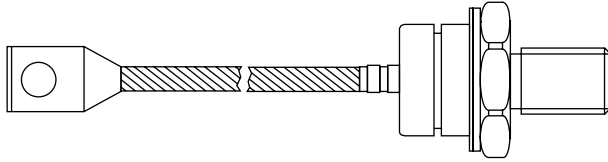


## Standard Recovery Diodes (Stud Version), 200 A


**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
- RoHS compliant
- Lead (Pb)-free
- Designed and qualified for industrial level


**RoHS  
COMPLIANT**
**PRODUCT SUMMARY**

$I_{F(AV)}$	200 A
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**TYPICAL APPLICATIONS**

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

**MAJOR RATINGS AND CHARACTERISTICS**

PARAMETER	TEST CONDITIONS	SD200N/R		UNITS
		1600 to 2000	2400	
$I_{F(AV)}$		200		A
	$T_C$	110		°C
$I_{F(RMS)}$		314		A
$I_{FSM}$	50 Hz	4700		
	60 Hz	4920		
$I^2t$	50 Hz	110		kA <sup>2</sup> s
	60 Hz	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
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			
Maximum average forward current at case temperature				110	°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	Sinusoidal half wave, initial $T_J = T_J$ maximum	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	100 % $V_{RRM}$ reapplied	101				
		t = 10 ms		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	$T_J$		- 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-205AC (DO-30)		



$\Delta R_{thJC}$ CONDUCTION				
CONDUCTION ANGLE	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDITIONS	UNITS
180°	0.041	0.030	T <sub>J</sub> = T <sub>J</sub> 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<sub>thJC</sub> when devices operate at different conduction angles than DC

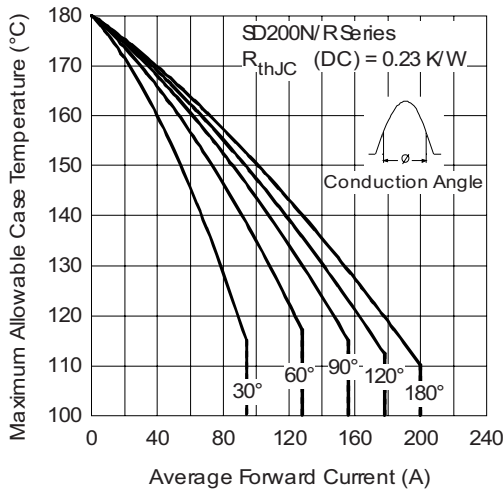


Fig. 1 - Current Ratings Characteristics

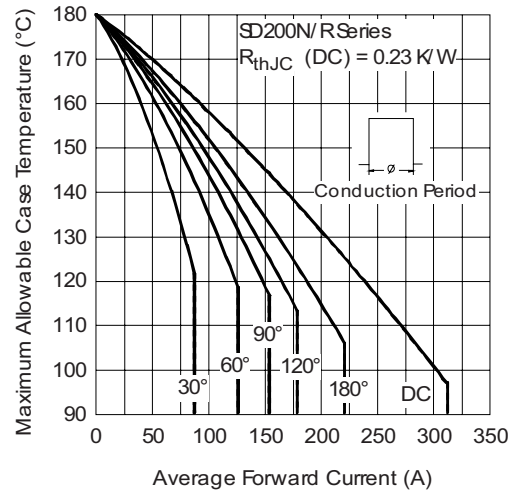


Fig. 2 - Current Ratings Characteristics

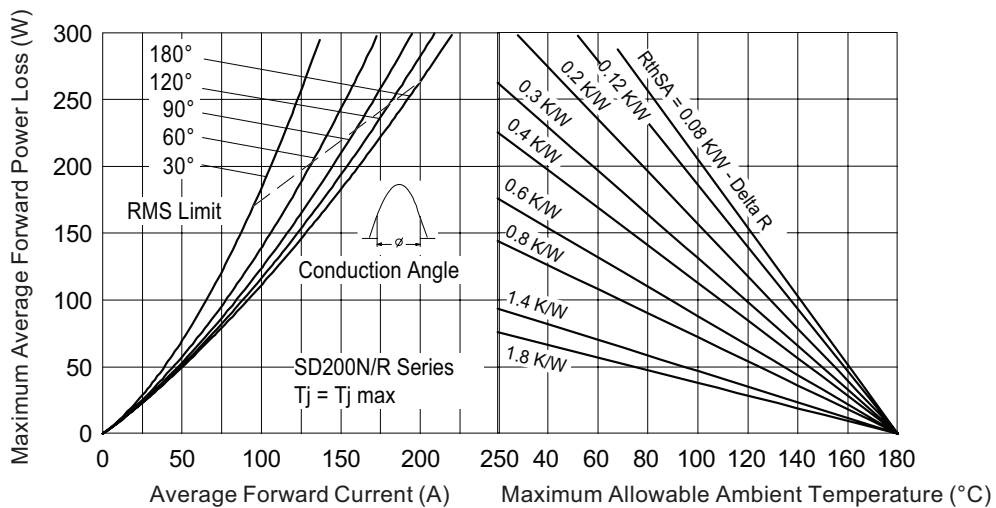


Fig. 3 - Forward Power Loss Characteristics

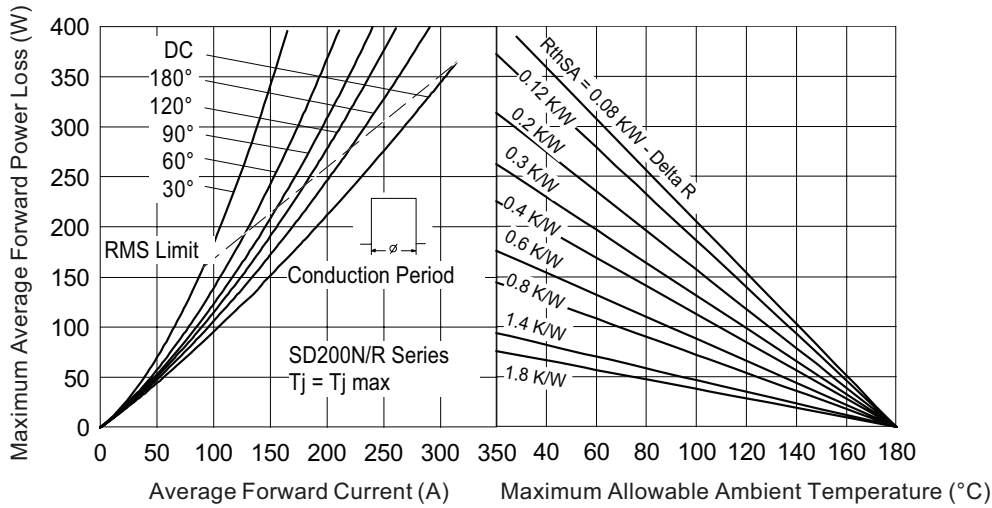


Fig. 4 - Forward Power Loss Characteristics

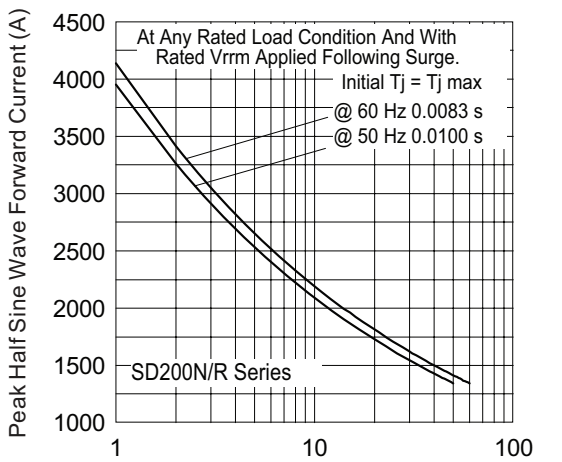


Fig. 5 - Maximum Non-Repetitive Surge Current

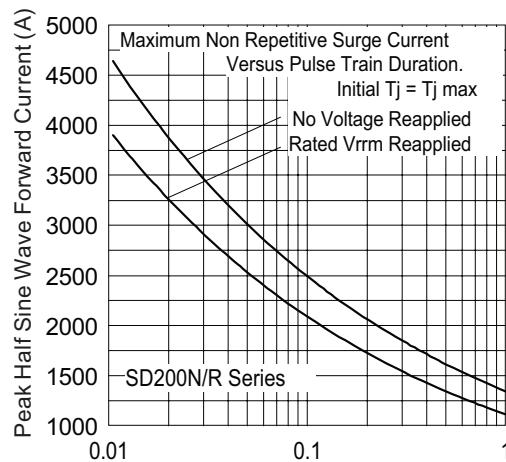


Fig. 6 - Maximum Non-Repetitive Surge Current

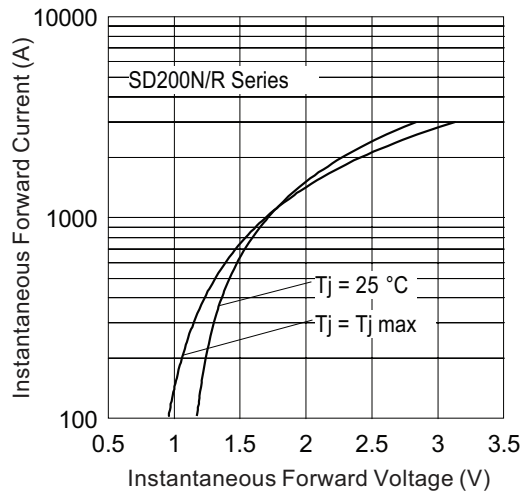


Fig. 7 - Forward Voltage Drop Characteristics

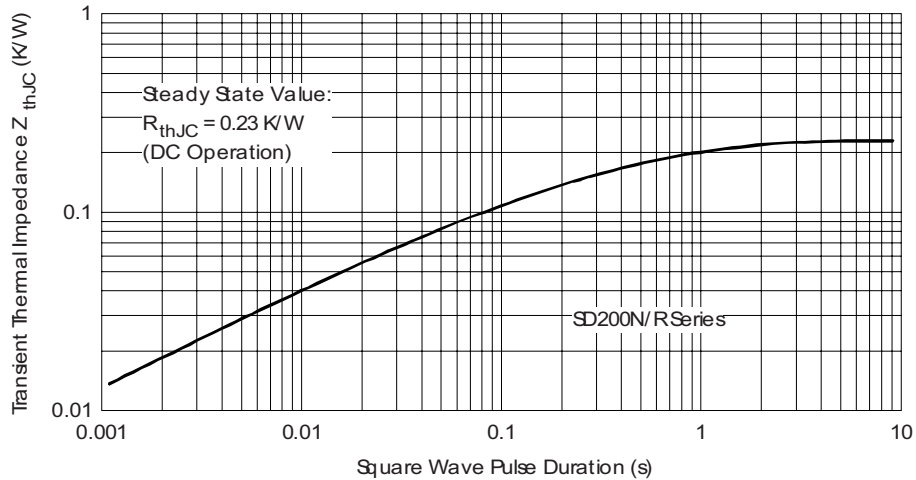


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristic

### ORDERING INFORMATION TABLE

Device code	<b>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

- 1** - Diode
- 2** - Essential part number
- 3** - 0 = Standard recovery
- 4** -
  - N = Stud normal polarity (cathode to stud)
  - R = Stud reverse polarity (anode to stud)
- 5** - Voltage code x 100 =  $V_{RRM}$  (see Voltage Ratings table)
- 6** -
  - P = Stud base DO-205AC (DO-30) 1/2" 20UNF-2A
  - M = Stud base DO-205AC (DO-30) M12 x 1.75
- 7** - 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">http://www.vishay.com/doc?95302</a>



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