International
IOR Rectifier

300HF(R) SERIES

STANDARD RECOVERY DIODES

Stud Version

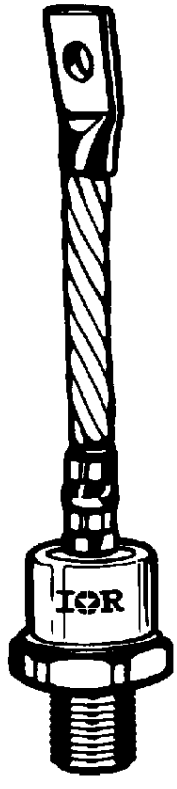
300A

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



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		400 to 1200	V
T_J		-40 to 180	°C

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	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	1.38	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

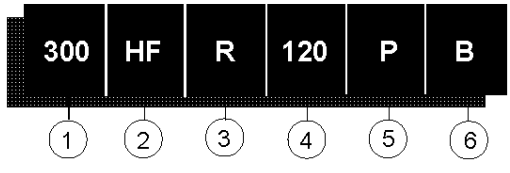
ΔR_{thJC} Conduction

(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

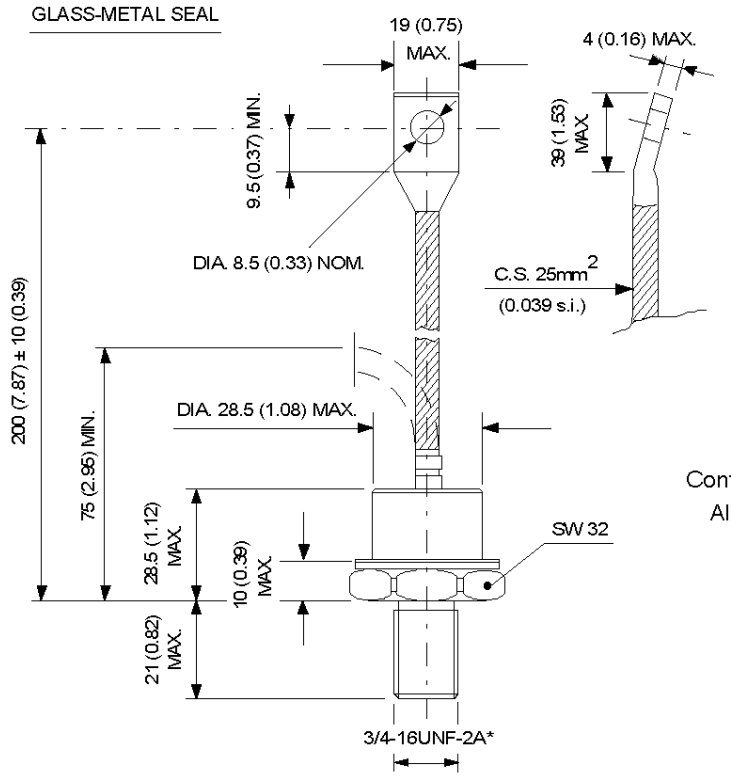
3 - None = Stud Normal Polarity (Cathode to Stud)
R = Stud Reverse Polarity (Anode to Stud)

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

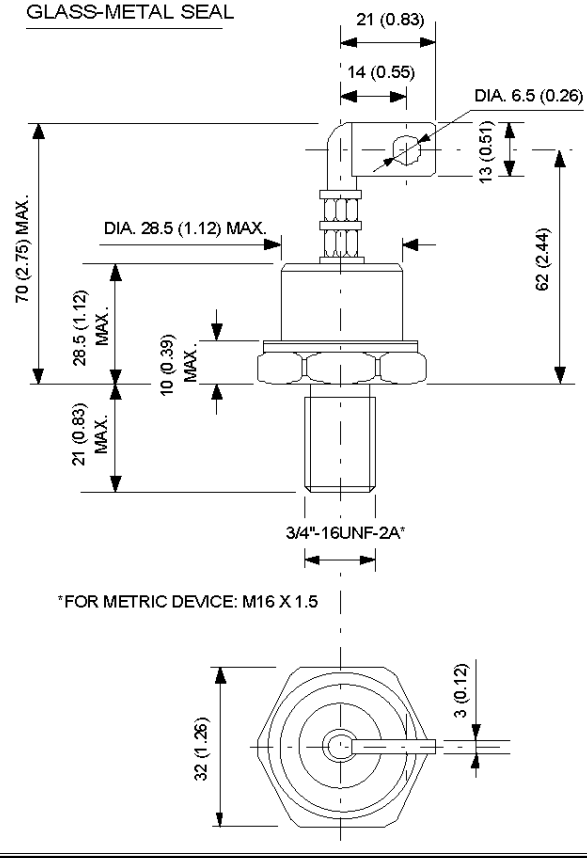
5 - P = Stud base DO-205AB(DO-9) 3/4" 16UNF-2A
M = Stud base DO-205AB(DO-9) M16 x 1.5

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

Outline Table



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



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

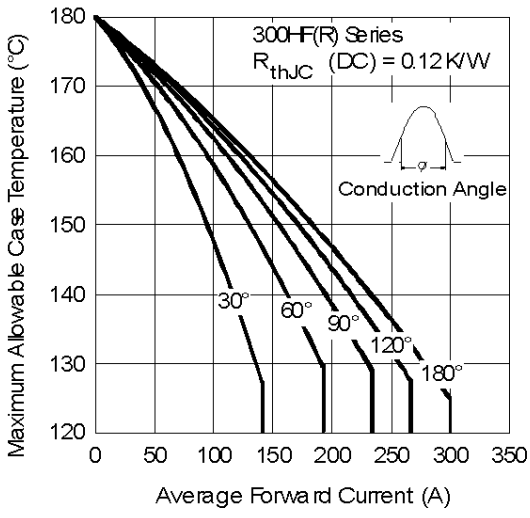


Fig. 1 - Current Ratings Characteristics

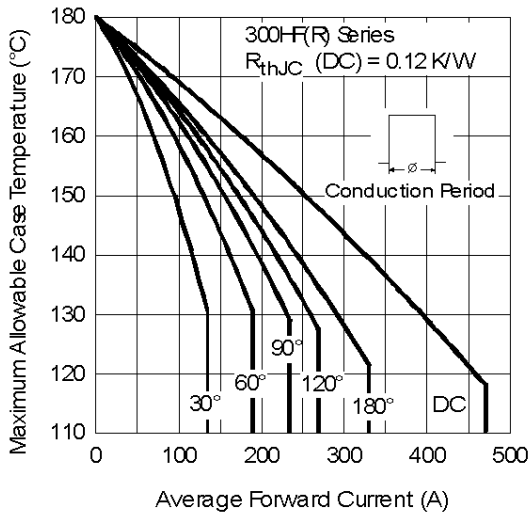


Fig. 2 - Current Ratings Characteristics

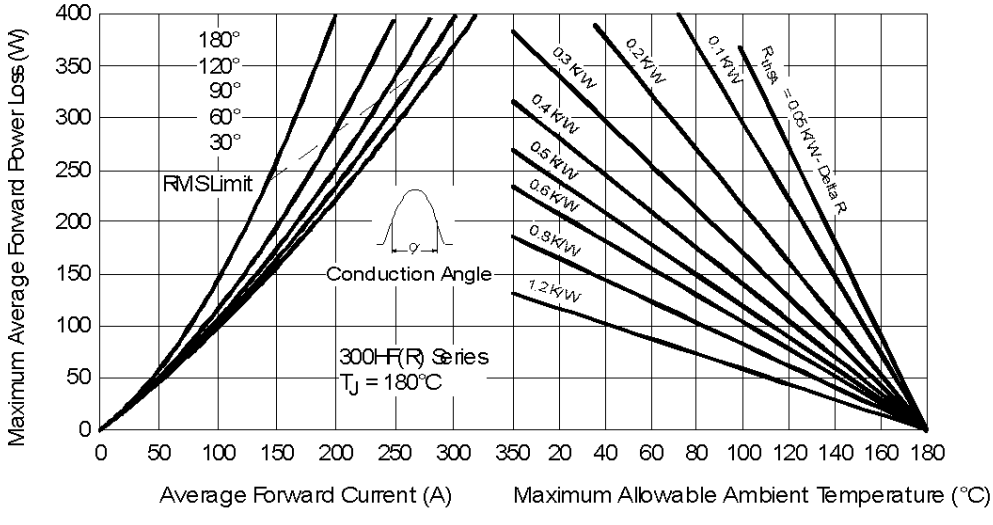


Fig. 3 - Forward Power Loss Characteristics

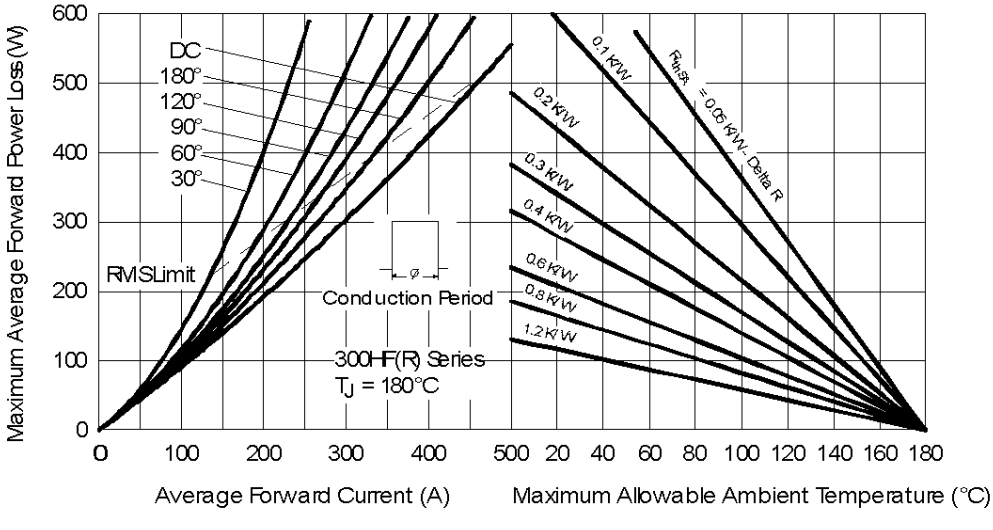


Fig. 4 - Forward Power Loss Characteristics

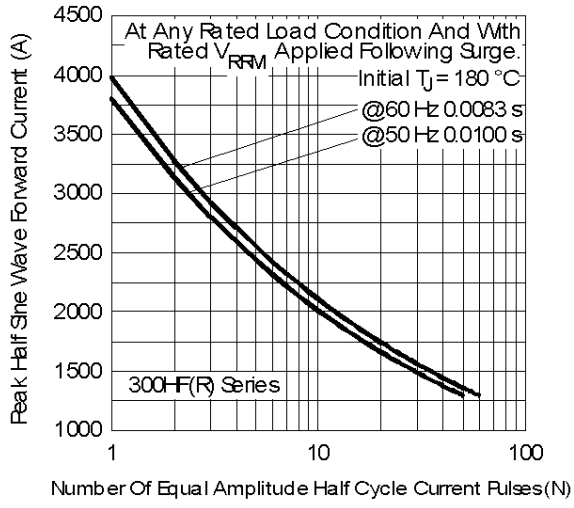


Fig. 5 - Maximum Non-Repetitive Surge Current

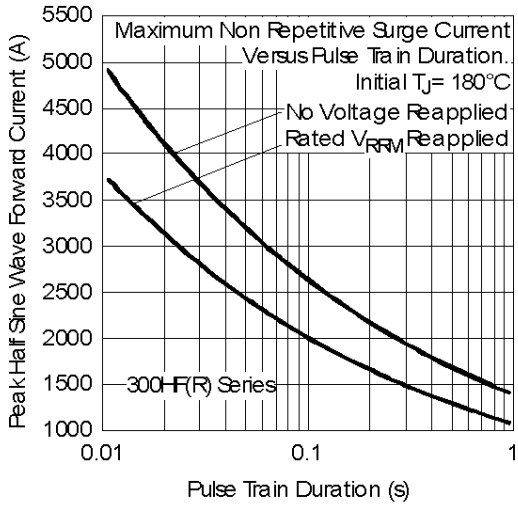


Fig. 6 - Maximum Non-Repetitive Surge Current

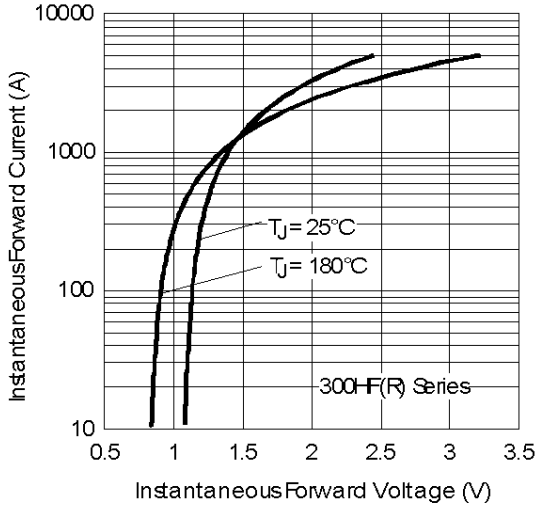


Fig. 7 - Forward Voltage Drop Characteristics

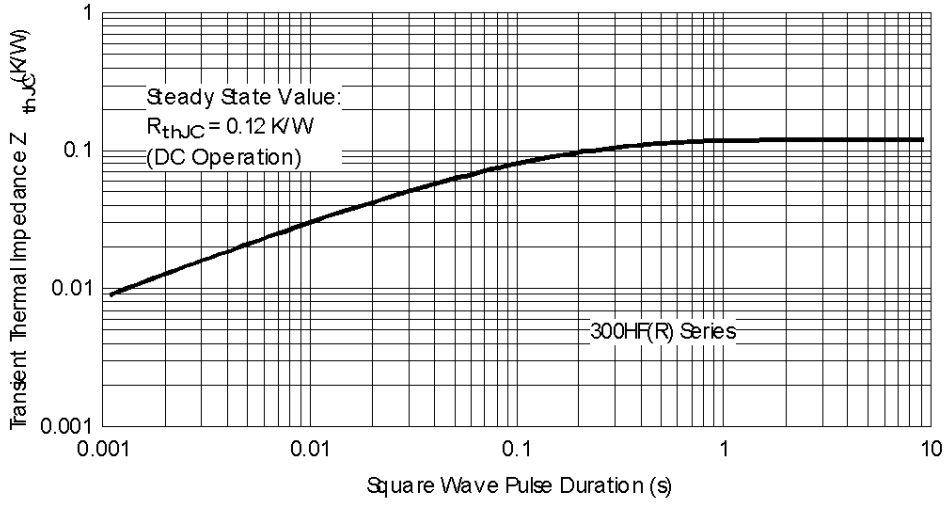


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic