Standard Recovery Diodes, (Hockey PUK Version), 700 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 B-PUK (DO-200AB)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free

RoHS COMPLIANT

TYPICAL APPLICATIONS

- Converters
- Power supplies
- High power drives
- Auxiliary system supplies for traction applications

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	700 A
Package	B-PUK (DO-200AB)
Circuit configuration	Single

MAJOR RATINGS AND CHARACTERISTICS			
PARAMETER	TEST CONDITIONS	VALUES	UNITS
$I_{F(AV)}$		700	A
	T_{hs}	55	°C
$I_{F(RMS)}$		1310	A
	T_{hs}	25	°C
I_{FSM}	50 Hz	7500	A
	60 Hz	7850	
I^2t	50 Hz	281	kA^2s
	60 Hz	257	
V_{RRM}	Range	3000 to 4500	V
T_J		-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-SD700C..L	30	3000	3100	50
	36	3600	3700	
	40	4000	4100	
	45	4600	4600	

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FORWARD CONDUCTION						
PARAMETER	SYMBOL	TEST CONDITIONS			VALUES	UNITS
Maximum average forward current at heatsink temperature	$I_{F(AV)}$	180° conduction, half sine wave Double side (single side) cooled			700 (345)	A
					55 (85)	°C
Maximum RMS forward current	$I_{F(RMS)}$	25 °C heatsink temperature double side cooled			1310	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	7500	
		t = 8.3 ms			7850	
		t = 10 ms	100 % V_{RRM} reapplied		6310	
		t = 8.3 ms			6600	
Maximum I^2t for fusing	I^2t	t = 10 ms	No voltage reapplied		281	kA^2s
		t = 8.3 ms			257	
		t = 10 ms	100 % V_{RRM} reapplied		199	
		t = 8.3 ms			182	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied			2810	$kA^2\sqrt{s}$
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			0.88	V
High level value of threshold voltage	$V_{F(TO)2}$	(I > π x $I_{F(AV)}$), $T_J = T_J$ maximum			0.99	
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			0.78	mΩ
High level value of forward slope resistance	r_{f2}	(I > π x $I_{F(AV)}$), $T_J = T_J$ maximum			0.73	
Maximum forward voltage drop	V_{FM}	I_{pk} = 1000 A, $T_J = T_J$ maximum, t_p = 10 ms sinusoidal wave			1.66	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	0.11	K/W
		DC operation double side cooled	0.05	
Mounting force, ± 10 %			9800 (1000)	N (kg)
Approximate weight			250	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°	0.011	0.011	0.008	0.008	$T_J = T_J$ maximum	K/W
120°	0.014	0.015	0.014	0.014		
90°	0.018	0.018	0.019	0.019		
60°	0.026	0.026	0.027	0.028		
30°	0.045	0.046	0.046	0.046		

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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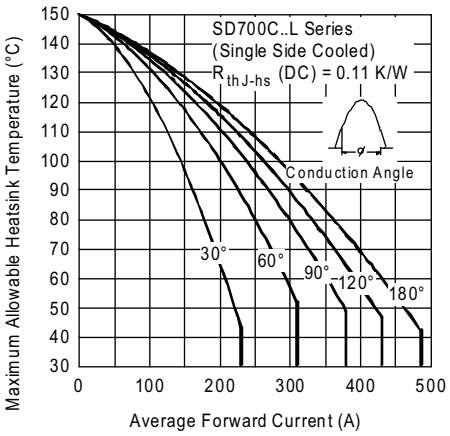


Fig. 1 - Current Ratings Characteristics

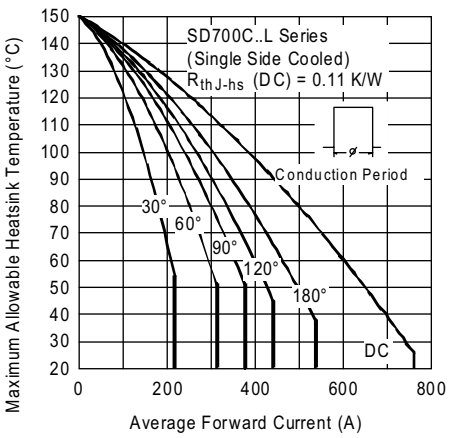


Fig. 2 - Current Ratings Characteristics

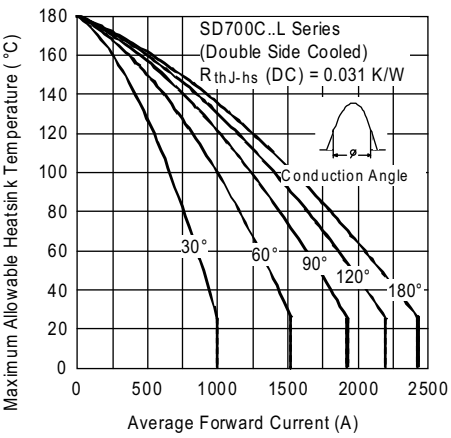


Fig. 3 - Current Ratings Characteristics

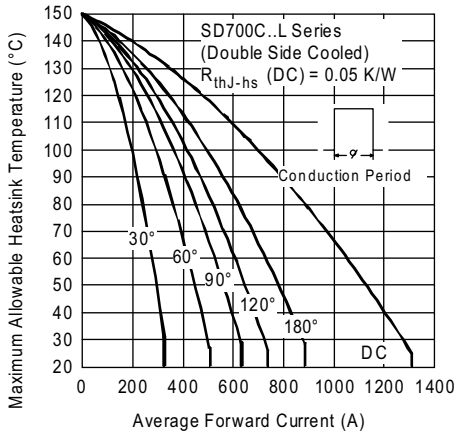


Fig. 4 - Current Ratings Characteristics

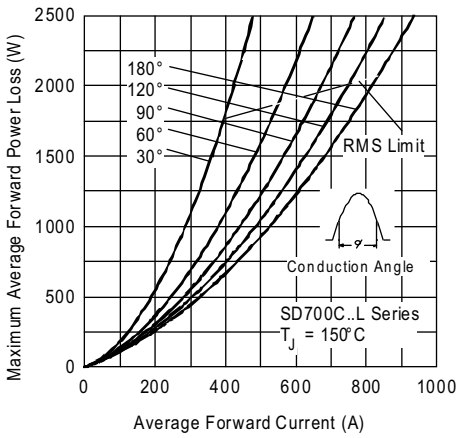


Fig. 5 - Forward Power Loss Characteristics

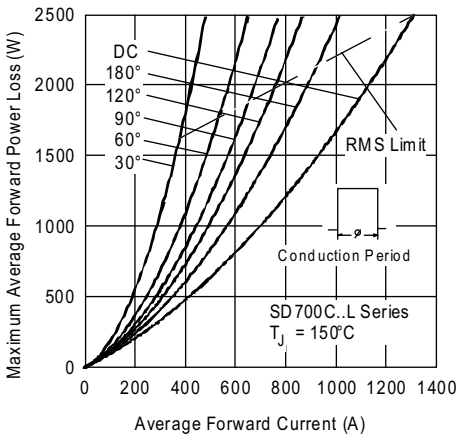


Fig. 6 - Forward Power Loss Characteristics

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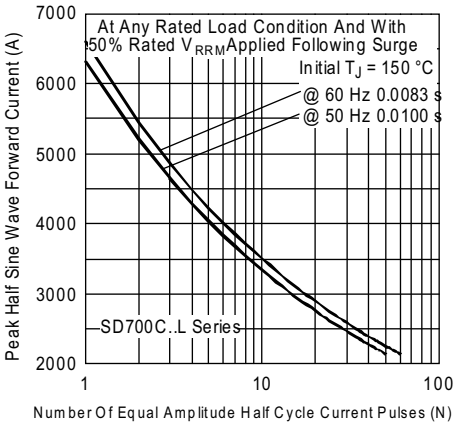


Fig. 7 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

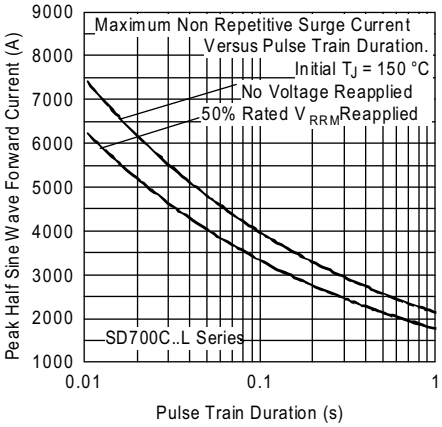


Fig. 8 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

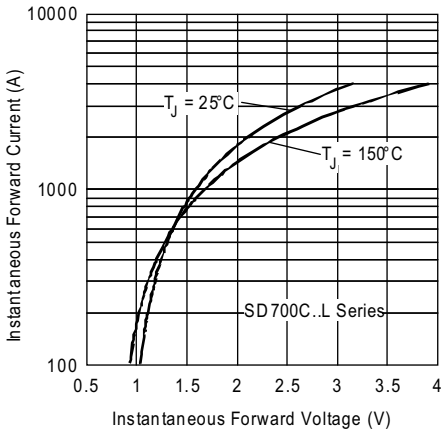


Fig. 9 - Forward Voltage Drop Characteristics

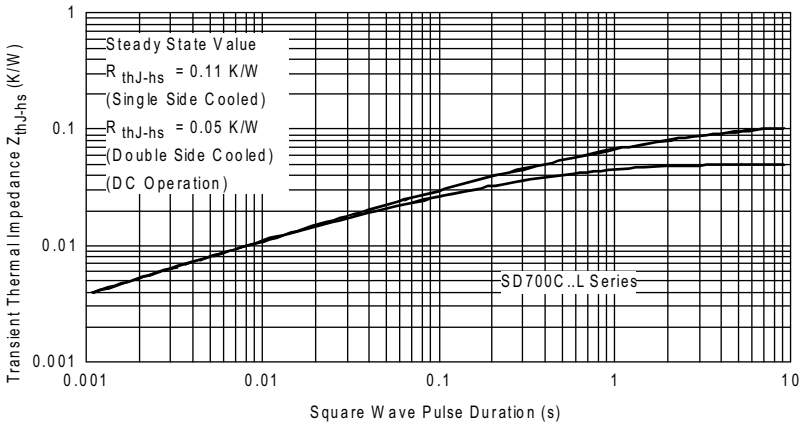


Fig. 10 - Thermal Impedance $Z_{thJ\text{-}hs}$ Characteristics

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ORDERING INFORMATION TABLE

Device code

VS-	SD	70	0	C	45	L
1	2	3	4	5	6	7

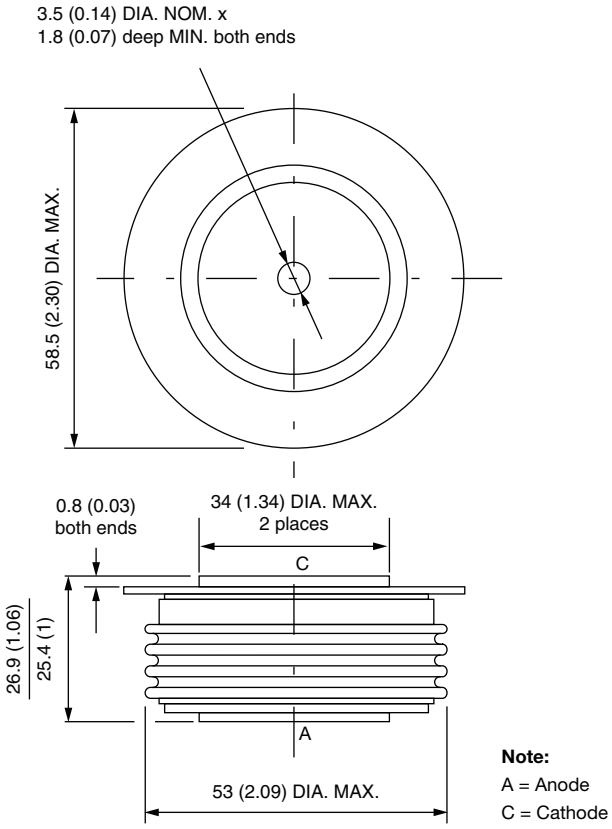
- 1 - Vishay Semiconductors product
- 2 - Diode
- 3 - Essential part number
- 4 - 0 = standard recovery
- 5 - C = ceramic PUK
- 6 - Voltage code x 100 = V_{RRM} (see Voltage Ratings table)
- 7 - L = PUK case B-PUK (DO-200AB)

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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