

### 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

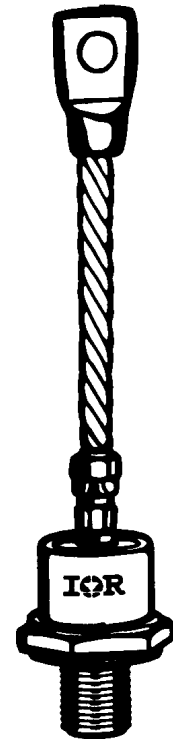
150A

#### Typical Applications

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

#### Major Ratings and Characteristics

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



case style  
DO-205AC (DO-30)

# SD150N/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
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
	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 <sup>2</sup> 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 <sup>2</sup> /s	t = 0.1 to 10ms, no voltage reapplied
$V_{F(TO)1}$ Low level value of threshold voltage	0.93	V	(16.7% x $\pi$ x $I_{F(AV)}$ < I < $\pi$ x $I_{F(AV)}$ ), $T_J = T_J$ max.
$V_{F(TO)2}$ High level value of threshold voltage	1.06		(I > $\pi$ x $I_{F(AV)}$ ), $T_J = T_J$ max.
$r_{f1}$ Low level value of forward slope resistance	1.27	m $\Omega$	(16.7% x $\pi$ x $I_{F(AV)}$ < I < $\pi$ x $I_{F(AV)}$ ), $T_J = T_J$ max.
$r_{f2}$ High level value of forward slope resistance	1.04		(I > $\pi$ x $I_{F(AV)}$ ), $T_J = T_J$ 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 <sub>J</sub> Max. junction operating temperature	-40 to 180	°C	
T <sub>stg</sub> Max. storage temperature range	-55 to 200		
R <sub>thJC</sub> Max. thermal resistance, junction to case	0.23	K/W	DC operation
R <sub>thCS</sub> 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

$\Delta R_{thJC}$  Conduction

(The following table shows the increment of thermal resistance R<sub>thJC</sub> 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 <sub>J</sub> = T <sub>J</sub> max.
120°	0.049	0.051		
90°	0.063	0.068		
60°	0.093	0.096		
30°	0.156	0.157		

Ordering Information Table

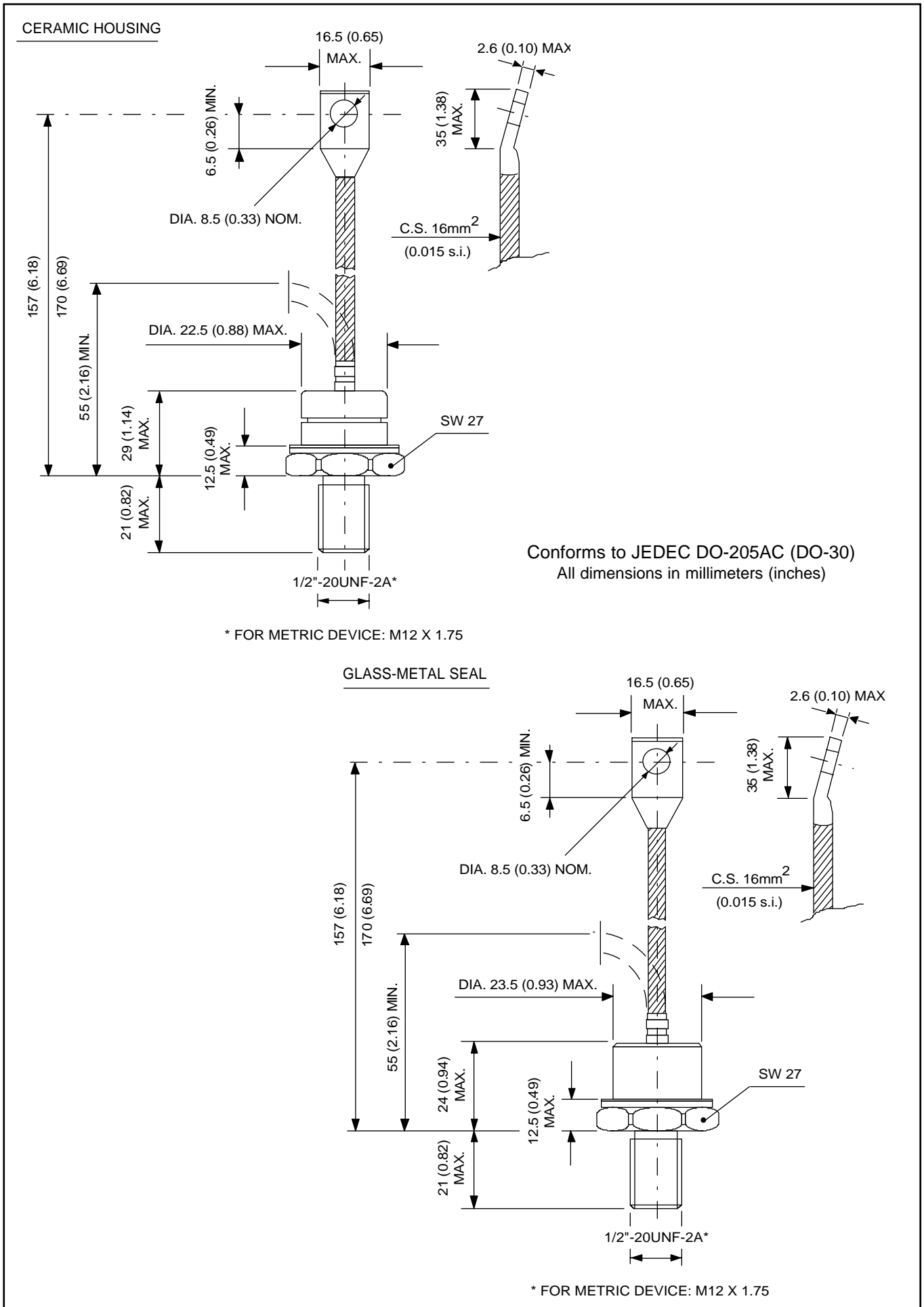
**Device Code**

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<sub>RRM</sub> (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)

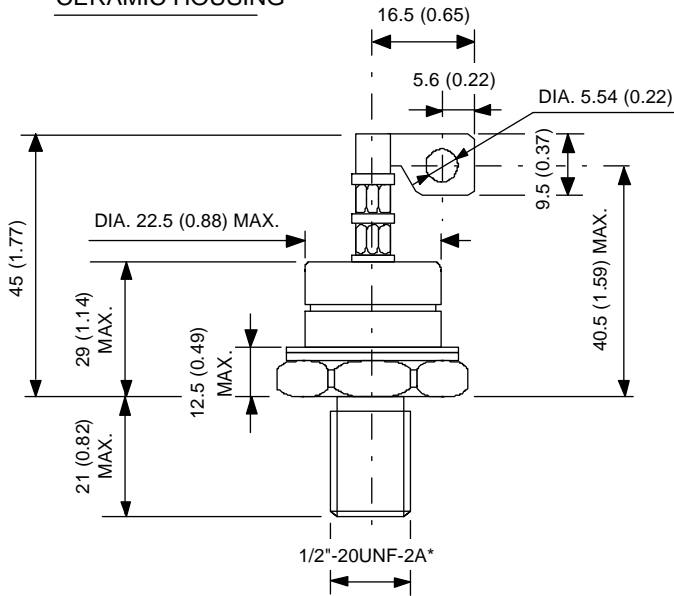
# SD150N/R Series

## Outline Table

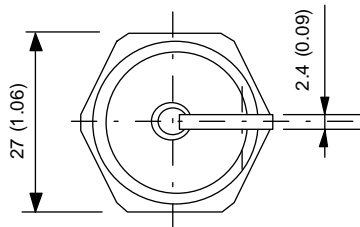


Outline Table

CERAMIC HOUSING

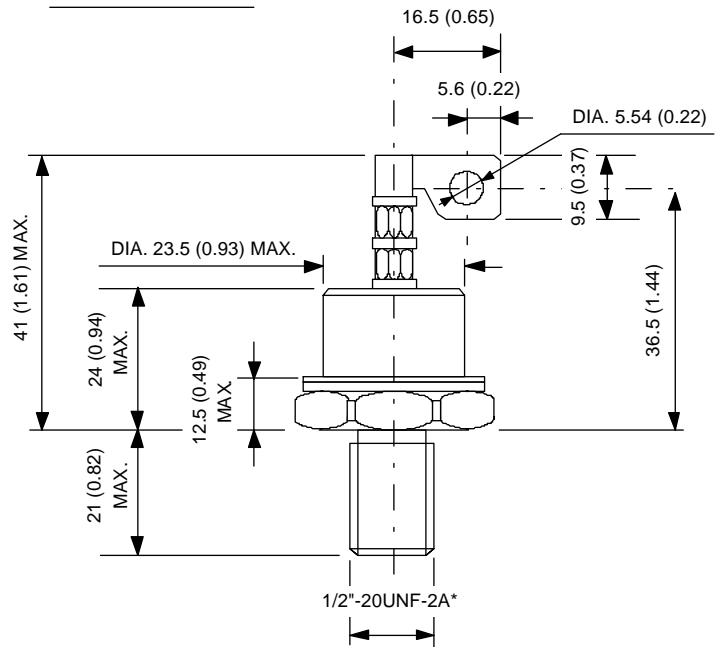


\*FOR METRIC DEVICE. M12 X 1.75

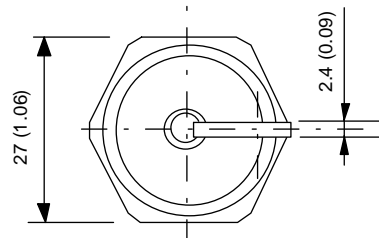


DO-205AC (DO-30) Flag  
All dimensions in millimeters (inches)

GLASS-METAL SEAL



\*FOR METRIC DEVICE. M12 X 1.75



# SD150N/R Series

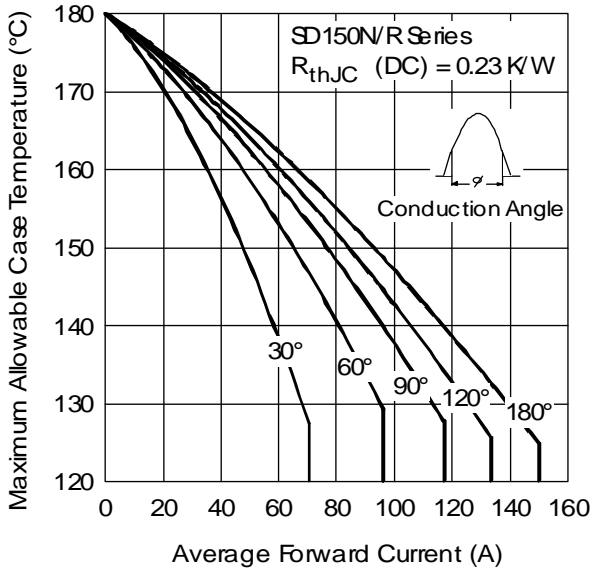


Fig. 1 - Current Ratings Characteristics

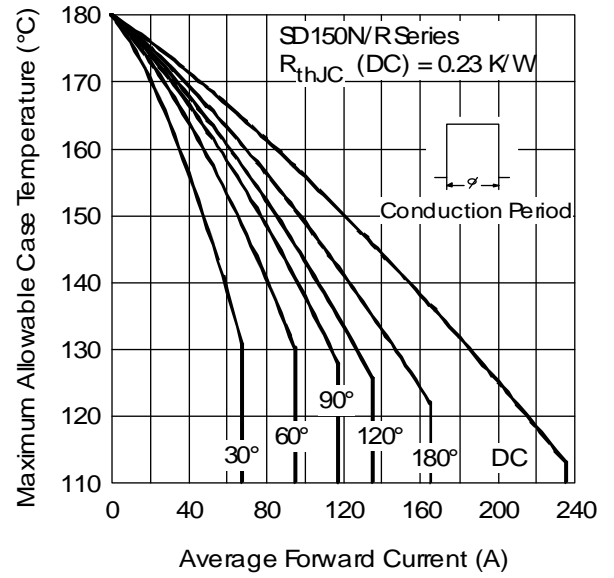


Fig. 2 - Current Ratings Characteristics

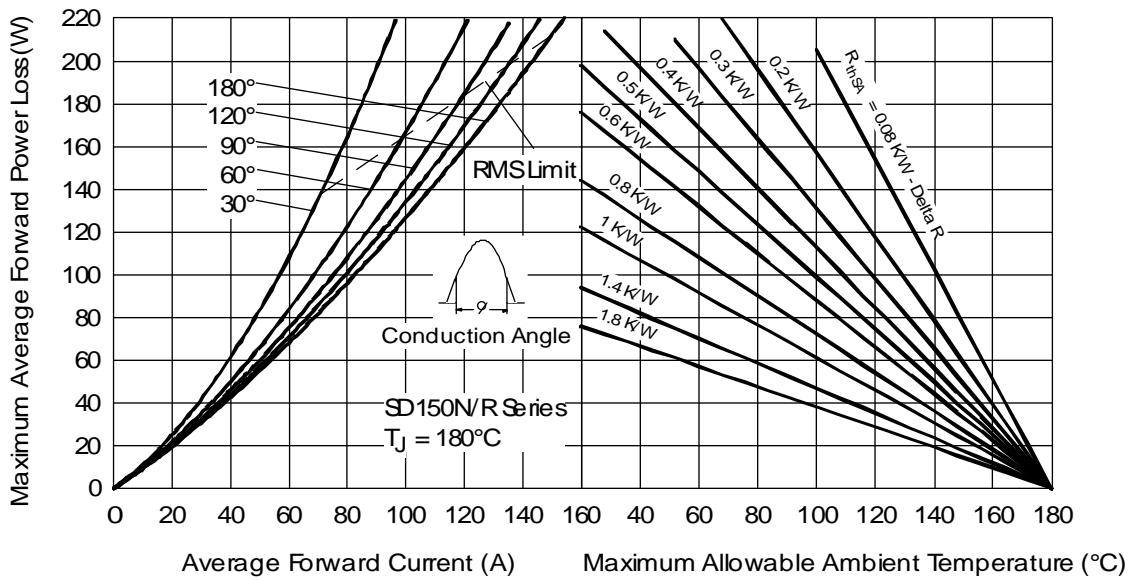


Fig. 3 - Forward Power Loss Characteristics

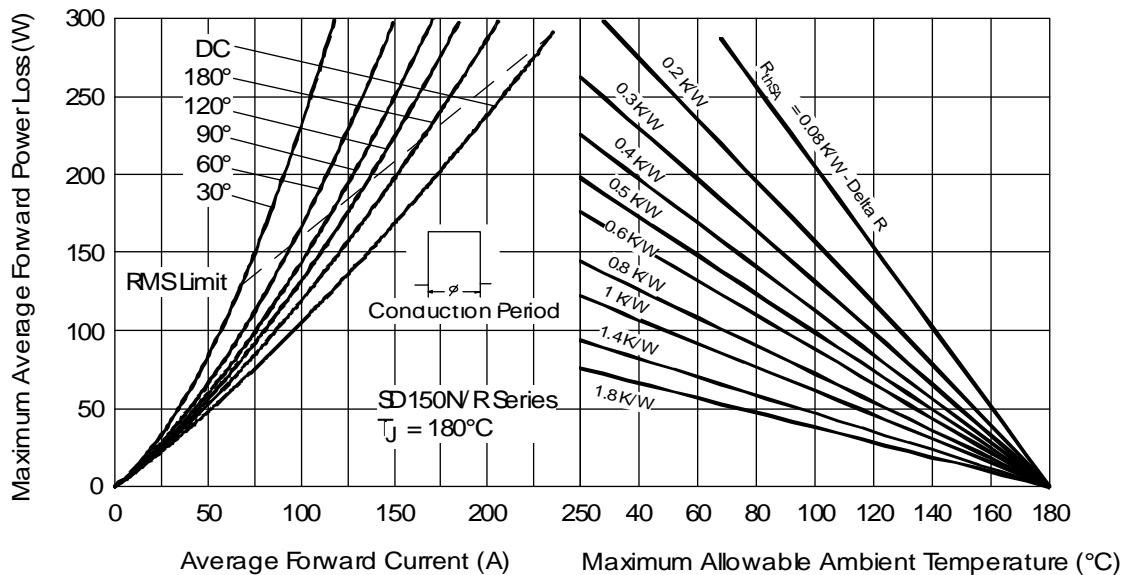


Fig. 4 - Forward Power Loss Characteristics

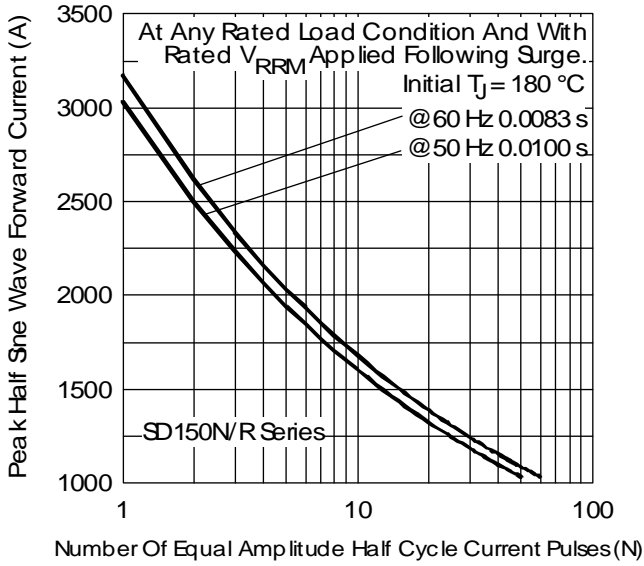


Fig. 5 - Maximum Non-Repetitive Surge Current

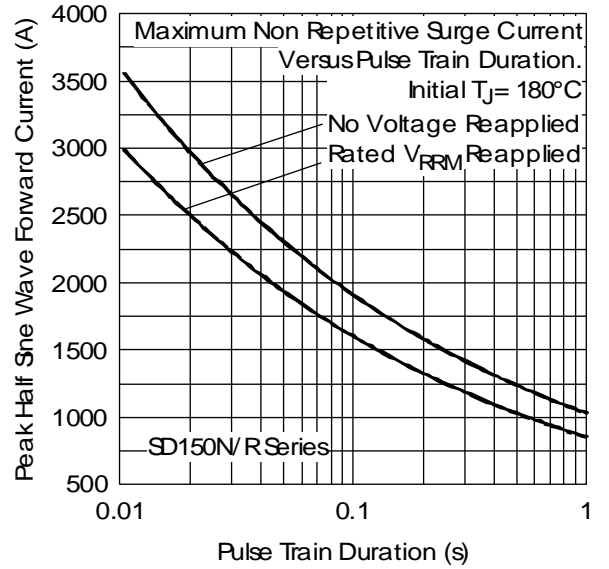


Fig. 6 - Maximum Non-Repetitive Surge Current

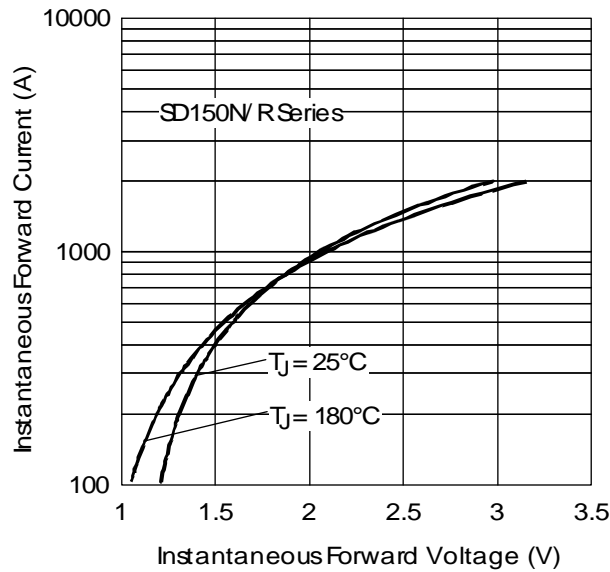


Fig. 7 - Forward Voltage Drop Characteristics

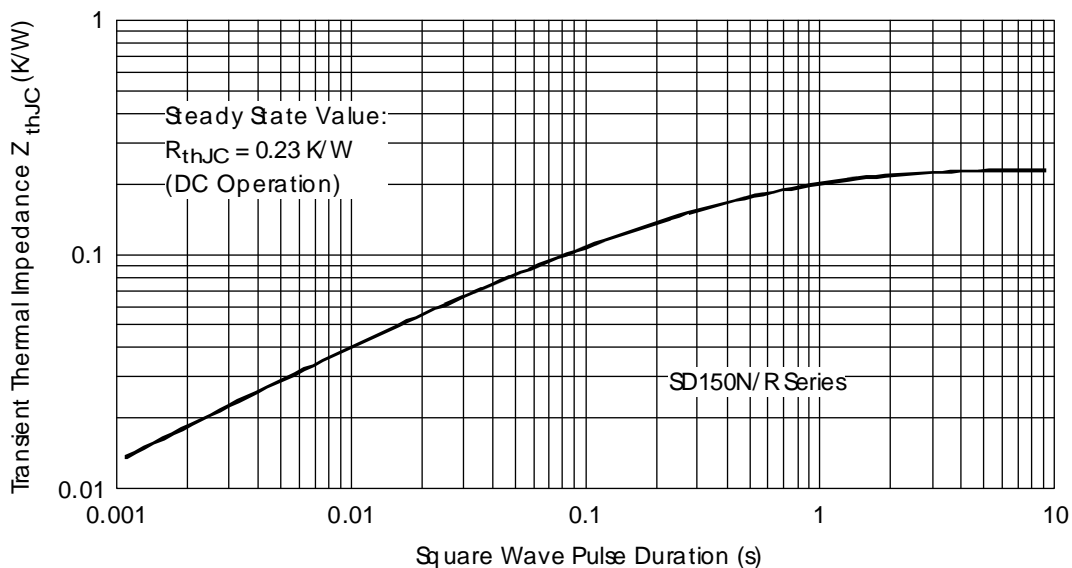


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristic