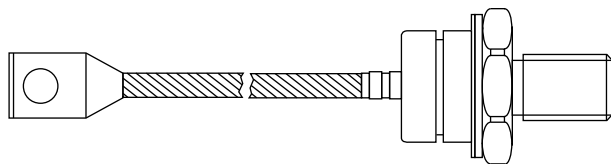


## Standard Recovery Diodes (Stud Version), 200 A


**DO-205AC (DO-30)**

### FEATURES

- Wide current range
- High voltage ratings up to 2400 V
- High surge current capabilities
- Stud cathode and stud anode version
- Standard JEDEC® types
- Compression bonded encapsulations
- Designed and qualified for industrial level
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS  
COMPLIANT**

### PRODUCT SUMMARY

$I_{F(AV)}$	200 A
Package	DO-205AC (DO-30)
Circuit configuration	Single diode

### TYPICAL APPLICATIONS

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

### MAJOR RATINGS AND CHARACTERISTICS

PARAMETER	TEST CONDITIONS	VS-SD200N/R		UNITS
		1600 to 2000	2400	
I <sub>F(AV)</sub>		200		A
	T <sub>C</sub>	110		°C
I <sub>F(RMS)</sub>		314		A
I <sub>FSM</sub>	50 Hz	4700		
	60 Hz	4920		
I <sup>2</sup> <sub>t</sub>	50 Hz	110		kA <sup>2</sup> s
	60 Hz	101		
V <sub>RRM</sub>	Range	1600 to 2000	2400	V
T <sub>J</sub>		-40 to 180	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-SD200N/R	16	1600	1700	15
	20	2000	2100	
	24	2400	2500	



FORWARD CONDUCTION							
PARAMETER	SYMBOL	TEST CONDITIONS			VALUES	UNITS	
Maximum average forward current at case temperature	$I_{F(AV)}$	180° conduction, half sine wave			200	A	
					110	°C	
Maximum average forward current at case temperature					220	A	
					100	°C	
Maximum RMS forward current	$I_{F(RMS)}$	DC at 95 °C case temperature			314		
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	4700	A	
		t = 8.3 ms			4920		
		t = 10 ms	100 % $V_{RRM}$ reapplied		3950		
		t = 8.3 ms			4140		
Maximum $I^2t$ for fusing	$I^2t$	t = 10 ms	No voltage reapplied			110	kA <sup>2</sup> s
		t = 8.3 ms				101	
		t = 10 ms	100 % $V_{RRM}$ reapplied			78	
		t = 8.3 ms				71	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied			1100	kA <sup>2</sup> √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			0.90	V	
High level value of threshold voltage	$V_{F(TO)2}$	$(I > \pi \times I_{F(AV)})$ , $T_J = T_J$ maximum			1.00		
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			0.79	mΩ	
High level value of forward slope resistance	$r_{f2}$	$(I > \pi \times I_{F(AV)})$ , $T_J = T_J$ maximum			0.64		
Maximum forward voltage drop	$V_{FM}$	$I_{pk} = 630$ A, $T_J = T_J$ maximum, $t_p = 10$ ms sinusoidal wave			1.40	V	

THERMAL AND MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS	SD200N/R		UNITS
			1600 to 2000	2400	
Maximum junction operating temperature range	T <sub>J</sub>		-40 to 180	-40 to 150	°C
Maximum storage temperature range	T <sub>Stg</sub>		- 55 to 200		
Maximum thermal resistance, junction to case	R <sub>thJC</sub>	DC operation	0.23		K/W
Maximum thermal resistance, case to heatsink	R <sub>thCS</sub>	Mounting surface, smooth, flat and greased	0.08		
Maximum allowed mounting torque ± 10 %		Not-lubricated threads	14		Nm
Approximate weight			120		g
Case style		See dimensions (link at the end of datasheet)	DO-205AC (DO-30)		



$\Delta R_{thJC}$ CONDUCTION				
CONDUCTION ANGLE	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDITIONS	UNITS
180°	0.041	0.030	$T_J = T_J$ maximum	K/W
120°	0.049	0.051		
90°	0.063	0.068		
60°	0.093	0.096		
30°	0.156	0.157		

## Note

- The table above shows the increment of thermal resistance  $R_{thJC}$  when devices operate at different conduction angles than DC

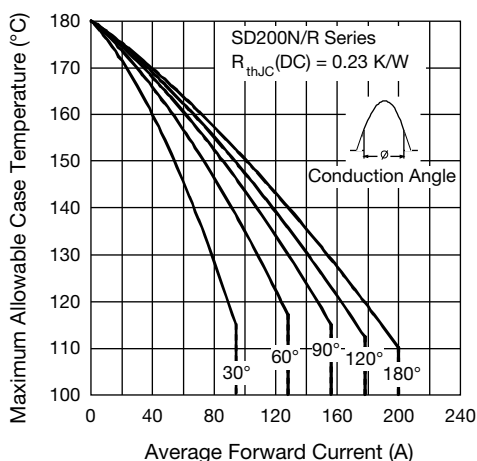


Fig. 1 - Current Ratings Characteristics

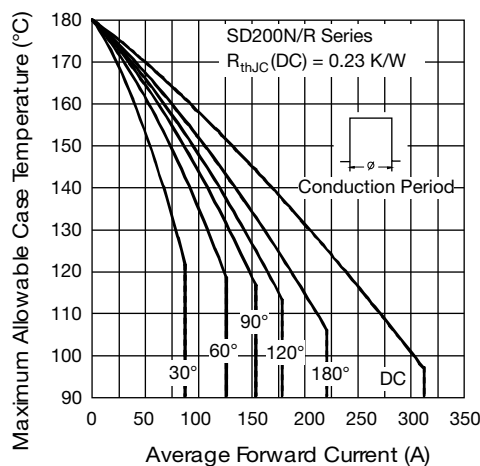


Fig. 2 - Current Ratings Characteristics

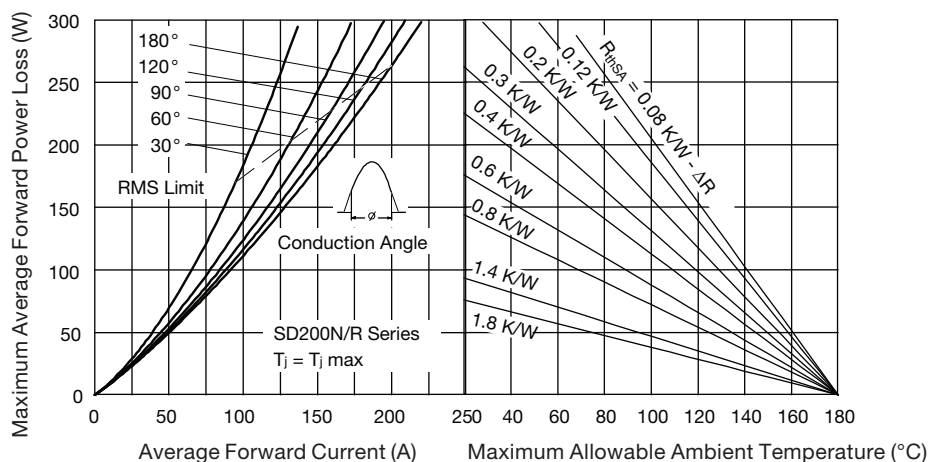


Fig. 3 - Forward Power Loss Characteristics

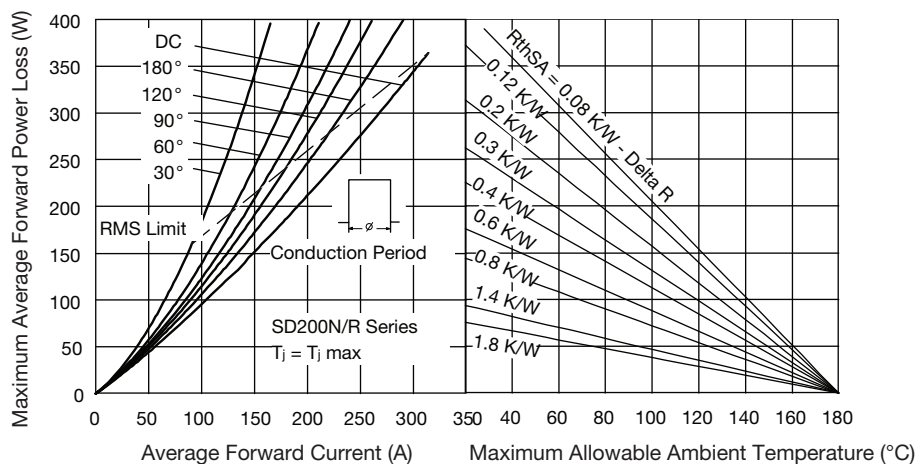


Fig. 4 - Forward Power Loss Characteristics

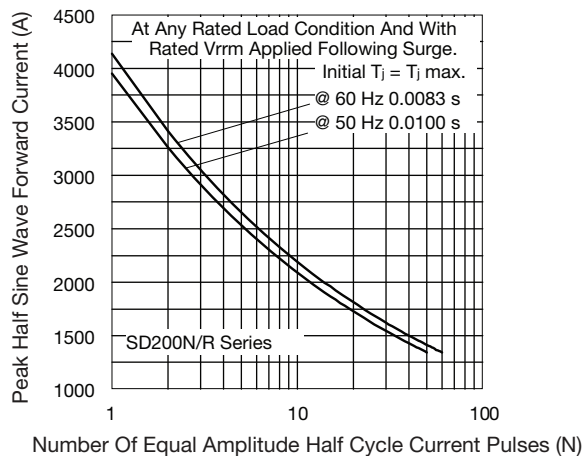


Fig. 5 - Maximum Non-Repetitive Surge Current

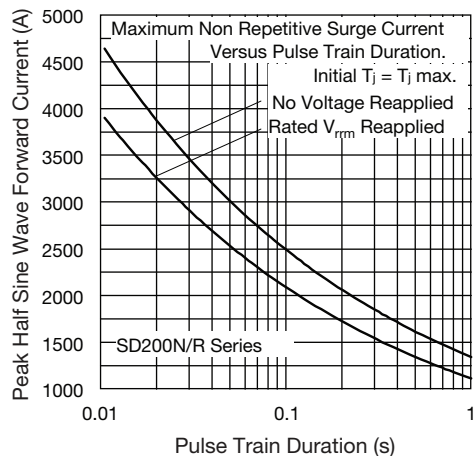


Fig. 6 - Maximum Non-Repetitive Surge Current

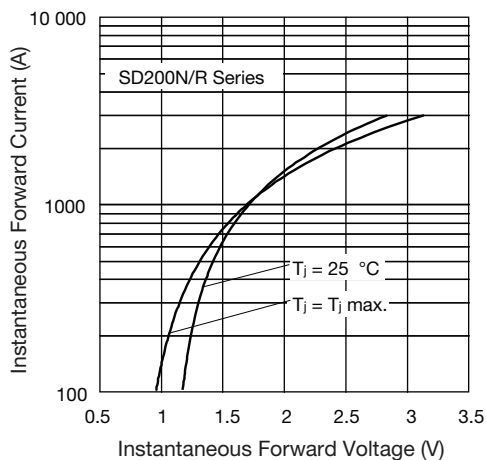
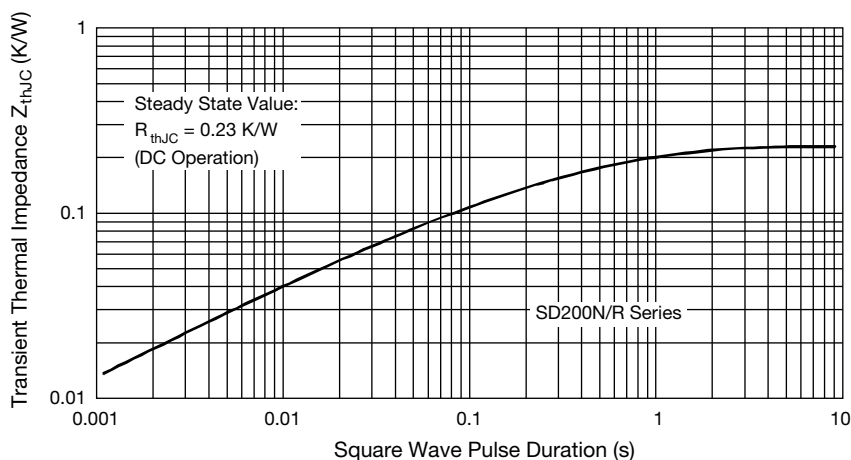


Fig. 7 - Forward Voltage Drop Characteristics


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristic

**ORDERING INFORMATION TABLE**

Device code	<b>VS-</b>	<b>SD</b>	<b>20</b>	<b>0</b>	<b>N</b>	<b>24</b>	<b>P</b>	<b>C</b>
	①	②	③	④	⑤	⑥	⑦	⑧

- 1** - Vishay Semiconductors product
- 2** - Diode
- 3** - Essential part number
- 4** - 0 = Standard recovery
- 5** -
  - N = Stud normal polarity (cathode to stud)
  - R = Stud reverse polarity (anode to stud)
- 6** - Voltage code x 100 =  $V_{RRM}$  (see Voltage Ratings table)
- 7** -
  - P = Stud base DO-205AC (DO-30) 1/2" 20UNF-2A
  - M = Stud base DO-205AC (DO-30) M12 x 1.75
- 8** - C = Ceramic housing

For metric device M12 x 1.75 contact factory

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95302">www.vishay.com/doc?95302</a>

**DIMENSIONS** in millimeters (inches)





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