Standard Recovery Diodes (Hockey PUK Version), 1600 A

DO-200AB (B-PUK)

FEATURES

- Wide current range
- High voltage ratings up to 3000 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

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

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^2s
	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	

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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			1600 (820)	A
					55 (85)	°C
Maximum RMS forward current	$I_{F(RMS)}$	25 °C heatsink temperature double side cooled			3010	A
Maximum peak, one cycle, non-repetitive surge current	I_{FSM}	t = 10 ms	No voltage reapplied	Sinusoidal half wave, initial $T_J = T_J$ maximum	16 600	A
		t = 8.3 ms			17 400	
		t = 10 ms	100 % V_{RRM} reapplied		14 000	
		t = 8.3 ms			14 700	
Maximum I^2t for fusing	I^2t	t = 10 ms	No voltage reapplied		1386	kA^2s
		t = 8.3 ms			1265	
		t = 10 ms	100 % V_{RRM} reapplied		980	
		t = 8.3 ms			895	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied			13 860	$kA^2\sqrt{s}$
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			0.83	V
High level value of threshold voltage	$V_{F(TO)2}$	(I > π x $I_{F(AV)}$), $T_J = T_J$ maximum			0.95	
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			0.27	mΩ
High level value of forward slope resistance	r_{f2}	(I > π x $I_{F(AV)}$), $T_J = T_J$ maximum			0.25	
Maximum forward voltage drop	V_{FM}	I_{pk} = 3000 A $T_J = T_J$ maximum, t_p = 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	°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	DO-200AB (B-PUK)	

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°	0.035	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

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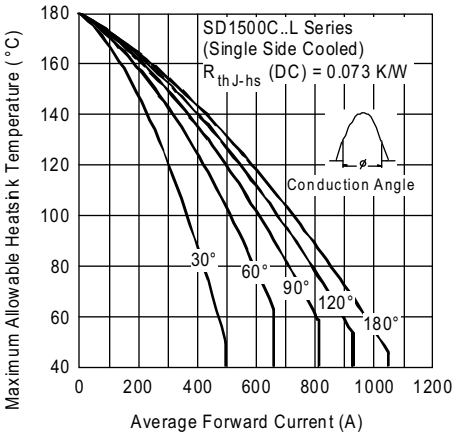

Fig. 1 - Current Ratings Characteristics

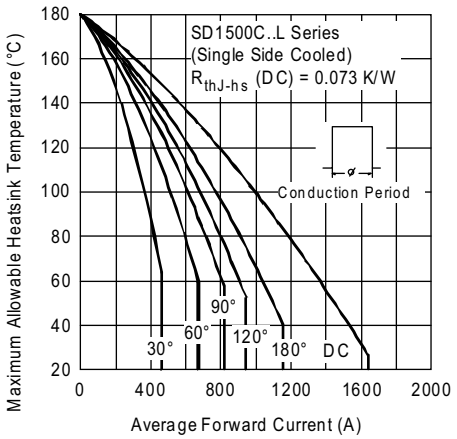

Fig. 2 - Current Ratings Characteristics

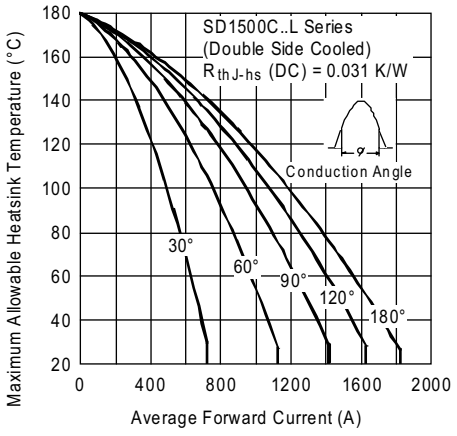

Fig. 3 - Current Ratings Characteristics

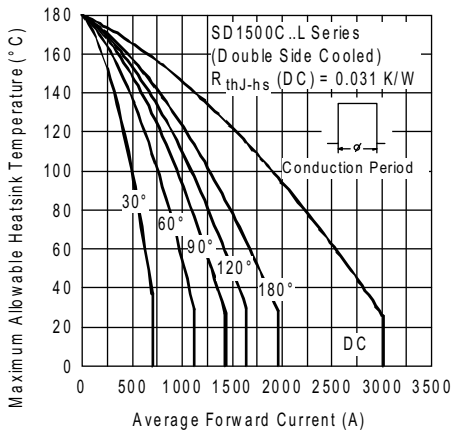

Fig. 4 - Current Ratings Characteristics

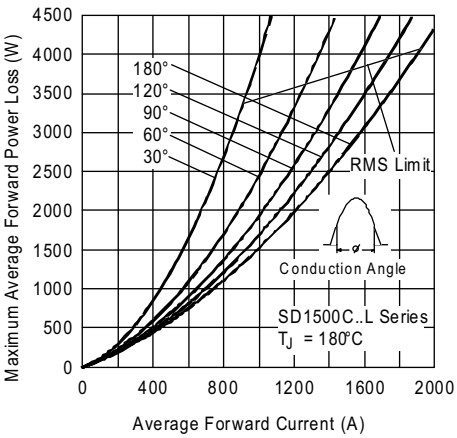

Fig. 5 - Forward Power Loss Characteristics

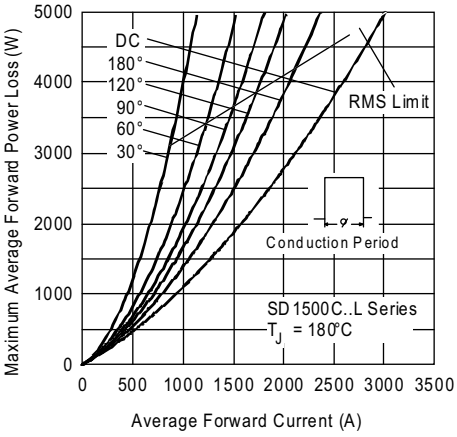

Fig. 6 - Forward Power Loss Characteristics

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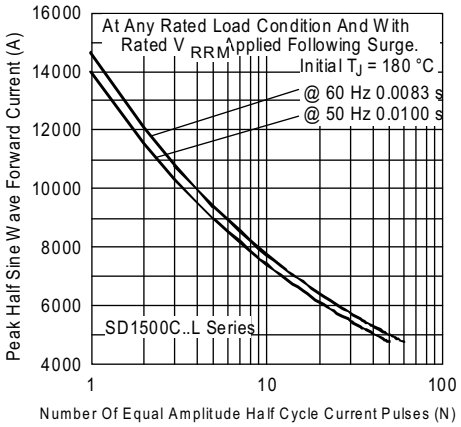

Fig. 7 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

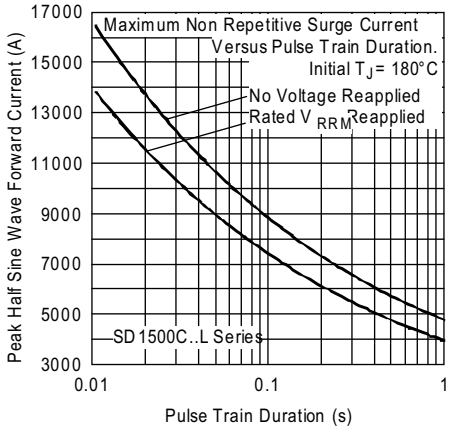

Fig. 8 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

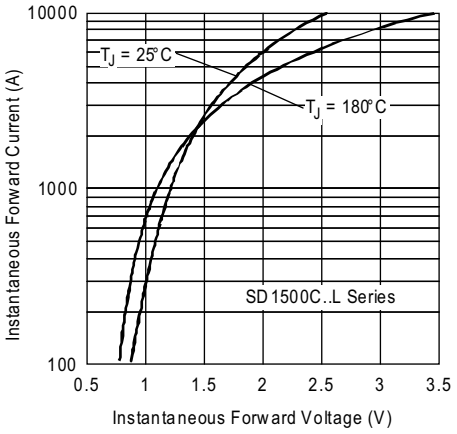

Fig. 9 - Forward Voltage Drop Characteristics

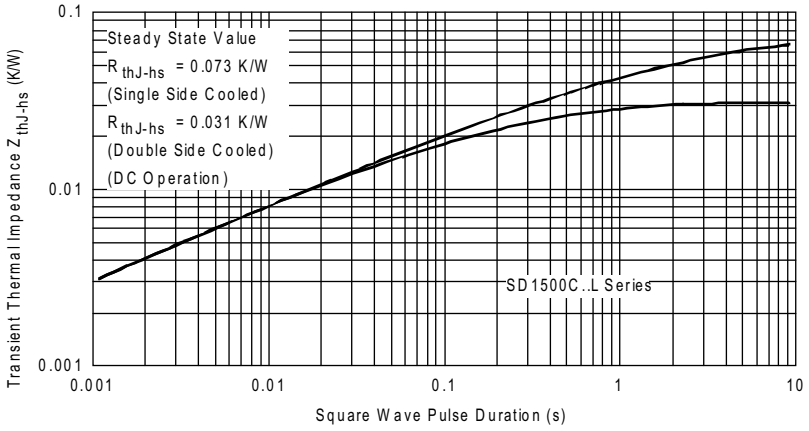

Fig. 10 - Thermal Impedance Z_{thJC} Characteristics

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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 DO-200AB (B-PUK)

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

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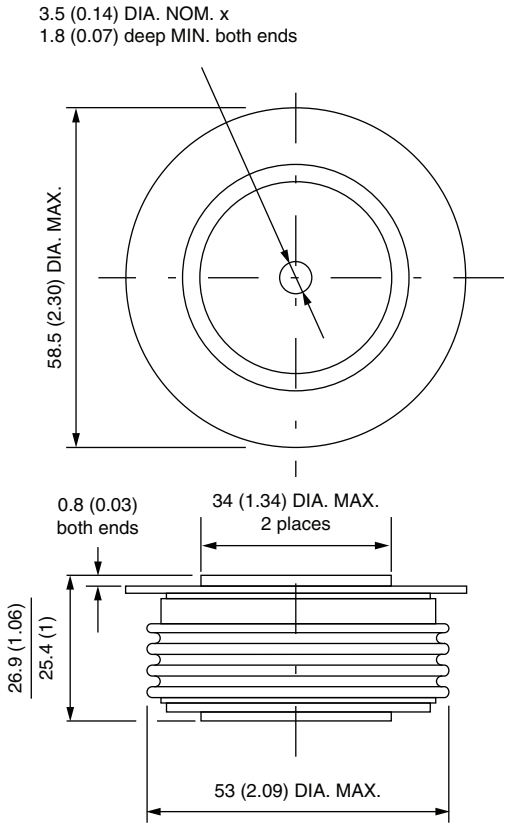
DO-200AB (B-PUK)

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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