

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

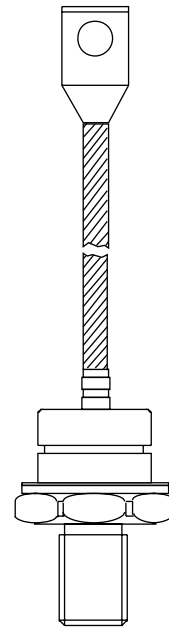
Typical Applications

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

Major Ratings and Characteristics

Parameters	SD150N/R	Units
$I_{F(AV)}$	150	A
@ T_C	125	°C
$I_{F(RMS)}$	235	A
I_{FSM} @ 50Hz	3600	A
@ 60Hz	3770	A
I^2t @ 50Hz	65	KA ² s
@ 60Hz	59	KA ² s
V_{RRM} range	400 to 2500	V
T_J	- 40 to 180	°C

150A



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
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	195	A	180° conduction, half sine wave			
		100	°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	Sinusoidal half wave, Initial T _J = T _J max.	
		3770		t = 8.3ms	reapplied		
		3000		t = 10ms	100% V _{RRM}		
		3170		t = 8.3ms	reapplied		
I ² t	Maximum I ² t for fusing	65	KA ² s	t = 10ms	No voltage		Initial T _J = T _J max.
		59		t = 8.3ms	reapplied		
		46		t = 10ms	100% V _{RRM}		
		42		t = 8.3ms	reapplied		
I ² /t	Maximum I ² /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% × π × I _{F(AV)} < I < π × I _{F(AV)}), T _J = T _J max.			
V _{F(TO)2}	High level value of threshold voltage	1.06		(I > π × I _{F(AV)}), T _J = T _J max.			
r _{f1}	Low level value of forward slope resistance	1.27	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	1.04		(I > π × 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
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	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)						

Bulletin I2077 rev. A 07/94

IOR Rectifier

CERAMIC HOUSING

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

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

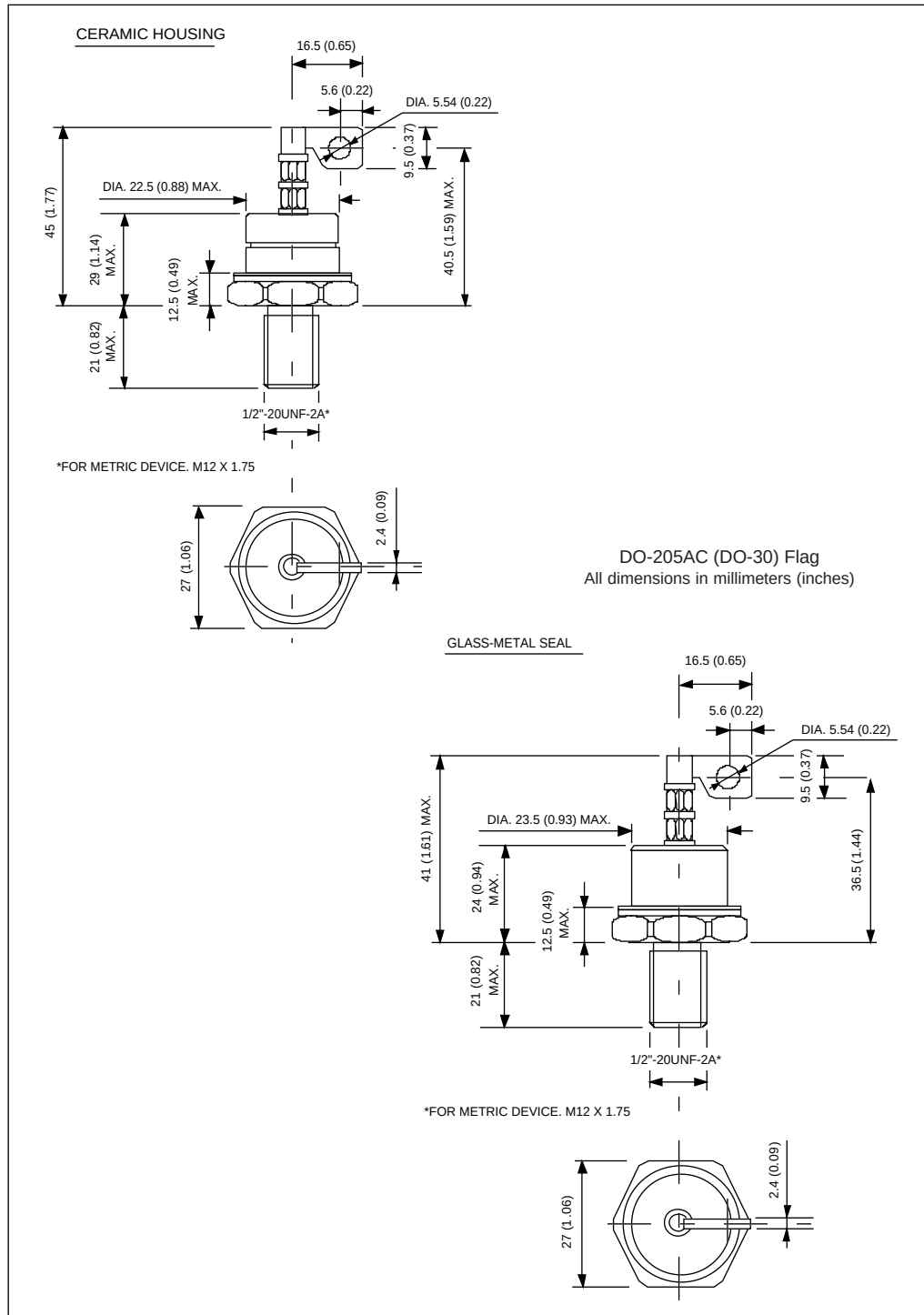
* FOR METRIC DEVICE: M12 X 1.75

GLASS-METAL SEAL

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

* FOR METRIC DEVICE: M12 X 1.75

Outline Table



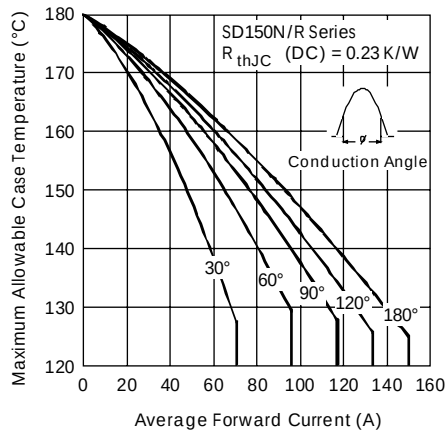


Fig. 1 - Current Ratings Characteristics

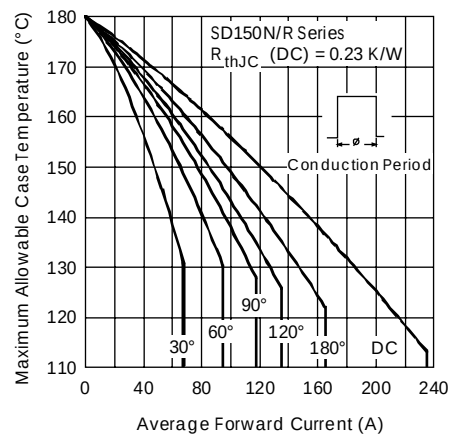


Fig. 2 - Current Ratings Characteristics

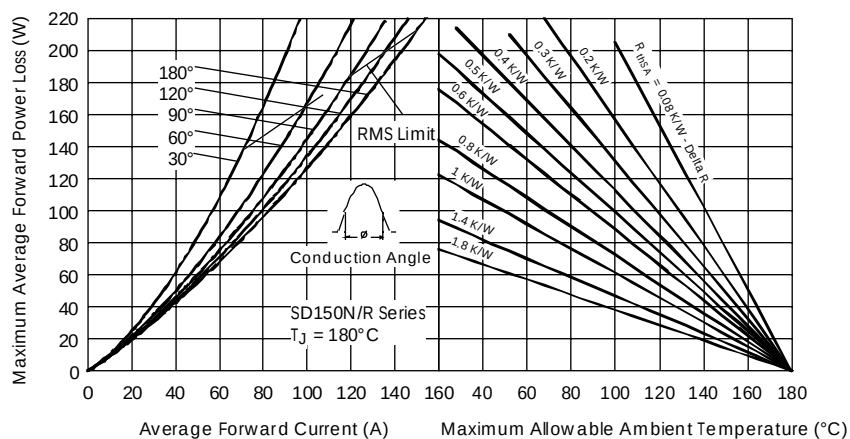


Fig. 3 - Forward Power Loss Characteristics

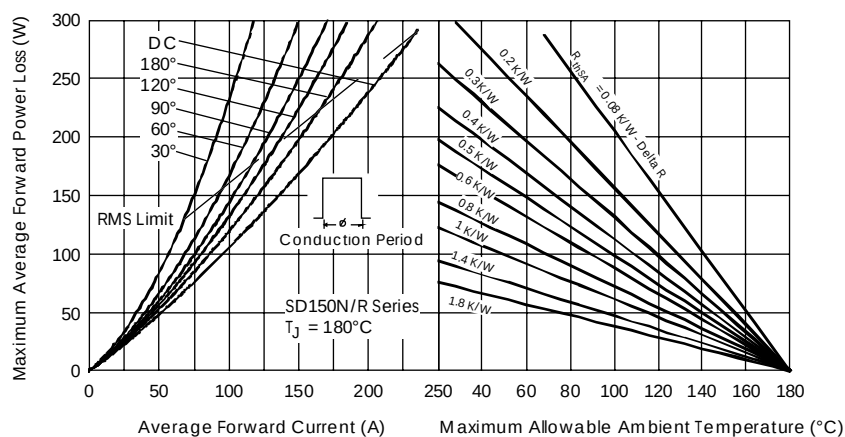


Fig. 4 - Forward Power Loss Characteristics

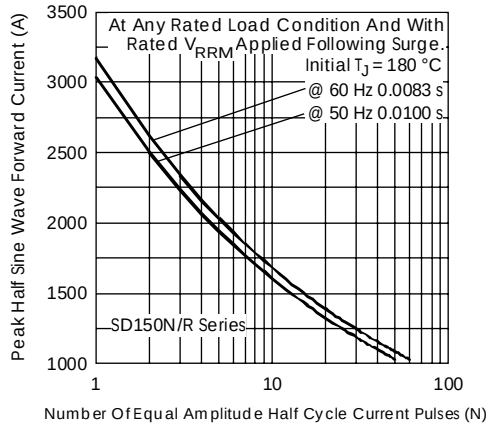


Fig. 5 - Maximum Non-Repetitive Surge Current

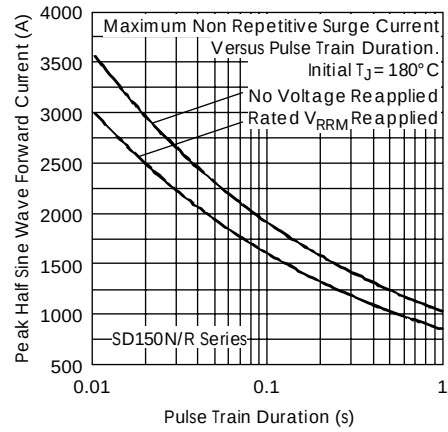


Fig. 6 - Maximum Non-Repetitive Surge Current

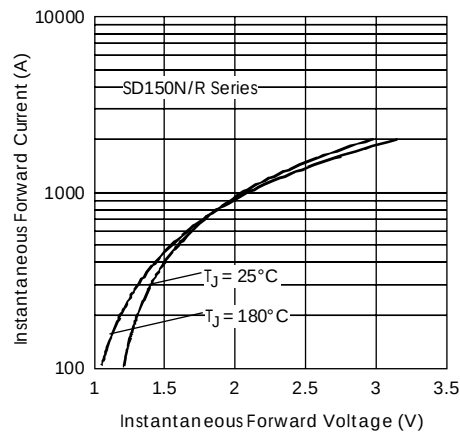


Fig. 7 - Forward Voltage Drop Characteristics

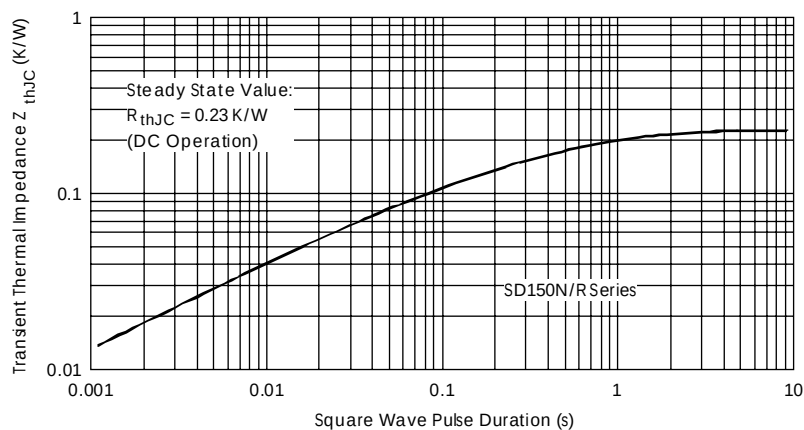


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic