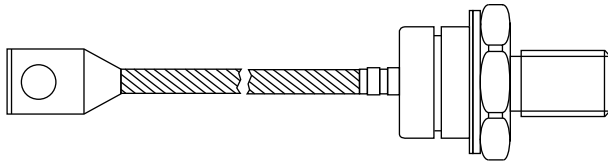




# Standard Recovery Diodes, (Stud Version), 200 A



DO-30 (DO-205AC)

### 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)



### TYPICAL APPLICATIONS

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

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

MAJOR RATINGS AND CHARACTERISTICS				
PARAMETER	TEST CONDITIONS	VS-SD200N/R		UNITS
		1600 to 2000	2400	
$I_{F(AV)}$		200	200	A
	$T_C$	110	110	°C
$I_{F(RMS)}$		314	314	A
$I_{FSM}$	50 Hz	4700	4700	
	60 Hz	4920	4920	
$I^2t$	50 Hz	110	110	kA <sup>2</sup> s
	60 Hz	101	101	
$V_{RRM}$	Range	1600 to 2000	2400	V
$T_J$		-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	$I_{F(AV)}$	180° conduction, half sine wave		220	A
				100	°C
Maximum RMS forward current	$I_{F(RMS)}$	DC at 95 °C case temperature		314	A
Maximum peak, one-cycle forward, non-repetitive surge current	$I_{FSM}$	t = 10 ms	No voltage reapplied	4700	
		t = 8.3 ms	No voltage reapplied	4920	
		t = 10 ms	100 % $V_{RRM}$ reapplied	3950	
		t = 8.3 ms	100 % $V_{RRM}$ reapplied	4140	
Maximum $I^2t$ for fusing	$I^2t$	t = 10 ms	No voltage reapplied	110	kA <sup>2</sup> s
		t = 8.3 ms	No voltage reapplied	101	
		t = 10 ms	100 % $V_{RRM}$ reapplied	78	
		t = 8.3 ms	100 % $V_{RRM}$ reapplied	71	
Maximum $I^2\dot{O}t$ for fusing	$I^2\dot{O}t$	t = 0.1 to 10 ms, no voltage reapplied		1100	kA <sup>2</sup> Ös
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	mW
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	$T_J$		-40 to 180	-40 to 150	°C
Maximum storage temperature range	$T_{Stg}$		-55 to 200		
Maximum thermal resistance, junction to case	$R_{thJC}$	DC operation	0.23		K/W
Maximum thermal resistance, case to heatsink	$R_{thCS}$	Mounting surface, smooth, flat and greased	0.08		
Maximum allowed mounting torque $\pm 10$ %		Not-lubricated threads	14		Nm
Approximate weight			120		g
Case style		See dimensions (link at the end of datasheet)	DO-30 (DO-205AC)		

$\Delta R_{thJC}$ 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

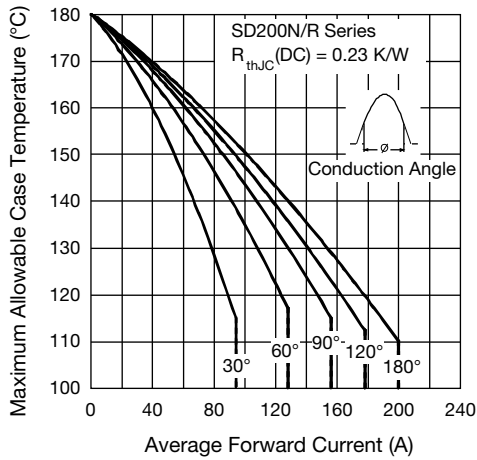


Fig. 1 - Current Ratings Characteristics

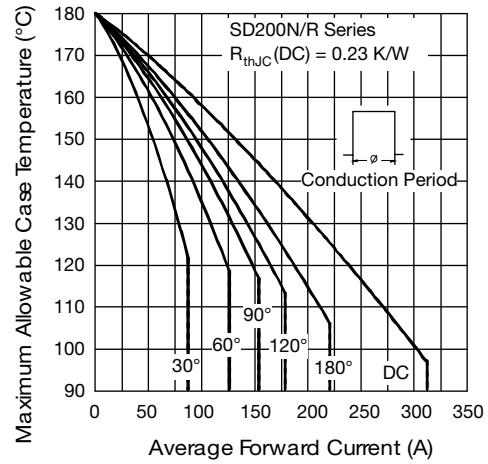


Fig. 2 - Current Ratings Characteristics

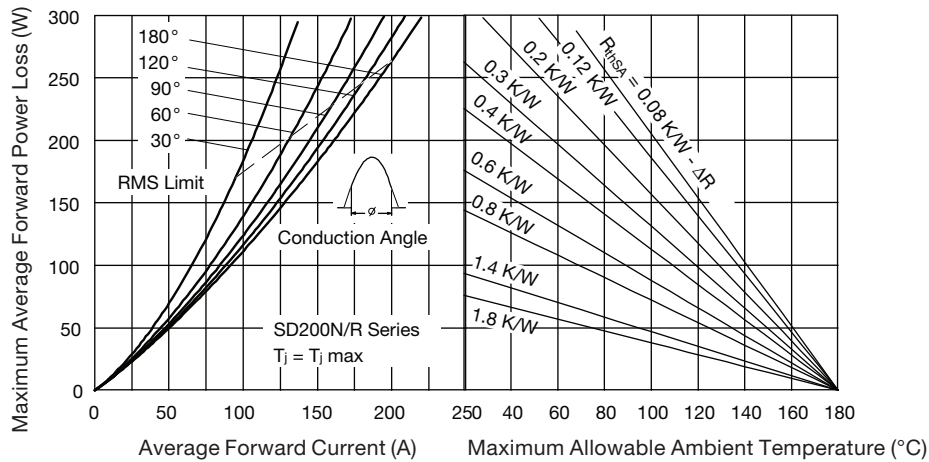


Fig. 3 - Forward Power Loss Characteristics

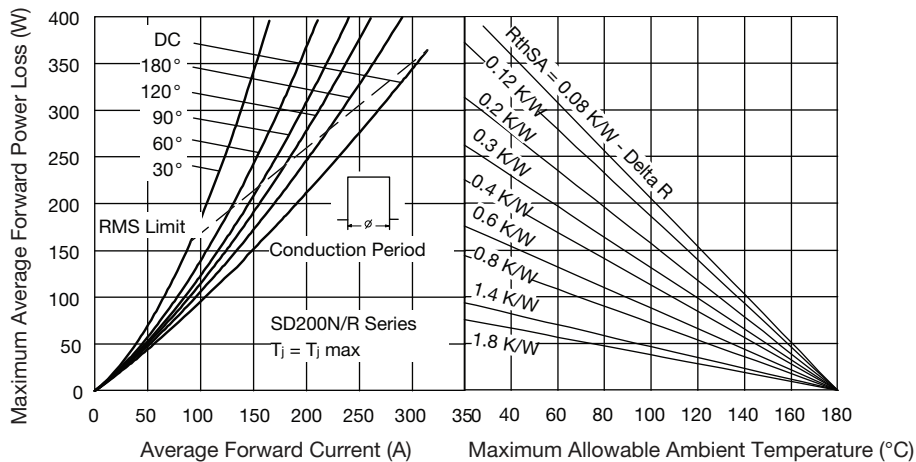


Fig. 4 - Forward Power Loss Characteristics

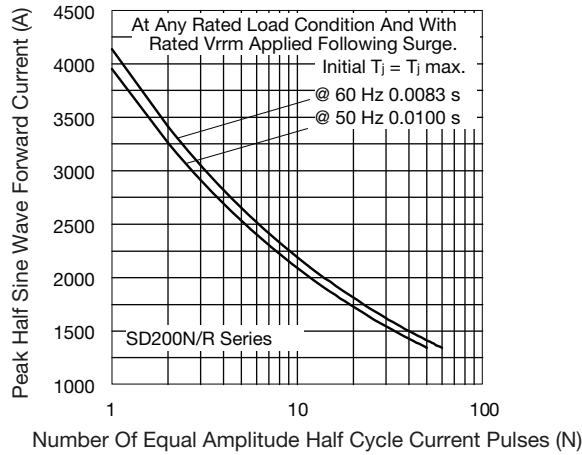


Fig. 5 - Maximum Non-Repetitive Surge Current

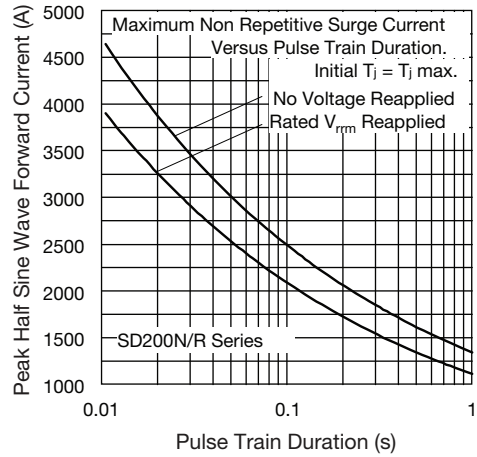


Fig. 6 - Maximum Non-Repetitive Surge Current

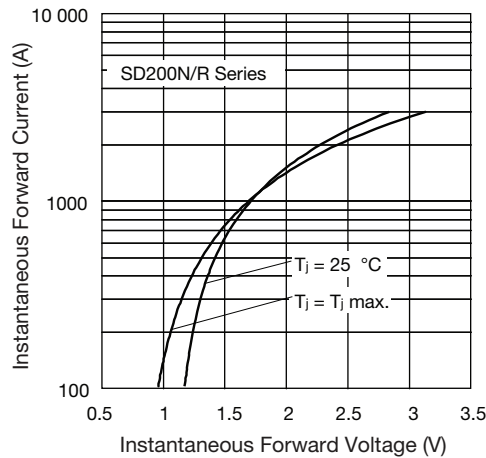


Fig. 7 - Forward Voltage Drop Characteristics

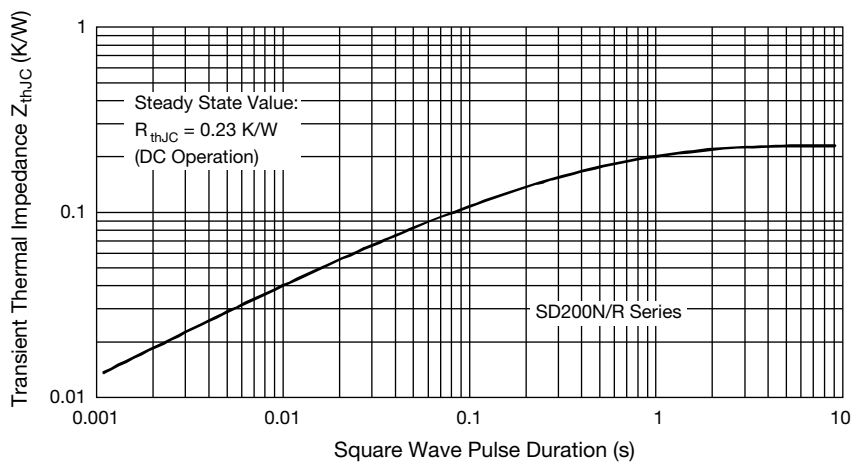


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristic



## 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

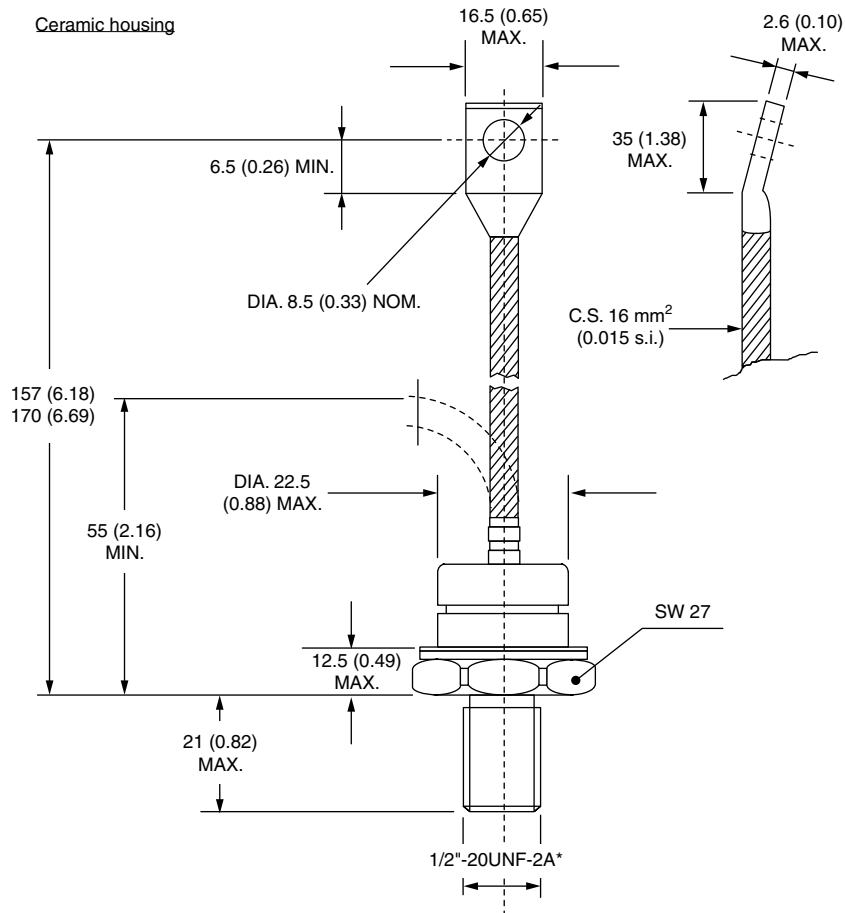
- 1** - Vishay Semiconductors product
- 2** - Diode
- 3** - Essential part number
- 4** - 0 = standard recovery
- 5** -
  - N = stud normal polarity (cathode to stud)
  - R = stud reverse polarity (anode to stud)
- 6** - Voltage code x 100 =  $V_{RRM}$  (see Voltage Ratings table)
- 7** -
  - P = stud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

## DO-205AC (DO-30)

**DIMENSIONS** in millimeters (inches)



\*For metric device: M12 x 1.75  
contact factory



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