

STANDARD RECOVERY DIODES

Stud Version

Features

- Wide current range
- High voltage ratings up to 3200V
- High surge current capabilities
- Stud cathode and stud anode version
- Standard JEDEC types

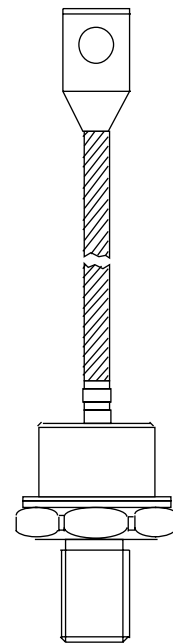
380A

Typical Applications

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

Major Ratings and Characteristics

Parameters	SD300N/R		Units
	04 to 20	25 to 32	
$I_{F(AV)}$	380	380	A
@ T_C	100	70	°C
$I_{F(RMS)}$	595	425	A
I_{FSM} @ 50Hz	6050	6050	A
@ 60Hz	6335	6335	A
I^2t @ 50Hz	183	183	KA ² s
@ 60Hz	167	167	KA ² s
V_{RRM} range	400 to 2000	2500 to 3200	V
T_J	- 40 to 180	- 40 to 150	°C



case style
DO-205AB (DO-9)

SD300N/R Series

Bulletin I2081 rev. A 08/94

International
IR Rectifier

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
SD300N/R	04	400	500	15
	08	800	900	
	12	1200	1300	
	16	1600	1700	
	20	2000	2100	
	25	2500	2600	
	28	2800	2900	
	32	3200	3300	

Forward Conduction

Parameter		SD300N/R		Units	Conditions			
		04 to 20	25 to 32					
I _{F(AV)}	Max. average forward current @ Case temperature	380	270	A	180° conduction, half sine wave			
		100	100	°C				
I _{F(AV)}	Max. average forward current @ Case temperature	300	380	A	180° conduction, half sine wave			
		125	70	°C				
I _{F(RMS)}	Max. RMS forward current	595	425	A	DC @ T _C = 88°C (02 to 24), T _C = 91°C (25 to 32)			
I _{FSM}	Max. peak, one-cycle forward, non-repetitive surge current	6050	6050	A	t = 10ms	No voltage	Sinusoidal half wave, Initial T _J = T _J max.	
		6335	6335		t = 8.3ms	reapplied		
		5090	5090		t = 10ms	100% V _{RRM}		
		5330	5330		t = 8.3ms	reapplied		
I ² t	Maximum I ² t for fusing	183	183	KA ² s	t = 10ms	No voltage		
		167	167		t = 8.3ms	reapplied		
		129	129		t = 10ms	100% V _{RRM}		
		118	118		t = 8.3ms	reapplied		
I ² √t	Maximum I ² √t for fusing	1830	1830	KA ² √s	t = 0.1 to 10ms, no voltage reapplied			
V _{F(TO)1}	Low level value of threshold voltage	0.95	0.95	V	(16.7% × π × I _{F(AV)} < I < π × I _{F(AV)}), T _J = T _J max.			
V _{F(TO)2}	High level value of threshold voltage	1.05	1.05		(I > π × I _{F(AV)}), T _J = T _J max.			
r _{f1}	Low level value of forward slope resistance	0.75	0.75	mΩ	(16.7% × π × I _{F(AV)} < I < π × I _{F(AV)}), T _J = T _J max.			
r _{f2}	High level value of forward slope resistance	0.66	0.66		(I > π × I _{F(AV)}), T _J = T _J max.			
V _{FM}	Max. forward voltage drop	1.83	1.83	V	I _{pk} = 1180A, T _J = T _J max, t _p = 10ms sinusoidal wave			

Thermal and Mechanical Specifications

Parameter		SD300N/R		Units	Conditions
		04 to 20	25 to 32		
T _j	Max. junction operating temperature range	-40 to 180	-40 to 150	°C	
T _{stg}	Max. storage temperature range	-55 to 200	-55 to 200		
R _{thJC}	Max. thermal resistance, junction to case	0.11		K/W	DC operation
R _{thCS}	Max. thermal resistance, case to heatsink	0.04			Mounting surface, smooth, flat and greased
T	Max. allowed mounting torque ±10%	27		Nm	Not lubricated threads
wt	Approximate weight	250		g	
Case style		DO-205AB (DO-9)			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
	04 to 20	25 to 32	04 to 20	25 to 32		
180°	0.019	0.019	0.013	0.013	K/W	$T_j = T_j \text{ max.}$
120°	0.023	0.023	0.023	0.023		
90°	0.028	0.028	0.030	0.030		
60°	0.042	0.042	0.044	0.044		
30°	0.073	0.073	0.074	0.074		

Ordering Information Table

Device Code							
SD	30	0	N	32	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-205AB (DO-9) 3/4" 16UNF-2A M = Stud base DO-205AB (DO-9) M16 X 1.5						
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)						

Bulletin I2081 rev. A 08/94

IOR Rectifier

CERAMIC HOUSING

210 (8.27) ± 10 (0.39)

82 (3.23) MIN.

38 (1.50) MAX.

21 (0.82) MAX.

16 (0.63) MAX.

3/4"-16UNF-2A*

DIA. 27.5 (1.08) MAX.

SW 32

19 (0.75) MAX.

9.5 (0.37) MIN.

DIA. 8.5 (0.33) NOM.

4 (0.16) MAX.

39 (1.53) MAX.

C.S. 35mm² (0.054 s.i.)

Conform to JEDEC DO-205AB (DO-9)

All dimensions in millimeters (inches)

* FOR METRIC DEVICE: M16 X 1.5

GLASS-METAL SEAL

200 (7.87) ± 10 (0.39)

75 (2.95) MIN.

28.5 (1.12) MAX.

16 (0.63) MAX.

3/4"-16UNF-2A*

DIA. 28.5 (1.08) MAX.

SW 32

19 (0.75) MAX.

9.5 (0.37) MIN.

DIA. 8.5 (0.33) NOM.

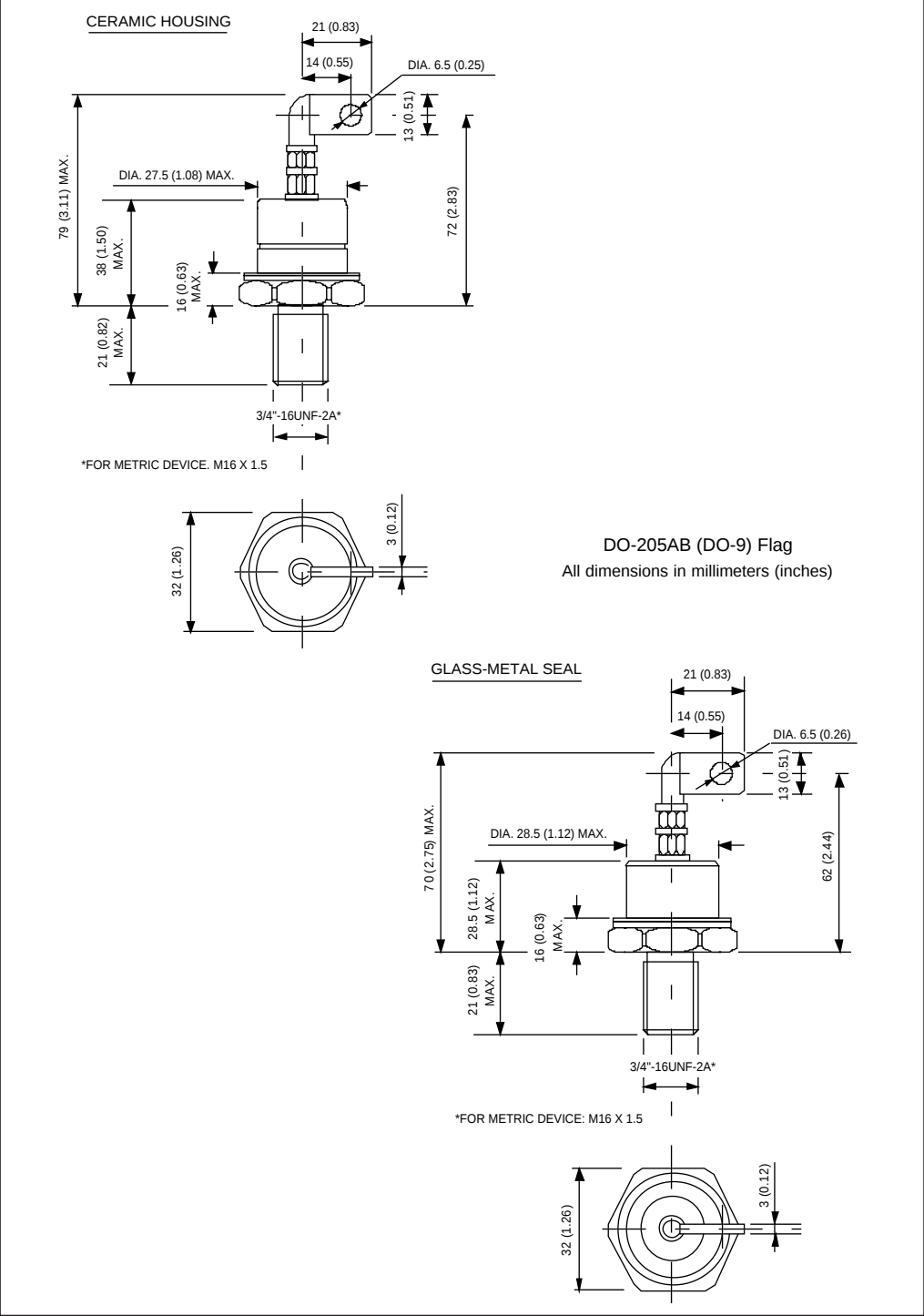
4 (0.16) MAX.

39 (1.53) MAX.

C.S. 35mm² (0.054 s.i.)

* FOR METRIC DEVICE: M16 X 1.5

Outline Table



SD300N/R Series

Bulletin I2081 rev. A 08/94

International
IRF Rectifier

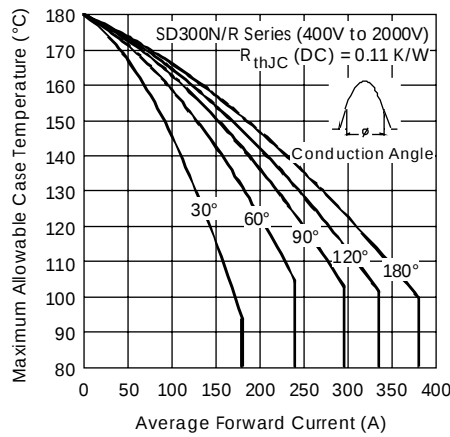


Fig. 1 - Current Ratings Characteristics

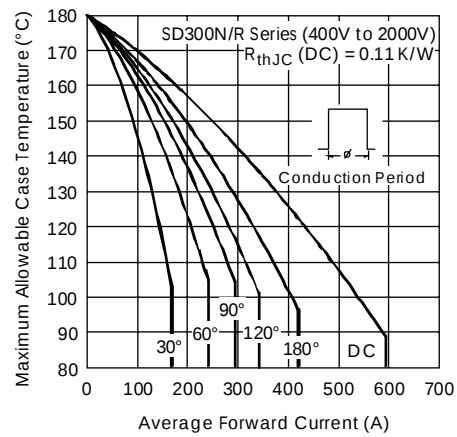


Fig. 2 - Current Ratings Characteristics

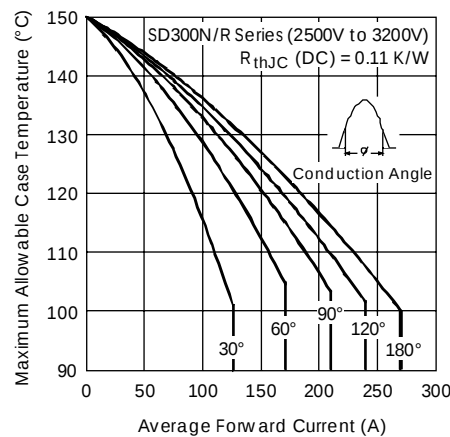


Fig. 3 - Current Ratings Characteristics

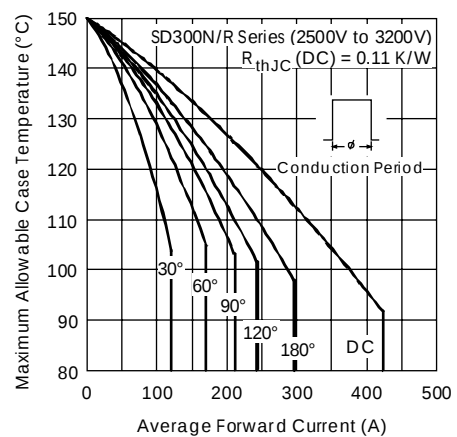


Fig. 4 - Current Ratings Characteristics

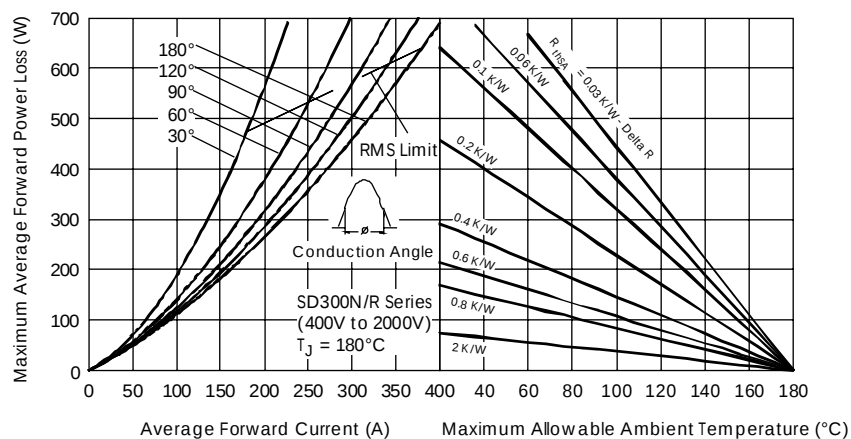


Fig. 5 - Forward Power Loss Characteristics

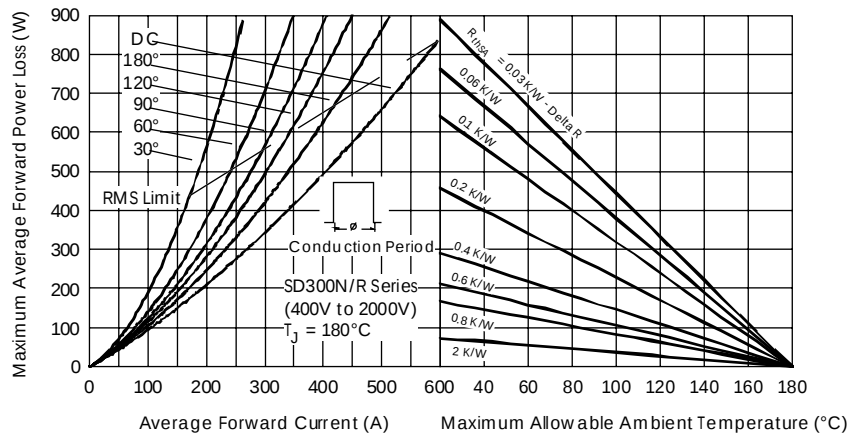


Fig. 6 - Forward Power Loss Characteristics

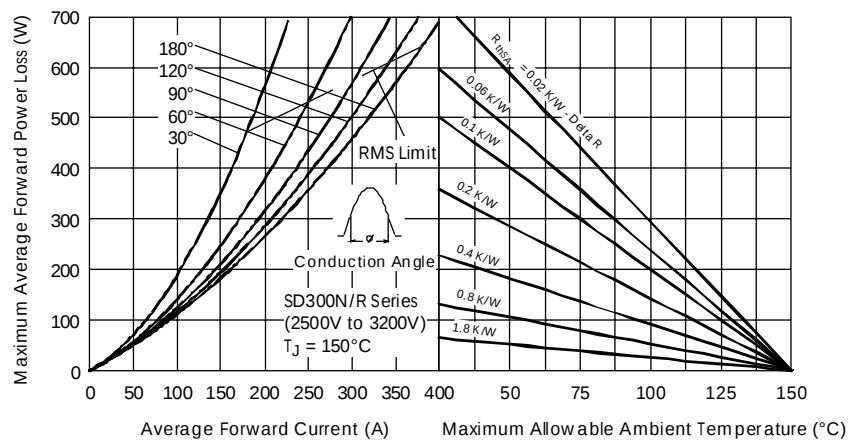


Fig. 7 - Forward Power Loss Characteristics

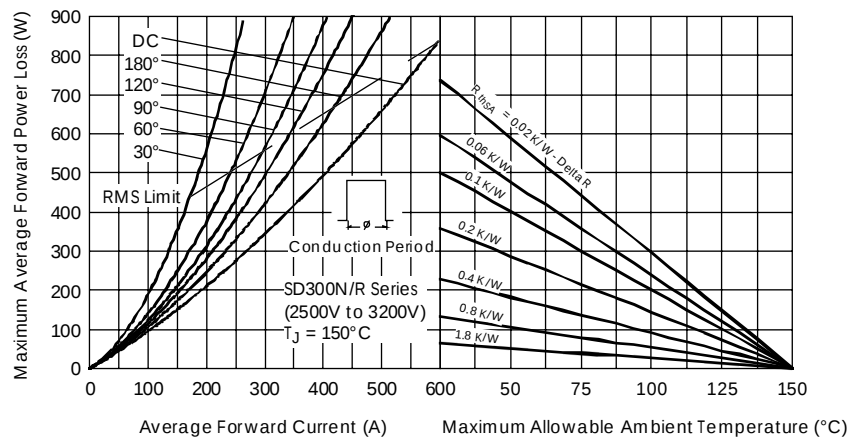


Fig. 8 - Forward Power Loss Characteristics

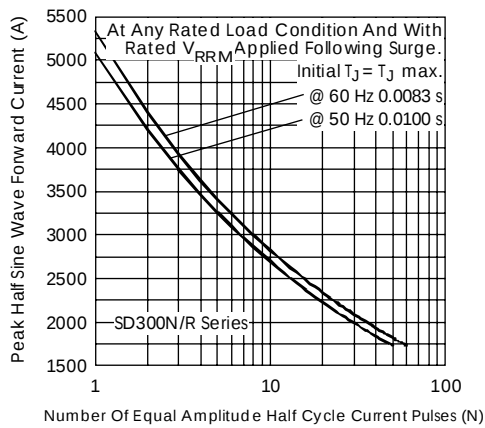


Fig. 9 - Maximum Non-Repetitive Surge Current

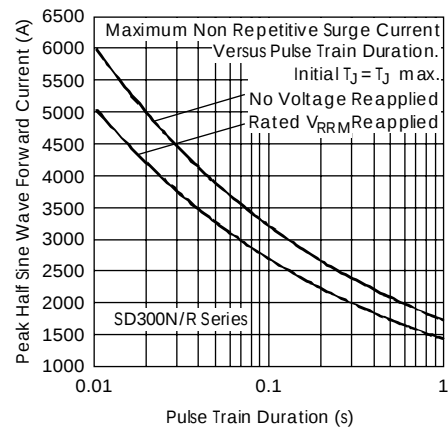


Fig. 10 - Maximum Non-Repetitive Surge Current

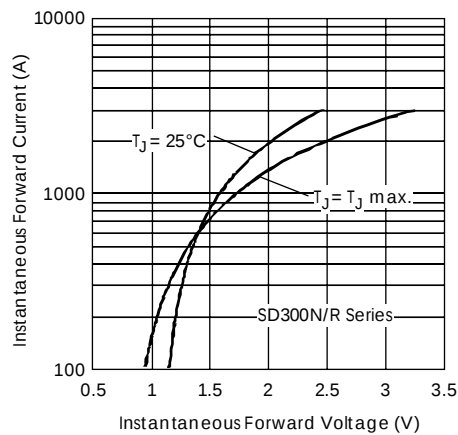
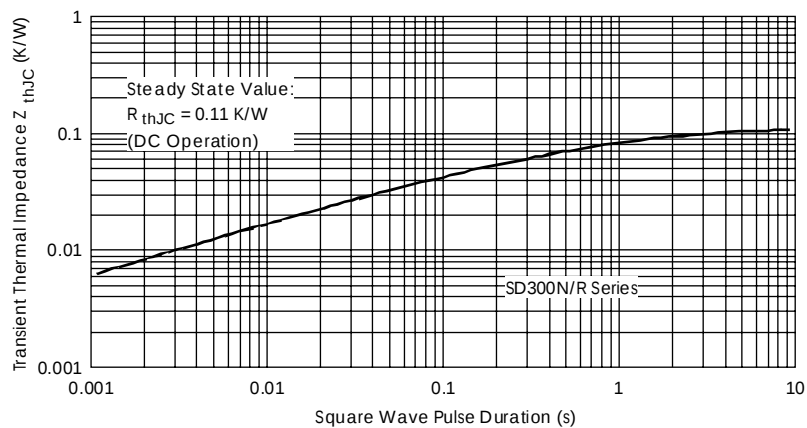


Fig. 11 - Forward Voltage Drop Characteristics

Fig. 12 - Thermal Impedance Z_{thJC} Characteristics