

International
IR Rectifier

SD150N/R SERIES

STANDARD RECOVERY DIODES

Stud Version

Features

- Wide current range
- High voltage ratings up to 2500V
- High surge current capabilities
- Stud cathode and stud anode version
- Standard JEDEC types

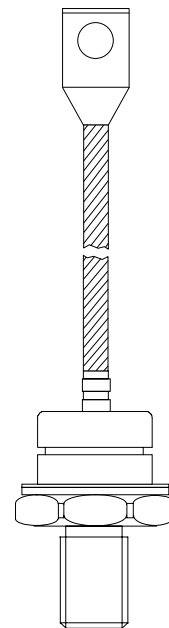
150A

Typical Applications

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

Major Ratings and Characteristics

Parameters		SD150N/R		Units
		400 to 2000	2500	
I _{F(AV)}		150	200	A
	@ T _C	125	110	°C
I _{F(RMS)}		235	314	A
I _{FSM}	@ 50Hz	3600	4700	A
	@ 60Hz	3770	4920	A
I ² t	@ 50Hz	65	110	KA ² s
	@ 60Hz	59	101	KA ² s
V _{RRM} range		400 to 2000	2500	V
T _J		- 40 to 180	150	°C



case style
DO-205AC (DO-30)

SD150N/R Series

Bulletin I2077 rev. B 11/01

International
IR Rectifier**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
SD150N/R	04	400	500	15
	08	800	900	
	12	1200	1300	
	16	1600	1700	
	20	2000	2100	
	25	2500	2600	

Forward Conduction

Parameter	SD150N/R	Units	Conditions
$I_{F(AV)}$ Max. average forward current @ Case temperature	150	A	180° conduction, half sine wave
	125	°C	
$I_{F(AV)}$ Max. average forward current @ Case temperature	200	A	180° conduction, half sine wave
	110	°C	
$I_{F(RMS)}$ Max. RMS forward current	235	A	DC @ 113°C case temperature
I_{FSM} Max. peak, one-cycle forward, non-repetitive surge current	3600	A	t = 10ms No voltage
	3770		t = 8.3ms reapplied
	3000		t = 10ms 100% V_{RRM}
	3170		t = 8.3ms reapplied
I^2t Maximum I^2t for fusing	65	KA ² s	t = 10ms No voltage
	59		t = 8.3ms reapplied
	46		t = 10ms 100% V_{RRM}
	42		t = 8.3ms reapplied
$I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing	650	KA ² /s	t = 0.1 to 10ms, no voltage reapplied
$V_{F(TO)1}$ Low level value of threshold voltage	0.93	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	1.06		$(I > \pi \times I_{F(AV)}), T_J = T_J$ max.
r_{f1} Low level value of forward slope resistance	1.27	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	1.04		$(I > \pi \times I_{F(AV)}), T_J = T_J$ max.
V_{FM} Max. forward voltage drop	1.5	V	$I_{pk} = 470A, T_J = T_J$ max, $t_p = 10ms$ sinusoidal wave

Thermal and Mechanical Specifications

Parameter	SD150N/R		Units	Conditions
	400to2000	2500		
T _J Max. junction operating temperature range	-40 to 180	150	°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	15	0	N	25	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)						

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IOR Rectifier

CERAMIC HOUSING

Technical drawing of a ceramic housing component. The drawing shows a side view of the component with various dimensions. The top part is a flange with a diameter of 16.5 (0.65) MAX. The central shaft has a diameter of 8.5 (0.33) NOM. The bottom part is a base with a diameter of 22.5 (0.88) MAX. The base is secured with a SW 27 screw. The overall height is 157 (6.18) and the base height is 170 (6.69). The base has a 1/2"-20UNF-2A* thread. The drawing also shows a detail of the base with a diameter of 2.6 (0.10) MAX. and a height of 35 (1.38) MAX. The base is made of C.S. 16mm² (0.015 s.i.).

157 (6.18)
170 (6.69)
55 (2.16) MIN.
DIA. 22.5 (0.88) MAX.
29 (1.14) MAX.
12.5 (0.49) MAX.
21 (0.82) MAX.
16.5 (0.65) MAX.
DIA. 8.5 (0.33) NOM.
C.S. 16mm² (0.015 s.i.)
35 (1.38) MAX.
2.6 (0.10) MAX.
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

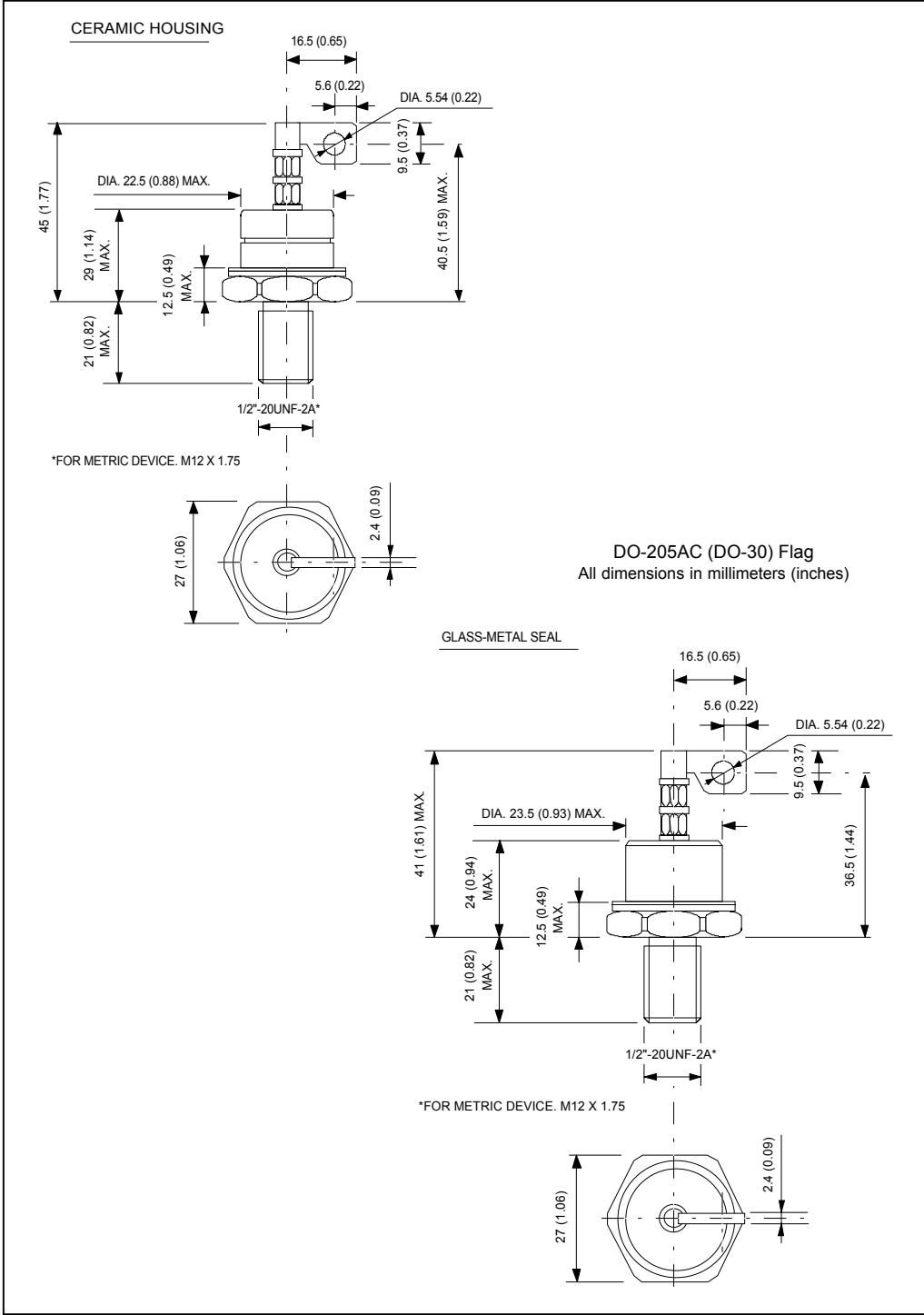
GLASS-METAL SEAL

Technical drawing of a glass-metal seal component. The drawing shows a side view of the component with various dimensions. The top part is a flange with a diameter of 16.5 (0.65) MAX. The central shaft has a diameter of 8.5 (0.33) NOM. The bottom part is a base with a diameter of 23.5 (0.93) MAX. The base is secured with a SW 27 screw. The overall height is 157 (6.18) and the base height is 170 (6.69). The base has a 1/2"-20UNF-2A* thread. The drawing also shows a detail of the base with a diameter of 2.6 (0.10) MAX. and a height of 35 (1.38) MAX. The base is made of C.S. 16mm² (0.015 s.i.).

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

* FOR METRIC DEVICE: M12 X 1.75

Outline Table



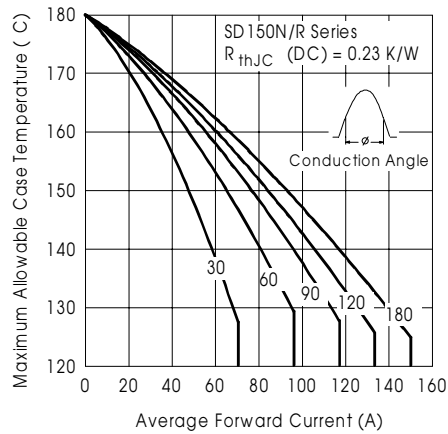


Fig. 1 - Current Ratings Characteristics

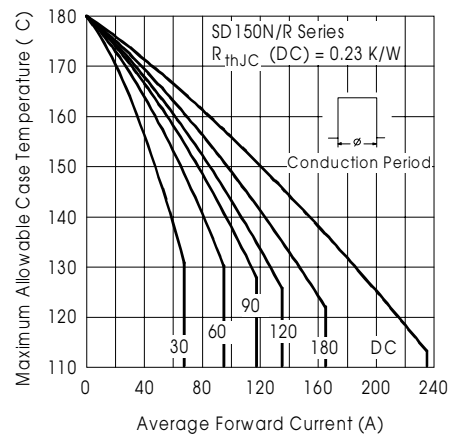


Fig. 2 - Current Ratings Characteristics

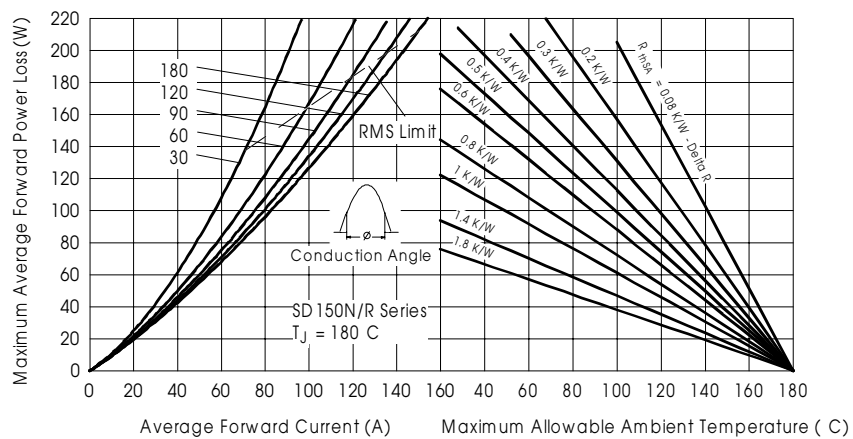


Fig. 3 - Forward Power Loss Characteristics

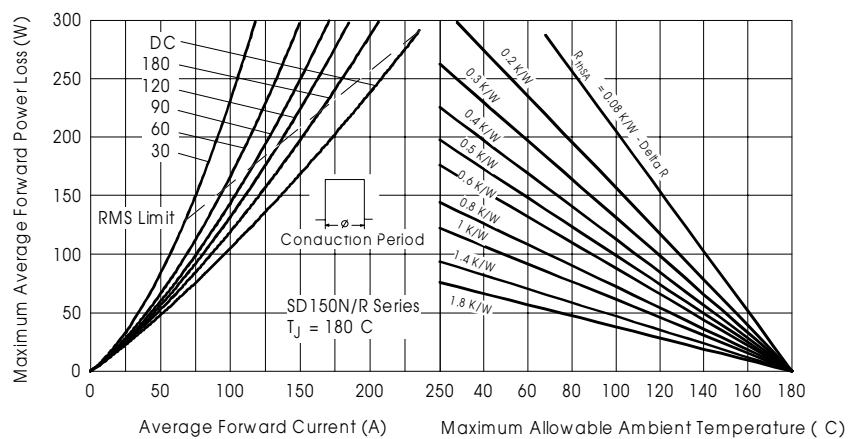


Fig. 4 - Forward Power Loss Characteristics

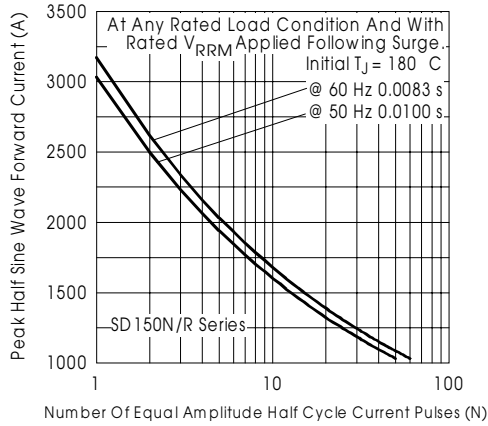


Fig. 5 - Maximum Non-Repetitive Surge Current

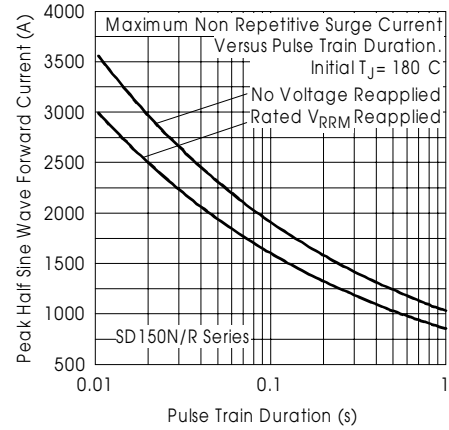


Fig. 6 - Maximum Non-Repetitive Surge Current

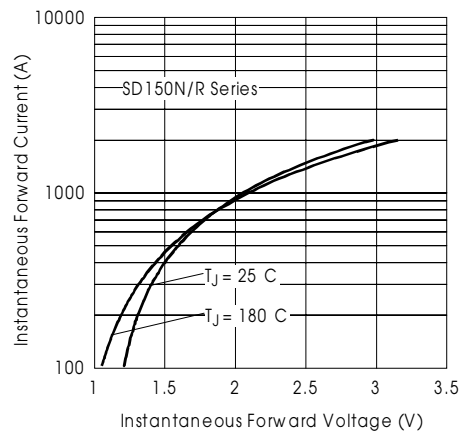


Fig. 7 - Forward Voltage Drop Characteristics

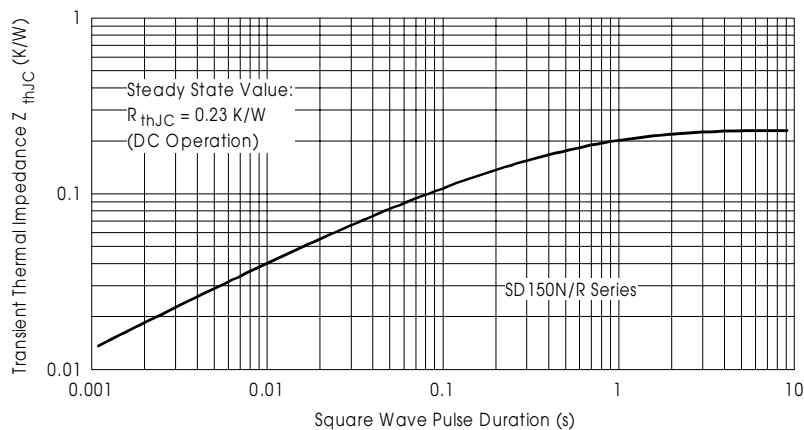


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic

SD150N/R Series

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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.

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