Bulletin I2080/A

International
IOR Rectifier

SD200N/R SERIES

STANDARD RECOVERY DIODES

Stud Version

200A

Features

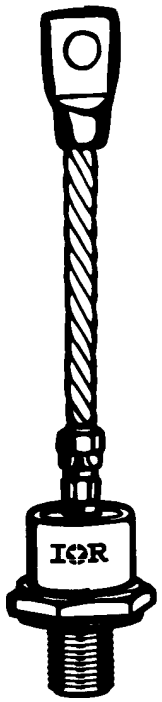
- Wide current range
- High voltage ratings up to 2400V
- High surge current capabilities
- Stud cathode and stud anode version
- Standard JEDEC types

Typical Applications

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

Major Ratings and Characteristics

Parameters		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^2s
	@ 60Hz	101	KA^2s
V_{RRM} range		400 to 2400	V
T_J		- 40 to 180	°C



case style
DO-205AC (DO-30)

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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
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	200 110	A °C	180° conduction, half sine wave		
$I_{F(AV)}$	Max. average forward current @ Case temperature	220 100	A °C	180° conduction, half sine wave		
$I_{F(RMS)}$	Max. RMS forward current	314	A	DC @ 95°C case temperature		
I_{FSM}	Max. peak, one-cycle forward, non-repetitive surge current	4700 4920 3950 4140	A	t = 10ms t = 8.3ms t = 10ms t = 8.3ms	No voltage reapplied 100% V_{RRM} reapplied	Sinusoidal half wave, Initial $T_J = T_J$ max.
I^2t	Maximum I^2t for fusing	110 101 78 71	KA^2s	t = 10ms t = 8.3ms t = 10ms t = 8.3ms	No voltage reapplied 100% V_{RRM} reapplied	
$I^2\sqrt{t}$	Maximum $I^2\sqrt{t}$ for fusing	1100	$KA^2\sqrt{s}$	t = 0.1 to 10ms, no voltage reapplied		
$V_{F(TO)1}$	Low level value of threshold voltage	0.90	V	(16.7% x 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	1.00		(I > π x $I_{F(AV)}$),$T_J = T_J$ max.		
r_{f1}	Low level value of forward slope resistance	0.79	mΩ	(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	0.64		(I > π 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	℃	
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 resistence 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	20	0	N	24	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)

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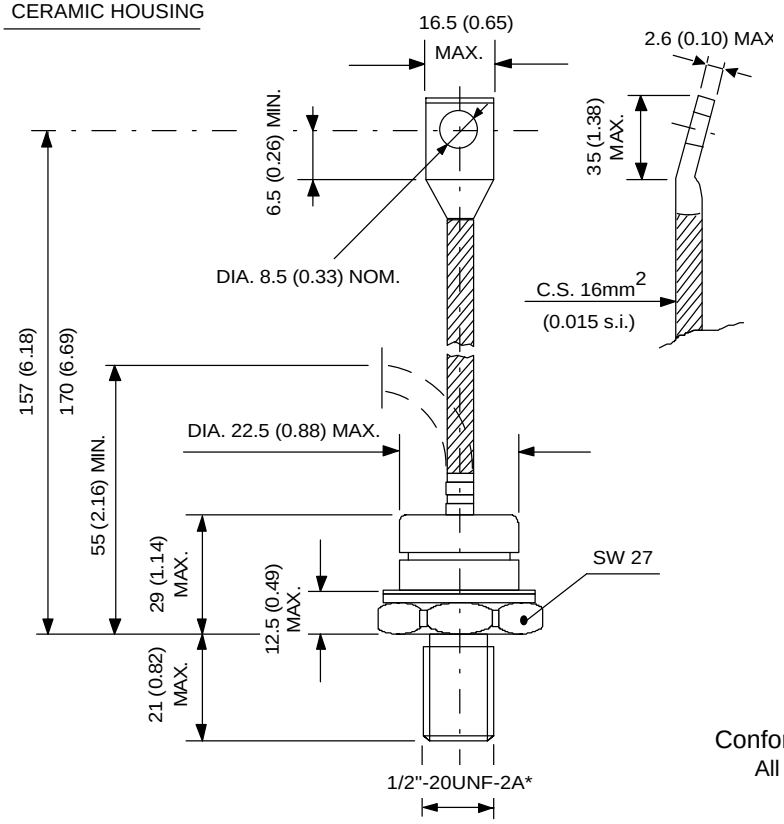
SD200N/R Series

Outline Table

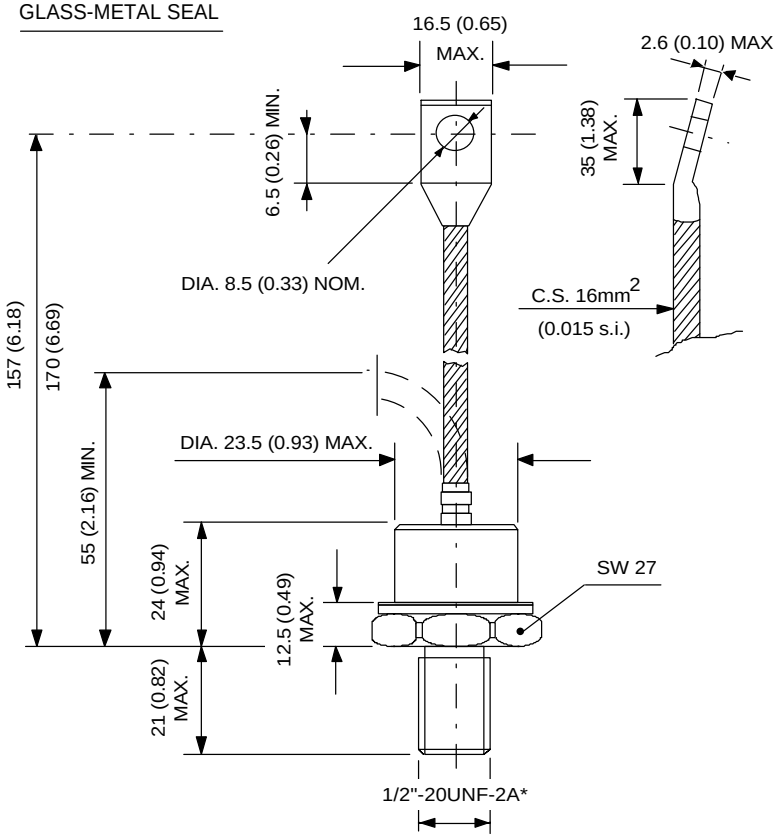
CERAMIC HOUSING



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

* FOR METRIC DEVICE: M12 X 1.75

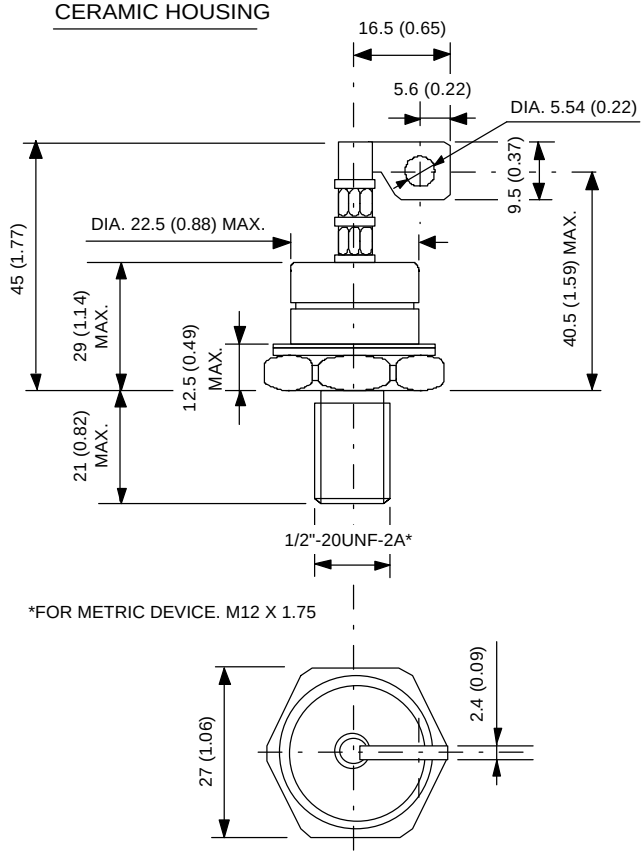
GLASS-METAL SEAL



* FOR METRIC DEVICE: M12 X 1.75

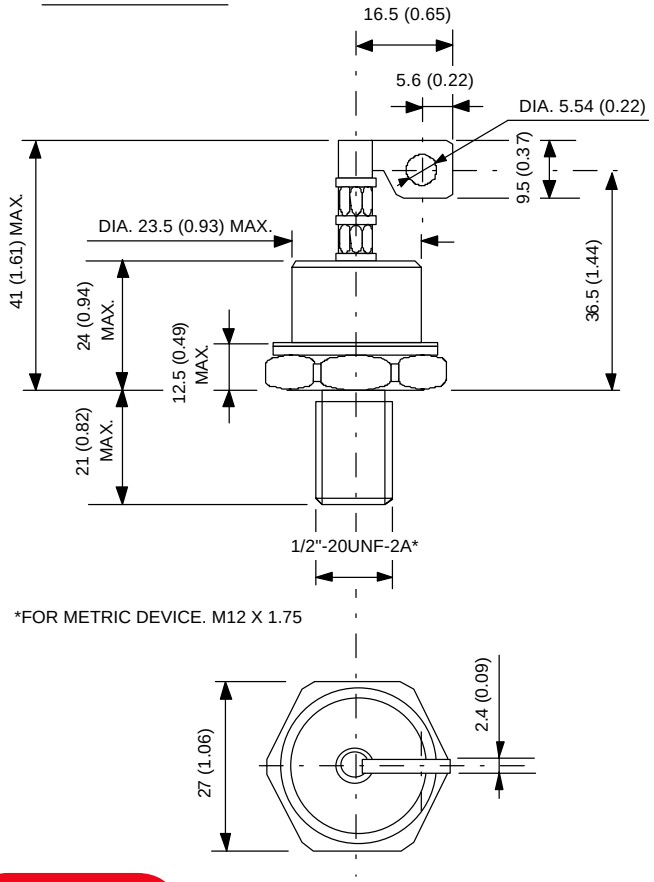
Outline Table

CERAMIC HOUSING



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

GLASS-METAL SEAL



SD200N/R Series

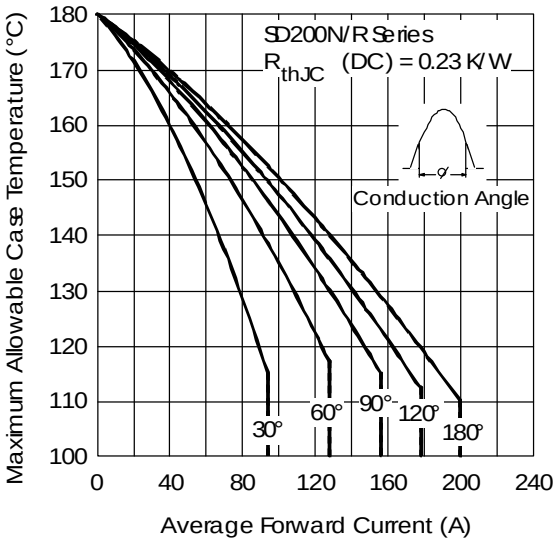


Fig. 1 - Current Ratings Characteristics

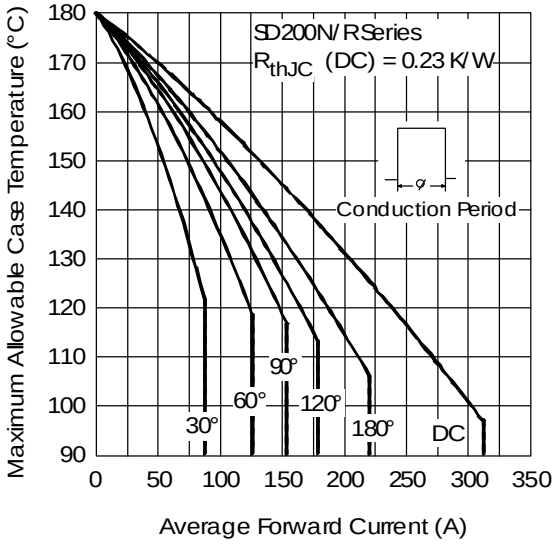


Fig. 2 - Current Ratings Characteristics

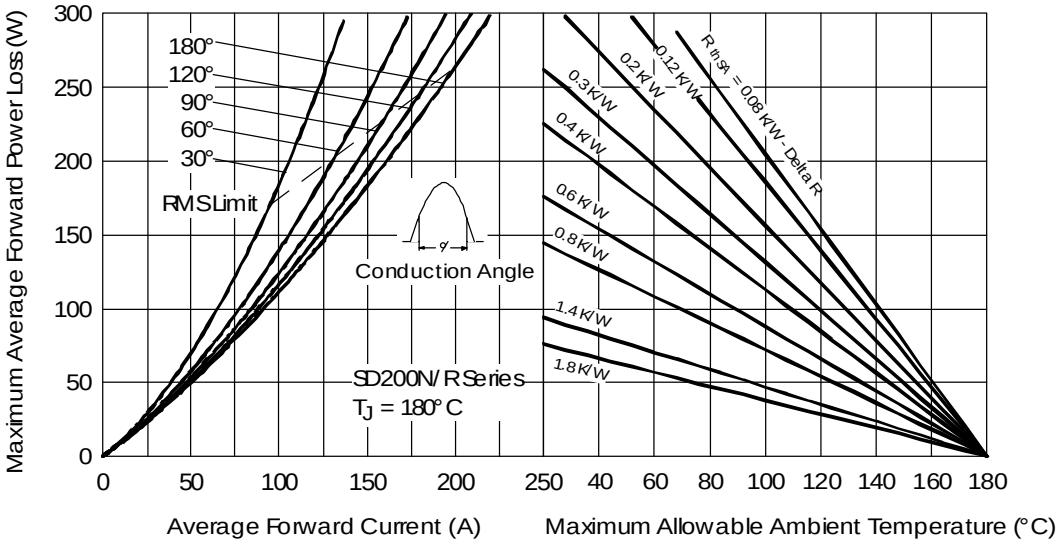


Fig. 3 - Forward Power Loss Characteristics

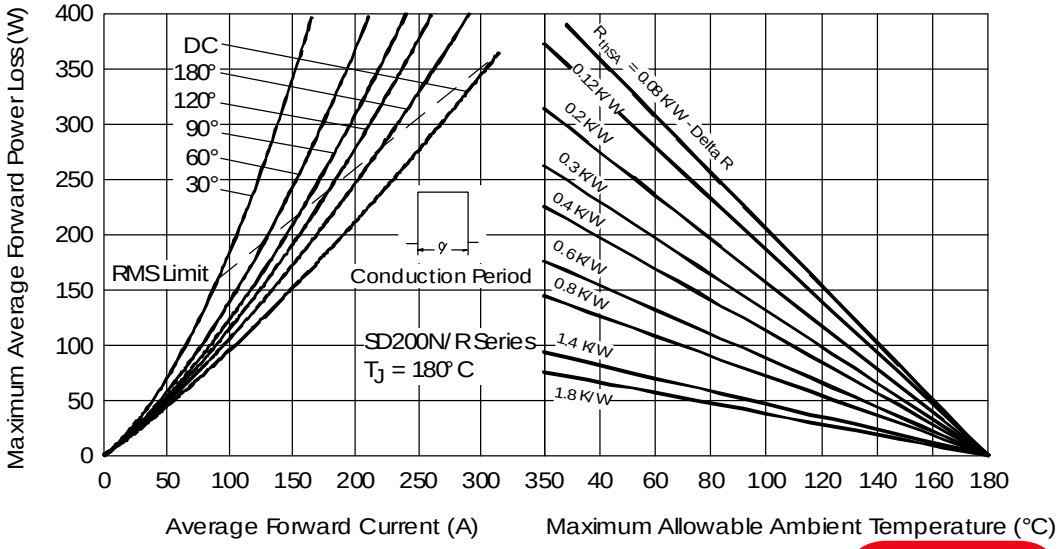


Fig. 4 - Forward Power Loss Characteristics

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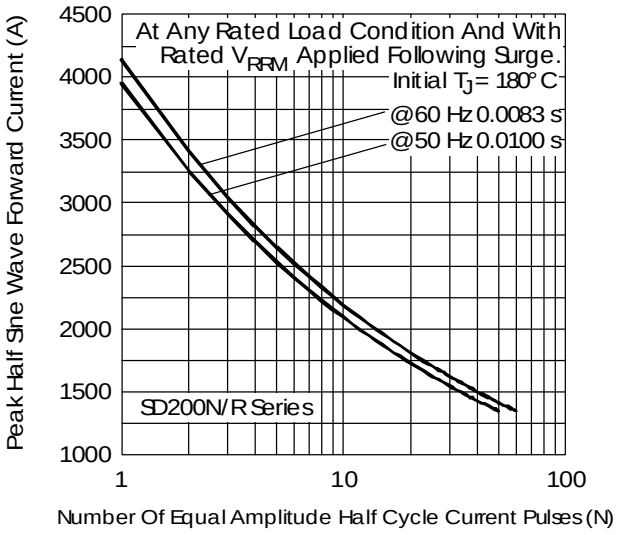

Fig. 5 - Maximum Non-Repetitive Surge Current

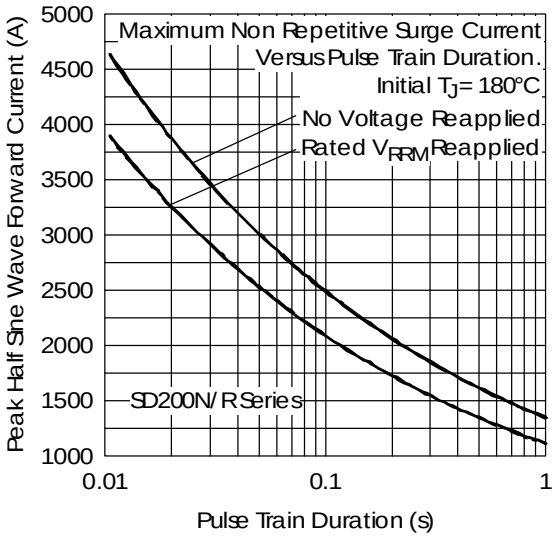

Fig. 6 - Maximum Non-Repetitive Surge Current

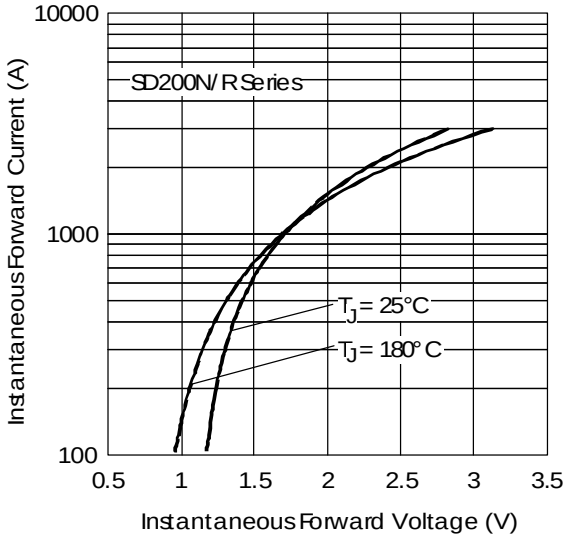

Fig. 7 - Forward Voltage Drop Characteristics

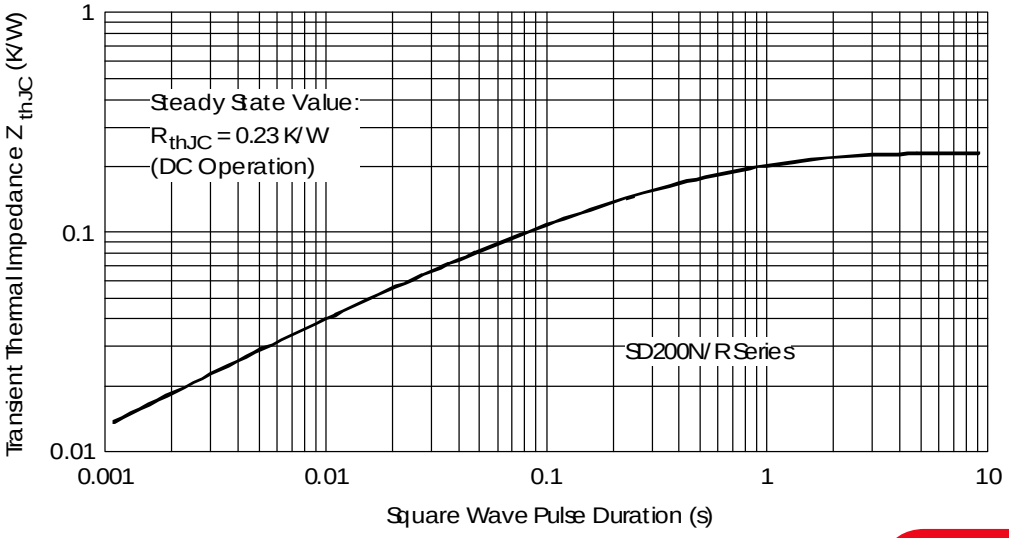

Fig. 8 - Thermal Impedance Z_{thJC} Characteristic

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