

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

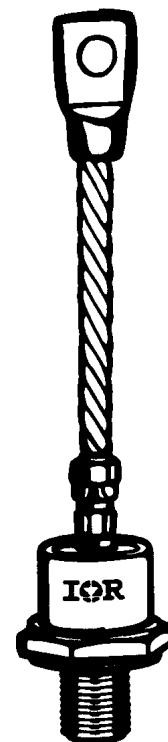
200A

Typical Applications

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

Major Ratings and Characteristics

Parameters	SD200N/R	Units
$I_{F(AV)}$	200	A
@ T_C	110	°C
$I_{F(RMS)}$	314	A
I_{FSM} @ 50Hz	4700	A
@ 60Hz	4920	A
I^2t @ 50Hz	110	KA ² s
@ 60Hz	101	KA ² s
V_{RRM} range	400 to 2400	V
T_J	- 40 to 180	°C



case style
DO-205AC (DO-30)

SD200N/R Series

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	04	400	500	15
	08	800	900	
	12	1200	1300	
	16	1600	1700	
	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 reappplied
	3950		t = 10ms 100% V_{RRM}
	4140		t = 8.3ms reappplied
I^2t Maximum I^2t for fusing	110	KA ² s	t = 10ms No voltage
	101		t = 8.3ms reappplied
	78		t = 10ms 100% V_{RRM}
	71		t = 8.3ms reappplied
$I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing	1100	KA ² √s	t = 0.1 to 10ms, no voltage reappplied
$V_{F(TO)1}$ 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
T _J Max. junction operating temperature range	-40 to 180	°C	
T _{stg} Max. storage temperature range	-55 to 200		
R _{thJC} Max. thermal resistance, junction to case	0.23	K/W	DC operation
R _{thCS} 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	

ΔR_{thJC} Conduction

(The following table shows the increment of thermal resistance R_{thJC} 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 _J = T _J 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

B

C

1

2

3

4

5

6

7

8

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_{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

-

B = Flag top terminal (for Cathode/ Anode Leads)

S = Isolated lead with silicone sleeve

(Red = Reverse Polarity; Blue = Normal Polarity)

None = Non isolated lead

8

-

C = Ceramic Housing (over 1600V)

V = Glass-metal seal (only up to 1600V)

Outline Table

Technical drawing of a ceramic housing assembly. The drawing includes a side view and a cross-sectional view of the housing. Key dimensions and specifications are as follows:

- Overall Height:** 157 (6.18) inches.
- Top Section Height:** 170 (6.69) inches.
- Top Section Diameter:** 6.5 (0.26) MIN.
- Top Section Material:** 16.5 (0.65) MAX.
- Top Section Hole Diameter:** DIA. 8.5 (0.33) NOM.
- Top Section Thickness:** 2.6 (0.10) MAX.
- Top Section Material:** 35 (1.38) MAX.
- Top Section Material:** C.S. 16mm² (0.015 s.i.)
- Top Section Material:** DIA. 22.5 (0.88) MAX.
- Top Section Material:** 55 (2.16) MIN.
- Top Section Material:** 29 (1.14) MAX.
- Top Section Material:** 12.5 (0.49) MAX.
- Top Section Material:** 21 (0.82) MAX.
- Top Section Material:** 1/2"-20UNF-2A*
- Top Section Material:** SW 27

* FOR METRIC DEVICE: M12 X 1.75

Technical drawing of a glass-metal seal assembly. The drawing shows a side view of the assembly with various dimensions and specifications.

Dimensions (inches in parentheses):

- Overall height: 157 (6.18)
- Height from base to top of seal: 170 (6.69)
- Height from base to top of seal (minimum): 55 (2.16) MIN.
- Height from base to top of seal (maximum): 24 (0.94) MAX.
- Height from base to top of seal (maximum): 21 (0.82) MAX.
- Height from base to top of seal (maximum): 12.5 (0.49) MAX.
- Height from base to top of seal (maximum): 35 (1.38) MAX.
- Height from base to top of seal (maximum): 2.6 (0.10) MAX.
- Height from base to top of seal (maximum): 16.5 (0.65) MAX.
- Height from base to top of seal (minimum): 6.5 (0.26) MIN.

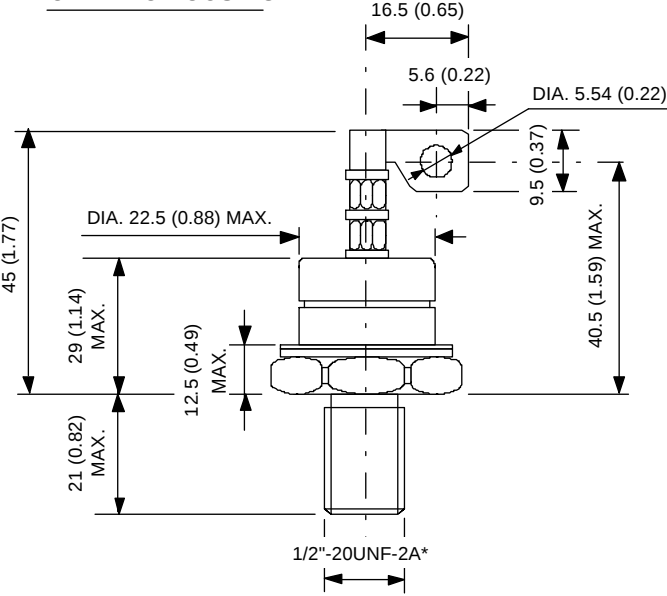
Specifications:

- DIA. 8.5 (0.33) NOM.
- DIA. 23.5 (0.93) MAX.
- C.S. 16mm² (0.015 s.i.)
- SW 27
- 1/2"-20UNF-2A*

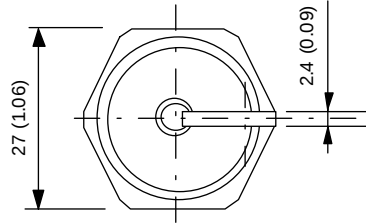
* FOR METRIC DEVICE: M12 X 1.75

Outline Table

CERAMIC HOUSING

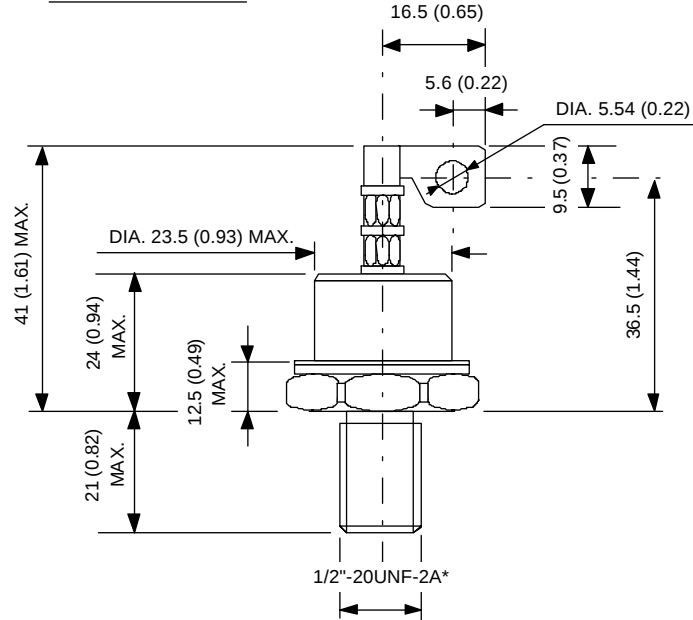


*FOR METRIC DEVICE. M12 X 1.75

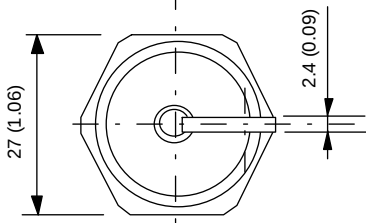


DO-205AC (DO-30) Flag
All dimensions in millimeters (inches)

GLASS-METAL SEAL



*FOR METRIC DEVICE. M12 X 1.75



SD200N/R Series

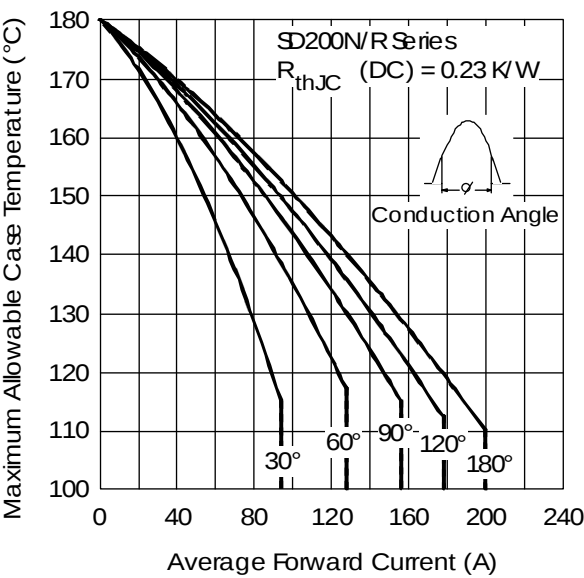


Fig. 1 - Current Ratings Characteristics

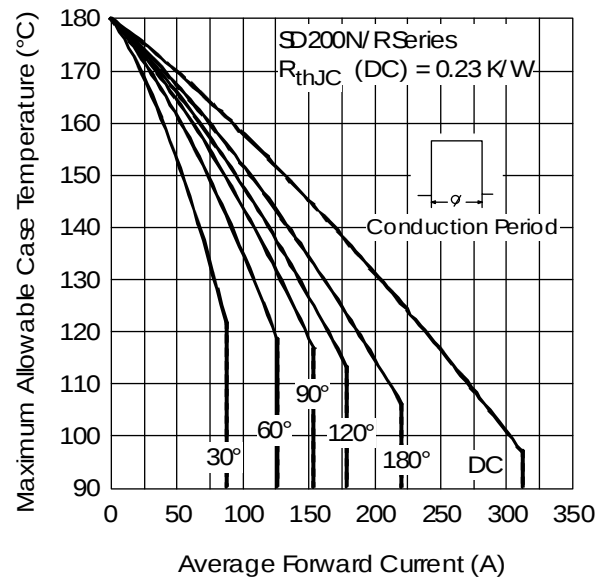


Fig. 2 - Current Ratings Characteristics

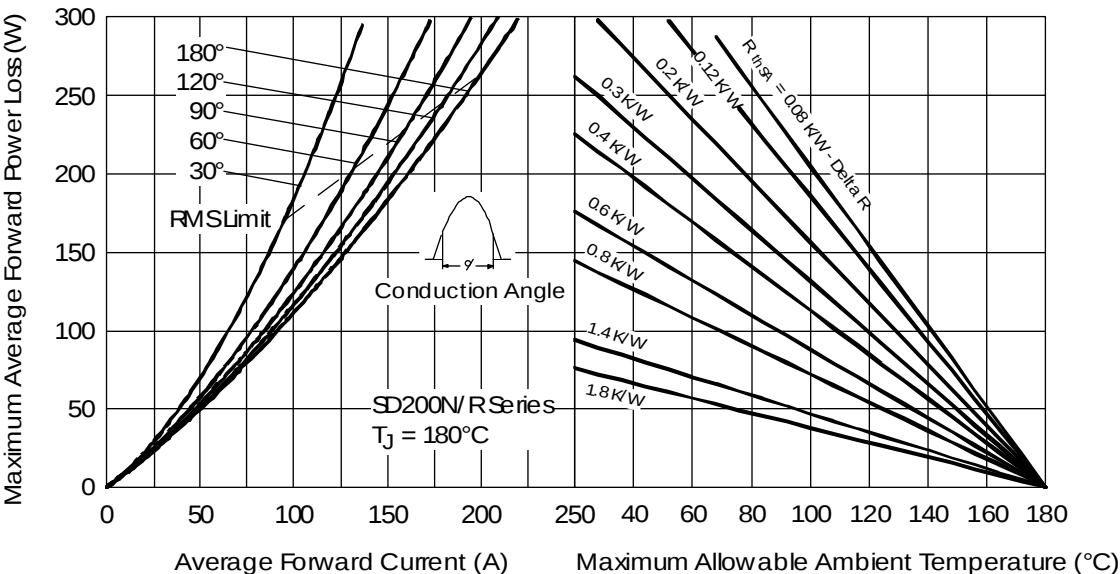


Fig. 3 - Forward Power Loss Characteristics

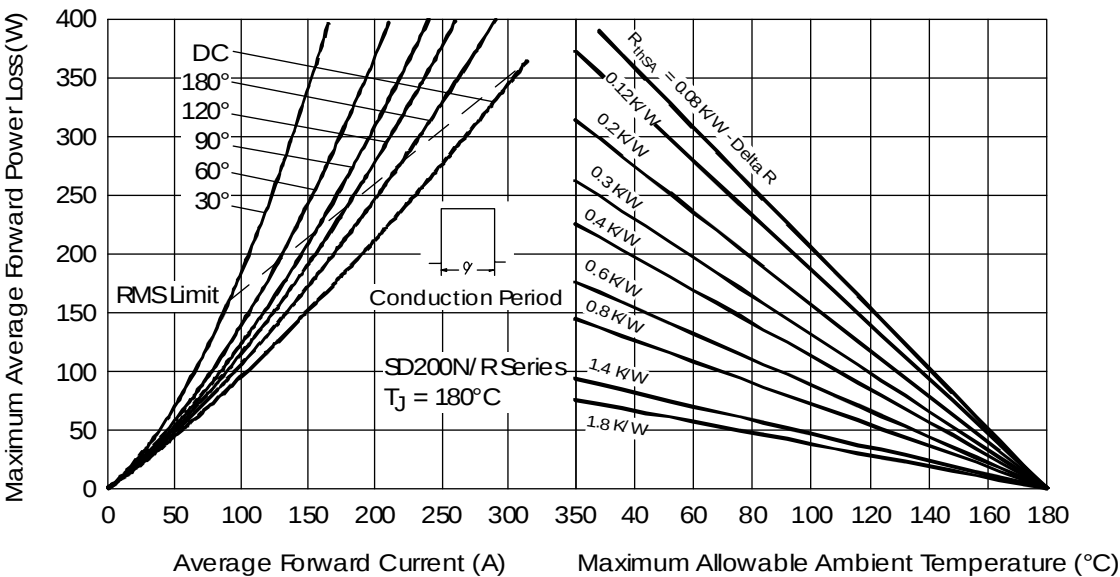


Fig. 4 - Forward Power Loss Characteristics

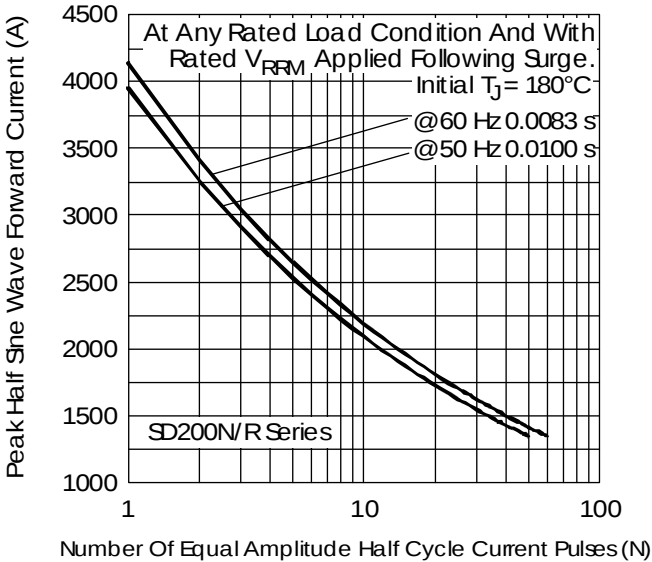


Fig. 5 - Maximum Non-Repetitive Surge Current

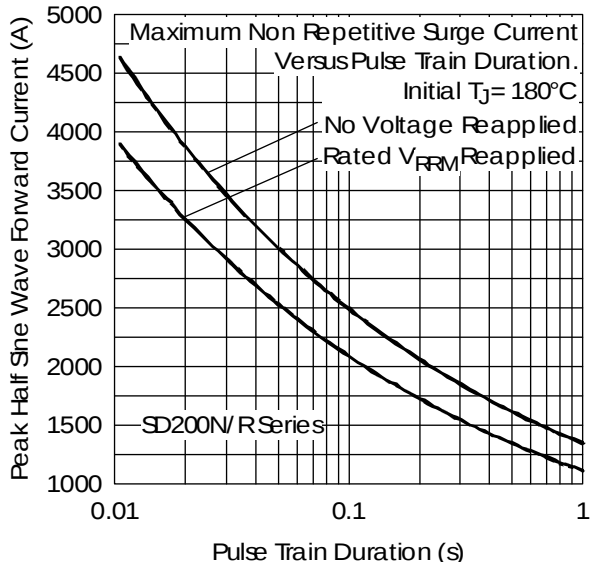


Fig. 6 - Maximum Non-Repetitive Surge Current

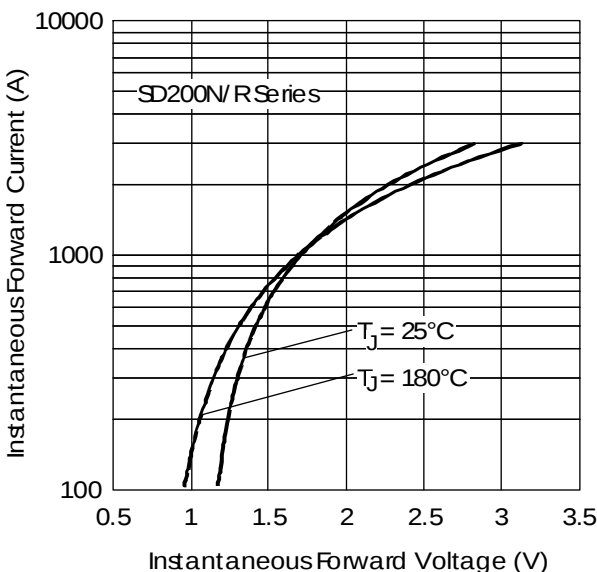


Fig. 7 - Forward Voltage Drop Characteristics

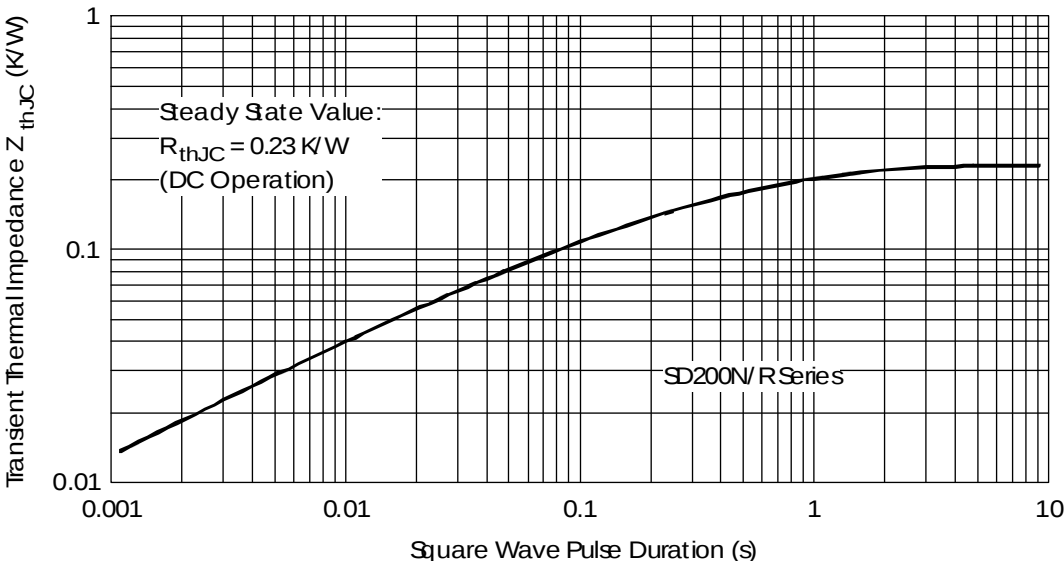


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic