

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

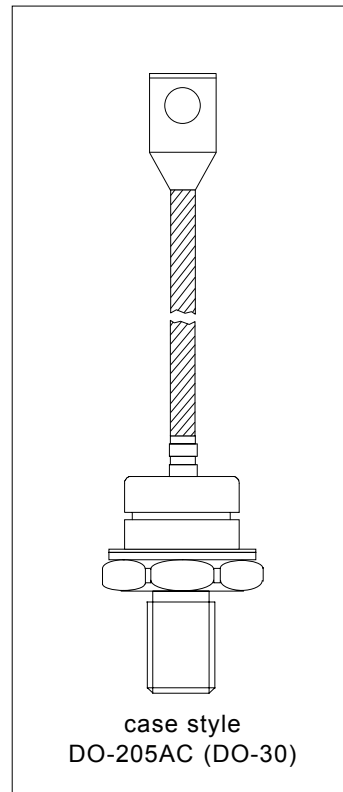
150A

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^2t	@ 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	



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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 reappplied
	3770		t = 8.3ms reappplied
	3000		t = 10ms 100% V_{RRM} reappplied
	3170		t = 8.3ms reappplied
I^2t Maximum I^2t for fusing	65	KA ² s	t = 10ms No voltage reappplied
	59		t = 8.3ms reappplied
	46		t = 10ms 100% V_{RRM} reappplied
	42		t = 8.3ms reappplied
$I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing	650	KA ² √s	t = 0.1 to 10ms, no voltage reappplied
$V_{F(TO)1}$ 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	V	$(I > \pi \times I_{F(AV)})$, $T_J = T_J$ 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

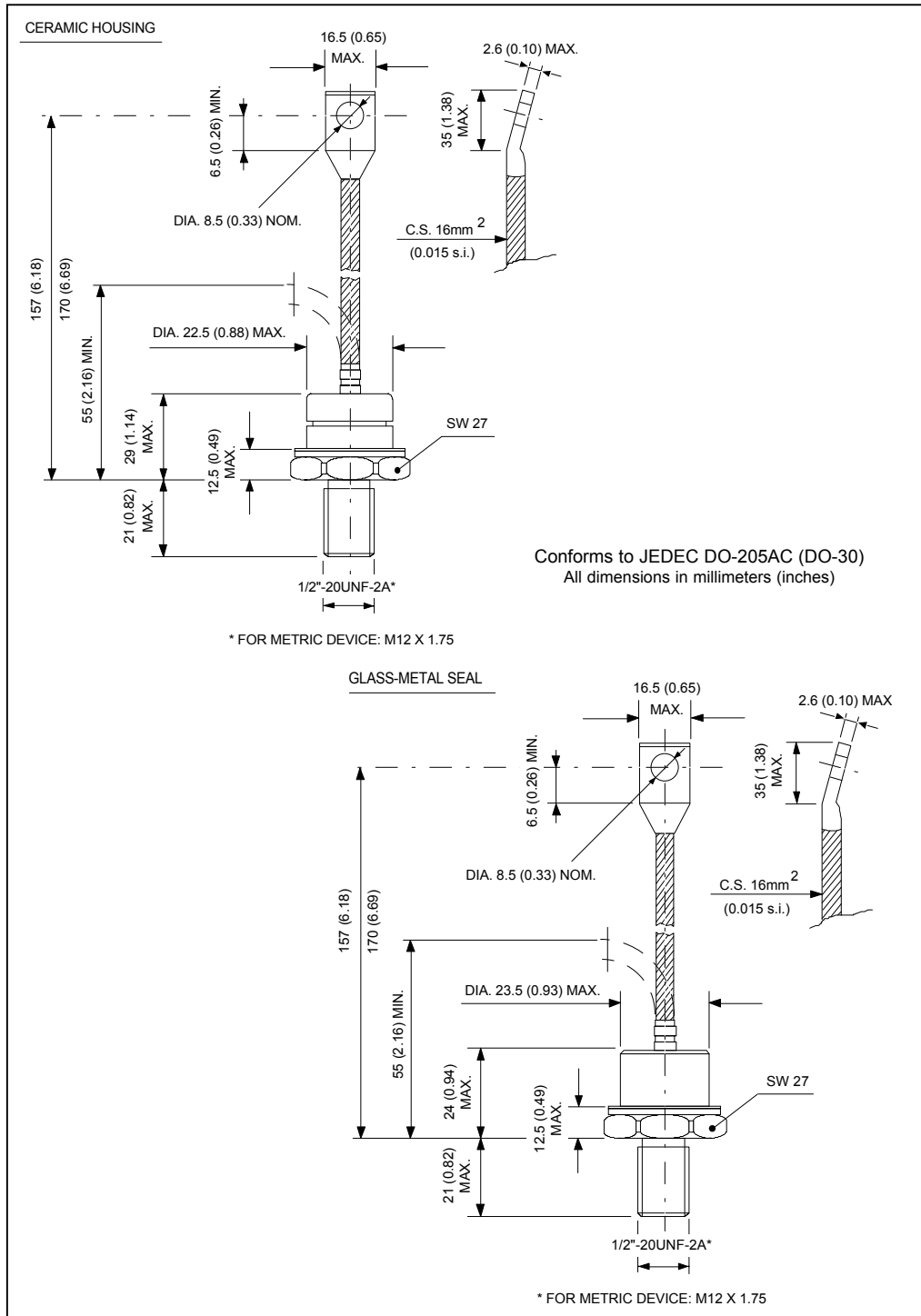
- 1 - Diode
- 2 - Essential part number
- 3 - 0 = Standard recovery
- 4 - N = Stud Normal Polarity (Cathode to Stud)
R = Stud Reverse Polarity (Anode to Stud)
- 5 - Voltage code: Code x 100 = V_{RRM} (See Voltage Ratings table)
- 6 - P = Stud base DO-205AC (DO-30) 1/2" 20UNF-2A
M = Stud base DO-205AC (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)

SD150N/R Series

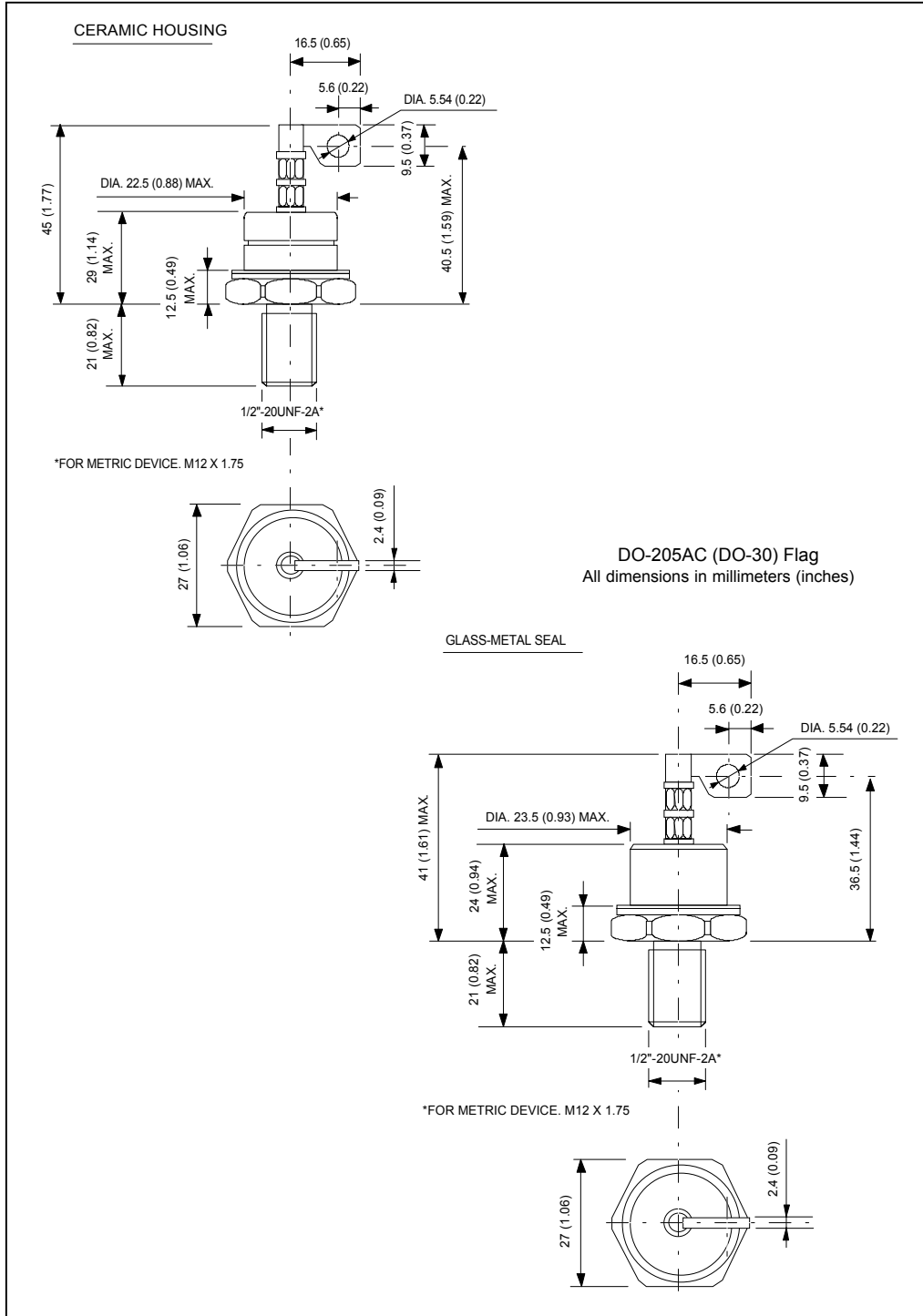
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Outline Table



Outline Table



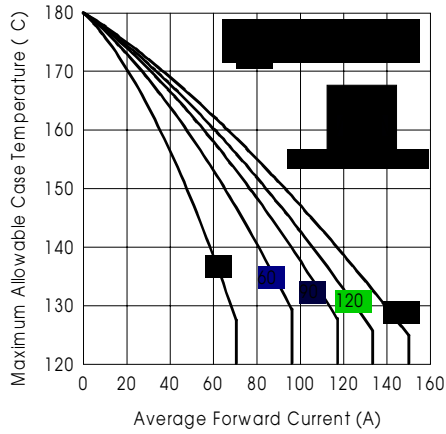


Fig. 1 - Current Ratings Characteristics

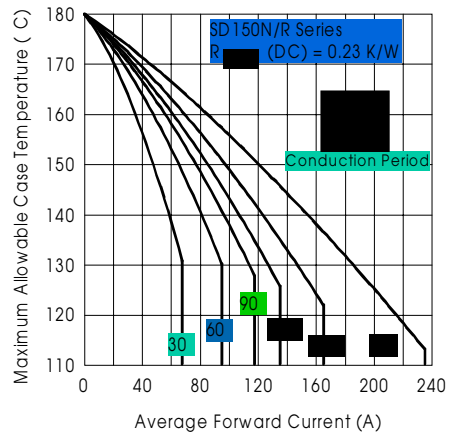


Fig. 2 - Current Ratings Characteristics

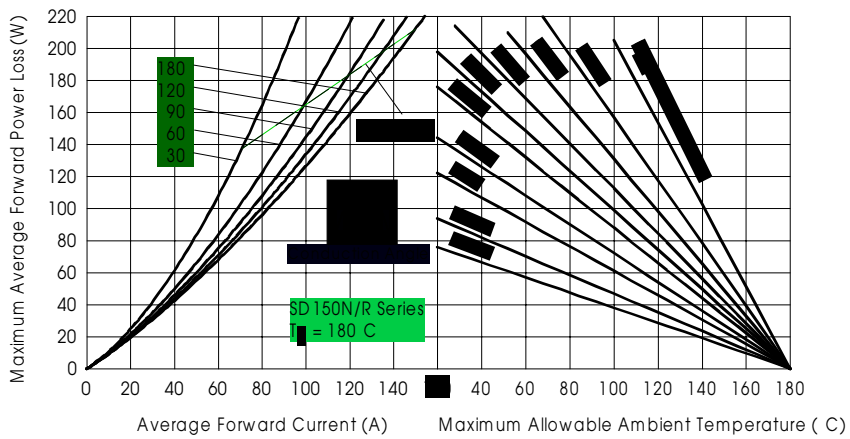


Fig. 3 - Forward Power Loss Characteristics

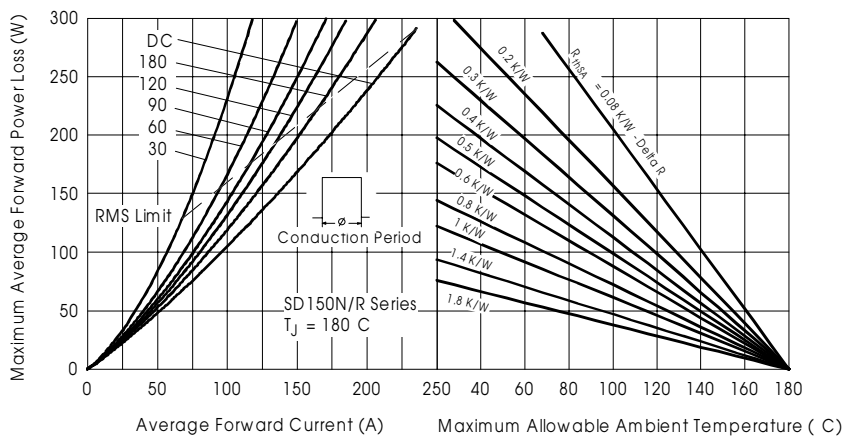


Fig. 4 - Forward Power Loss Characteristics

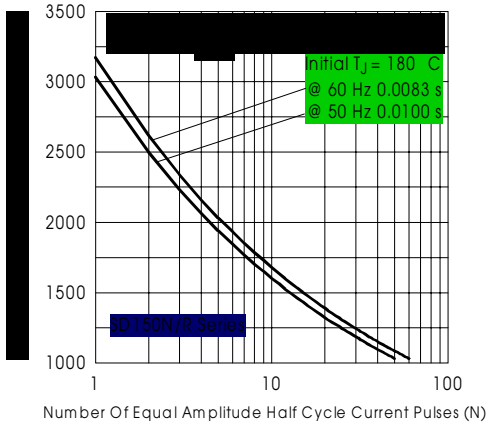


Fig. 5 - Maximum Non-Repetitive Surge Current

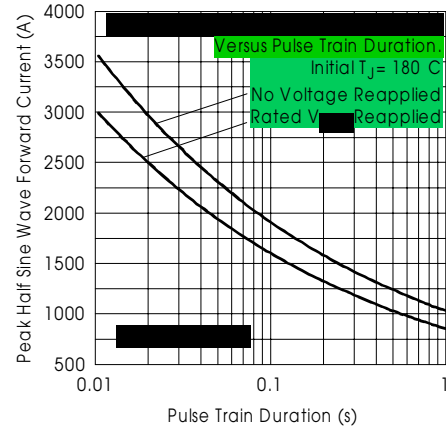


Fig. 6 - Maximum Non-Repetitive Surge Current

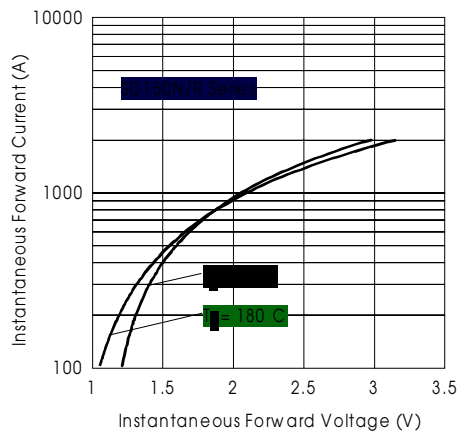


Fig. 7 - Forward Voltage Drop Characteristics

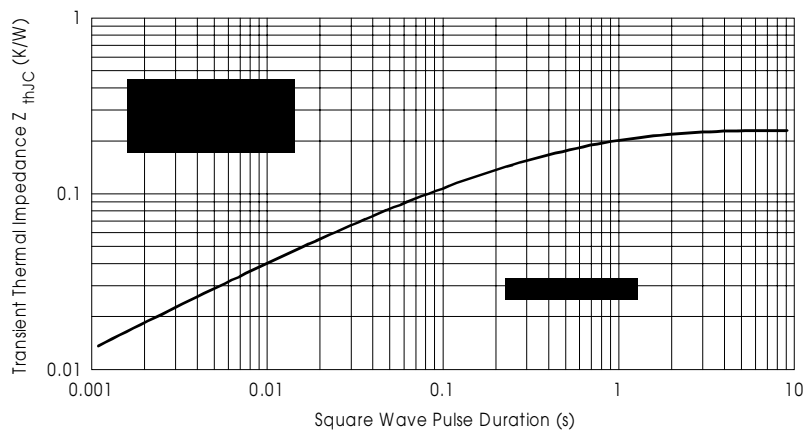


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic

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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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