

International
IRF Rectifier

300U(R) SERIES

STANDARD RECOVERY DIODES

Stud Version

Features

- Alloy diode
- Popular series for rough service
- Stud cathode and stud anode version

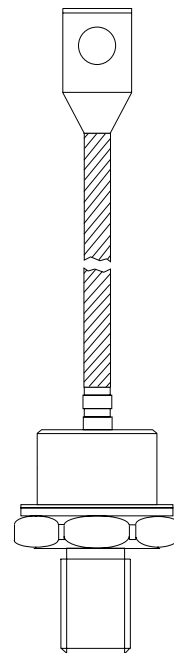
300A

Typical Applications

- Welders
- Power supplies
- Motor controls
- Battery chargers
- General industrial current rectification

Major Ratings and Characteristics

Parameters	300U	Units
$I_{F(AV)}$	300	A
@ T_C	150	°C
I_{FSM} @ 50Hz	6550	A
@ 60Hz	6850	A
I^2t @ 50Hz	214	KA ² s
@ 60Hz	195	KA ² s
V_{RRM} range	100 to 600	V
T_J	-65 to 200	°C



case style
DO-205AB (DO-9)

300U(R) Series

Bulletin I2039 rev. C 03/03

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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. $T_J = 175^\circ\text{C}$ mA
300U	10	100	200	40
	20	200	300	
	30	300	400	
	40	400	500	
	60	600	700	

Forward Conduction

Parameter	300U	Units	Conditions
$I_{F(AV)}$ Max. average forward current @ Case temperature	300	A	180° conduction, half sine wave
	130	°C	
I_{FSM} Max. peak, one-cycle forward, non-repetitive surge current	6550	A	t = 10ms No voltage reappplied
	6850		t = 8.3ms
	5500		t = 10ms 100% V_{RRM}
	5750		t = 8.3ms reappplied
I^2t Maximum I^2t for fusing	214	KA ² s	t = 10ms No voltage reappplied
	195		t = 8.3ms
	151		t = 10ms 100% V_{RRM}
	138		t = 8.3ms reappplied
$I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing	2140	KA ² √s	t = 0.1 to 10ms, no voltage reappplied
$V_{F(TO)}$ Max. value of threshold voltage	0.610	V	$T_J = 200^\circ\text{C}$
r_f Max. value of forward slope resistance	0.751	mΩ	
V_{FM} Max. peak forward voltage	1.40	V	$I_{peak} = 942\text{A}$, $T_J = 25^\circ\text{C}$

Thermal and Mechanical Specifications

Parameter	300U(R)	Units	Conditions
T_J Max. junction operating temperature range	-65 to 200	°C	
T_{stg} Max. storage temperature range	-65 to 200		
R_{thJC} Max. thermal resistance, junction to case	0.18	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 +0 -20%	37	Nm	Not lubricated threads
	28		Lubricated threads
wt Approximate weight	250	g	
Case style	DO-205AB (DO-9)**		JEDEC (See Outline Table)

** 302U-A uses IR case style B-26

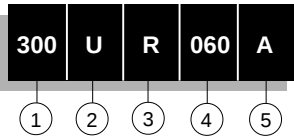
ΔR_{thJC} Conduction

(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°	0.020	0.015	K/W	$T_J = T_J \text{ max.}$
120°	0.024	0.025		
90°	0.031	0.034		
60°	0.045	0.047		
30°	0.077	0.077		

Ordering Information Table

Device Code



- 1** - 300 = Standard 300U device
302 = 300U Top Threaded version
- 2** - U = Essential Part Number
- 3** - R = Stud Reverse Polarity (Anode to Stud)
None = Stud Normal Polarity (Cathode to Stud)
- 4** - Voltage code: Code x 10 = V_{RRM} (See Voltage Ratings table)
- 5** - A = Essential Part Number

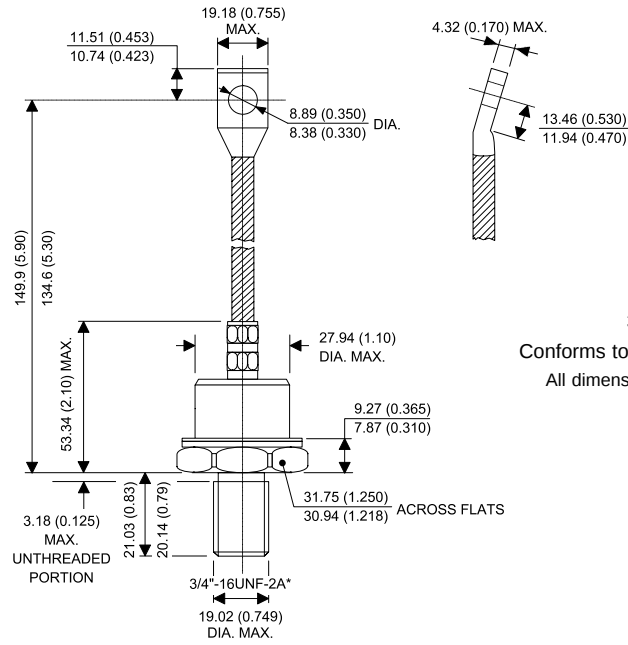
NOTE: For Metric Device M16 x 1.5 Contact Factory

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Outline Table



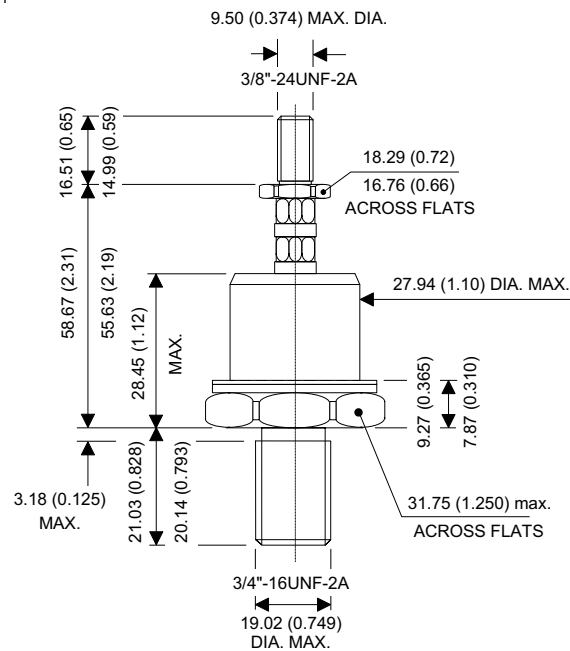
300U-A Series

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

All dimensions in millimeters (inches)

* FOR METRIC DEVICE: M16 X 1.5
CONTACT FACTORY

302U-A Series
IR Case Style B26
All dimensions in millimeters (inches)



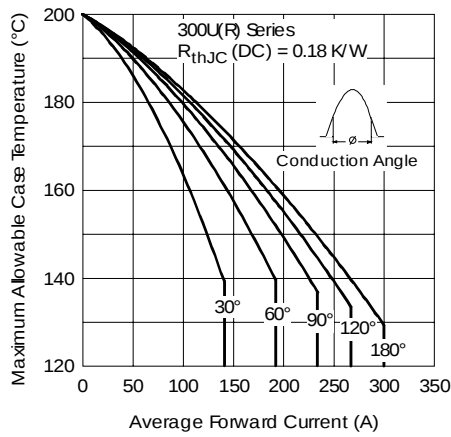


Fig. 1 - Current Ratings Characteristics

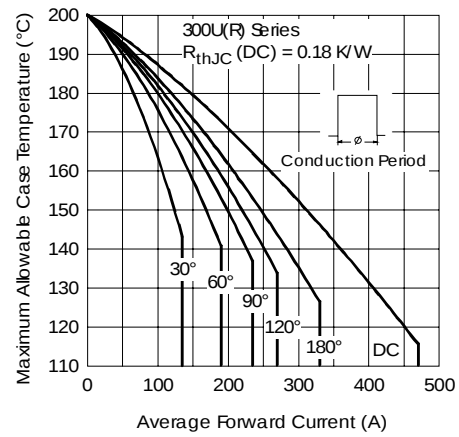


Fig. 2 - Current Ratings Characteristics

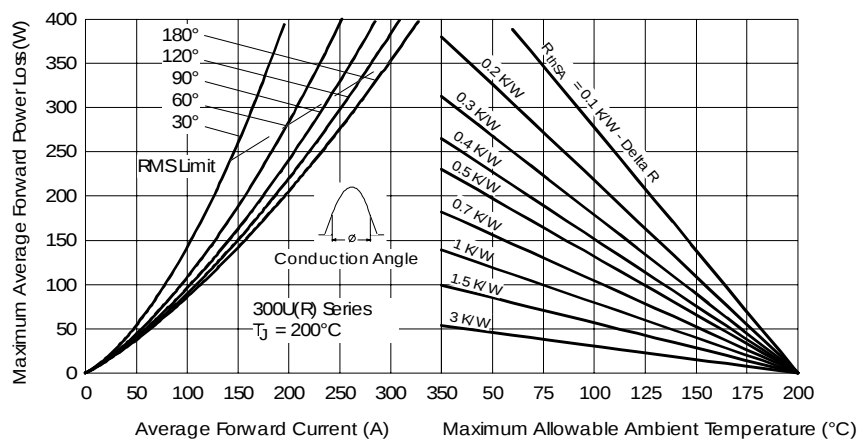


Fig. 3 - Forward Power Loss Characteristics

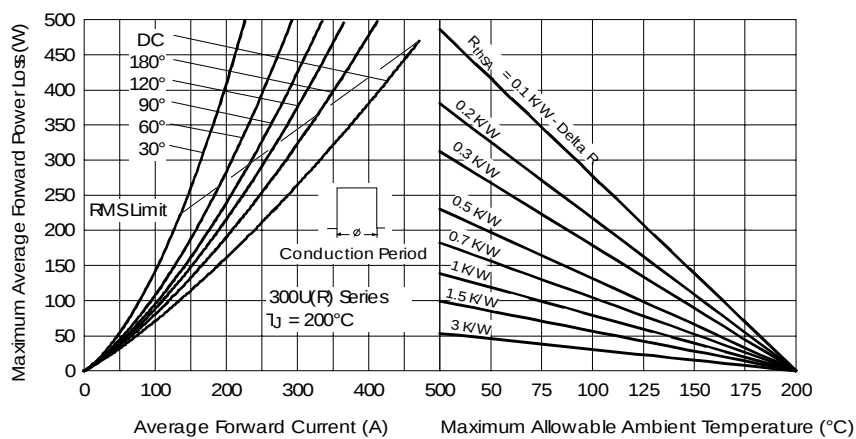


Fig. 4 - Forward Power Loss Characteristics

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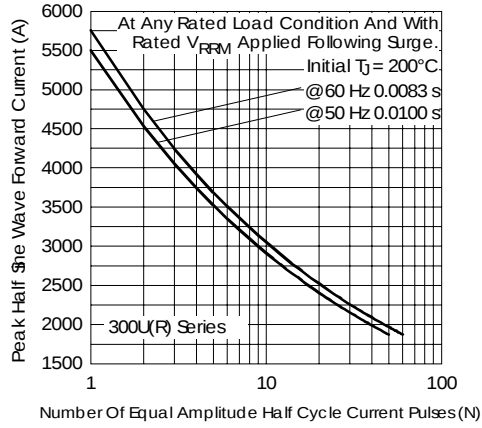


Fig. 5 - Maximum Non-Repetitive Surge Current

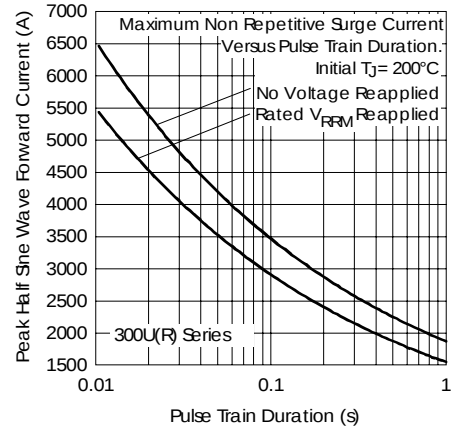


Fig. 6 - Maximum Non-Repetitive Surge Current

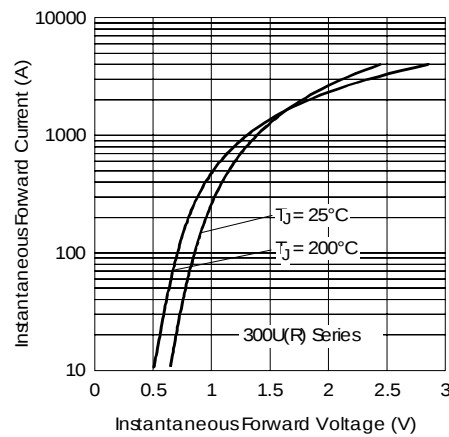


Fig. 7 - Forward Voltage Drop Characteristics

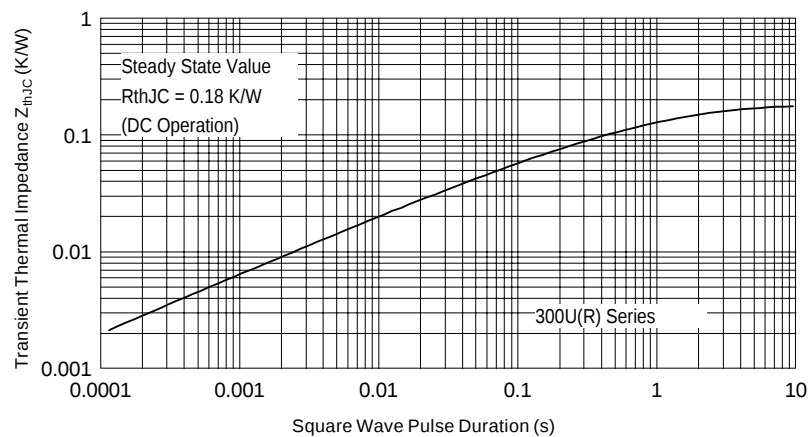


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic

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
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