



# Standard Recovery Diodes (Stud Version), 300 A



DO-205AB (DO-9)

### FEATURES

- Alloy diode
- Popular series for rough service
- Stud cathode and stud anode version
- Designed and qualified for industrial level
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



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### TYPICAL APPLICATIONS

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

| PRODUCT SUMMARY |       |
|-----------------|-------|
| $I_{F(AV)}$     | 300 A |

| MAJOR RATINGS AND CHARACTERISTICS |                 |             |                   |
|-----------------------------------|-----------------|-------------|-------------------|
| PARAMETER                         | TEST CONDITIONS | VALUES      | UNITS             |
| $I_{F(AV)}$                       |                 | 300         | A                 |
|                                   | $T_C$           | 150         | °C                |
| $I_{FSM}$                         | 50 Hz           | 6550        | A                 |
|                                   | 60 Hz           | 6850        |                   |
| $I^2t$                            | 50 Hz           | 214         | kA <sup>2</sup> s |
|                                   | 60 Hz           | 195         |                   |
| $V_{RRM}$                         | Range           | 100 to 600  | V                 |
| $T_J$                             |                 | - 65 to 200 | °C                |

### ELECTRICAL SPECIFICATIONS

| VOLTAGE RATINGS |              |  |  |  |
|-----------------|--------------|--|--|--|
| TYPE NUMBER     | VOLTAGE CODE | $V_{RRM}$ , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE<br>V | $V_{RSM}$ , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE<br>V | $I_{RRM}$ MAXIMUM AT $T_J = 175\text{ °C}$<br>mA |
| 300U(R)         | 10           | 100  | 200  | 40   |
|                 | 20           | 200  | 300  |  |
|                 | 30           | 300  | 400  |  |
|                 | 40           | 400  | 500  |  |
|                 | 60           | 600  | 700  |  |



| FORWARD CONDUCTION  |               |   |                           |        |                    |
|---|---------------|---|---------------------------|--------|--------------------|
| PARAMETER   | SYMBOL        | TEST CONDITIONS                             |                           | VALUES | UNITS              |
| Maximum average forward current at case temperature           | $I_{F(AV)}$   | 180° conduction, half sine wave             |                           | 300    | A                  |
|   |               |   |                           | 130    | °C                 |
| Maximum peak, one cycle forward, non-repetitive surge current | $I_{FSM}$     | t = 10 ms                                   | No voltage reapplied      | 6550   | A                  |
|   |               | t = 8.3 ms                                  |                           | 6850   |                    |
|   |               | t = 10 ms                                   | 100 % $V_{RRM}$ reapplied | 5500   |                    |
|   |               | t = 8.3 ms                                  |                           | 5750   |                    |
| Maximum $I^2t$ for fusing                                     | $I^2t$        | t = 10 ms                                   | No voltage reapplied      | 214    | kA <sup>2</sup> s  |
|   |               | t = 8.3 ms                                  |                           | 195    |                    |
|   |               | t = 10 ms                                   | 100 % $V_{RRM}$ reapplied | 151    |                    |
|   |               | t = 8.3 ms                                  |                           | 138    |                    |
| Maximum $I^2\sqrt{t}$ for fusing                              | $I^2\sqrt{t}$ | t = 0.1 to 10 ms, no voltage reapplied      |                           | 2140   | kA <sup>2</sup> √s |
| Maximum value of threshold voltage                            | $V_{F(TO)}$   | $T_J = 200\text{ °C}$                       |                           | 0.610  | V                  |
| Maximum value of forward slope resistance                     | $r_f$         |   |                           | 0.751  | mΩ                 |
| Maximum forward voltage drop                                  | $V_{FM}$      | $I_{pk} = 942\text{ A}, T_J = 25\text{ °C}$ |                           | 1.40   | V                  |

| THERMAL AND MECHANICAL SPECIFICATIONS                    |                |   |                                |       |
|--|----------------|---|--------------------------------|-------|
| PARAMETER  | SYMBOL         | TEST CONDITIONS                                       | VALUES                         | UNITS |
| Maximum junction operating and storage temperature range | $T_J, T_{Stg}$ |   | - 65 to 200                    | °C    |
| Maximum thermal resistance, junction to case             | $R_{thJC}$     | DC operation  | 0.18                           | K/W   |
| Maximum thermal resistance, case to heatsink             | $R_{thCS}$     | Mounting surface, smooth, flat and greased            | 0.08                           |       |
| Maximum allowed mounting torque + 0 - 20 %               |                | Not lubricated threads                                | 37                             | Nm    |
|  |                | Lubricated threads                                    | 28                             |       |
| Approximate weight                                       |                |   | 250                            | g     |
| Case style   |                | (JEDEC) see dimensions - link at the end of datasheet | DO-205AB (DO-9) <sup>(1)</sup> |       |

**Note**

<sup>(1)</sup> 302U-A uses case style B-26

| $\Delta R_{thJC}$ CONDUCTION |                       |                        |                            |       |
|------------------------------|-----------------------|------------------------|----------------------------|-------|
| CONDUCTION ANGLE             | SINUSOIDAL CONDUCTION | RECTANGULAR CONDUCTION | TEST CONDITIONS            | UNITS |
| 180°                         | 0.020                 | 0.015                  | $T_J = T_J\text{ maximum}$ | K/W   |
| 120°                         | 0.024                 | 0.025                  |                            |       |
| 90°                          | 0.031                 | 0.034                  |                            |       |
| 60°                          | 0.045                 | 0.047                  |                            |       |
| 30°                          | 0.077                 | 0.077                  |                            |       |

**Note**

- The table above shows the increment of thermal resistance  $R_{thJC}$  when devices operate at different conduction angles than DC

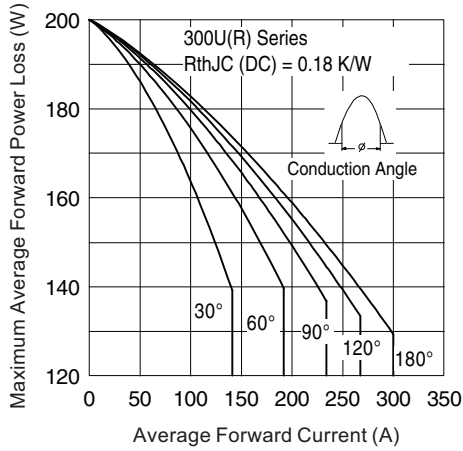


Fig. 1 - Current Ratings Characteristics

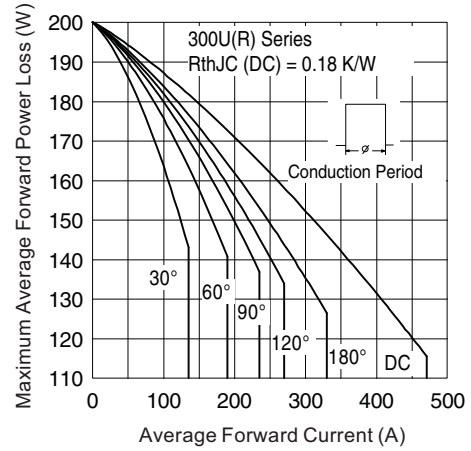


Fig. 1 - Current Ratings Characteristics

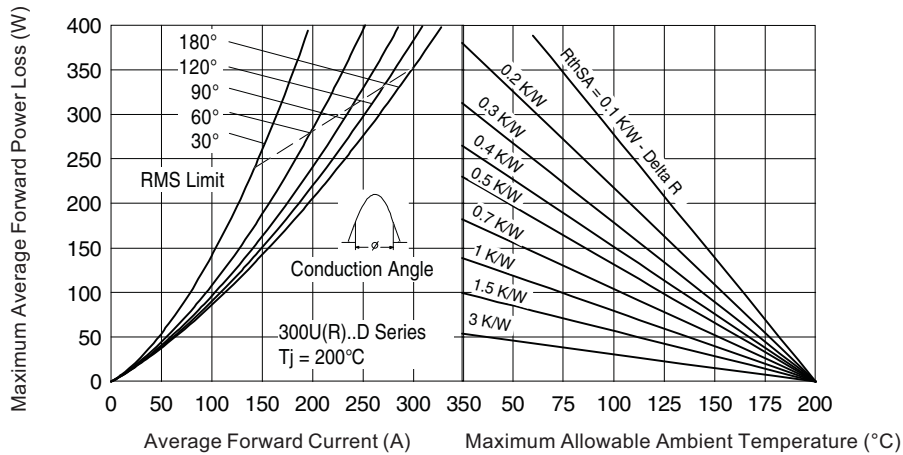


Fig. 2 - Forward Power Loss Characteristics

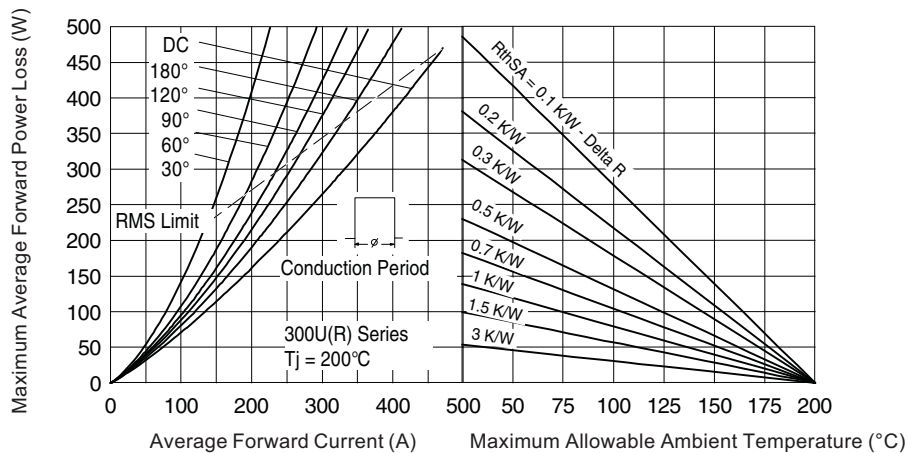


Fig. 3 - Forward Power Loss Characteristics

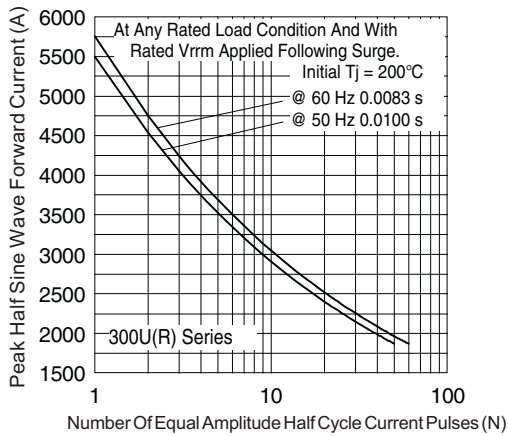


Fig. 4 - Maximum Non-Repetitive Surge Current

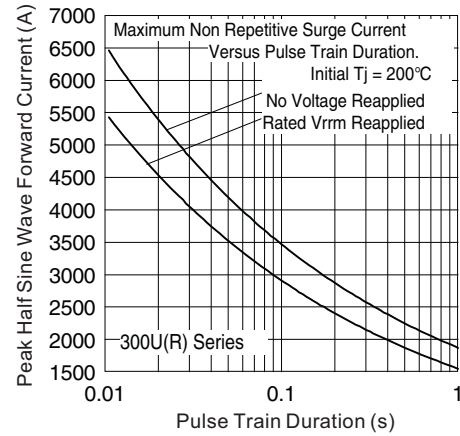


Fig. 5 - Maximum Non-Repetitive Surge Current

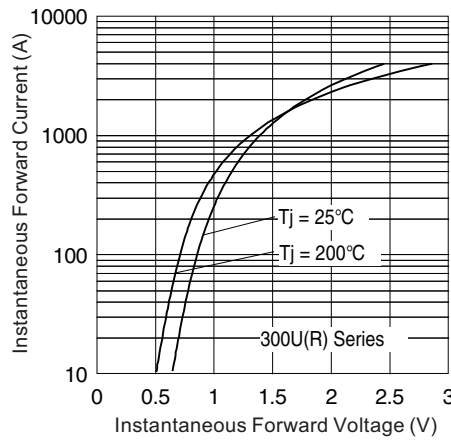


Fig. 6 - Forward Voltage Drop Characteristics

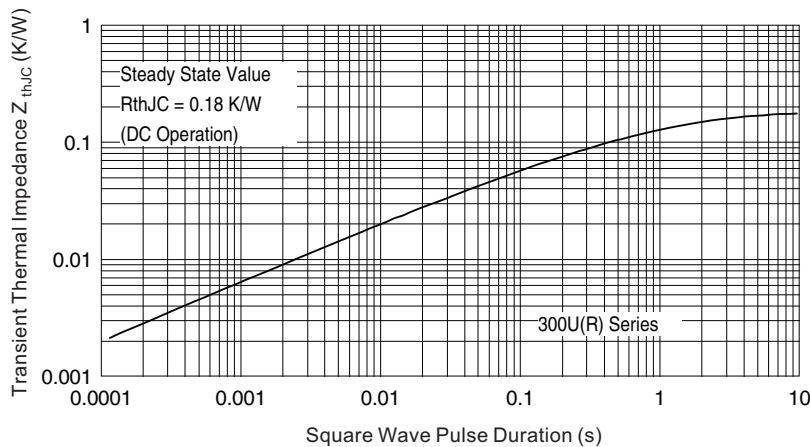
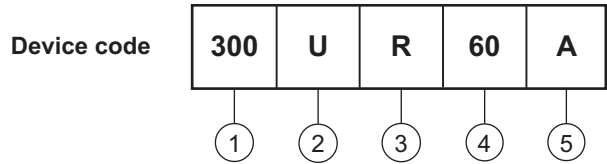


Fig. 7 - Thermal Impedance  $Z_{thJC}$  Characteristic



## ORDERING INFORMATION TABLE



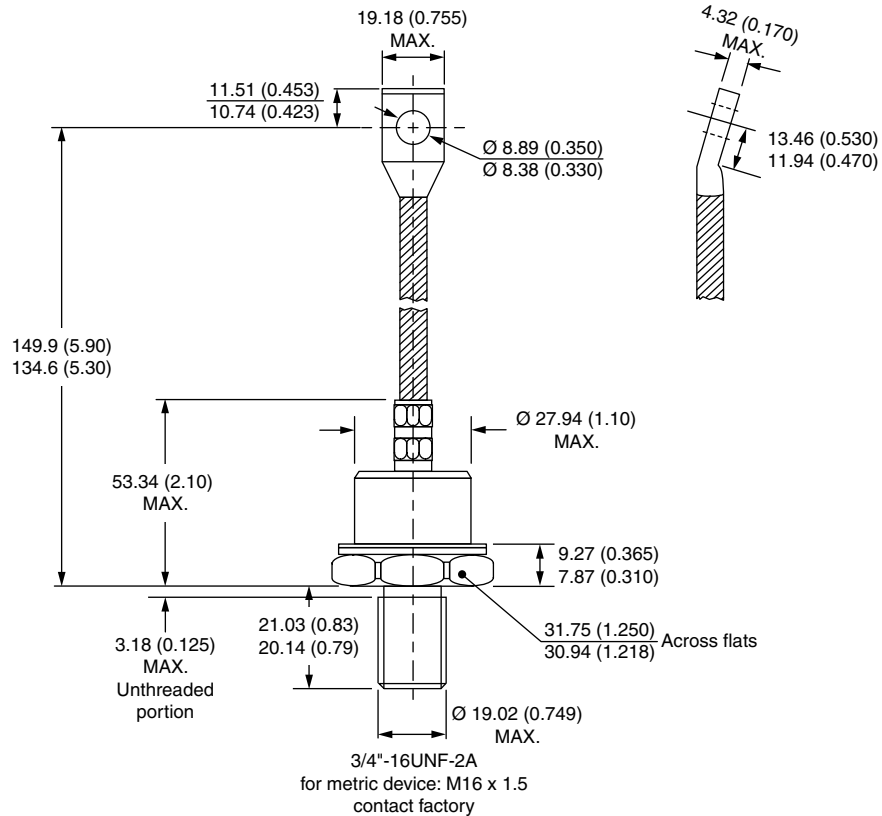
- 1** -
  - 300 = Standard 300U device
  - 302 = 300U top threaded version
- 2** - U = Essential part number
- 3** -
  - R = Stud reverse polarity (anode to stud)
  - None = Stud normal polarity (cathode to stud)
- 4** - Voltage code x 10 =  $V_{RRM}$  (see Voltage Ratings table)
- 5** - A = Essential part number

Note: For metric device M16 x 1.5 contact factory

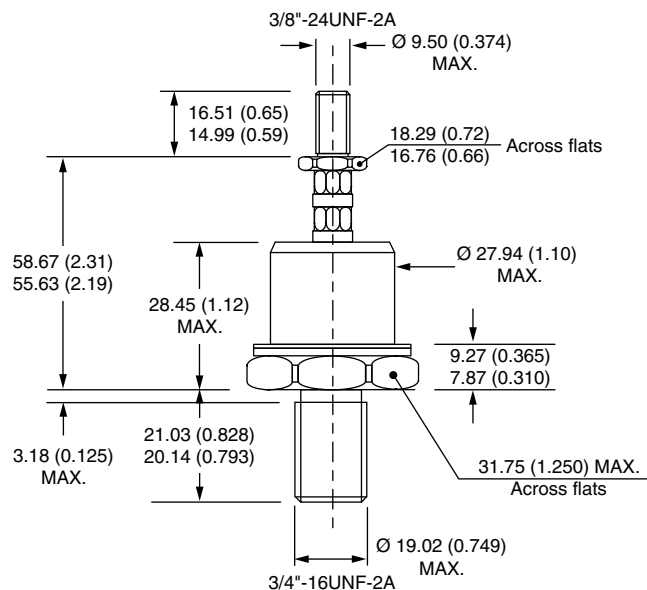
| LINKS TO RELATED DOCUMENTS |  |
|----------------------------|--|
| Dimensions                 | <a href="http://www.vishay.com/doc?95340">www.vishay.com/doc?95340</a> |

## DO-205AB (DO-9) and B-26 for 300U(R) Series

### DIMENSIONS FOR 300U(R)-A SERIES - DO-205AB (DO-9) in millimeters (inches)



### DIMENSIONS FOR 302U(R)-A SERIES - B-26 in millimeters (inches)





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