

### STANDARD RECOVERY DIODES

Stud Version

#### Features

- Wide current range
- High voltage ratings up to 2400V
- High surge current capabilities
- Stud cathode and stud anode version
- Standard JEDEC types

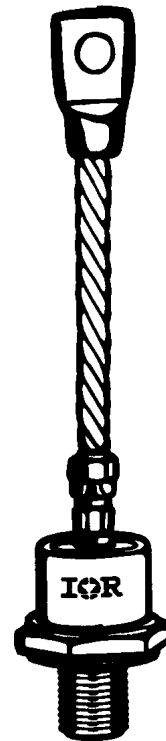
200A

#### Typical Applications

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

#### Major Ratings and Characteristics

Parameters	SD200N/R	Units
$I_{F(AV)}$	200	A
@ $T_C$	110	°C
$I_{F(RMS)}$	314	A
$I_{FSM}$ @ 50Hz	4700	A
@ 60Hz	4920	A
$I^2t$ @ 50Hz	110	KA <sup>2</sup> s
@ 60Hz	101	KA <sup>2</sup> s
$V_{RRM}$ range	400 to 2400	V
$T_J$	- 40 to 180	°C



case style  
DO-205AC (DO-30)

# SD200N/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
SD200N/R	04	400	500	15
	08	800	900	
	12	1200	1300	
	16	1600	1700	
	20	2000	2100	
	24	2400	2500	

### Forward Conduction

Parameter	SD200N/R	Units	Conditions
$I_{F(AV)}$ Max. average forward current @ Case temperature	200	A	180° conduction, half sine wave
	110	°C	
$I_{F(AV)}$ Max. average forward current @ Case temperature	220	A	180° conduction, half sine wave
	100	°C	
$I_{F(RMS)}$ Max. RMS forward current	314	A	DC @ 95°C case temperature
$I_{FSM}$ Max. peak, one-cycle forward, non-repetitive surge current	4700	A	t = 10ms No voltage
	4920		t = 8.3ms reapplied
	3950		t = 10ms 100% $V_{RRM}$
	4140		t = 8.3ms reapplied
$I^2t$ Maximum $I^2t$ for fusing	110	KA <sup>2</sup> s	t = 10ms No voltage
	101		t = 8.3ms reapplied
	78		t = 10ms 100% $V_{RRM}$
	71		t = 8.3ms reapplied
$I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing	1100	KA <sup>2</sup> √s	t = 0.1 to 10ms, no voltage reapplied
$V_{F(TO)1}$ Low level value of threshold voltage	0.90	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	1.00		( $I > \pi$ x $I_{F(AV)}$ ), $T_J = T_J$ max.
$r_{f1}$ Low level value of forward slope resistance	0.79	mΩ	(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	0.64		( $I > \pi$ x $I_{F(AV)}$ ), $T_J = T_J$ max.
$V_{FM}$ Max. forward voltage drop	1.40	V	$I_{pk} = 630A$ , $T_J = T_J$ max, $t_p = 10ms$ sinusoidal wave

## Thermal and Mechanical Specifications

Parameter	SD200N/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 $\pm 10\%$	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  $R_{thJC}$  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		

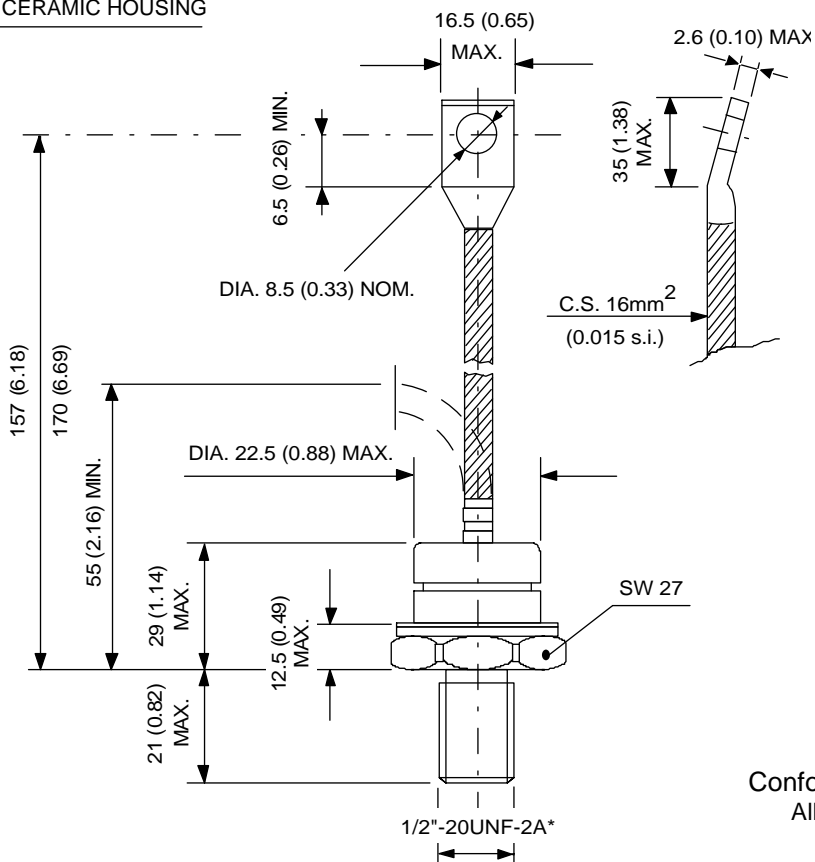
## Ordering Information Table

Device Code	
<b>1</b>	- Diode
<b>2</b>	- Essential part number
<b>3</b>	- 0 = Standard recovery
<b>4</b>	- N = Stud Normal Polarity (Cathode to Stud) R = Stud Reverse Polarity (Anode to Stud)
<b>5</b>	- Voltage code: Code x 100 = $V_{RRM}$ (See Voltage Ratings table)
<b>6</b>	- P = Stud base DO-205AC (DO-30) 1/2" 20UNF-2A M = Stud base DO-205AC (DO-30) M12 X 1.75
<b>7</b>	- B = Flag top terminal (for Cathode/ Anode Leads) S = Isolated lead with silicone sleeve (Red = Reverse Polarity; Blue = Normal Polarity) None = Non isolated lead
<b>8</b>	- C = Ceramic Housing (over 1600V) V = Glass-metal seal (only up to 1600V)

# SD200N/R Series

## Outline Table

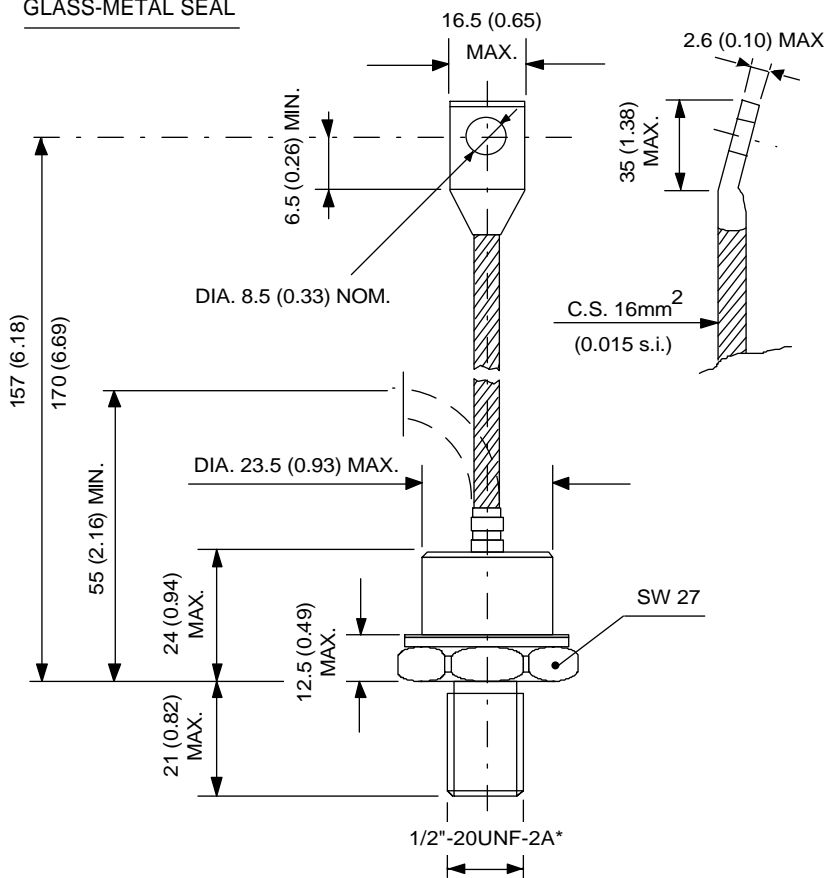
### CERAMIC HOUSING



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

\* FOR METRIC DEVICE: M12 X 1.75

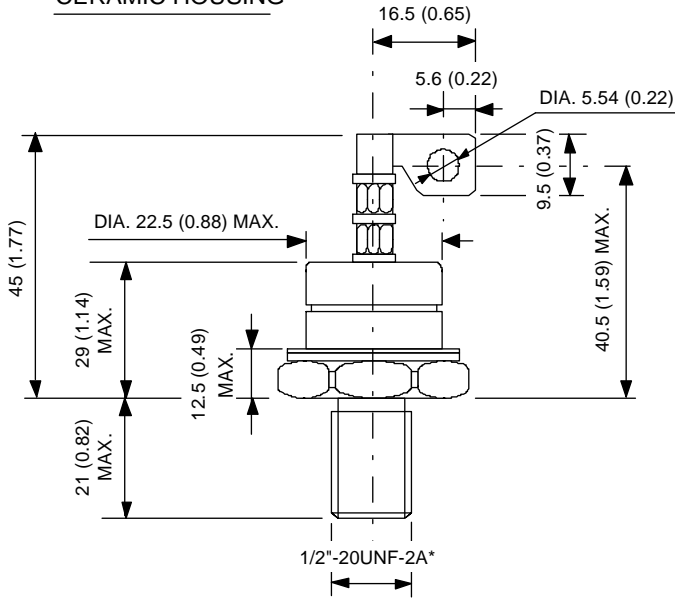
### GLASS-METAL SEAL



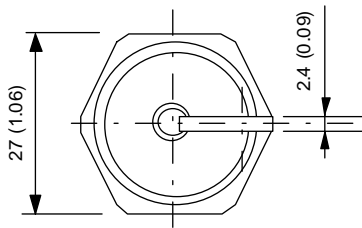
\* FOR METRIC DEVICE: M12 X 1.75

Outline Table

CERAMIC HOUSING

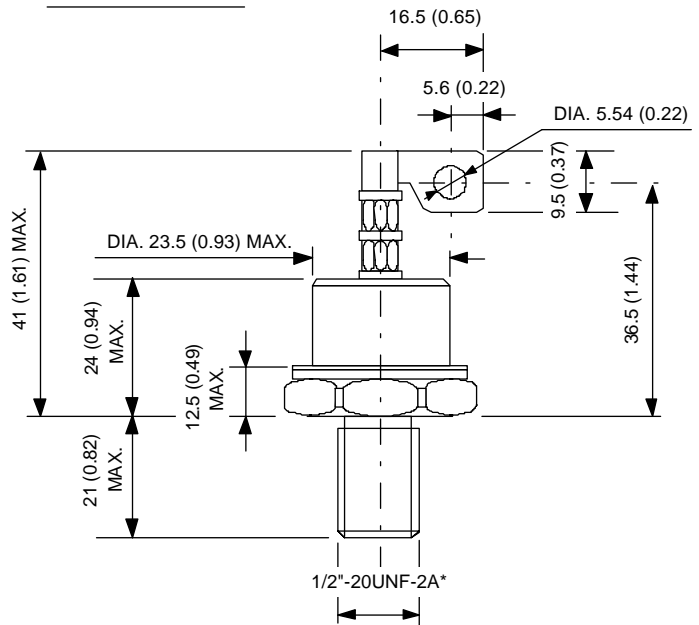


\*FOR METRIC DEVICE. M12 X 1.75

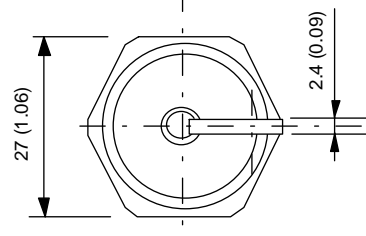


DO-205AC (DO-30) Flag  
All dimensions in millimeters (inches)

GLASS-METAL SEAL



\*FOR METRIC DEVICE. M12 X 1.75



# SD200N/R Series

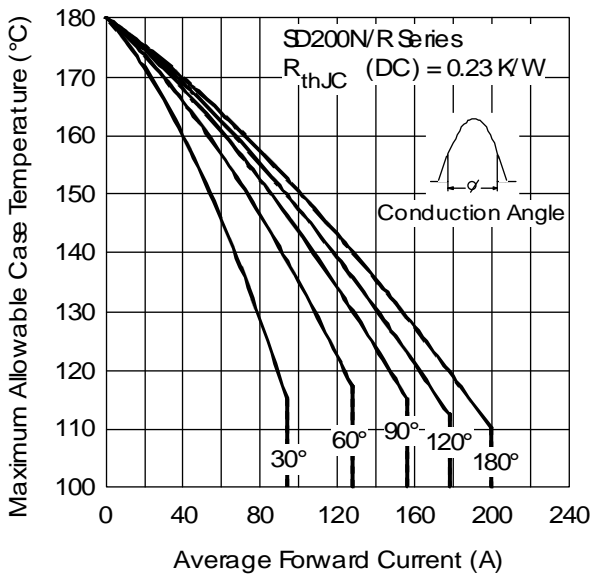


Fig. 1 - Current Ratings Characteristics

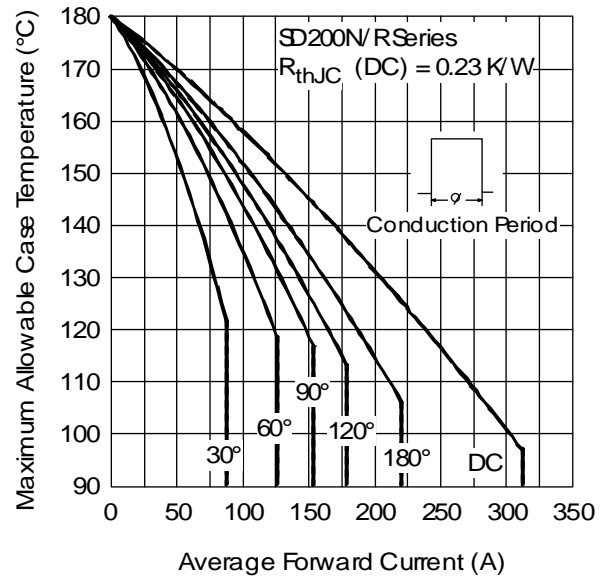


Fig. 2 - Current Ratings Characteristics

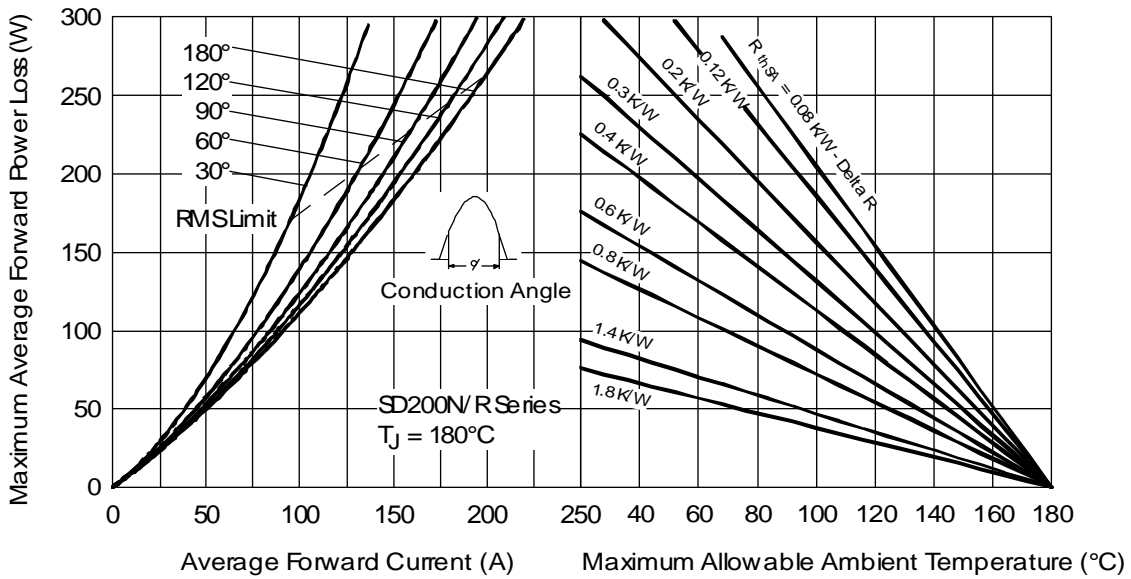


Fig. 3 - Forward Power Loss Characteristics

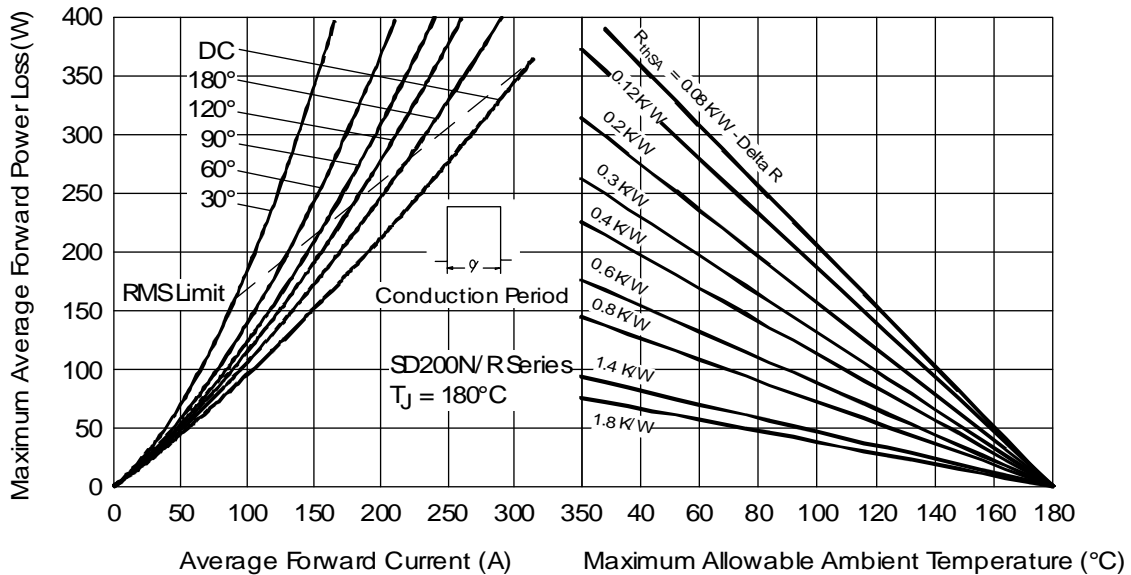


Fig. 4 - Forward Power Loss Characteristics

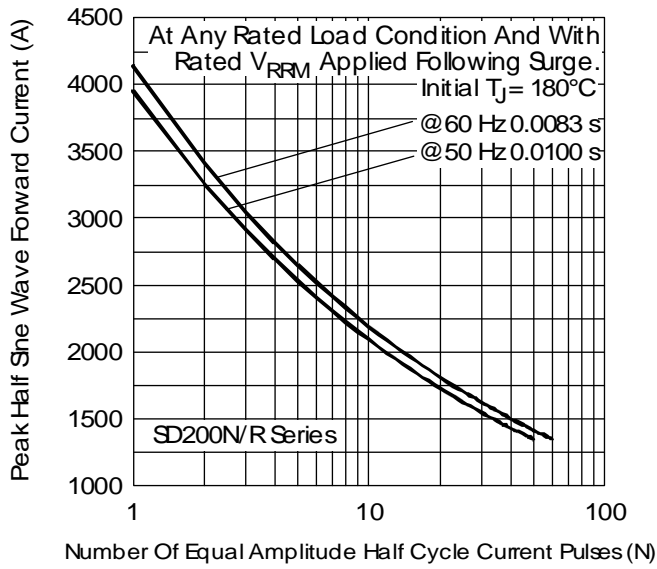


Fig. 5 - Maximum Non-Repetitive Surge Current

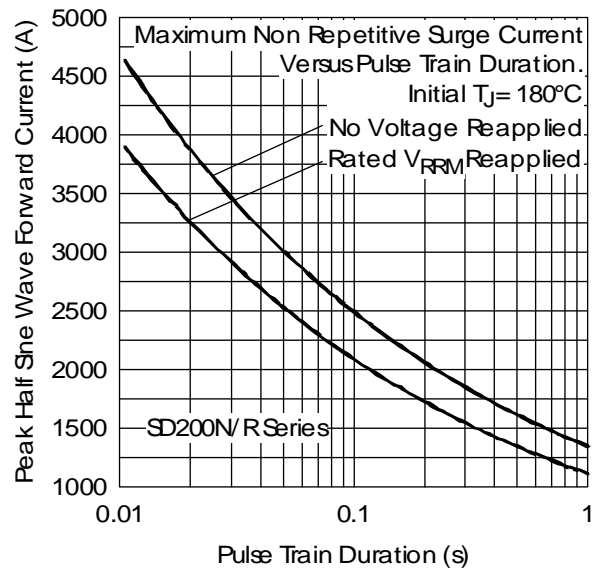


Fig. 6 - Maximum Non-Repetitive Surge Current

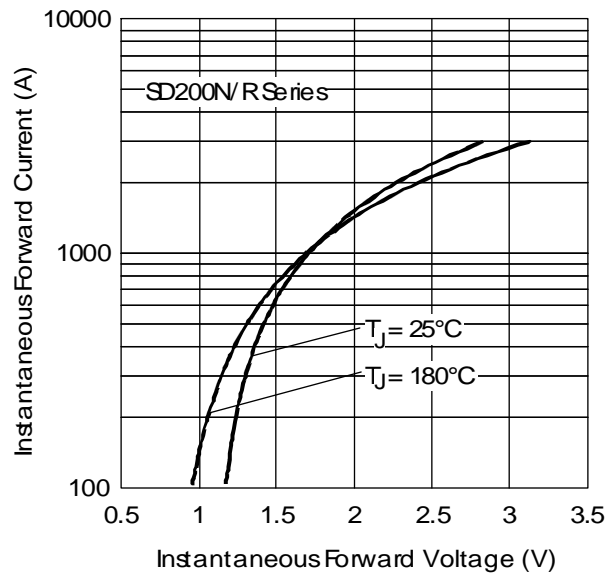


Fig. 7 - Forward Voltage Drop Characteristics

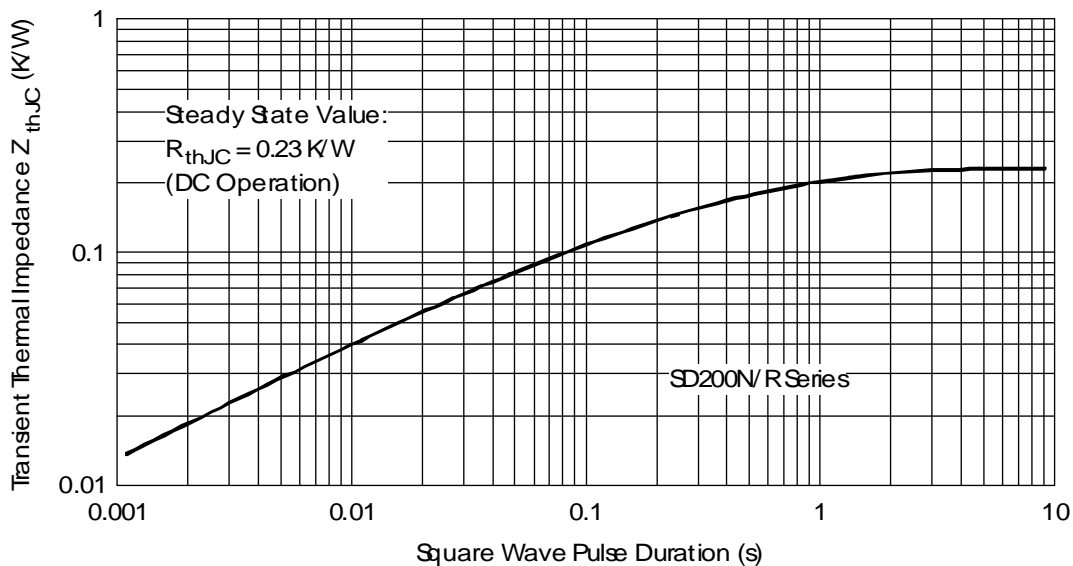


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristic