}	t = 10 ms t = 8.3 ms	No voltage reappplied	13 000 13 600	A
		t = 10 ms t = 8.3 ms	100 % V_{RRM} reappplied	10 930 11 450	
		Sinusoidal half wave, initial $T_J = T_J$ maximum		846 772	
				551 503	
Maximum I^2t for fusing	I^2t	t = 10 ms t = 8.3 ms	No voltage reappplied	846 772	kA ² s
		t = 10 ms t = 8.3 ms	100 % V_{RRM} reappplied	598 546	
		Sinusoidal half wave, initial $T_J = T_J$ maximum		551 503	
				390 356	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reappplied	8460	5510	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	0.78	0.84	V
High level value of threshold voltage	$V_{F(TO)2}$	($I > \pi \times I_{F(AV)}$), $T_J = T_J$ maximum	0.94	0.88	
Low level value 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	0.35	0.40	mΩ
High level value of forward slope resistance	r_{f2}	($I > \pi \times I_{F(AV)}$), $T_J = T_J$ 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

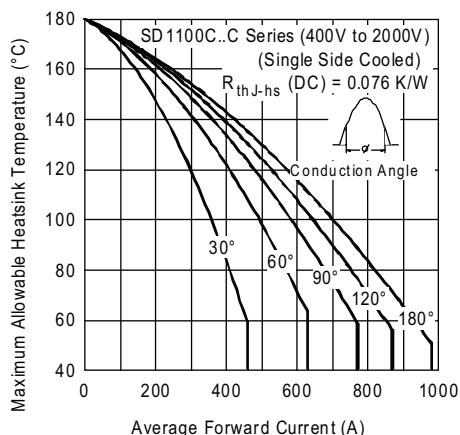


Fig. 1 - Current Ratings Characteristics

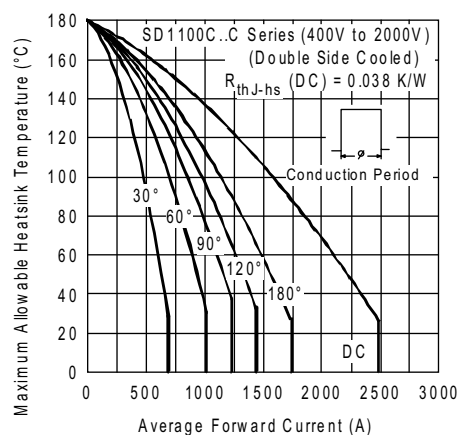


Fig. 4 - Current Ratings Characteristics

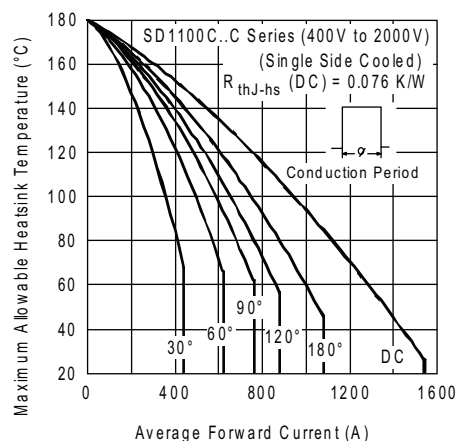


Fig. 2 - Current Ratings Characteristics

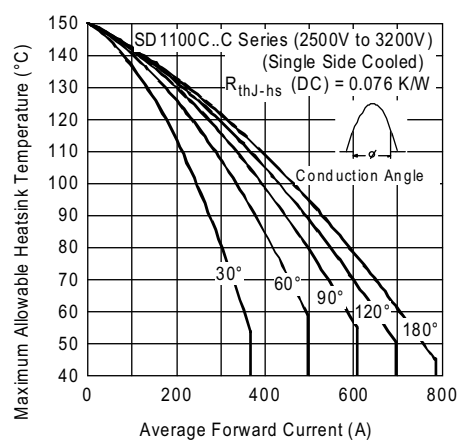


Fig. 5 - Current Ratings Characteristics

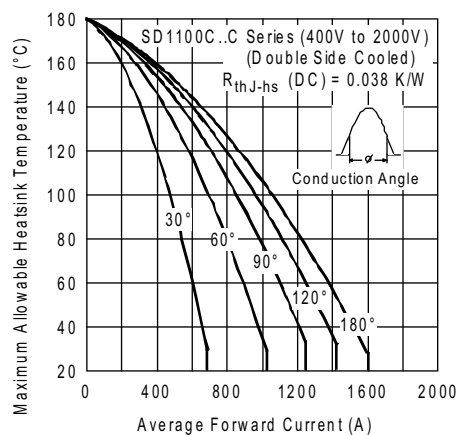


Fig. 3 - Current Ratings Characteristics

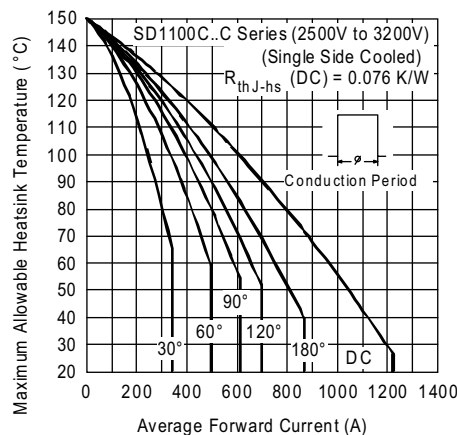


Fig. 6 - Current Ratings Characteristics

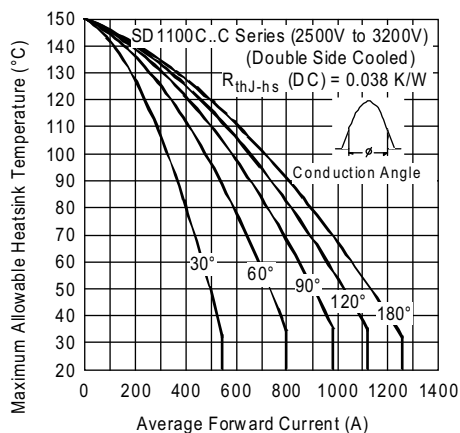


Fig. 7 - Current Ratings Characteristics

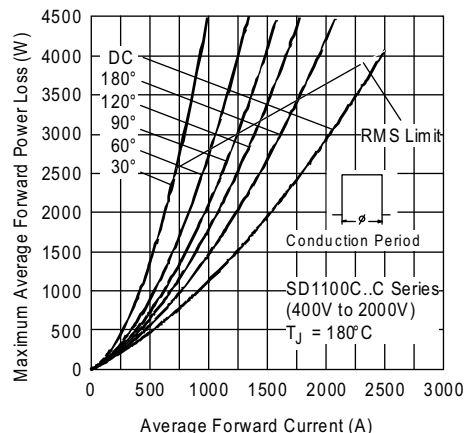


Fig. 10 - Forward Power Loss Characteristics

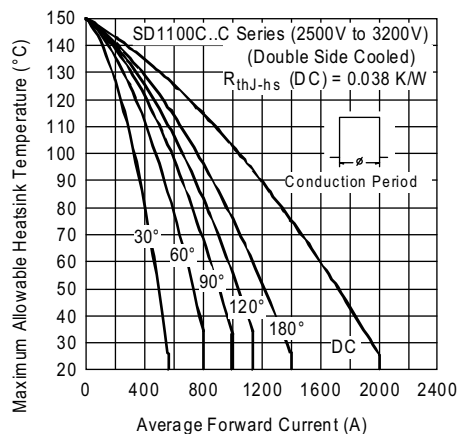


Fig. 8 - Current Ratings Characteristics

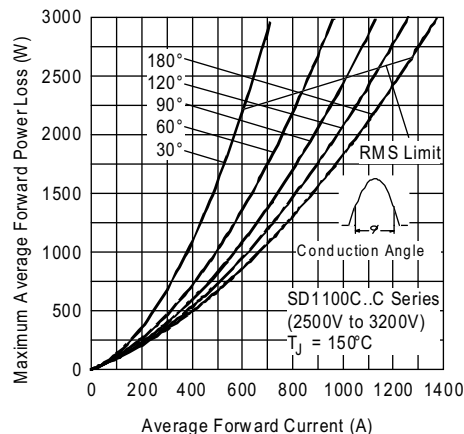


Fig. 11 - Forward Power Loss Characteristics

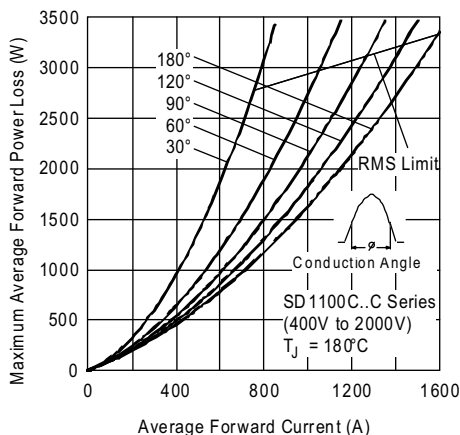


Fig. 9 - Forward Power Loss Characteristics

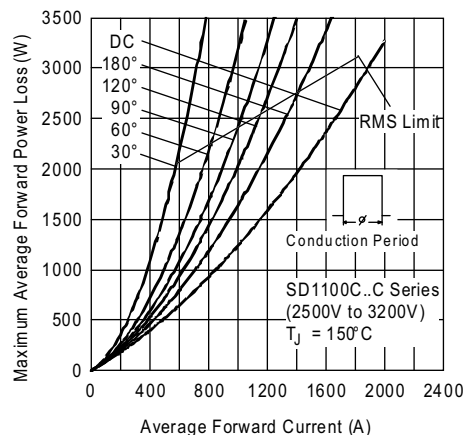


Fig. 12 - Forward Power Loss Characteristics

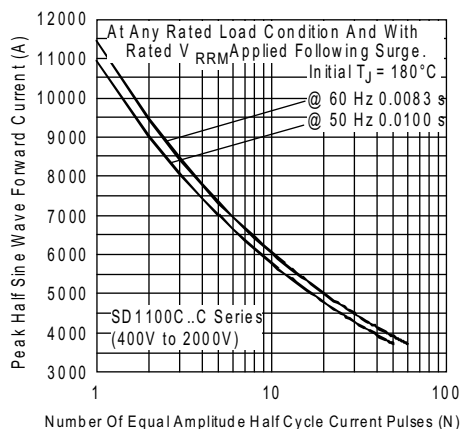


Fig. 13 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

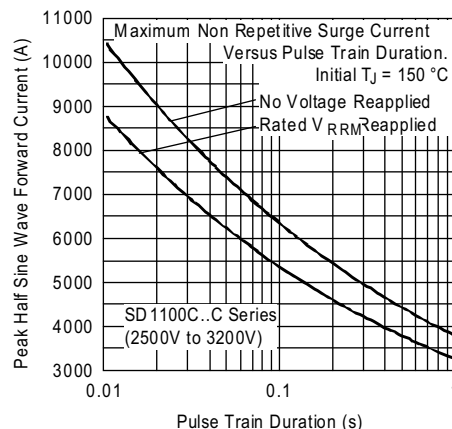


Fig. 16 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

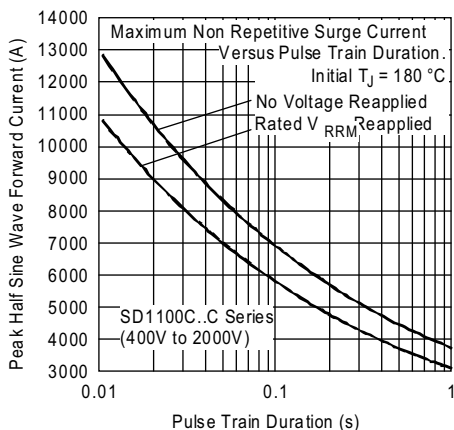


Fig. 14 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

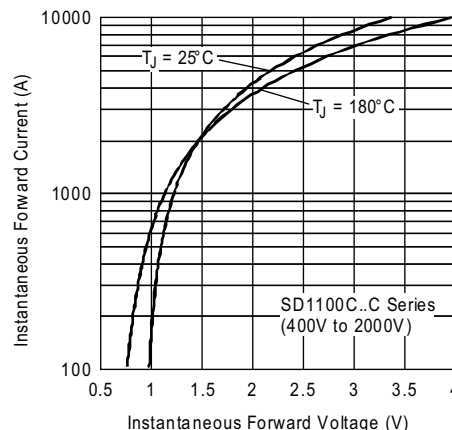


Fig. 17 - Forward Voltage Drop Characteristics

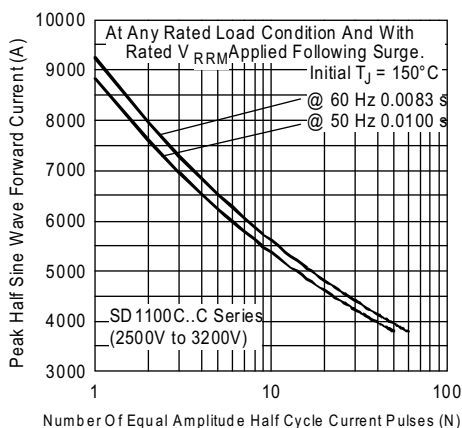


Fig. 15 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

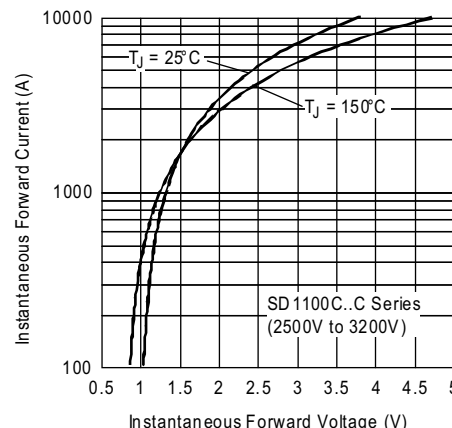
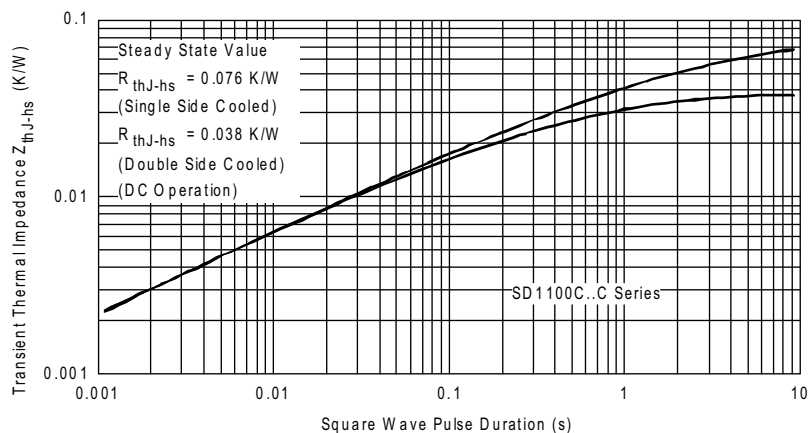


Fig. 18 - Forward Voltage Drop Characteristics


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

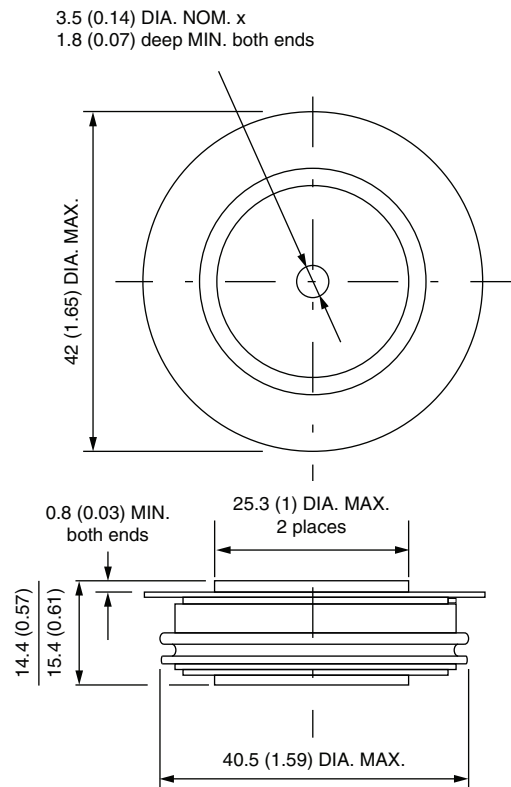
ORDERING INFORMATION TABLE

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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