

### STANDARD RECOVERY DIODES

Stud Version

#### Features

- Alloy diode
- Peak reverse voltage up to 1000V
- Popular series for rough service
- Standard JEDEC types
- Stud cathode and stud anode version

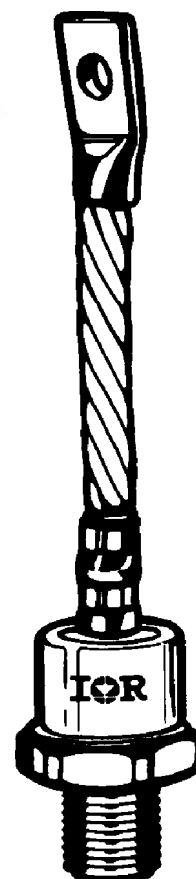
#### Typical Applications

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

250A  
300A

#### Major Ratings and Characteristics

| Parameters       | 70U         | 300U       | Units             |
|------------------|-------------|------------|-------------------|
| $I_{F(AV)}$      | 250         | 300        | A                 |
| @ $T_C$          | 150         | 130        | °C                |
| $I_{FSM}$ @ 50Hz | 6550        |            | A                 |
| @ 60Hz           | 6850        |            | A                 |
| $I^2t$ @ 50Hz    | 214         |            | KA <sup>2</sup> s |
| @ 60Hz           | 195         |            | KA <sup>2</sup> s |
| $V_{RRM}$ range  | 100 to 1000 | 50 to 1000 | V                 |
| $T_J$            | -65 to 200  |            | °C                |



case style  
DO-205AB (DO-9)

## 70/300U(R) Series

### ELECTRICAL SPECIFICATIONS

#### Voltage Ratings

| Type number * | Voltage Code | $V_{RRM}$ , maximum repetitive peak reverse voltage<br>V | $V_{RSM}$ , maximum non-repetitive peak rev. voltage<br>V | $I_{RRM}$ max.<br>$T_J = 200^\circ\text{C}$<br>mA |
|---------------|--------------|--|---|---|
| 70U           | 10           | 100  | 200   | 60  |
|               | 20           | 200  | 300   |   |
|               | 40           | 400  | 500   |   |
|               | 60           | 600  | 720   |   |
|               | 80           | 800  | 960   |   |
|               | 100          | 1000   | 1200  |   |
| Type number   | Voltage Code | $V_{RRM}$ , maximum repetitive peak reverse voltage<br>V | $V_{RSM}$ , maximum non-repetitive peak rev. voltage<br>V | $I_{RRM}$ max.<br>$T_J = 175^\circ\text{C}$<br>mA |
| 300U          | 5            | 50   | 100   | 40  |
|               | 10           | 100  | 200   | 40  |
|               | 20           | 200  | 300   | 40  |
|               | 30           | 300  | 400   | 40  |
|               | 40           | 400  | 500   | 40  |
|               | 60           | 600  | 720   | 40  |
|               | 80           | 800  | 960   | 35  |
|               | 100          | 1000   | 1200  | 30  |

\* Also available as JEDEC series: 1N3735 through 1N3743; 1N2054 through 1N2068; 1N4044 through 1N4056.

#### Forward Conduction

| Parameter  | 70U   | 300U | Units              | Conditions   |
|--|-------|------|--------------------|--|
| $I_{F(AV)}$ Max. average forward current @ Case temperature          | 250   | 300  | A                  | 180° conduction, half sine wave  |
|  | 150   | 130  | °C                 |  |
| $I_{FSM}$ Max. peak, one-cycle forward, non-repetitive surge current | 6550  |      | A                  | t = 10ms No voltage reappplied   |
|  | 6850  |      |                    | t = 8.3ms reappplied   |
|  | 5500  |      |                    | t = 10ms 100% $V_{RRM}$ reappplied   |
|  | 5750  |      |                    | t = 8.3ms reappplied   |
| $I^2t$ Maximum $I^2t$ for fusing                                     | 214   |      | KA <sup>2</sup> s  | t = 10ms No voltage reappplied   |
|  | 195   |      |                    | t = 8.3ms reappplied   |
|  | 151   |      |                    | t = 10ms 100% $V_{RRM}$ reappplied   |
|  | 138   |      |                    | t = 8.3ms reappplied   |
| $I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing                       | 2140  |      | KA <sup>2</sup> /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                                   | 1.30  | --   | V                  | $(I_{FM} \times \pi \times I_{F(AV)})$ (785A peak), $T_J = 25^\circ\text{C}$ |
|  | --    | 1.40 | V                  | $(I_{FM} \times \pi \times I_{F(AV)})$ (942A peak), $T_J = 25^\circ\text{C}$ |

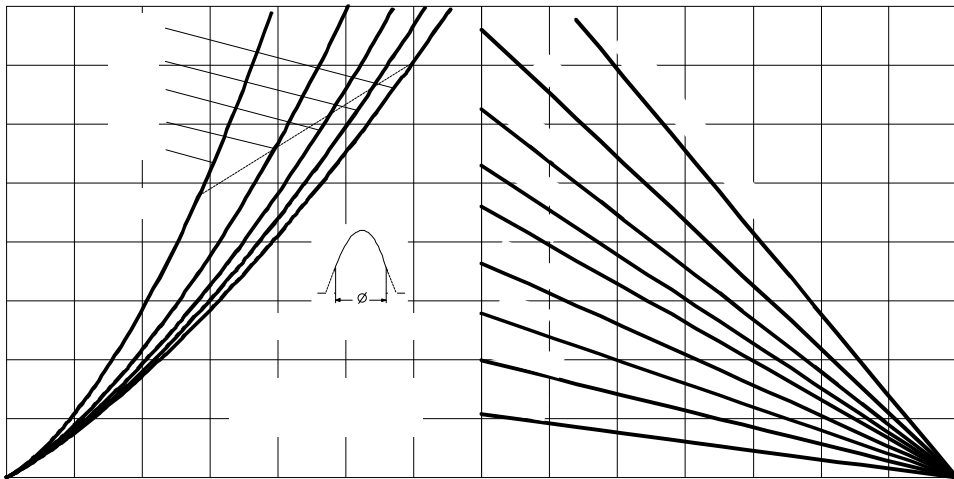


Fig. 3 - Forward Power Loss Characteristics

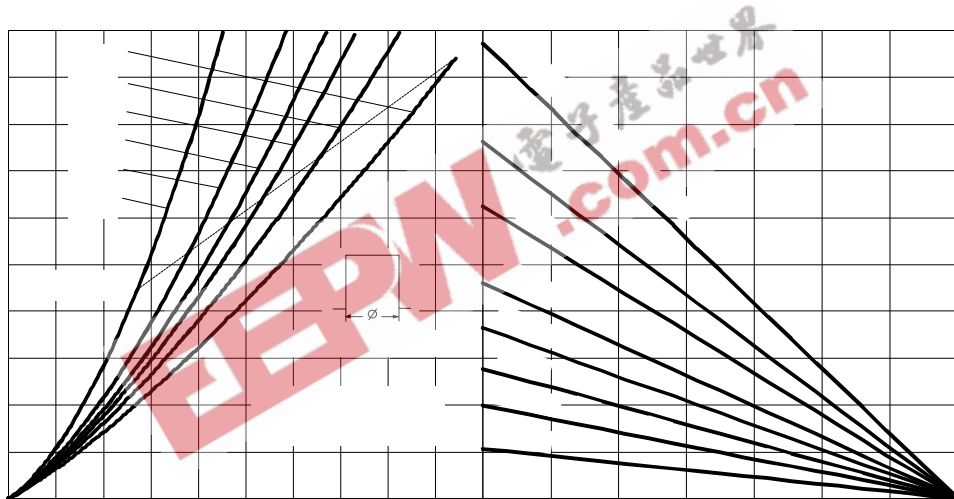
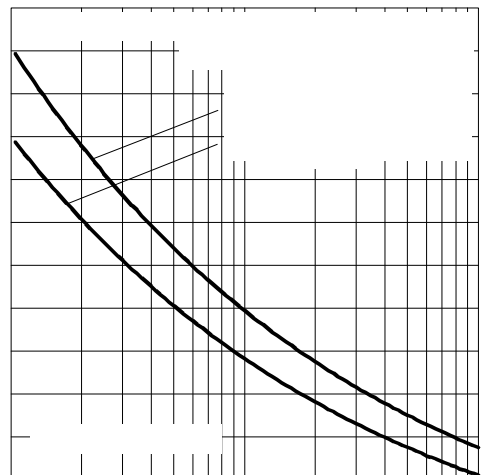
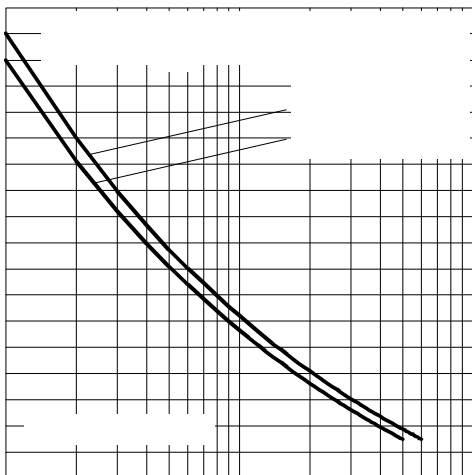


Fig. 4 - Forward Power Loss Characteristics



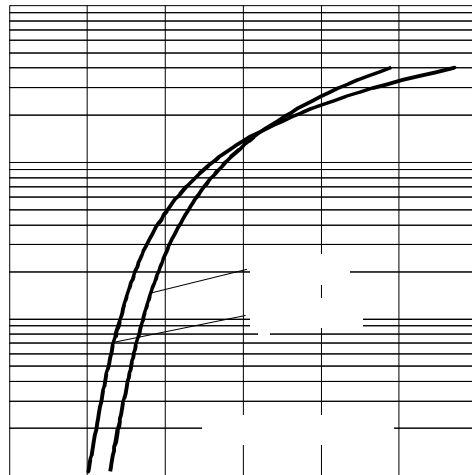


Fig. 7 - Forward Voltage Drop Characteristics

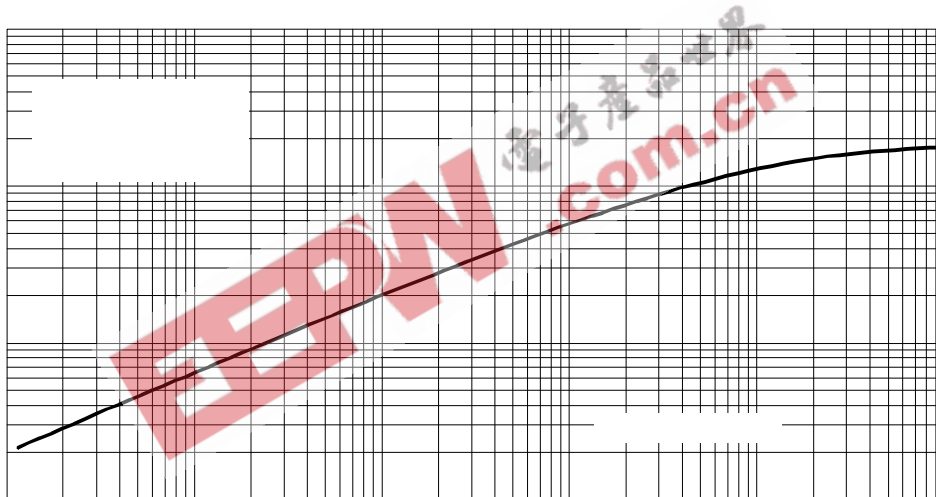


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristic

## Thermal and Mechanical Specifications

| Parameter  | 70/300U(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

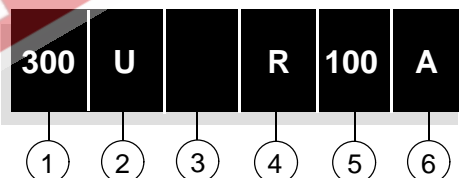
 $\Delta R_{thJC}$  Conduction

(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

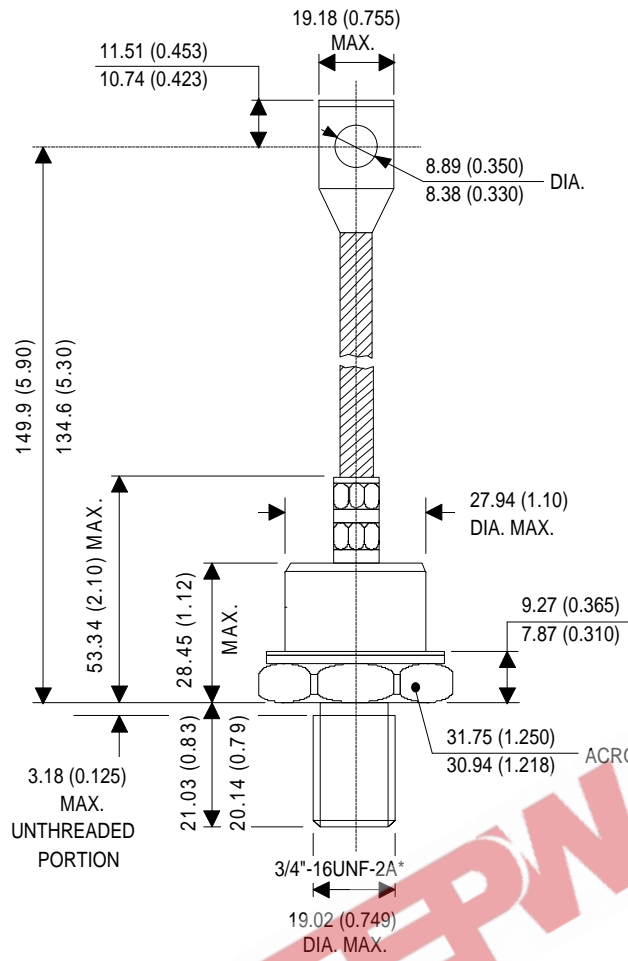


- 1** - 300 = Standard 300U device  
70 = Standard 70U device  
302 = 300U Top Threaded version  
72 = 70U with Pinch Bolt
- 2** - U = Essential Part Number
- 3** - F = Flat Base, available only on 72UF Series  
None = Normal Stud
- 4** - R = Stud Reverse Polarity (Anode to Stud)  
None = Stud Normal Polarity (Cathode to Stud)
- 5** - Voltage code: Code x 10 =  $V_{RRM}$  (See Voltage Ratings table)
- 6** - A = Essential Part Number only for 300U Series  
None = 70U Series

NOTE: For longer lead Contact Factory

# 70/300U(R) Series

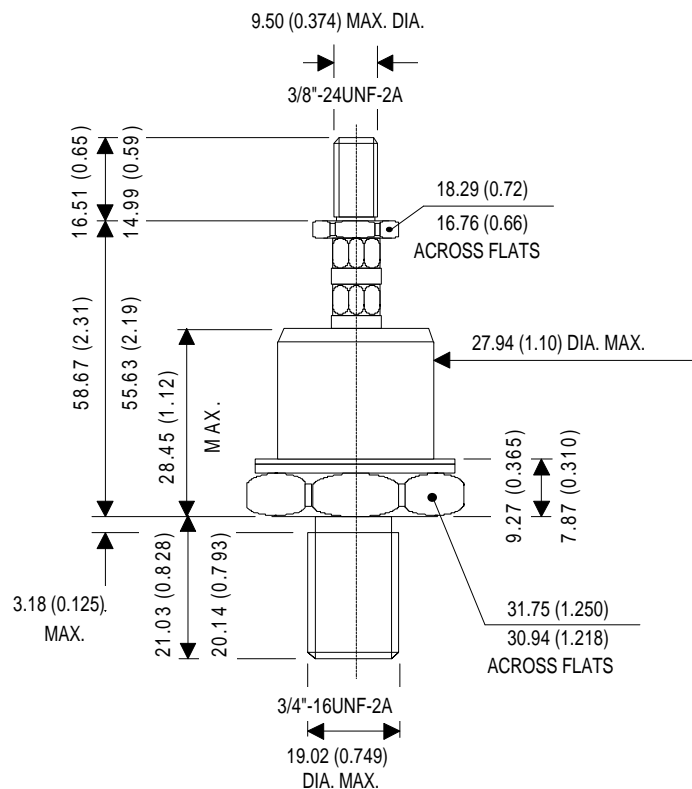
## Outline Table



**70U/300U-A Series**  
 Conforms to JEDEC DO-205AB (DO-9)  
 All dimensions in millimeters (inches)

\* METRIC DEVICE. M16 X 1.5 FOR 300U..AM  
 METRIC DEVICE. M20 X 1.5 FOR 300U..AMA

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



Outline Table

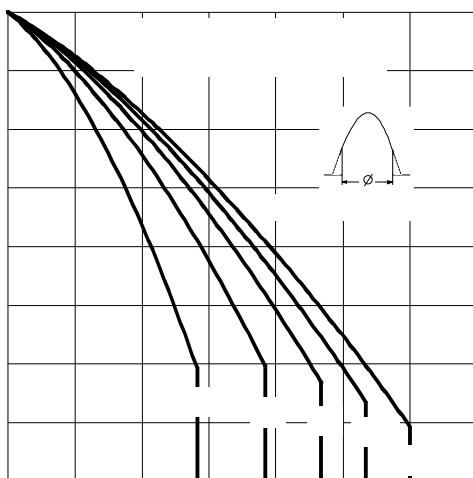
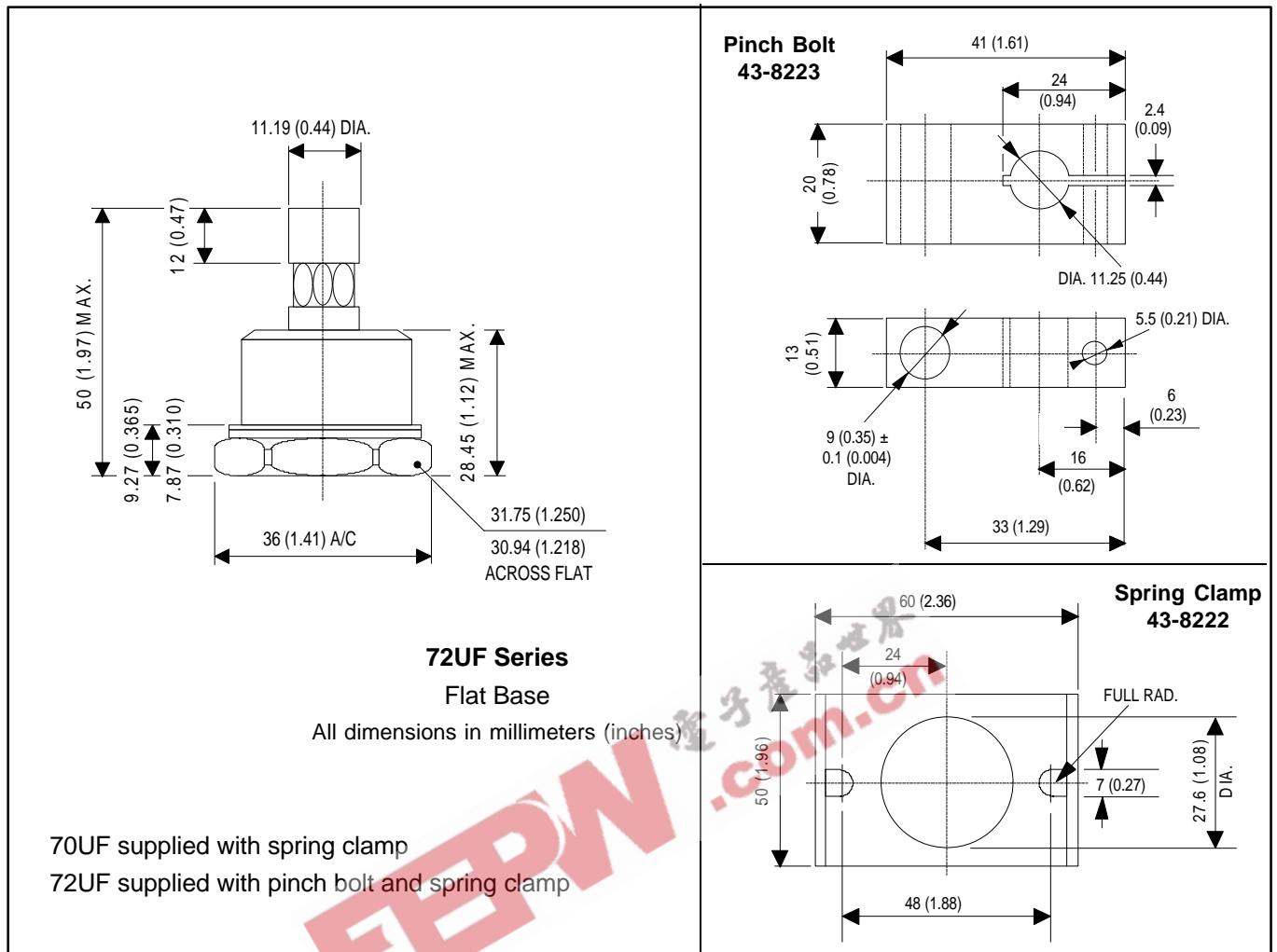


Fig. 1 - Current Ratings Characteristics

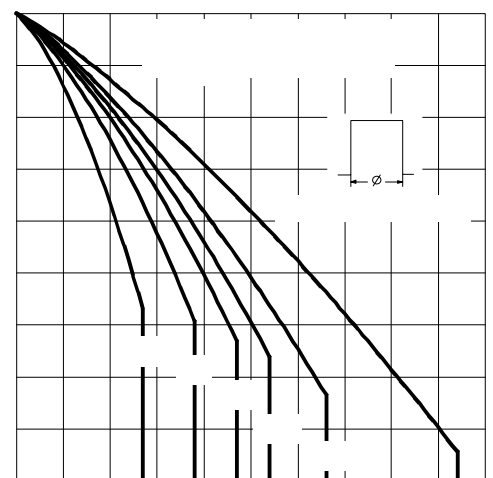


Fig. 2 - Current Ratings Characteristics