

300HF(R) SERIES

STANDARD RECOVERY DIODES

Stud Version

Features

- High current carrying capability
- High surge current capability
- Types up to 1200V V_{RRM}
- Stud cathode and stud anode version
- Standard JEDEC types
- Diffused junction

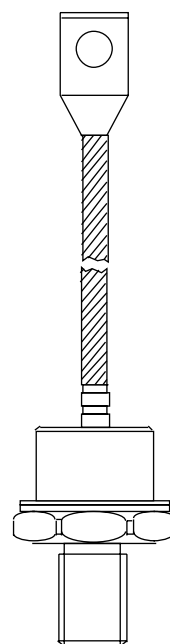
Typical Applications

- Battery chargers
- Converters
- Power supplies
- Machine tool controls

Major Ratings and Characteristics

Parameters	300HF(R)	Units
$I_{F(AV)}$	300	A
@ T_C	125	°C
$I_{F(RMS)}$	470	A
I_{FSM} @ 50Hz	5000	A
@ 60Hz	5200	A
I^2t @ 50Hz	125	KA ² s
@ 60Hz	113	KA ² s
V_{RRM} range	400 to 1200	V
T_J	-40 to 180	°C

300A



case style
DO-205AB (DO-9)

300HF(R) Series

Bulletin I2021 rev. A 07/94

International
IR Rectifier

ELECTRICAL SPECIFICATIONS

Voltage Ratings

Type number	Voltage Code	V_{RRM} , maximum repetitive peak voltage V	V_{RSM} , maximum non-repetitive peak voltage V	I_{RRM} max. @ 180°C mA
300HF(R)	40	400	500	20
	80	800	900	
	120	1200	1300	

Forward Conduction

Parameter	300HF(R)	Units	Conditions
$I_{F(AV)}$ Max. average forward current @ Case temperature	300 125	A °C	180° conduction, half sine wave
$I_{F(RMS)}$ Max. RMS forward current	470	A	DC @ 118°C case temperature
I_{FSM} Max. peak, one-cycle forward, non-repetitive surge current	5000	A	t = 10ms No voltage
	5200		t = 8.3ms reapplied
	3800		t = 10ms 100% V_{RRM}
	4000		t = 8.3ms reapplied
I^2t Maximum I^2t for fusing	125	KA ² s	t = 10ms No voltage
	113		t = 8.3ms reapplied
	72		t = 10ms 100% V_{RRM}
	66		t = 8.3ms reapplied
$I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing	1250	KA ² /s	t = 0.1 to 10ms, no voltage reapplied
$V_{F(TO)1}$ Low level value of threshold voltage	0.86	V	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}), T_J = T_J \text{ max.}$
$V_{F(TO)2}$ High level value of threshold voltage	0.89		$(I > \pi \times I_{F(AV)}), T_J = T_J \text{ max.}$
r_{f1} Low level value of forward slope resistance	0.48	mΩ	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}), T_J = T_J \text{ max.}$
r_{f2} High level value of forward slope resistance	0.46		$(I > \pi \times I_{F(AV)}), T_J = T_J \text{ max.}$
V_{FM} Max. forward voltage drop	1.38	V	$I_{FM} = \pi \times I_{F(AV)}, T_J = 25^\circ\text{C}, t_p = 10\text{ms}$ sinusoidal wave

Thermal and Mechanical Specification

Parameter	300HF(R)	Units	Conditions
T_J Max. operating temperature range	-40 to 180	°C	
T_{stg} Max. storage temperature range	-55 to 180		
R_{thJC} Max. thermal resistance, junction to case	0.12	K/W	DC operation
R_{thCS} Max. thermal resistance, case to heatsink	0.05		Mounting surface, smooth, flat and greased
T Max. allowed mounting torque +0 -20%	28	Nm	Not lubricated threads
	22		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
180°	0.030	0.022	K/W	$T_J = T_J \text{ max.}$
120°	0.035	0.037		
90°	0.045	0.048		
60°	0.064	0.066		
30°	0.104	0.105		

Ordering Information Table

Device Code					
	300	HF	R	120	P B
	①	②	③	④	⑤ ⑥
1	- Essential Part Number				
2	- Diode				
3	- None = Stud Normal Polarity (Cathode to Stud) R = Stud Reverse Polarity (Anode to Stud)				
4	- Voltage code: Code x 10 = V_{RRM} (See Voltage Ratings table)				
5	- P = Stud base DO-205AB(DO-9) 3/4" 16UNF-2A M = Stud base DO-205AB(DO-9) M16 x 1.5				
6	- B = Flag top terminals (for Cathode/ Anode Leads) S = Isolated lead with silicone sleeve (Red = Reverse Polarity; Blue = Normal Polarity) None = Not isolated lead				

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IOR Rectifier

GLASS-METAL SEAL

200 (7.87) ± 10 (0.39)

75 (2.95) MIN.

9.5 (0.37) MIN.

19 (0.75) MAX.

DIA. 8.5 (0.33) NOM.

39 (1.53) MAX.

4 (0.16) MAX.

C.S. 25mm²
(0.039 s.i.)

DIA. 28.5 (1.08) MAX.

28.5 (1.12) MAX.

10 (0.39) MAX.

21 (0.82) MAX.

SW 32

3/4"-16UNF-2A*

Conform to JEDEC DO-205AB (DO-9)
All dimensions in millimeters (inches)

* FOR METRIC DEVICE: M16 X 1.5

GLASS-METAL SEAL

21 (0.83)

14 (0.55)

DIA. 6.5 (0.26)

13 (0.51)

70 (2.75) MAX.

DIA. 28.5 (1.12) MAX.

28.5 (1.12) MAX.

10 (0.39) MAX.

21 (0.83) MAX.

62 (2.44)

3/4"-16UNF-2A*

DO-205AB (DO-9) Flag
All dimensions in millimeters (inches)

*FOR METRIC DEVICE: M16 X 1.5

3.2 (1.26)

3 (0.12)

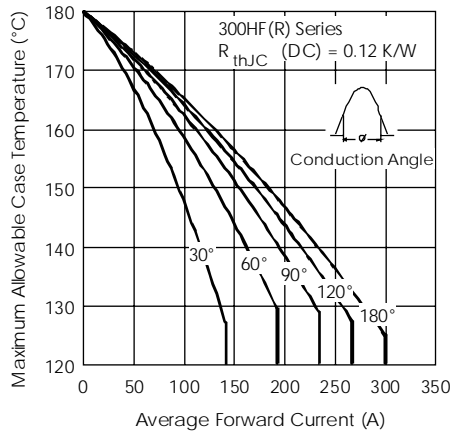


Fig. 1 - Current Ratings Characteristics

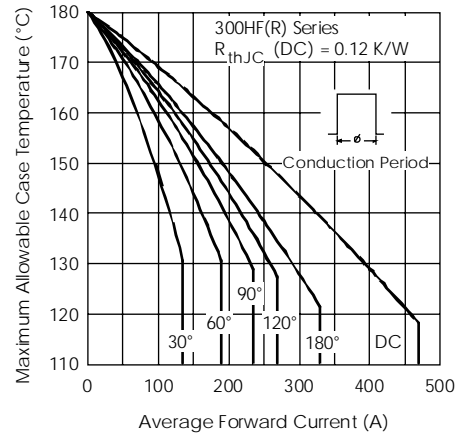


Fig. 2 - Current Ratings Characteristics

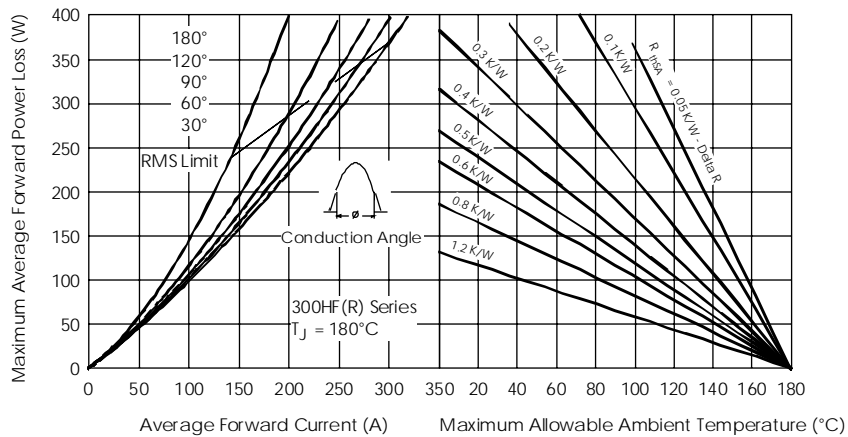


Fig. 3 - Forward Power Loss Characteristics

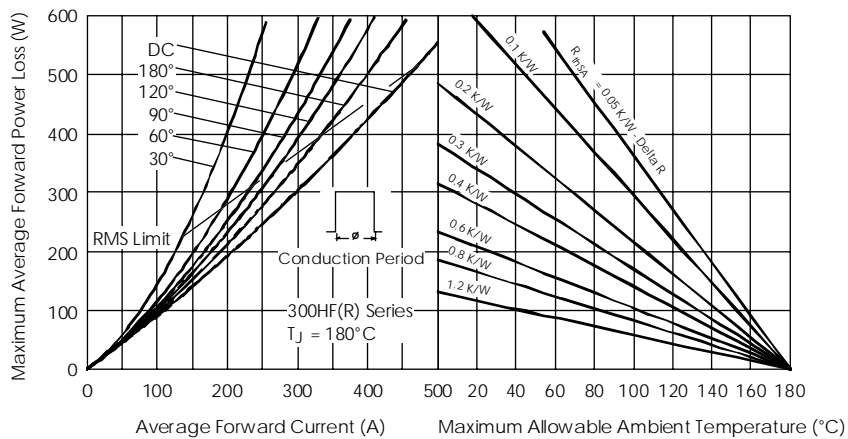


Fig. 4 - Forward Power Loss Characteristics

300HF(R) Series

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International
IOR Rectifier

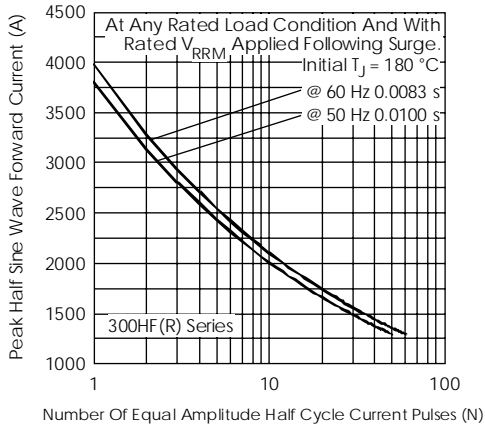


Fig. 5 - Maximum Non-Repetitive Surge Current

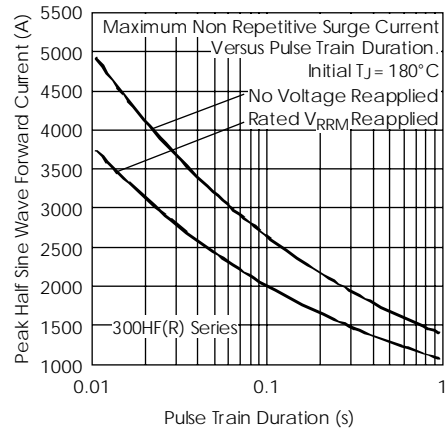


Fig. 6 - Maximum Non-Repetitive Surge Current

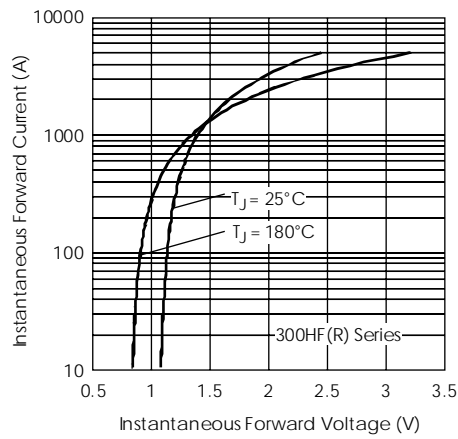


Fig. 7 - Forward Voltage Drop Characteristics

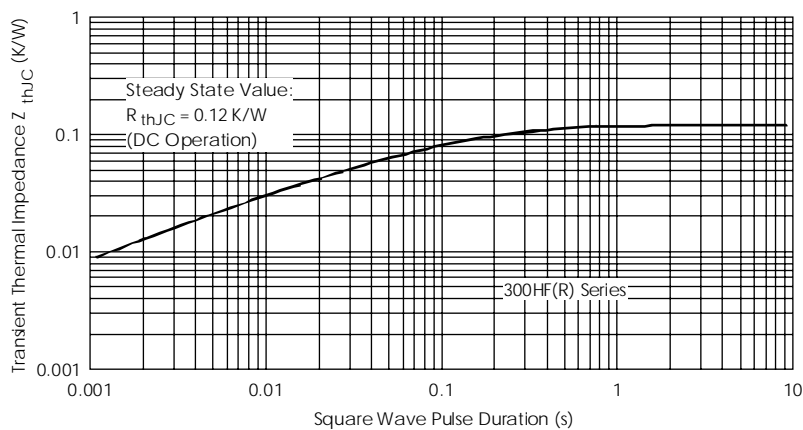


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic