International
IOR Rectifier

300HF(R) SERIES

STANDARD RECOVERY DIODES

Stud Version

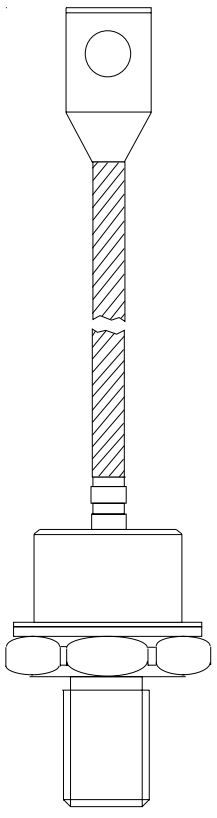
Features

- 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
- RoHS Compliant

300A

Typical Applications

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



case style
DO-205AB (DO-9)

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^2s
	@ 60Hz	113	KA^2s
V_{RRM} range		800 to 1200	V
T_J		-40 to 180	℃

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)	80	800	900	20
	100	1000	1100	
	120	1200	1300	

Forward Conduction

Parameter		300HF(R)	Units	Conditions		
$I_{F(AV)}$	Max. average forward current	300	A	180° conduction, half sine wave		
	@ Case temperature	125	°C			
$I_{F(RMS)}$	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 reapplied	Sinusoidal half wave, Initial $T_J = T_J$ max
		5200		t = 8.3ms		
		3800		t = 10ms	100% V_{RRM} reapplied	
		4000		t = 8.3ms		
I^2t	Maximum I^2t for fusing	125	KA^2s	t = 10ms	No voltage reapplied	
		113		t = 8.3ms		
		72		t = 10ms	100% V_{RRM} reapplied	
		66		t = 8.3ms		
$I^2\sqrt{t}$	Maximum $I^2\sqrt{t}$ for fusing	1250	$KA^2\sqrt{s}$	t = 0.1 to 10ms, no voltage reapplied		
$V_{F(TO)1}$	Low level value of threshold voltage	0.86	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	0.89		(I > π x $I_{F(AV)}$), $T_J = T_J$ max.		
r_{f1}	Low level value of forward slope resistance	0.48	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	0.46		(I > π x $I_{F(AV)}$), $T_J = T_J$ max.		
V_{FM}	Max. forward voltage drop	1.15	V	I_{FM}= π x $I_{F(AV)}$, T_J = 25 °C, t_p = 10ms 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

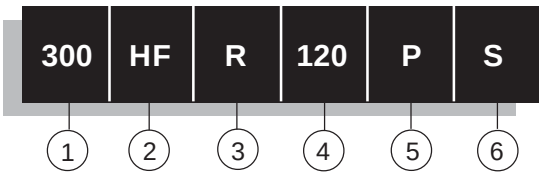
ΔR_{thJC} Conduction

(The following table shows the increment of thermal resistence 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	$T_J = T_J$ 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



1 - Essential Part Number

2 - Diode

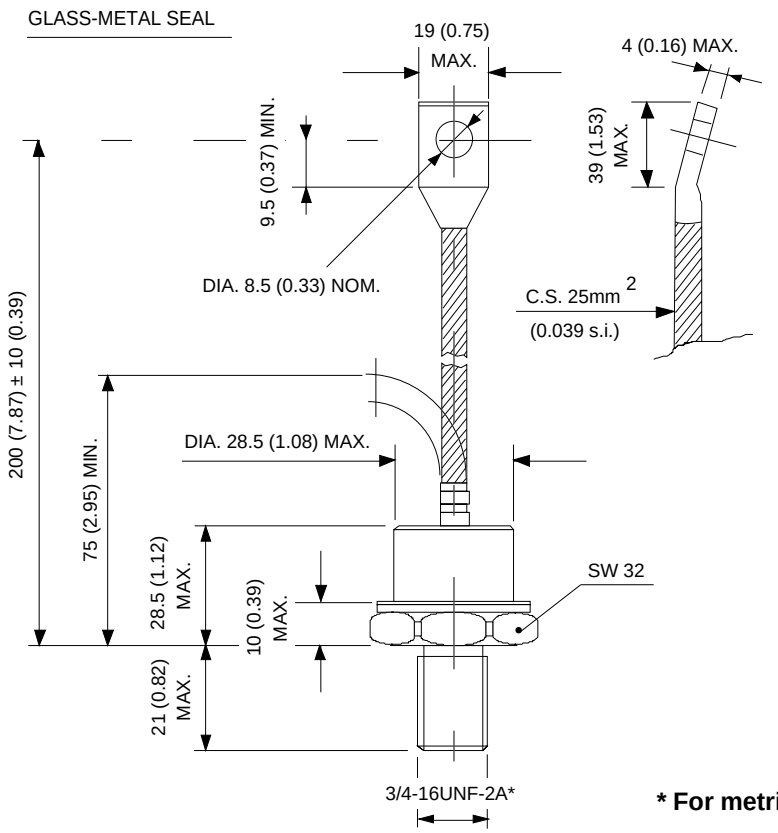
3 - None = Stud Normal Polarity (Cathode to Stud)
R = Stud Reverse Polarity (Anode to Stud)

4 - Voltage code: Code x 10 = V_{RRM} (See Voltage Ratings table)

5 - P = Stud base DO-205AB(DO-9) 3/4" 16UNF-2A

6 - S = Isolated lead with silicone sleeve
(Red = Reverse Polarity; Blue = Normal Polarity)
None = Not isolated lead

Outline Table



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

*** For metric devices M16x1.5 contact factory**

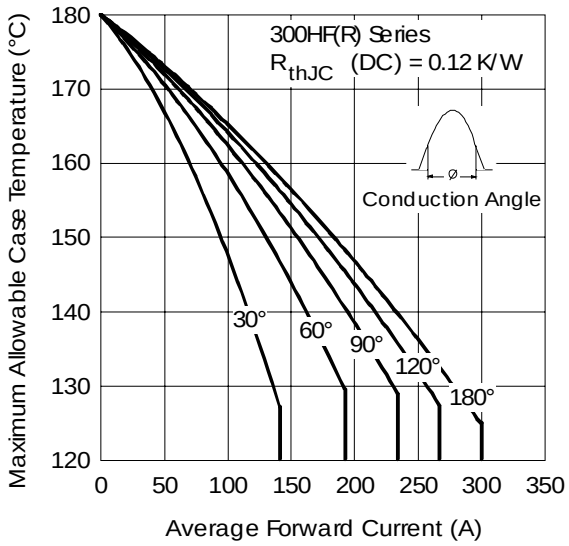


Fig. 1 - Current Ratings Characteristics

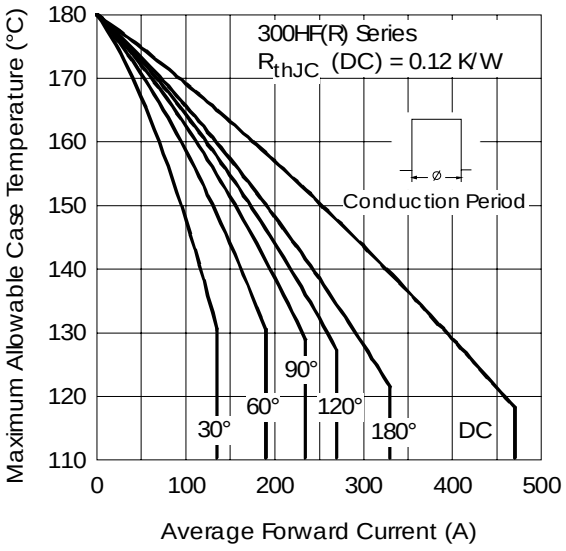


Fig. 2 - Current Ratings Characteristics

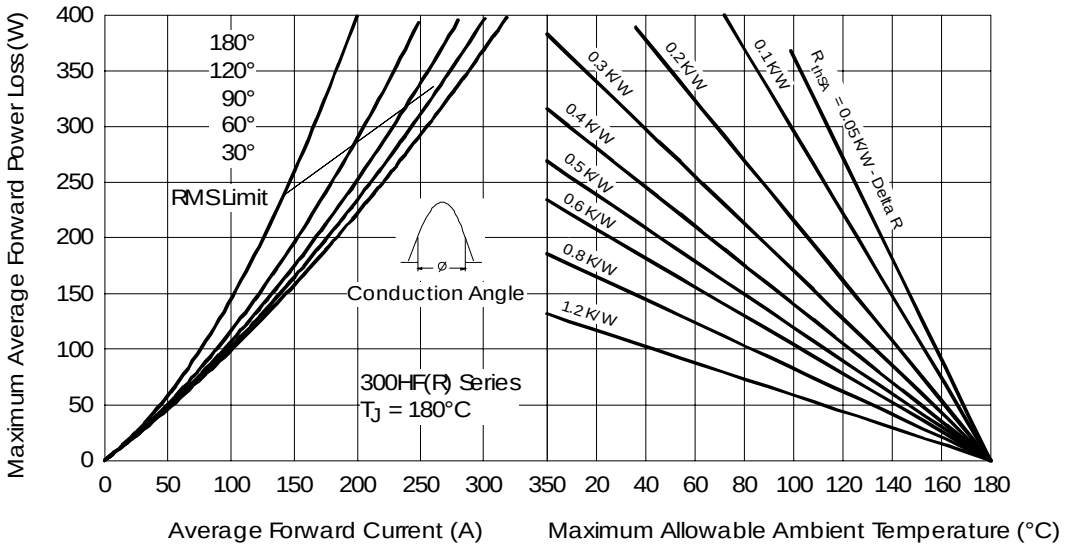


Fig. 3 - Forward Power Loss Characteristics

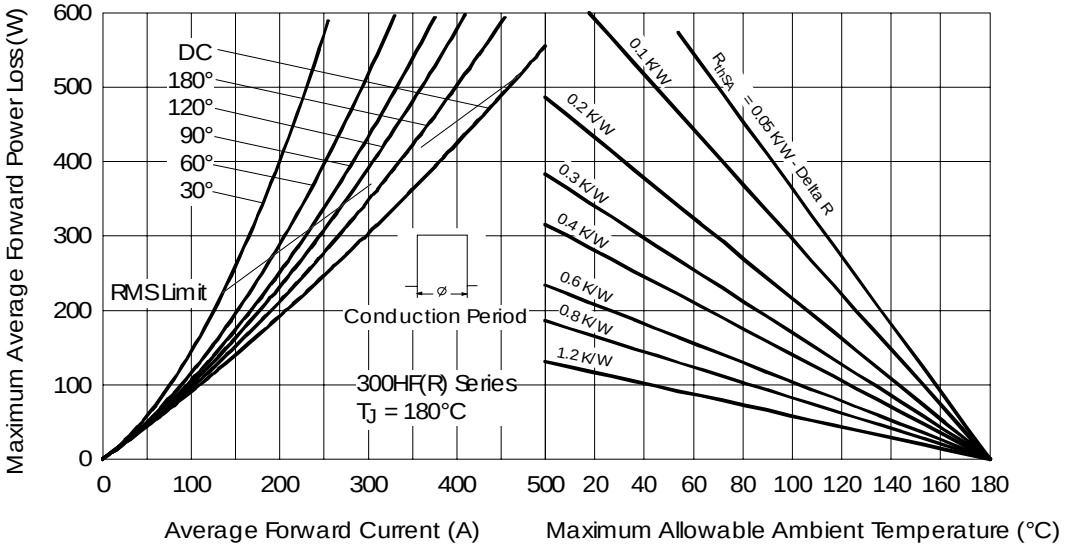


Fig. 4 - Forward Power Loss Characteristics

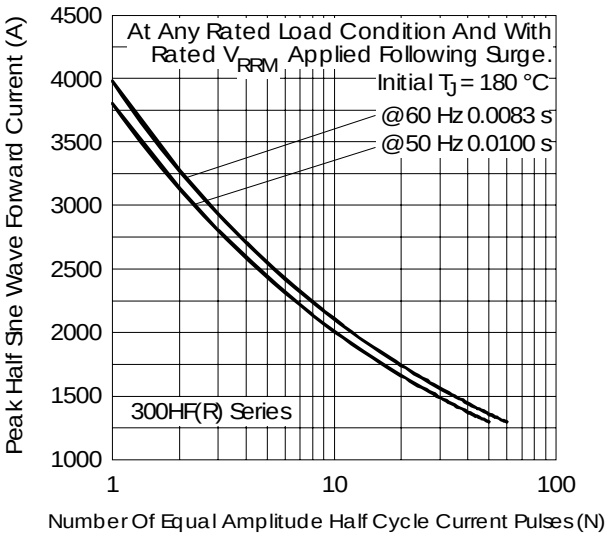


Fig. 5 - Maximum Non-Repetitive Surge Current

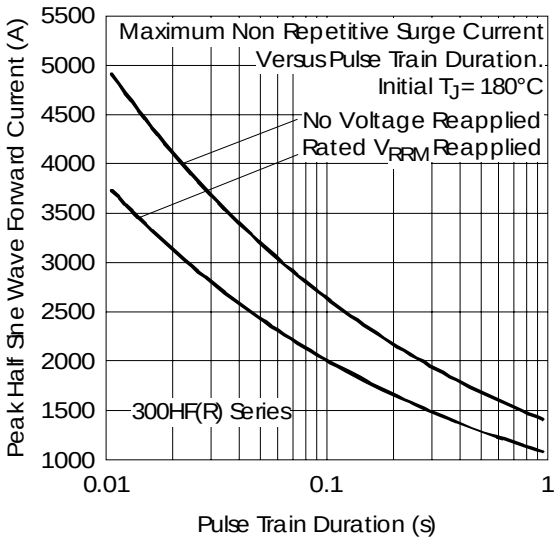


Fig. 6 - Maximum Non-Repetitive Surge Current

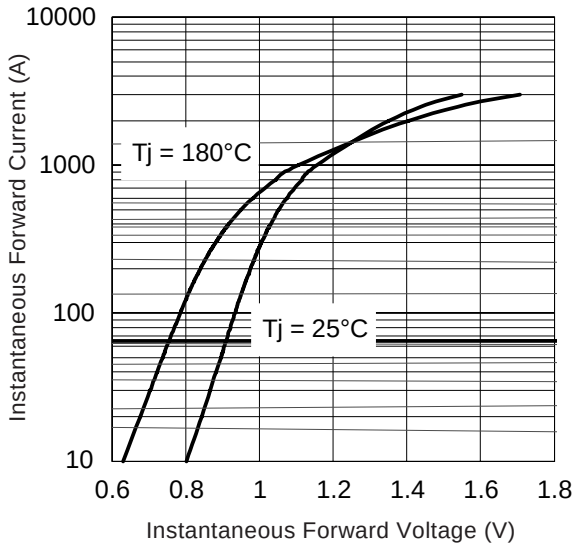


Fig. 7 - Forward Voltage Drop Characteristics

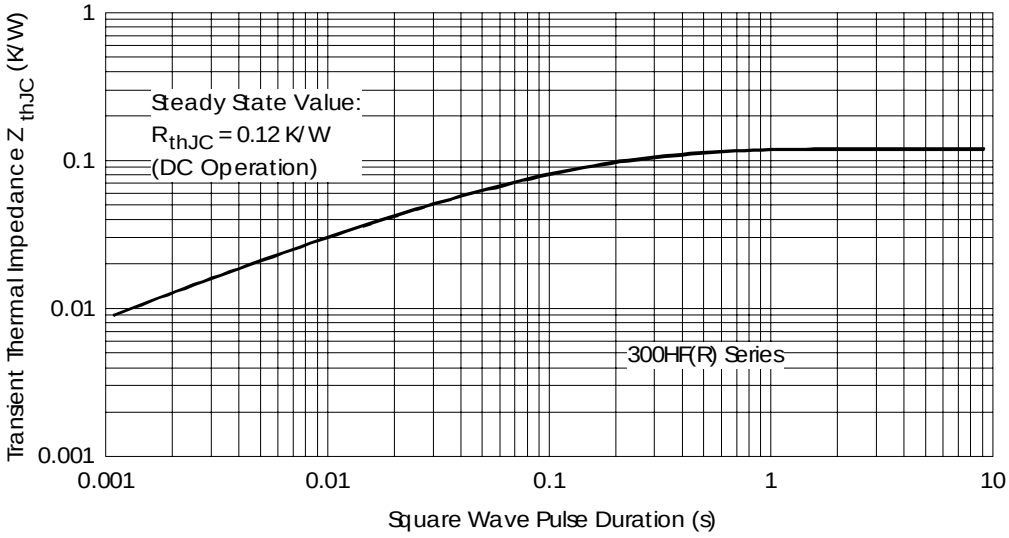


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic

Data and specifications subject to change without notice.
This product has been designed and qualified for Industrial Level.
Qualification Standards can be found on IR's Web site.

International
IOR Rectifier

IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7309
Visit us at www.irf.com for sales contact information. 10/06