

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



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 ² s
	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	

**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) 55 (85)	A °C
Maximum RMS forward current	$I_{F(RMS)}$	25 °C heatsink temperature double side cooled	1310	
Maximum peak, one-cycle forward, non-repetitive surge current	I_{FSM}	<div> <div> $t = 10\text{ ms}$ $t = 8.3\text{ ms}$ </div> <div> No voltage reappplied 100 % V_{RRM} reappplied </div> </div>	<div> 7500 7850 6310 6600 </div>	A
Maximum I^2t for fusing	I^2t	<div> <div> $t = 10\text{ ms}$ $t = 8.3\text{ ms}$ </div> <div> No voltage reappplied 100 % V_{RRM} reappplied </div> </div>	<div> 281 257 199 182 </div>	kA^2s
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	$t = 0.1$ to 10 ms, no voltage reappplied	2810	$kA^2\sqrt{s}$
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	0.88	V
High level value of threshold voltage	$V_{F(TO)2}$	$(I > \pi \times I_{F(AV)})$, $T_J = T_J$ maximum	0.99	
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	0.78	$m\Omega$
High level value of forward slope resistance	r_{f2}	$(I > \pi \times I_{F(AV)})$, $T_J = T_J$ maximum	0.73	
Maximum forward voltage drop	V_{FM}	$I_{pk} = 1000\text{ A}$, $T_J = T_J$ maximum, $t_p = 10\text{ ms}$ 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 DC operation double side cooled	0.11 0.05	K/W
Mounting force, $\pm 10\%$			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

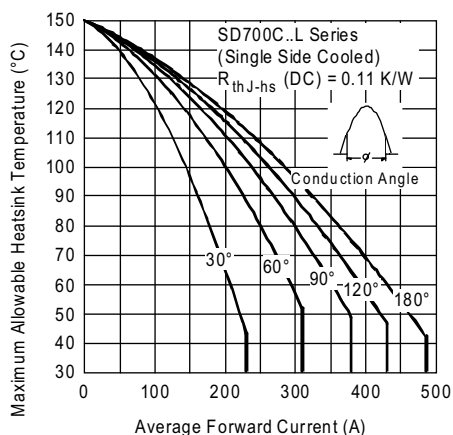


Fig. 1 - Current Ratings Characteristics

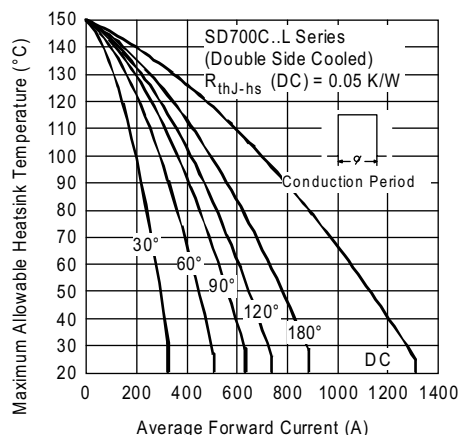


Fig. 4 - Current Ratings Characteristics

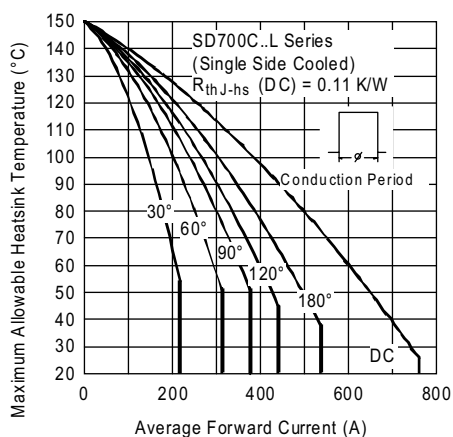


Fig. 2 - Current Ratings Characteristics

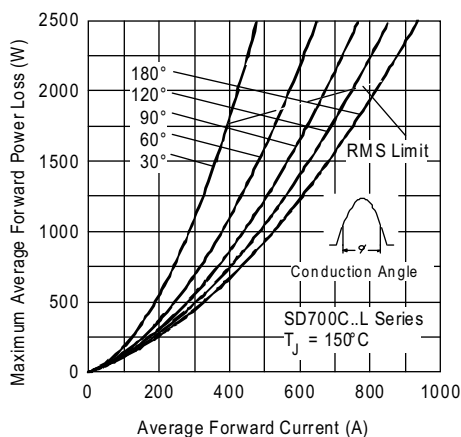


Fig. 5 - Forward Power Loss Characteristics

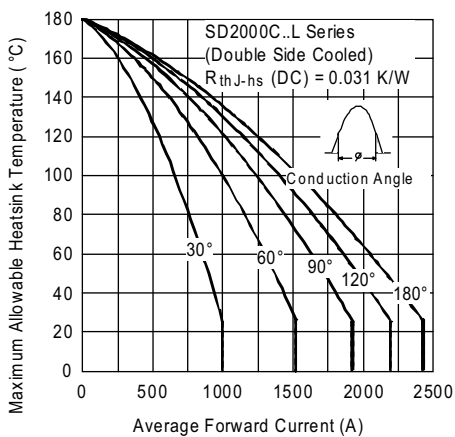


Fig. 3 - Current Ratings Characteristics

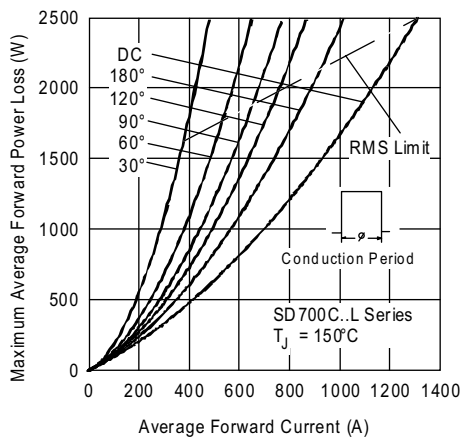


Fig. 6 - Forward Power Loss Characteristics

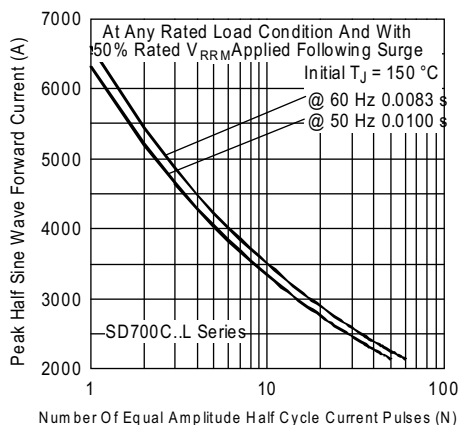


Fig. 7 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

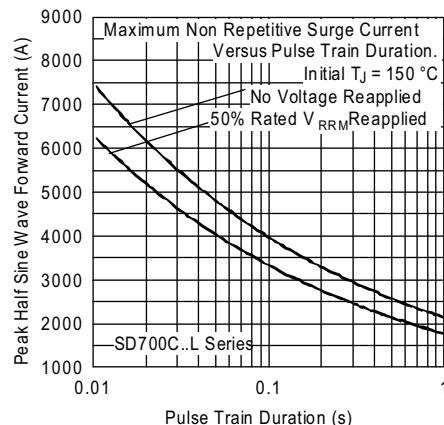


Fig. 8 - Maximum Non-Repetitive Surge Current
Single and Double Side Cooled

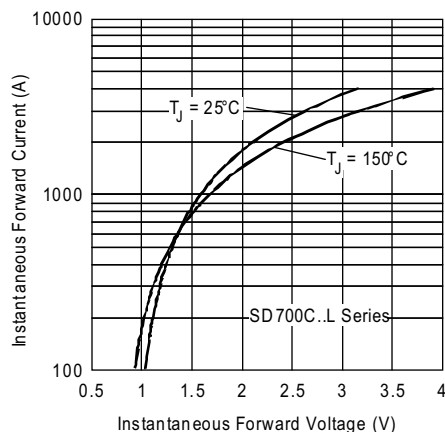


Fig. 9 - Forward Voltage Drop Characteristics

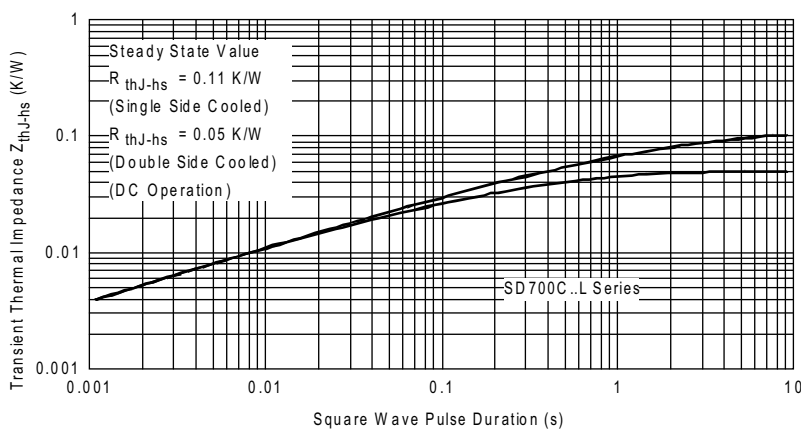


Fig. 10 - Thermal Impedance Z_{thJ-hs} Characteristics



ORDERING INFORMATION TABLE

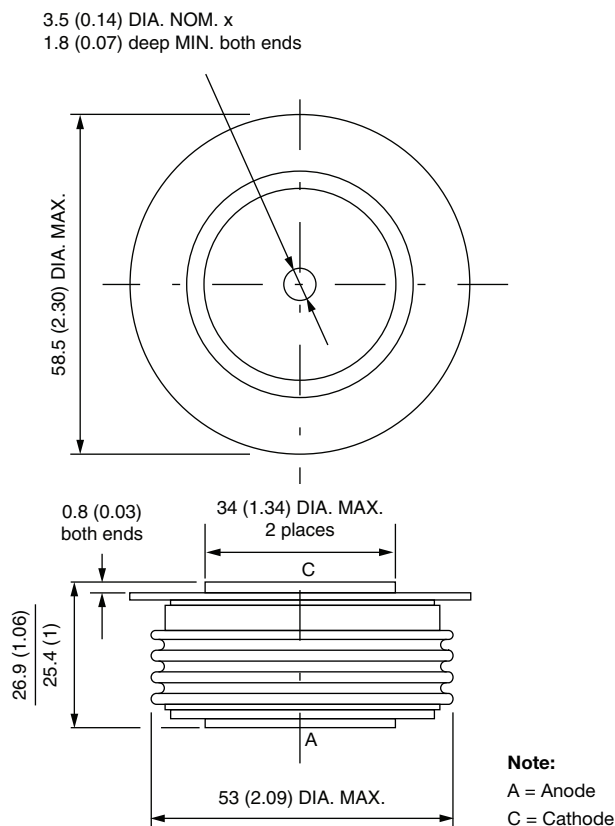
Device code	VS-	SD	70	0	C	45	L
	1	2	3	4	5	6	7
1	- Vishay Semiconductors product						
2	- Diode						
3	- Essential part number						
4	- 0 = standard recovery						
5	- C = ceramic PUK						
6	- Voltage code x 100 = V_{RRM} (see Voltage Ratings table)						
7	- L = PUK case B-PUK (DO-200AB)						

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



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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