

## Standard Recovery Diodes, (Hockey PUK Version), 1600 A



B-PUK (DO-200AB)

### FEATURES

- Wide current range
- High voltage ratings up to 3000 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](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT

### TYPICAL APPLICATIONS

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

### PRIMARY CHARACTERISTICS

$I_{T(AV)}$	1600 A
Package	B-PUK (DO-200AB)
Circuit configuration	Single

### MAJOR RATINGS AND CHARACTERISTICS

PARAMETER	TEST CONDITIONS	VALUES	UNITS
$I_{F(AV)}$		1600	A
	$T_{hs}$	55	°C
$I_{F(RMS)}$		3010	A
	$T_{hs}$	25	°C
$I_{FSM}$	50 Hz	16 600	A
	60 Hz	17 400	
$I^2t$	50 Hz	1386	kA <sup>2</sup> s
	60 Hz	1265	
$V_{RRM}$	Range	400 to 3000	V
$T_J$		-40 to +180	°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-SD1500C..L	04	400	500	50
	08	800	900	
	12	1200	1300	
	16	1600	1700	
	20	2000	2100	
	25	2500	2600	
	30	3000	3100	



FORWARD CONDUCTION						
PARAMETER	SYMBOL	TEST CONDITIONS			VALUES	UNITS
Maximum average forward current at heatsink temperature	I <sub>F(AV)</sub>	180° conduction, half sine wave Double side (single side) cooled			1600 (820)	A
					55 (85)	°C
Maximum RMS forward current	I <sub>F(RMS)</sub>	25 °C heatsink temperature double side cooled			3010	A
Maximum peak, one cycle, non-repetitive surge current	I <sub>FSM</sub>	t = 10 ms	No voltage reapplied	Sinusoidal half wave, initial T <sub>J</sub> = T <sub>J</sub> maximum	16 600	
		t = 8.3 ms			17 400	
		t = 10 ms	100 % V <sub>RRM</sub> reapplied		14 000	
		t = 8.3 ms			14 700	
Maximum I <sup>2</sup> t for fusing	I <sup>2</sup> t	t = 10 ms	No voltage reapplied		1386	kA <sup>2</sup> s
		t = 8.3 ms		1265		
		t = 10 ms	100 % V <sub>RRM</sub> reapplied	980		
		t = 8.3 ms		895		
Maximum I <sup>2</sup> √t for fusing	I <sup>2</sup> √t	t = 0.1 to 10 ms, no voltage reapplied			13 860	kA <sup>2</sup> √s
Low level value of threshold voltage	V <sub>F(TO)1</sub>	(16.7 % × π × I <sub>F(AV)</sub> ) < I < π × I <sub>F(AV)</sub> , T <sub>J</sub> = T <sub>J</sub> maximum			0.83	V
High level value of threshold voltage	V <sub>F(TO)2</sub>	(I > π × I <sub>F(AV)</sub> ), T <sub>J</sub> = T <sub>J</sub> maximum			0.95	
Low level value of forward slope resistance	r <sub>f1</sub>	(16.7 % × π × I <sub>F(AV)</sub> ) < I < π × I <sub>F(AV)</sub> , T <sub>J</sub> = T <sub>J</sub> maximum			0.27	mΩ
High level value of forward slope resistance	r <sub>f2</sub>	(I > π × I <sub>F(AV)</sub> ), T <sub>J</sub> = T <sub>J</sub> maximum			0.25	
Maximum forward voltage drop	V <sub>FM</sub>	I <sub>pk</sub> = 3000 A T <sub>J</sub> = T <sub>J</sub> maximum, t <sub>p</sub> = 10 ms sinusoidal wave			1.64	V

THERMAL AND MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS			VALUES UNITS
Maximum junction operating temperature range	$T_J$				-40 to 180
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
		DC operation double side cooled			0.031
Mounting force, $\pm 10$ %					14 700 (1500) N (kg)
Approximate weight					255 g
Case style		See dimensions - link at the end of datasheet			B-PUK (DO-200AB)

$\Delta R_{thJ-hs}$ 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°	0.035	0.035	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

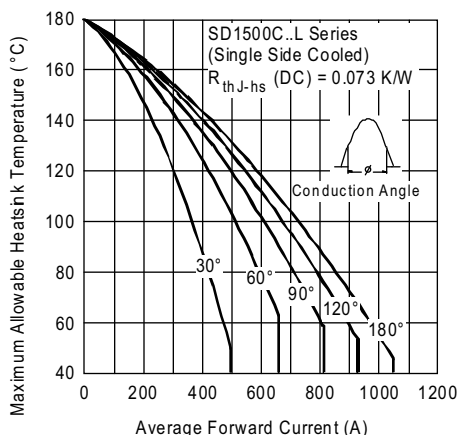


Fig. 1 - Current Ratings Characteristics

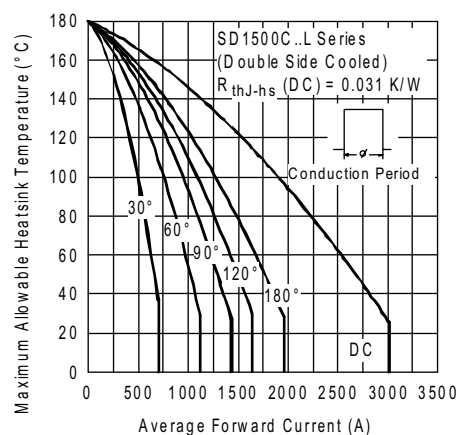


Fig. 4 - Current Ratings Characteristics

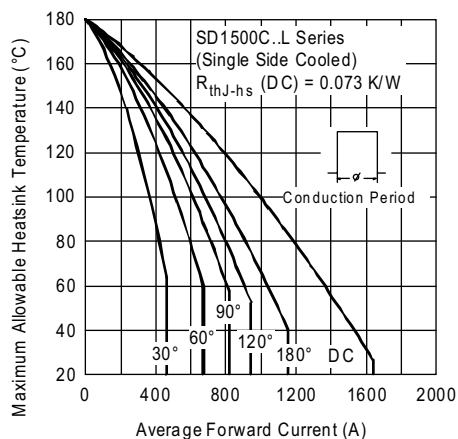


Fig. 2 - Current Ratings Characteristics

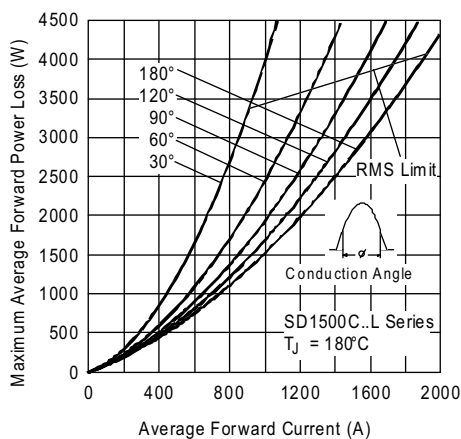


Fig. 5 - Forward Power Loss Characteristics

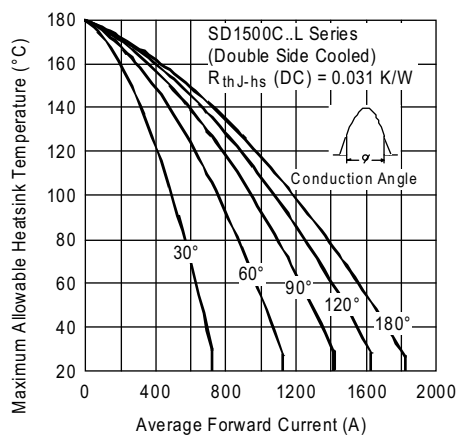


Fig. 3 - Current Ratings Characteristics

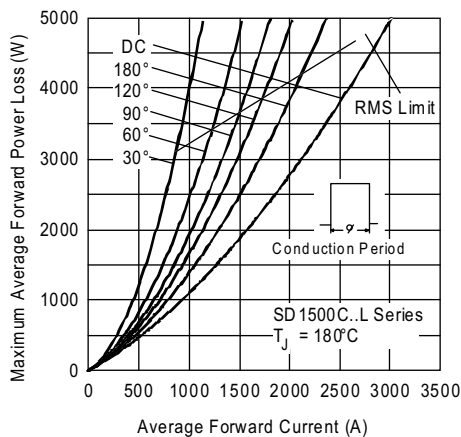


Fig. 6 - Forward Power Loss Characteristics

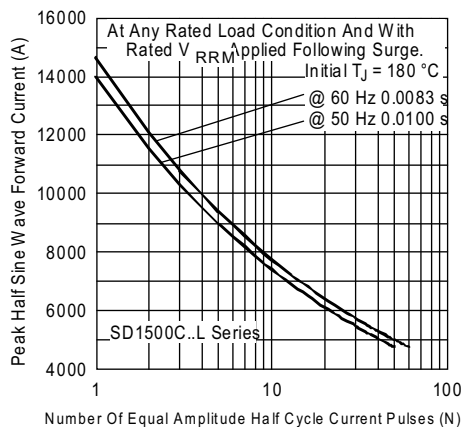


Fig. 7 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

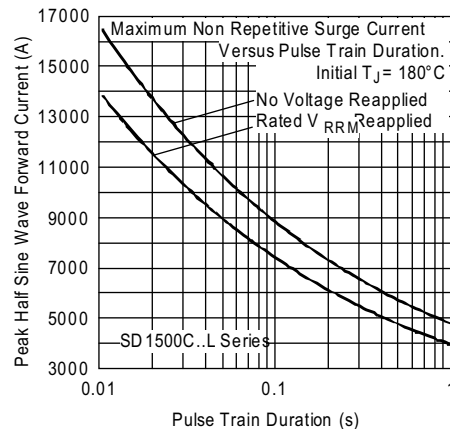


Fig. 8 - Maximum Non-Repetitive Surge Current Single and Double Side Cooled

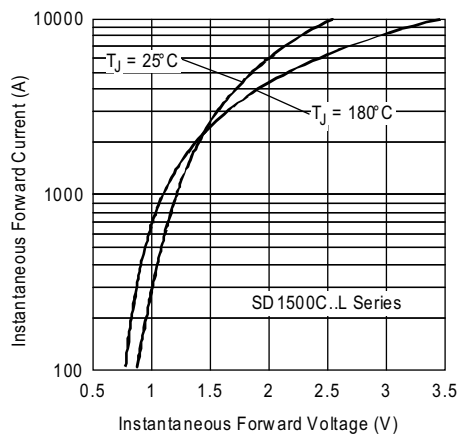


Fig. 9 - Forward Voltage Drop Characteristics

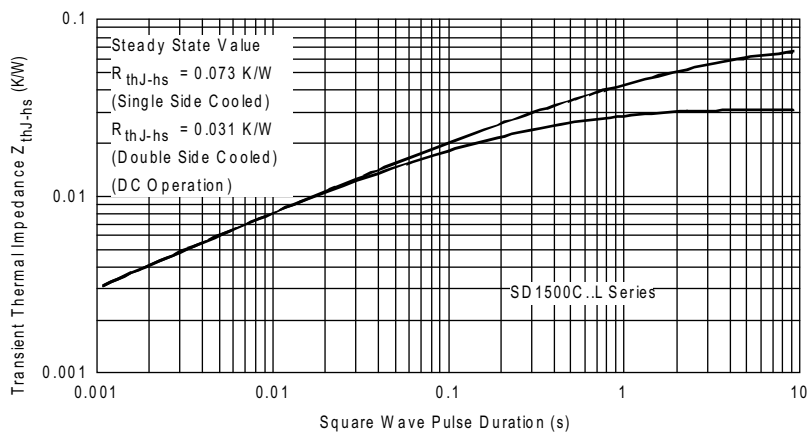


Fig. 10 - Thermal Impedance  $Z_{thJC}$  Characteristics



## ORDERING INFORMATION TABLE

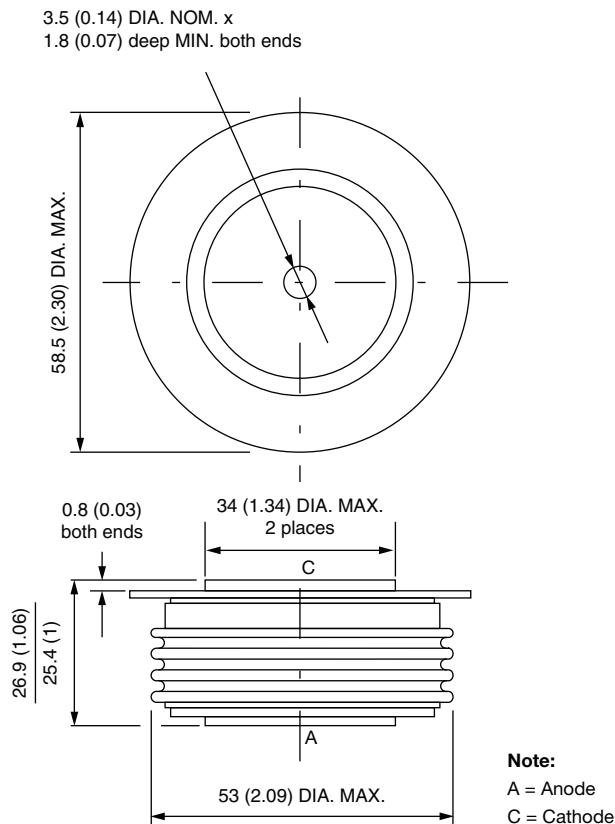
Device code	VS-	SD	150	0	C	30	L
	①	②	③	④	⑤	⑥	⑦
①	- Vishay Semiconductors product						
②	- Diode						
③	- Essential part number						
④	- 0 = standard recovery						
⑤	- C = ceramic PUK						
⑥	- Voltage code x 100 = $V_{RRM}$ (see Voltage Ratings table)						
⑦	- L = PUK case B-PUK (DO-200AB)						

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95246">www.vishay.com/doc?95246</a>



## 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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