

### STANDARD RECOVERY DIODES

Stud Version

#### Features

- Wide current range
- High voltage ratings up to 2400V
- High surge current capabilities
- Stud cathode and stud anode version
- Standard JEDEC types
- RoHS Compliant

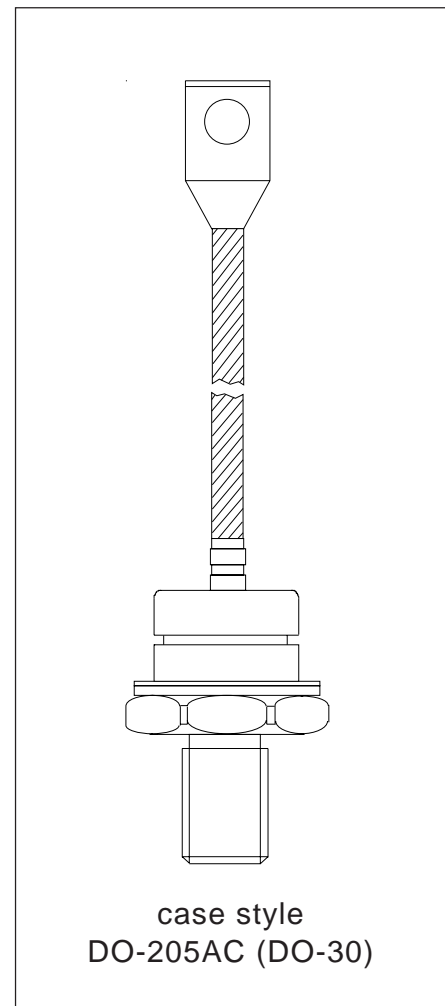
200A

#### Typical Applications

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

#### Major Ratings and Characteristics

Parameters	SD200N/R		Units
	1600 to 2000	2400	
$I_{F(AV)}$	200	200	A
@ $T_C$	110	110	°C
$I_{F(RMS)}$	314	314	A
$I_{FSM}$			
@ 50Hz	4700	4700	A
@ 60Hz	4920	4920	A
$I^2t$			
@ 50Hz	110	110	KA <sup>2</sup> s
@ 60Hz	101	101	KA <sup>2</sup> s
$V_{RRM}$ 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 rev. voltage V	$I_{RRM}$ max. @ $T_J = T_J$ max. mA
SD200N/R	16	1600	1700	15
	20	2000	2100	
	24	2400	2500	

## Forward Conduction

Parameter	SD200N/R	Units	Conditions
$I_{F(AV)}$ Max. average forward current @ Case temperature	200	A	180° conduction, half sine wave
	110	°C	
$I_{F(AV)}$ Max. average forward current @ Case temperature	220	A	180° conduction, half sine wave
	100	°C	
$I_{F(RMS)}$ Max. RMS forward current	314	A	DC @ 95°C case temperature
$I_{FSM}$ Max. peak, one-cycle forward, non-repetitive surge current	4700	A	t = 10ms No voltage
	4920		t = 8.3ms reapplied
	3950		t = 10ms 100% $V_{RRM}$
	4140		t = 8.3ms reapplied
$I^2t$ Maximum $I^2t$ for fusing	110	KA <sup>2</sup> s	t = 10ms No voltage
	101		t = 8.3ms reapplied
	78		t = 10ms 100% $V_{RRM}$
	71		t = 8.3ms reapplied
$I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing	1100	KA <sup>2</sup> √s	t = 0.1 to 10ms, no voltage reapplied
$V_{F(TO)1}$ Low level value of threshold voltage	0.90	V	(16.7% $\times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}$ ), $T_J = T_J$ max.
$V_{F(TO)2}$ High level value of threshold voltage	1.00		( $I > \pi \times I_{F(AV)}$ ), $T_J = T_J$ max.
$r_{f1}$ Low level value of forward slope resistance	0.79	mΩ	(16.7% $\times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}$ ), $T_J = T_J$ max.
$r_{f2}$ High level value of forward slope resistance	0.64		( $I > \pi \times I_{F(AV)}$ ), $T_J = T_J$ max.
$V_{FM}$ Max. forward voltage drop	1.40	V	$I_{pk} = 630A$ , $T_J = T_J$ max, $t_p = 10ms$ sinusoidal wave

Thermal and Mechanical Specifications

Parameter	SD200N/R		Units	Conditions
	1600 to 2000	2400		
T <sub>J</sub> Max. junction operating temperature range	-40 to 180	-40 to 150	°C	
T <sub>stg</sub> Max. storage temperature range	-55 to 200			
R <sub>thJC</sub> Max. thermal resistance, junction to case	0.23		K/W	DC operation
R <sub>thCS</sub> Max. thermal resistance, case to heatsink	0.08			Mounting surface, smooth, flat and greased
T Max. allowed mounting torque ±10%	14		Nm	Not lubricated threads
wt Approximate weight	120		g	
Case style	DO-205AC(DO-30)		See Outline Table	

$\Delta R_{thJC}$  Conduction

(The following table shows the increment of thermal resistance R<sub>thJC</sub> when devices operate at different conduction angles than DC)

Conduction angle	Sinusoidal conduction	Rectangular conduction	Units	Conditions
180°	0.041	0.030	K/W	T <sub>J</sub> = T <sub>J</sub> max.
120°	0.049	0.051		
90°	0.063	0.068		
60°	0.093	0.096		
30°	0.156	0.157		

Ordering Information Table

**Device Code**

SD	20	0	N	24	P	C
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: Code x 100 = V<sub>RRM</sub> (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

Outline Table

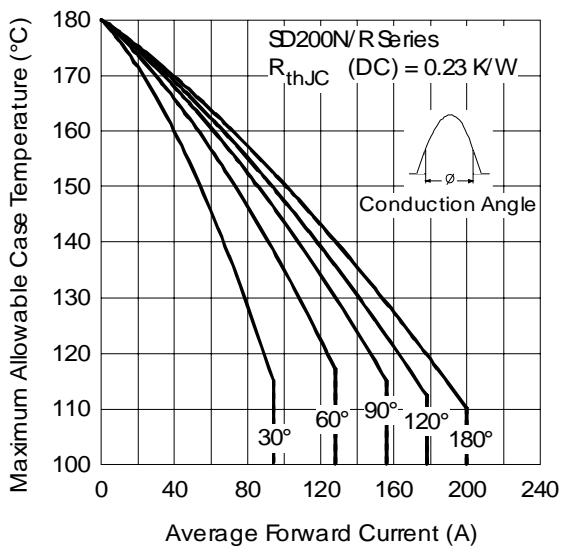
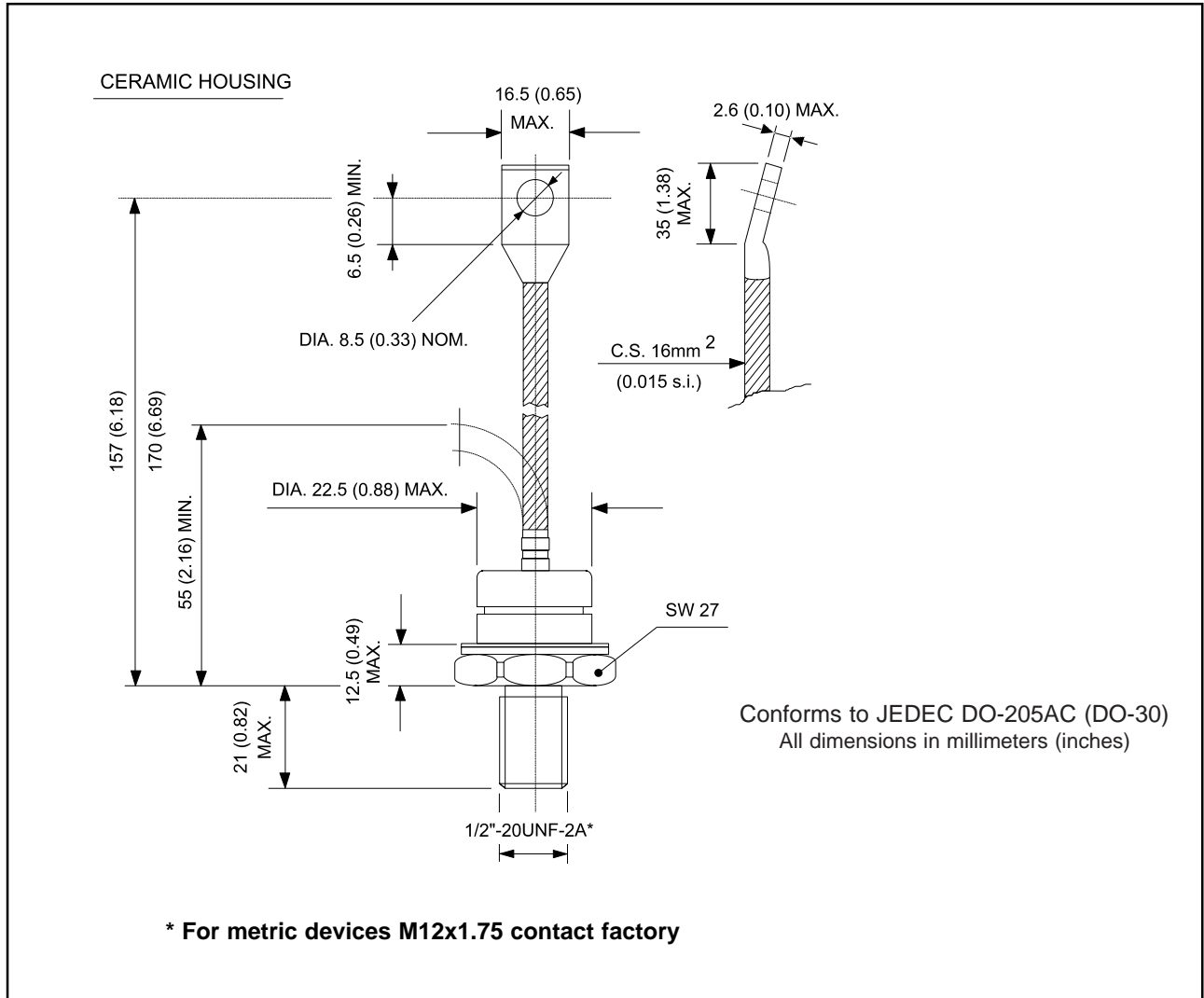


Fig. 1 - Current Ratings Characteristics

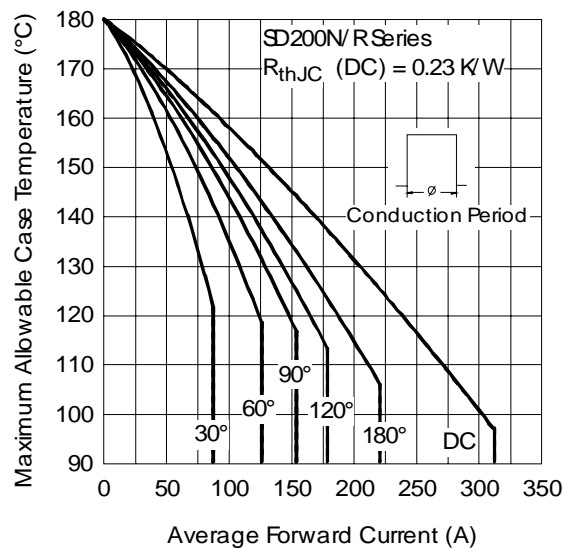


Fig. 2 - Current Ratings Characteristics

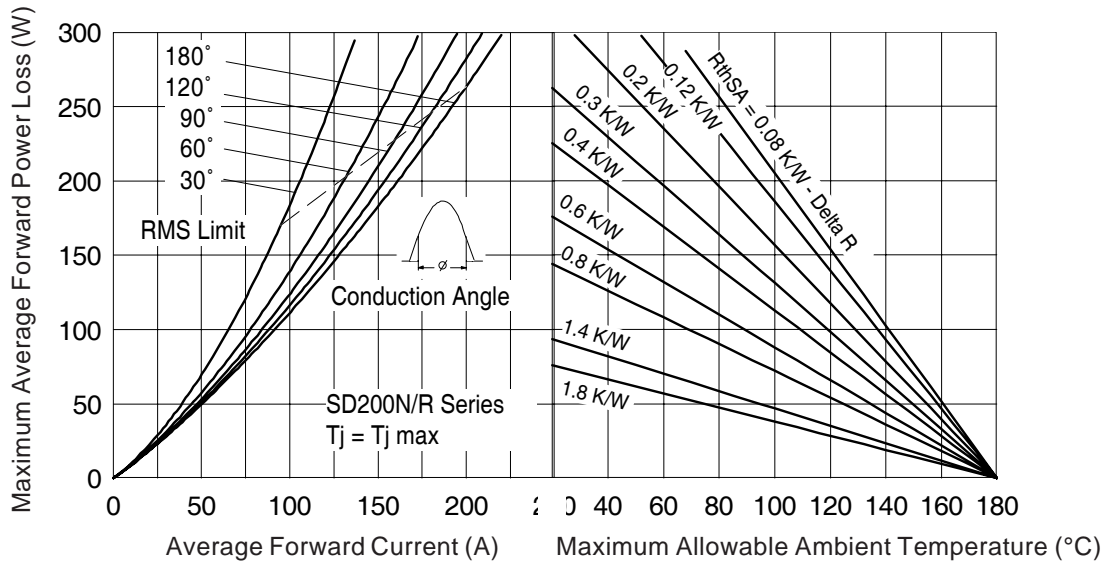


Fig.3 - Forward Power Loss Characteristics

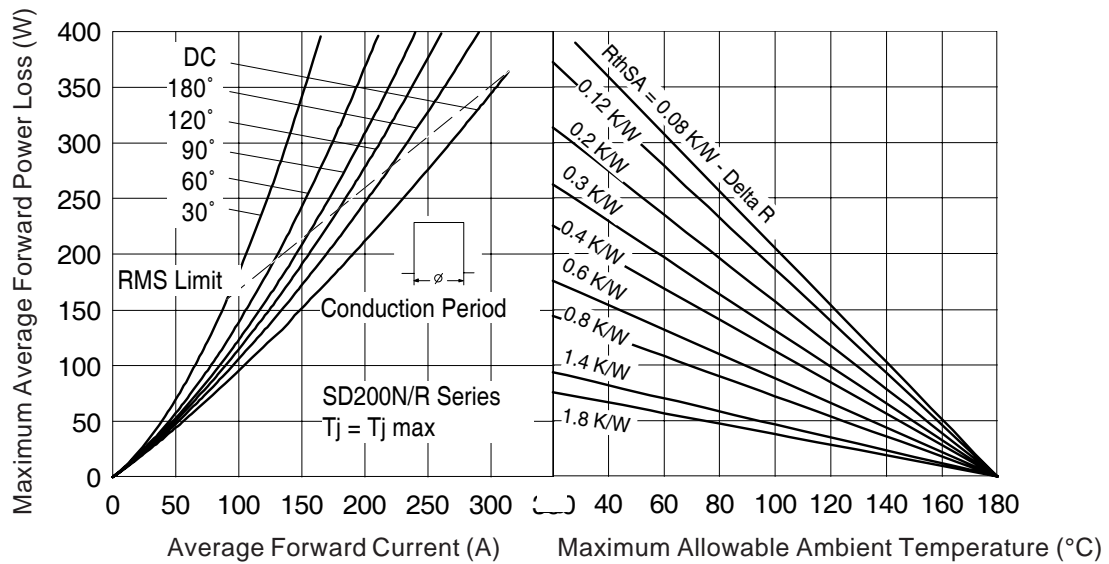


Fig. 4 - Forward Power Loss Characteristics

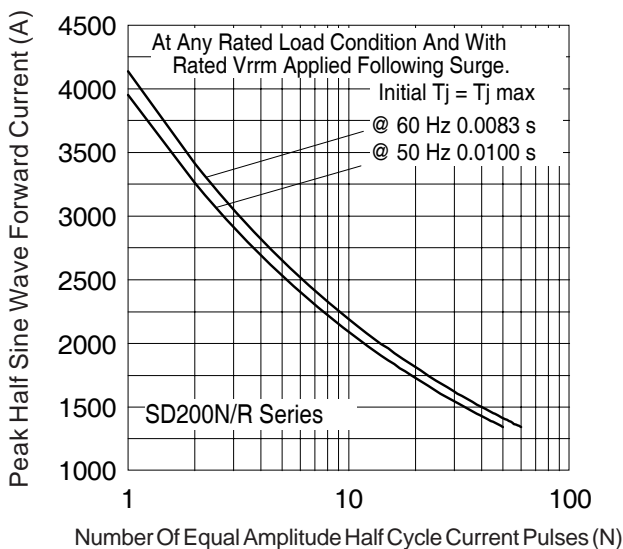


Fig. 5 - Maximum Non-Repetitive Surge Current

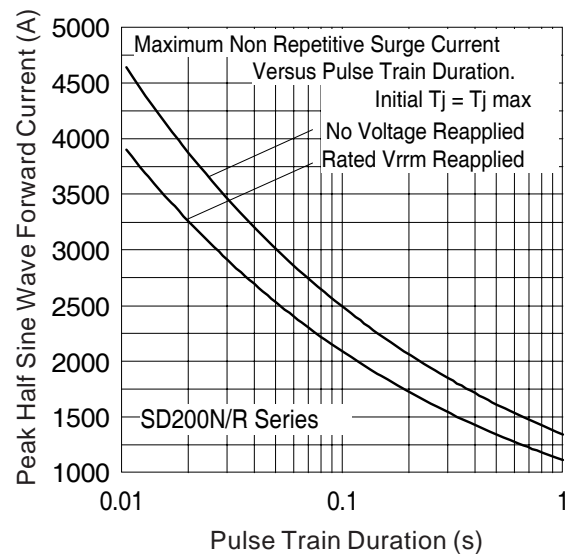


Fig. 6 - Maximum Non-Repetitive Surge Current

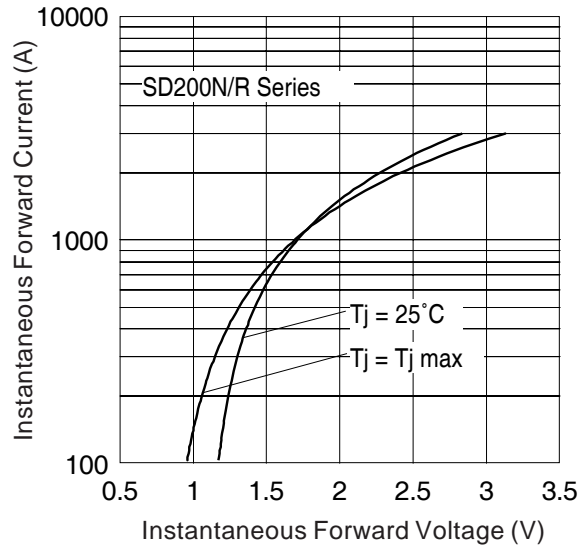


Fig. 7 - Forward Voltage Drop Characteristics

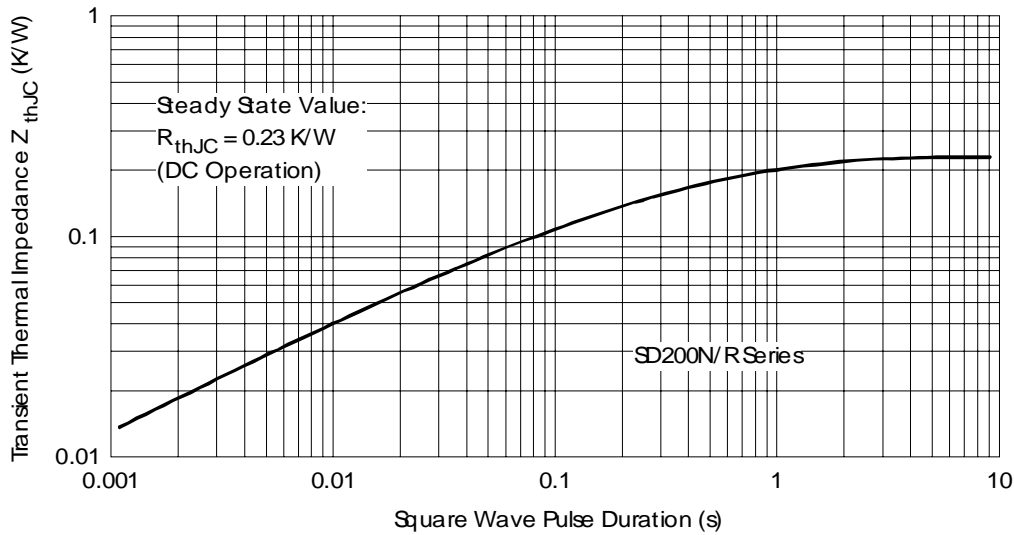


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristic

Data and specifications subject to change without notice.  
This product has been designed and qualified for Industrial Level.  
Qualification Standards can be found on IR's Web site.