

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

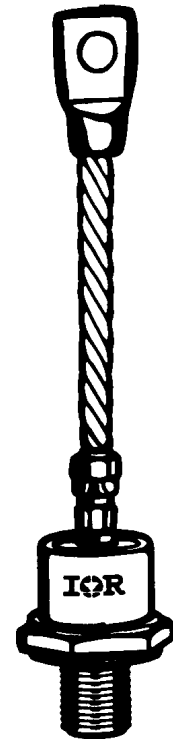
150A

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 ² s
@ 60Hz	59	KA ² 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 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% x π x $I_{F(AV)}$) < I < (π x $I_{F(AV)}$), $T_J = T_J$ max.
$V_{F(TO)2}$ High level value of threshold voltage	1.06		(I > π x $I_{F(AV)}$), $T_J = T_J$ max.
r_{f1} Low level value of forward slope resistance	1.27	m Ω	(16.7% x π x $I_{F(AV)}$) < I < (π x $I_{F(AV)}$), $T_J = T_J$ max.
r_{f2} High level value of forward slope resistance	1.04		(I > π 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_J Max. junction operating temperature	-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)

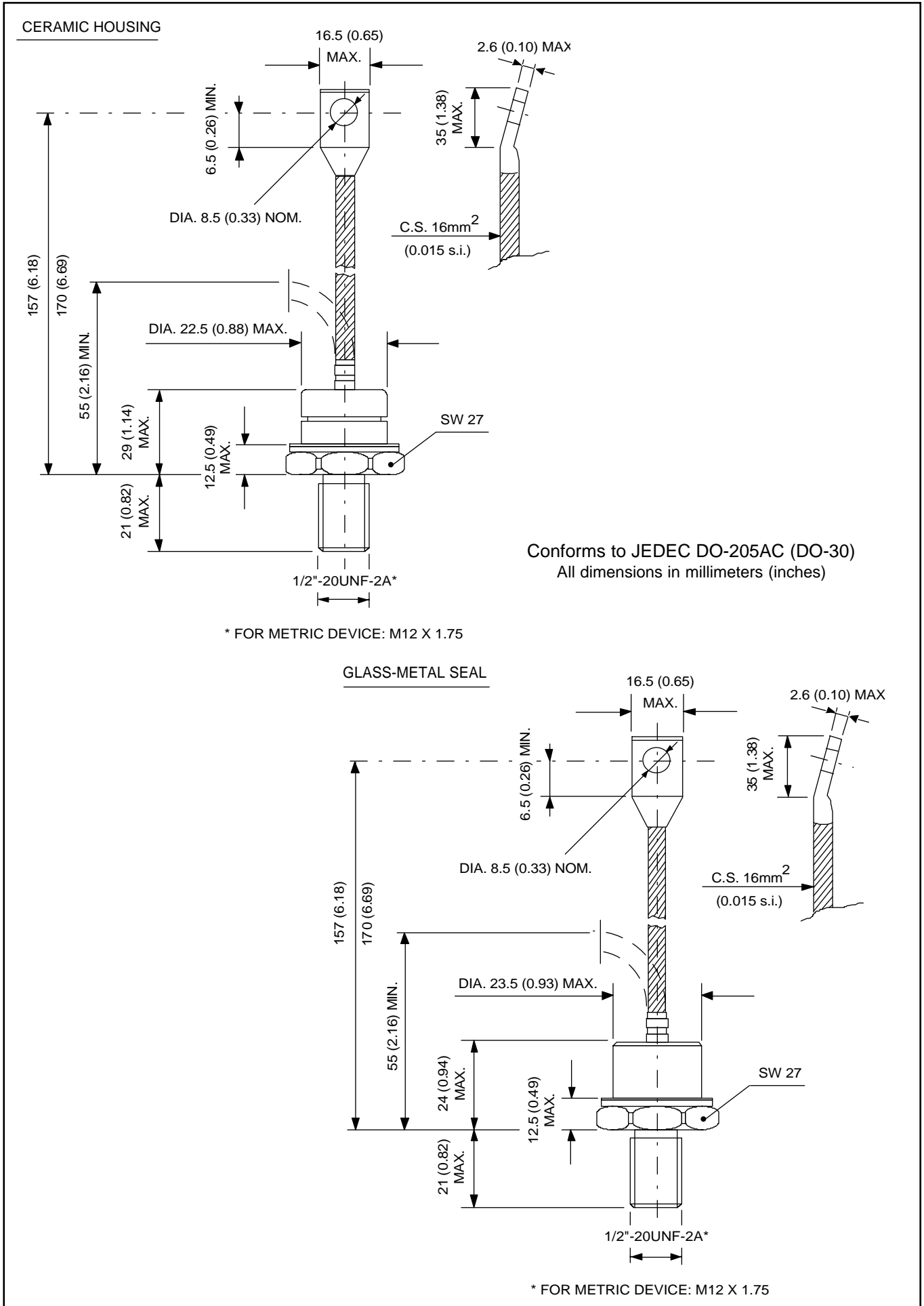
Conduction angle	Sinusoidal conduction	Rectangular conduction	Units	Conditions
180°	0.041	0.030	K/W	$T_J = T_J \text{ max.}$
120°	0.049	0.051		
90°	0.063	0.068		
60°	0.093	0.096		
30°	0.156	0.157		

Ordering Information Table

Device Code	
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)

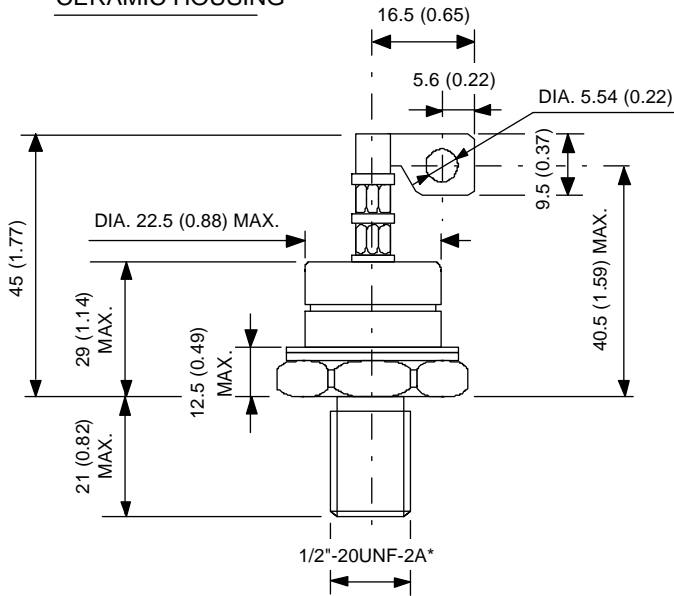
SD150N/R Series

Outline Table

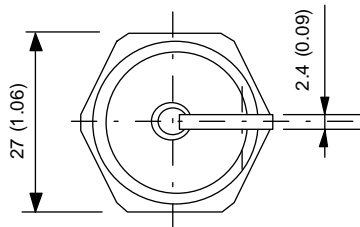


Outline Table

CERAMIC HOUSING

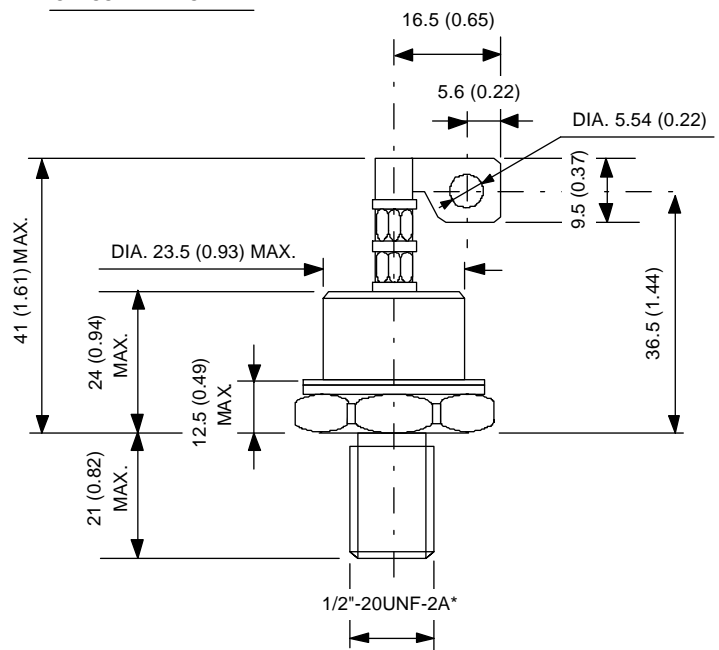


*FOR METRIC DEVICE. M12 X 1.75

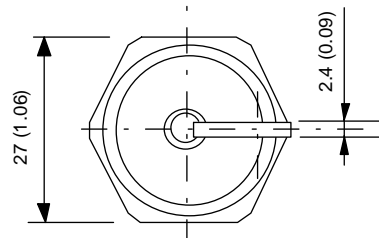


DO-205AC (DO-30) Flag
All dimensions in millimeters (inches)

GLASS-METAL SEAL



*FOR METRIC DEVICE. M12 X 1.75



SD150N/R Series

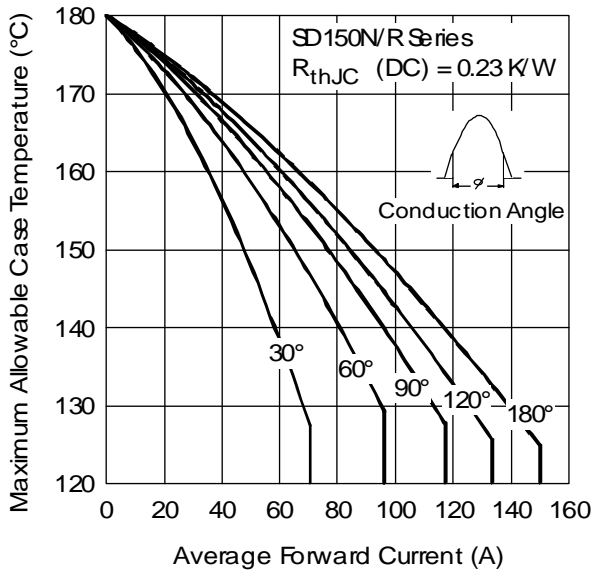


Fig. 1 - Current Ratings Characteristics

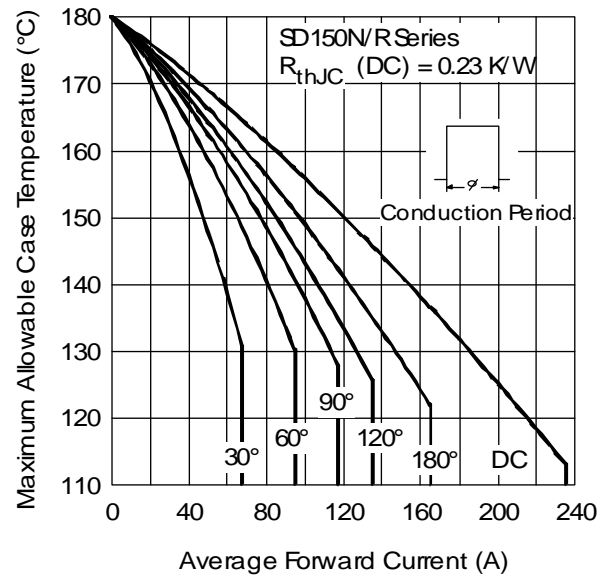


Fig. 2 - Current Ratings Characteristics

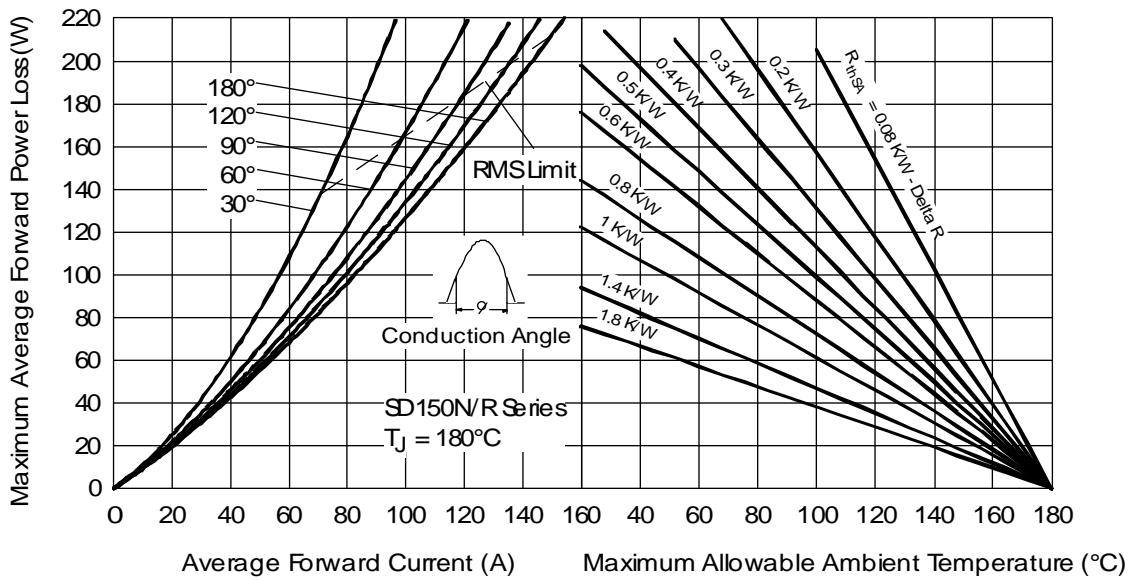


Fig. 3 - Forward Power Loss Characteristics

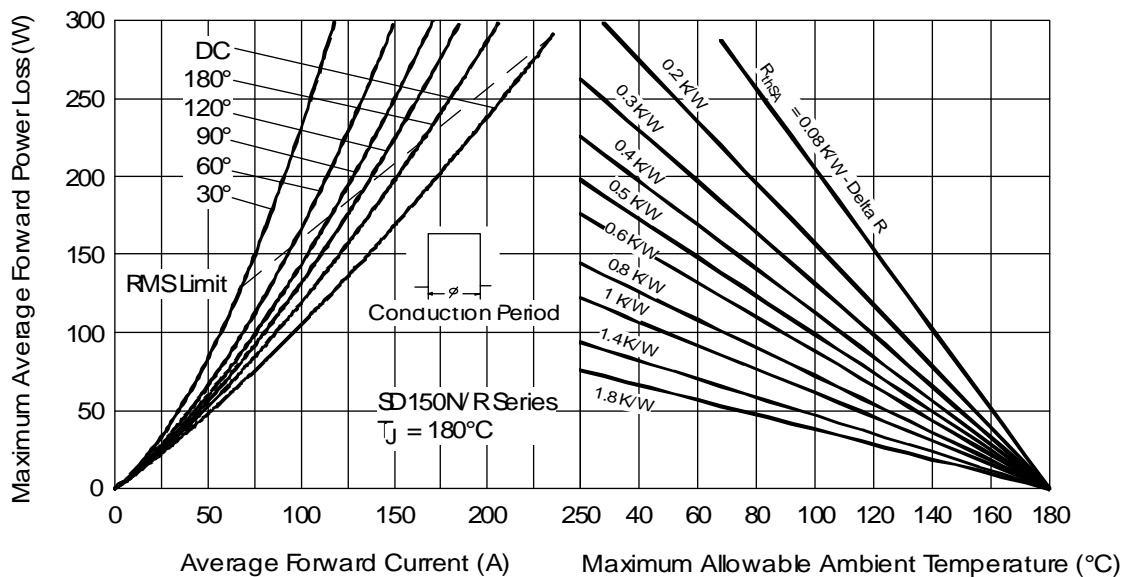


Fig. 4 - Forward Power Loss Characteristics

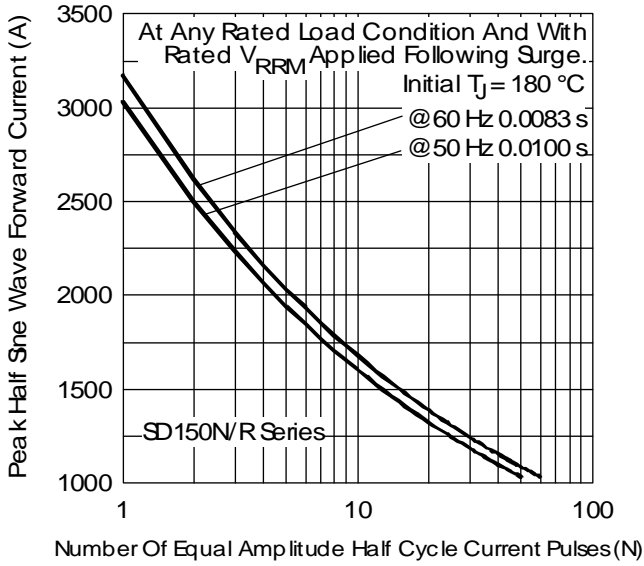


Fig. 5 - Maximum Non-Repetitive Surge Current

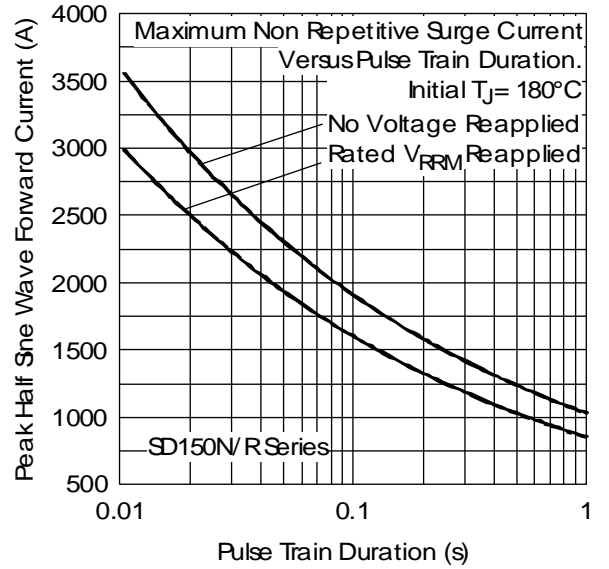


Fig. 6 - Maximum Non-Repetitive Surge Current

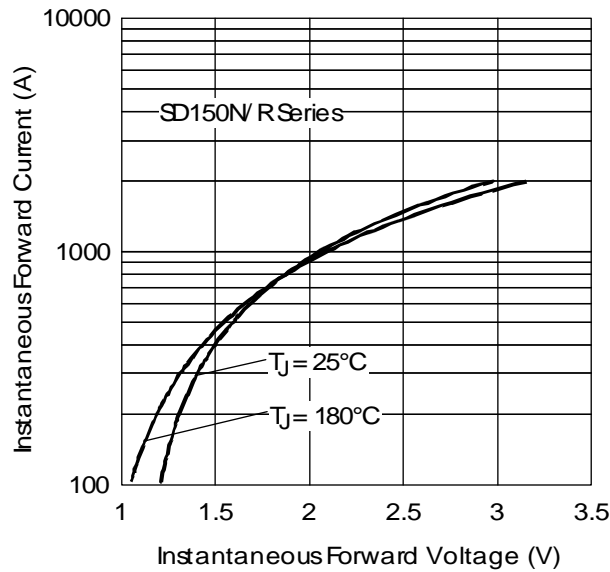


Fig. 7 - Forward Voltage Drop Characteristics

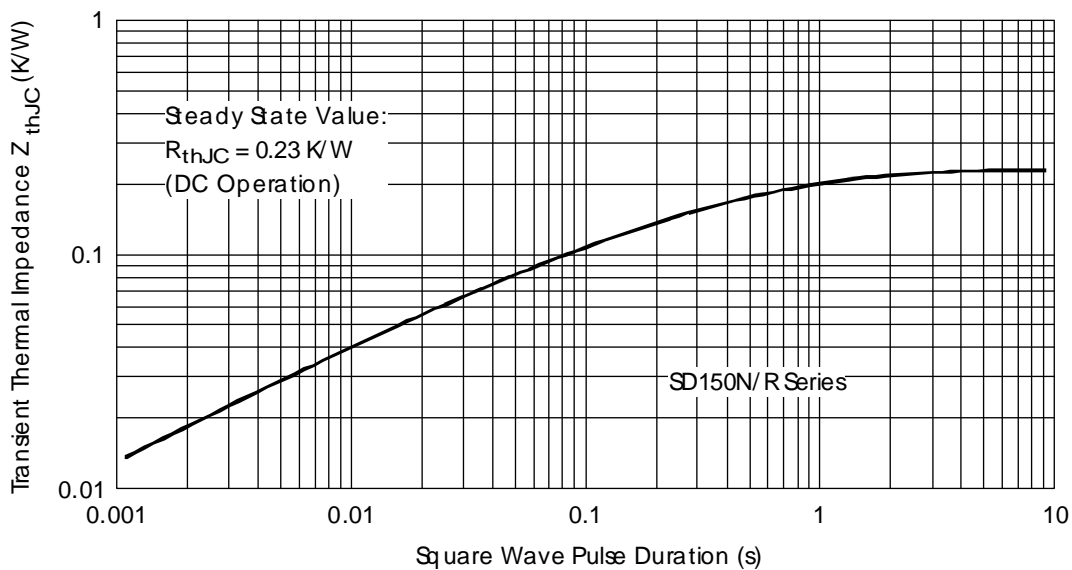


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic