Standard Recovery Diodes, (Hockey PUK Version), 1200 A



B-PUK (DO-200AB)

FEATURES

- Wide current range
- High voltage ratings up to 4500 V
- High surge current capabilities
- Diffused junction
- Hockey PUK version
- Case style DO-200AB (B-PUK)
- 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	
$I_{F(AV)}$	1200 A
Package	B-PUK (DO-200AB)
Circuit configuration	Single

MAJOR RATINGS AND CHARACTERISTICS				
PARAMETER	TEST CONDITIONS	SD800C..L		UNITS
		24 to 36	40 to 45	
$I_{F(AV)}$		1180	1065	A
	T_{hs}	55	55	°C
$I_{F(RMS)}$		2280	2040	A
	T_{hs}	25	25	°C
I_{FSM}	50 Hz	13 600	12 200	A
	60 Hz	14 240	12 800	
I^2t	50 Hz	925	745	kA^2s
	60 Hz	845	680	
V_{RRM}	Range	2400 to 3600	4000 to 4500	V
T_J		-40 to +150	-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-SD800C..L	24	2400	2500	50
	30	3000	3100	
	36	3600	3700	
	40	4000	4100	
	45	4500	4600	

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FORWARD CONDUCTION

PARAMETER	SYMBOL	TEST CONDITIONS			SD800C..L 24 to 36	SD800C..L 40 to 45	UNITS
Maximum average forward current at heatsink temperature	$I_{F(AV)}$	180° conduction, half sine wave			1180 (550)	1065 (490)	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			2280	2040	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	13 600	12 200	A
		t = 8.3 ms			14 240	12 800	
		t = 10 ms	50 % V_{RRM} reapplied		11 440	10 250	
		t = 8.3 ms			11 980	10 750	
Maximum I^2t for fusing	I^2t	t = 10 ms	No voltage reapplied		925	745	kA^2s
		t = 8.3 ms			845	680	
		t = 10 ms	50 % V_{RRM} reapplied		654	526	
		t = 8.3 ms			597	480	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied			9250	7450	$kA^2\sqrt{s}$
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			0.90	1.06	V
High level value of threshold voltage	$V_{F(TO)2}$	(I > π x $I_{F(AV)}$), $T_J = T_J$ maximum			1.10	1.18	
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			0.38	0.44	mΩ
High level value of forward slope resistance	r_{f2}	(I > π x $I_{F(AV)}$), $T_J = T_J$ maximum			0.34	0.41	
Maximum forward voltage drop	V_{FM}	I_{pk} = 2000 A, $T_J = T_J$ maximum, t_p = 10 ms sinusoidal wave			1.66	1.95	V

THERMAL AND MECHANICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction operating temperature range	T_J		- 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	0.073	K/W
		DC operation double side cooled	0.031	
Mounting force, ± 10 %			14 700 (1500)	N (kg)
Approximate weight			255	g
Case style		See dimensions - link at the end of datasheet	B-PUK (DO-200AB)	

ΔR_{thJ-hs} CONDUCTION

CONDUCTION ANGLE	SINUSOIDAL CONDUCTION		RECTANGULAR CONDUCTION		TEST CONDITIONS	UNITS
	SINGLE SIDE	DOUBLE SIDE	SINGLE SIDE	DOUBLE SIDE		
180°	0.009	0.009	0.006	0.006	$T_J = T_J$ maximum	K/W
120°	0.011	0.011	0.011	0.011		
90°	0.014	0.014	0.015	0.015		
60°	0.020	0.020	0.021	0.021		
30°	0.036	0.036	0.036	0.036		

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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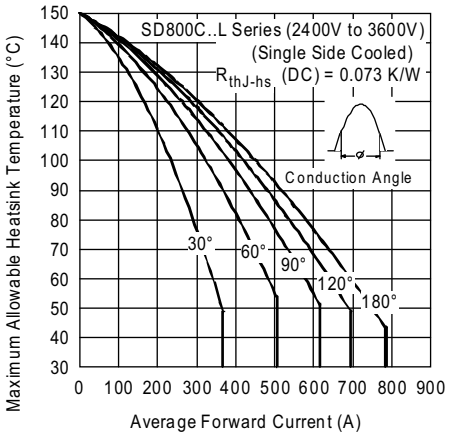


Fig. 1 - Current Ratings Characteristics

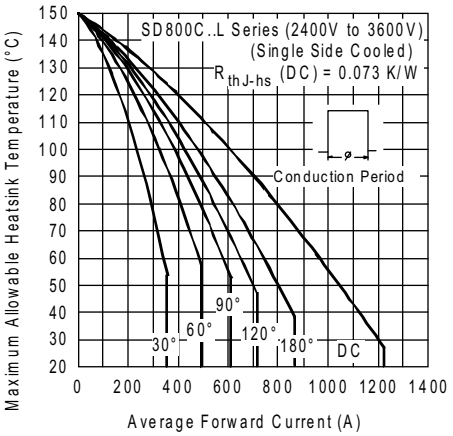


Fig. 2 - Current Ratings Characteristics

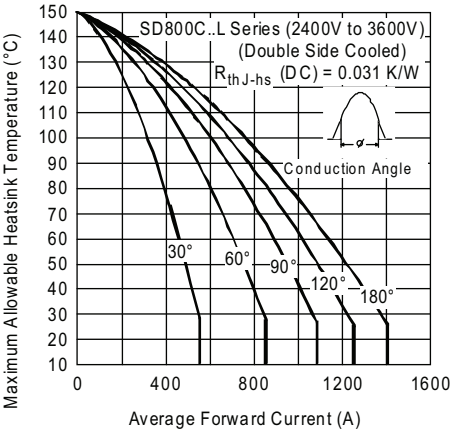


Fig. 3 - Current Ratings Characteristics

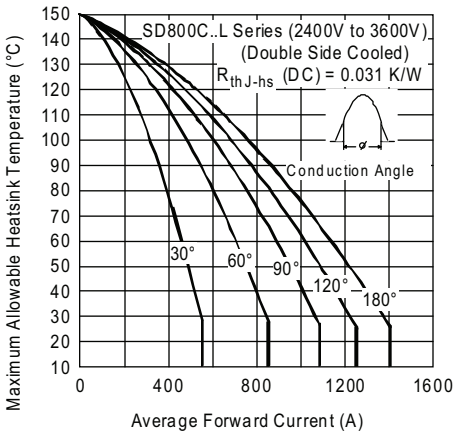


Fig. 4 - Current Ratings Characteristics

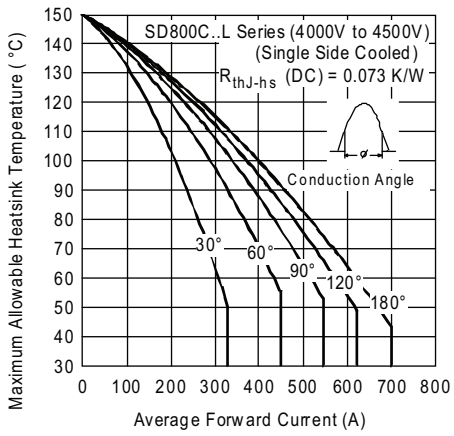


Fig. 5 - Current Ratings Characteristics

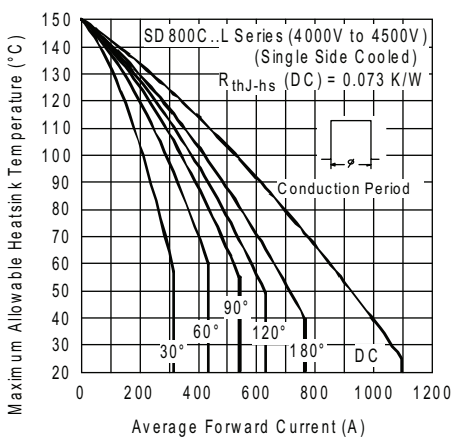


Fig. 6 - Current Ratings Characteristics

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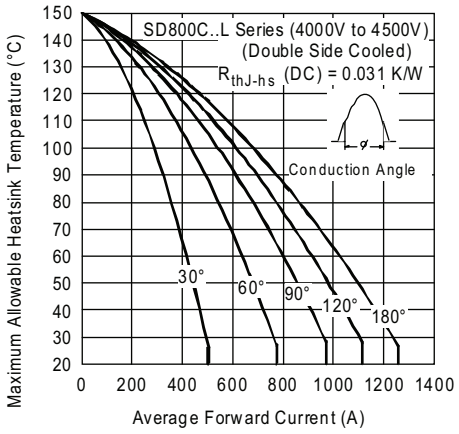


Fig. 7 - Current Ratings Characteristics

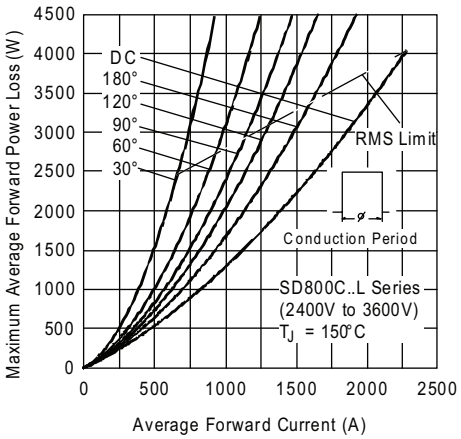


Fig. 10 - Forward Power Loss Characteristics

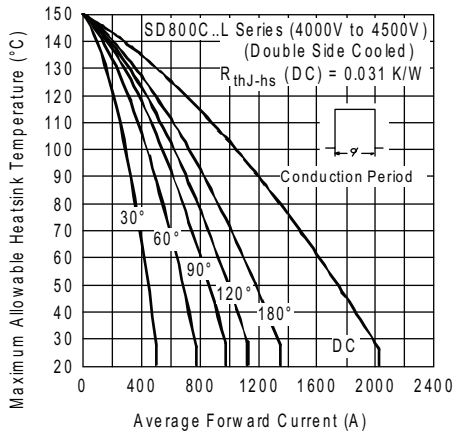


Fig. 8 - Current Ratings Characteristics

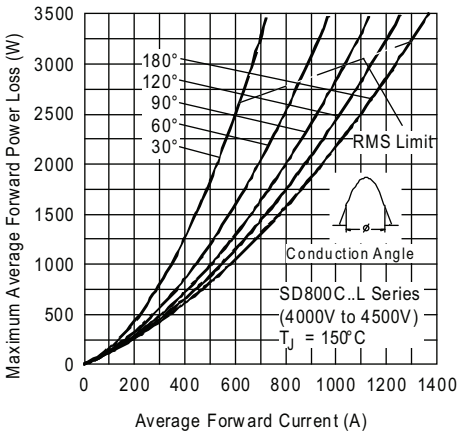


Fig. 11 - Forward Power Loss Characteristics

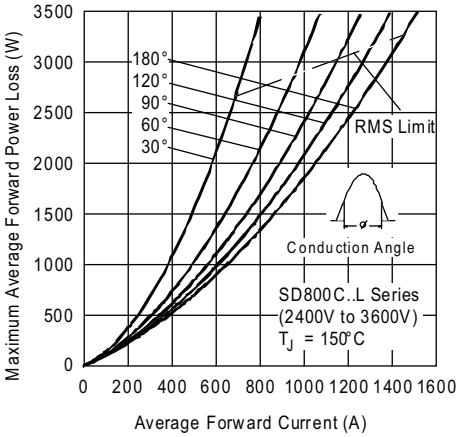


Fig. 9 - Forward Power Loss Characteristics

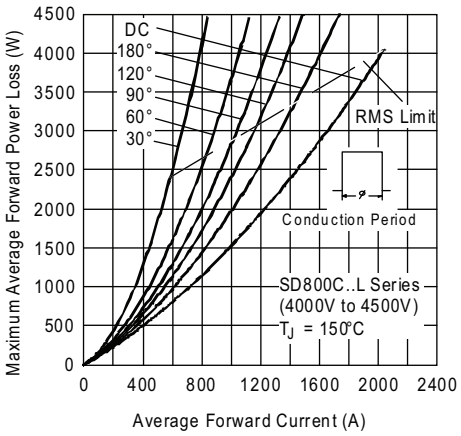


Fig. 12 - Forward Power Loss Characteristics

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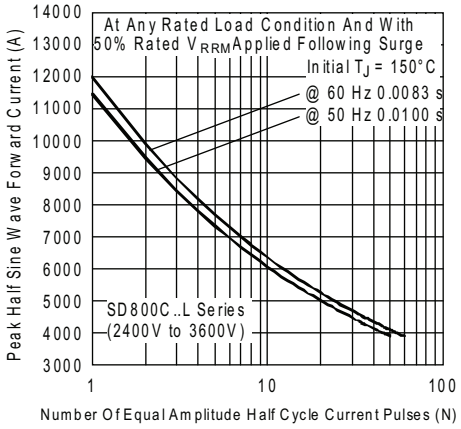


Fig. 13 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

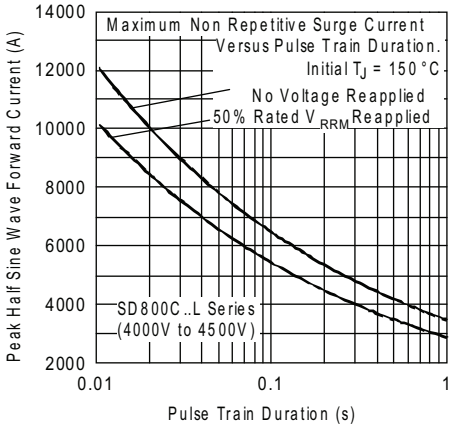


Fig. 16 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

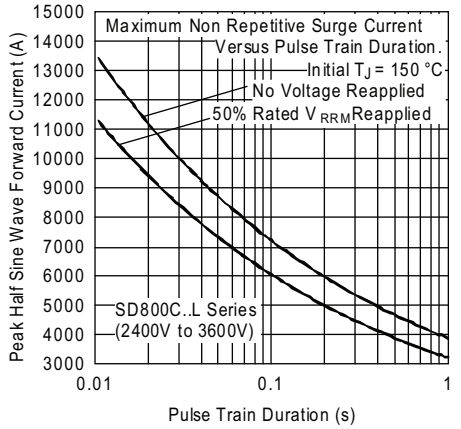


Fig. 14 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

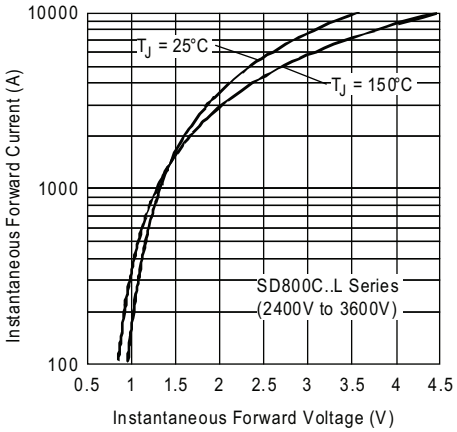


Fig. 17 - Forward Voltage Drop Characteristics

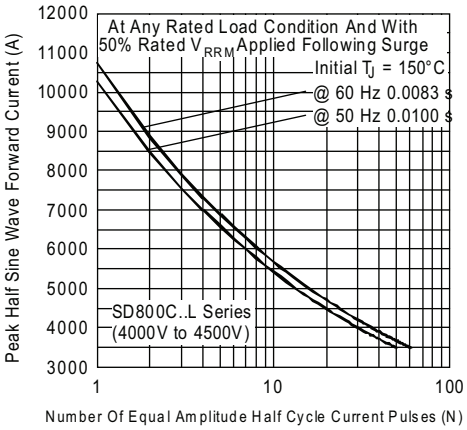


Fig. 15 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

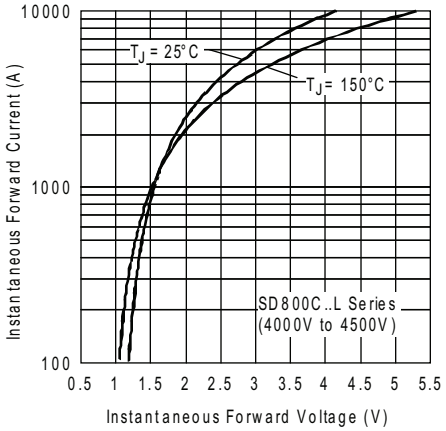


Fig. 18 - Forward Voltage Drop Characteristics

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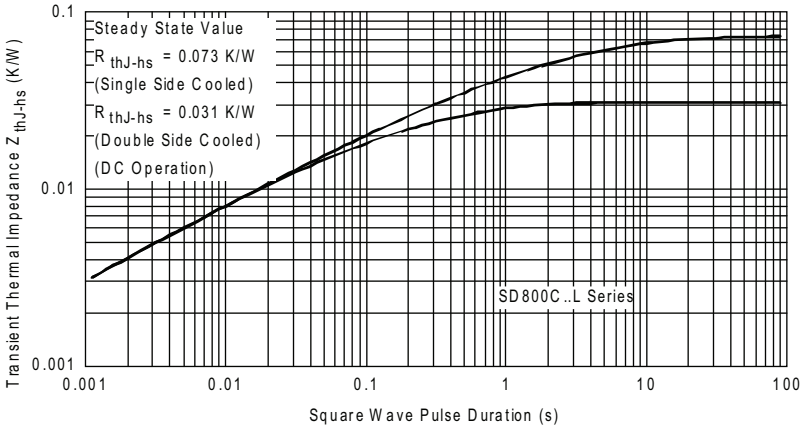


Fig. 19 - Thermal Impedance $Z_{thJ\text{-}hs}$ Characteristics

ORDERING INFORMATION TABLE

Device code

VS-	SD	80	0	C	45	L
1	2	3	4	5	6	

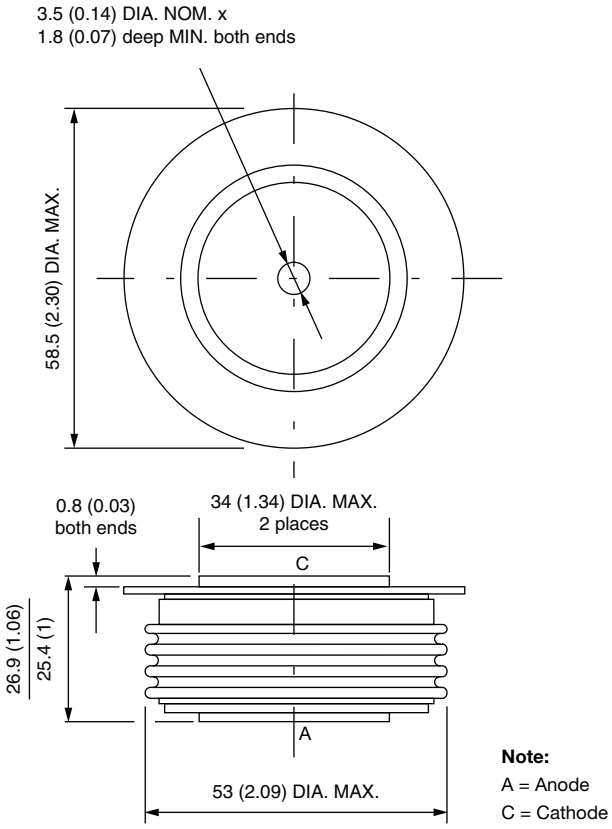
- 1 - Vishay Semiconductors product
- 2 - Diode
- 3 - Essential part number
- 4 - 0 = standard recovery
- 5 - C = ceramic PUK
- 6 - Voltage code x 100 = V_{RRM} (see Voltage Ratings table)
- 6 - L = PUK case B-PUK (DO-200AB)

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95246

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B-PUK (DO-200AB)

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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