

SD200N/R SERIES

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

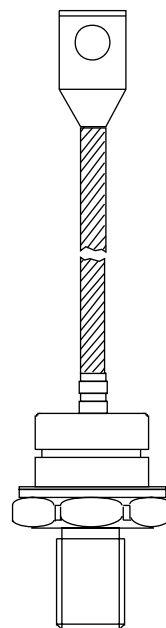
Typical Applications

- 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

200A



case style
DO-205AC (DO-30)

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	Sinusoidal half wave, Initial T _J = T _J max.	
		4920		t = 8.3ms	reapplied		
		3950		t = 10ms	100% V _{RRM}		
		4140		t = 8.3ms	reapplied		
I ² t	Maximum I ² t for fusing	110	KA ² s	t = 10ms	No voltage		Initial T _J = T _J max.
		101		t = 8.3ms	reapplied		
		78		t = 10ms	100% V _{RRM}		
		71		t = 8.3ms	reapplied		
I ² √t	Maximum I ² √t for fusing	1100	KA ² /s	t = 0.1 to 10ms, no voltage reapplied			
V _{F(TO)1}	Low level value of threshold voltage	0.90	V	(16.7% × π × I _{F(AV)}) < I < π × I _{F(AV)} , T _J = T _J max.			
V _{F(TO)2}	High level value of threshold voltage	1.00		(I > π × I _{F(AV)}), T _J = T _J max.			
r _{f1}	Low level value of forward slope resistance	0.79	mΩ	(16.7% × π × I _{F(AV)}) < I < π × I _{F(AV)} , T _J = T _J max.			
r _{f2}	High level value of forward slope resistance	0.64		(I > π × 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 $\pm 10\%$	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	$T_J = T_{J \text{ max.}}$
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)						

Bulletin I2080 rev. A 07/94

IOR Rectifier

CERAMIC HOUSING

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

Conforms to JEDEC DO-205AC (DO-30)
All dimensions in millimeters (inches)

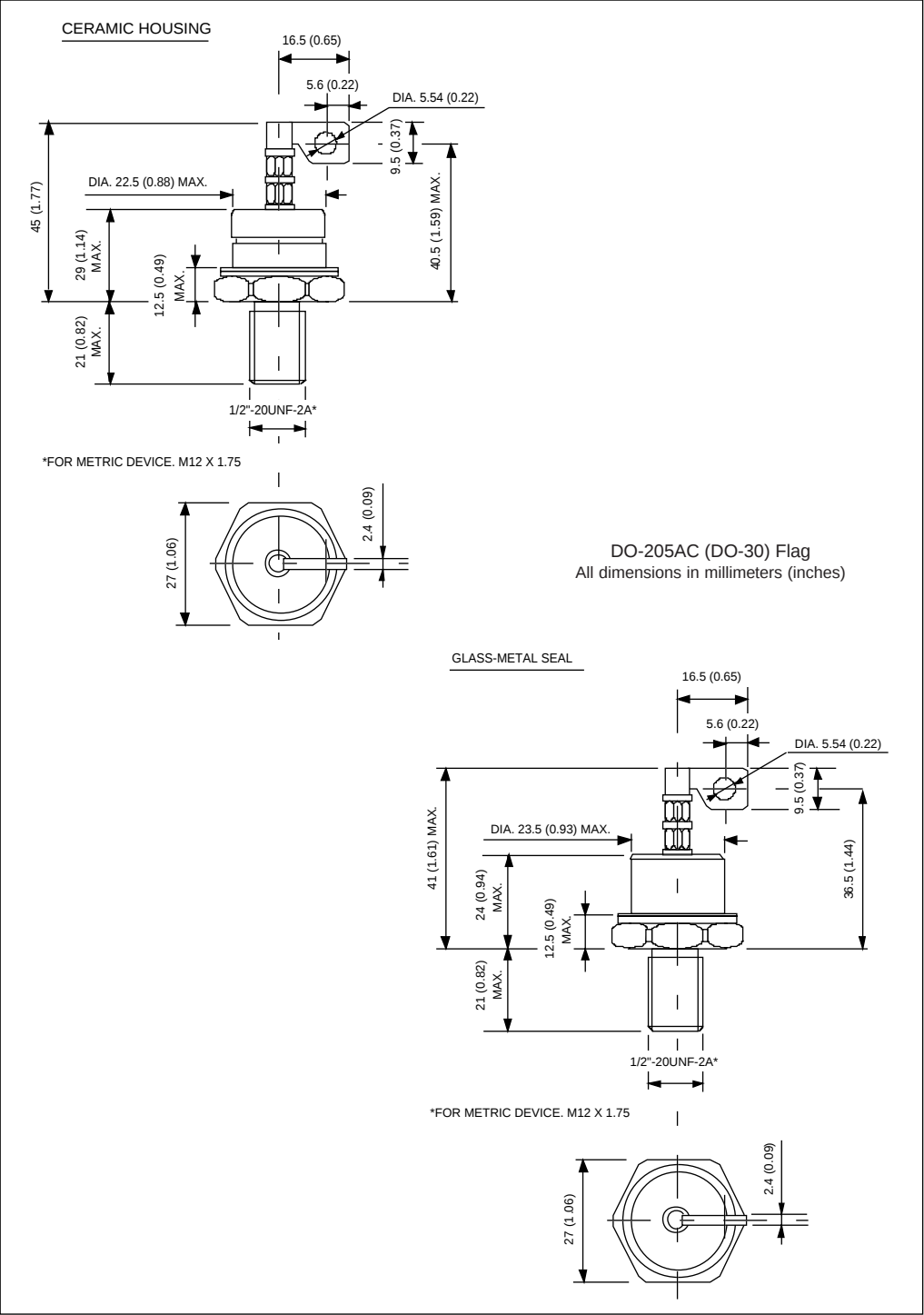
* FOR METRIC DEVICE: M12 X 1.75

GLASS-METAL SEAL

157 (6.18)
170 (6.69)
55 (2.16) MIN.
24 (0.94) MAX.
21 (0.82) MAX.
12.5 (0.49) MAX.
DIA. 8.5 (0.33) NOM.
DIA. 23.5 (0.93) MAX.
16.5 (0.65) MAX.
6.5 (0.26) MIN.
35 (1.38) MAX.
2.6 (0.10) MAX.
C.S. 16mm² (0.015 s.i.)
SW 27
1/2"-20UNF-2A*

* FOR METRIC DEVICE: M12 X 1.75

Outline Table



SD200N/R Series

Bulletin I2080 rev. A 07/94

International
IRF Rectifier

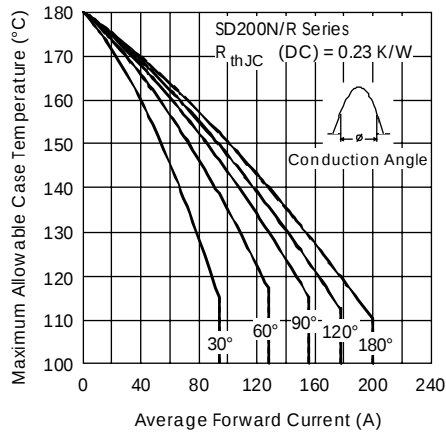


Fig. 1 - Current Ratings Characteristics

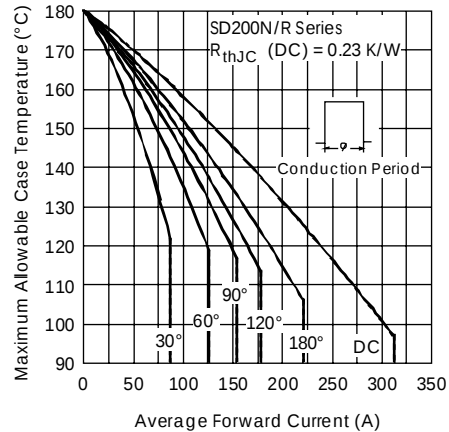


Fig. 2 - Current Ratings Characteristics

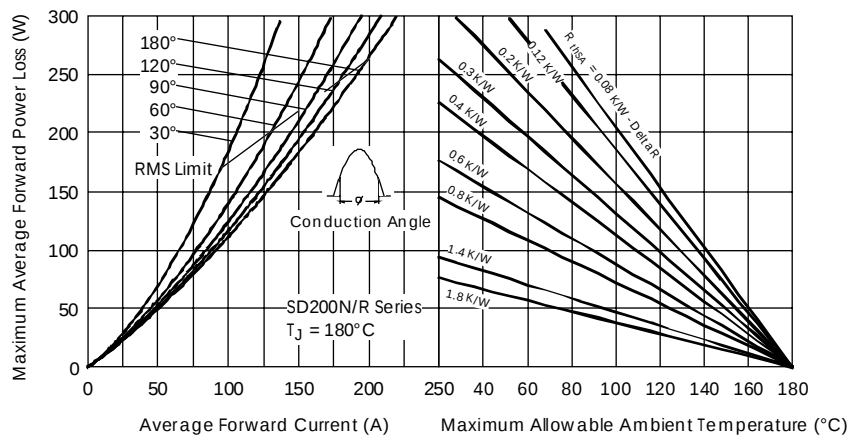


Fig. 3 - Forward Power Loss Characteristics

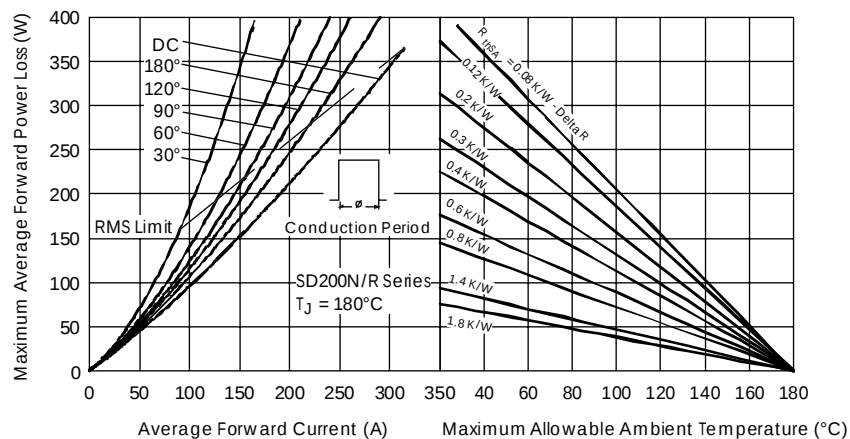


Fig. 4 - Forward Power Loss Characteristics

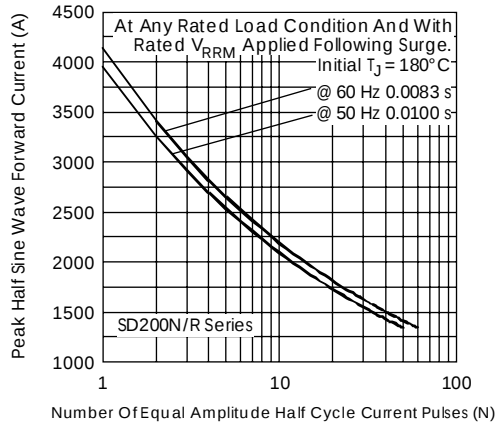


Fig. 5 - Maximum Non-Repetitive Surge Current

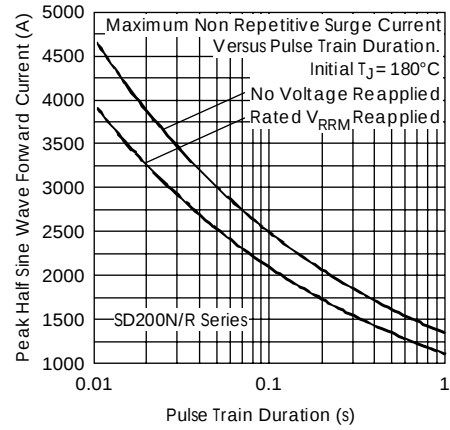


Fig. 6 - Maximum Non-Repetitive Surge Current

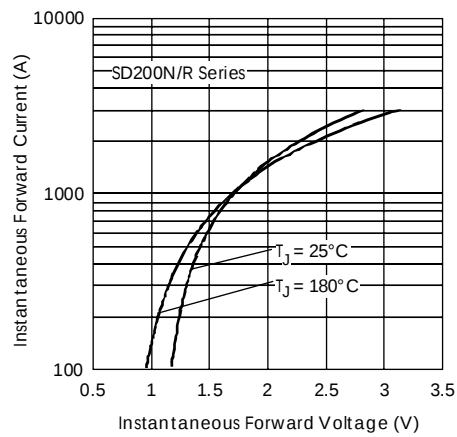


Fig. 7 - Forward Voltage Drop Characteristics

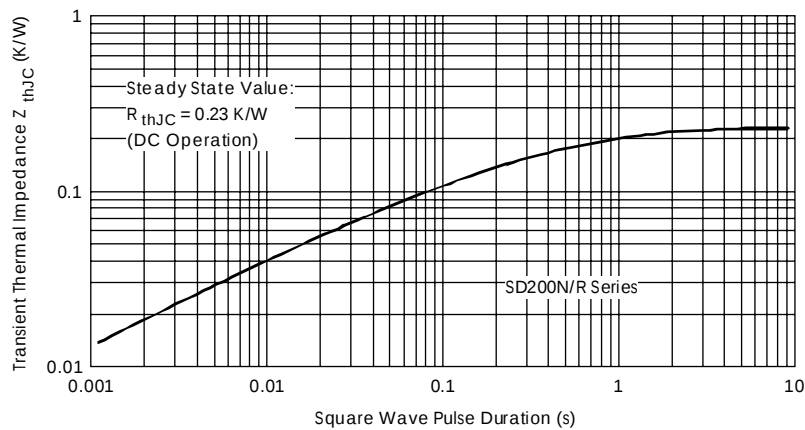


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic