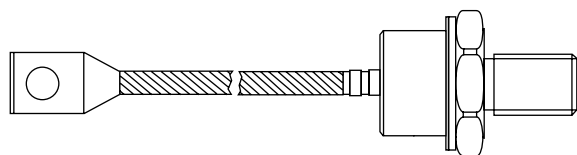


## Standard Recovery Diodes (Stud Version), 300 A



DO-205AB (DO-9)

### FEATURES

- Alloy diode
- Popular series for rough service
- Stud cathode and stud anode version
- RoHS compliant
- Designed and qualified for industrial level



### 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 <sub>F(AV)</sub> | 180° conduction, half sine wave                 |                                  |                                                                       | 300    | A                  |
|                                                               |                    |                                                 |                                  |                                                                       | 130    | °C                 |
| Maximum peak, one cycle forward, non-repetitive surge current | I <sub>FSM</sub>   | t = 10 ms                                       | No voltage reapplied             | Sinusoidal half wave, initial T <sub>J</sub> = T <sub>J</sub> maximum | 6550   | A                  |
|                                                               |                    | t = 8.3 ms                                      |                                  |                                                                       | 6850   |                    |
|                                                               |                    | t = 10 ms                                       | 100 % V <sub>RRM</sub> reapplied |                                                                       | 5500   |                    |
|                                                               |                    | t = 8.3 ms                                      |                                  |                                                                       | 5750   |                    |
| Maximum I <sup>2</sup> t for fusing                           | I <sup>2</sup> t   | t = 10 ms                                       | No voltage reapplied             |                                                                       | 214    | kA <sup>2</sup> s  |
|                                                               |                    | t = 8.3 ms                                      |                                  |                                                                       | 195    |                    |
|                                                               |                    | t = 10 ms                                       | 100 % V <sub>RRM</sub> reapplied |                                                                       | 151    |                    |
|                                                               |                    | t = 8.3 ms                                      |                                  |                                                                       | 138    |                    |
| Maximum I <sup>2</sup> √t for fusing                          | I <sup>2</sup> √t  | t = 0.1 to 10 ms, no voltage reapplied          |                                  |                                                                       | 2140   | kA <sup>2</sup> √s |
| Maximum value of threshold voltage                            | V <sub>F(TO)</sub> | T <sub>J</sub> = 200 °C                         |                                  |                                                                       | 0.610  | V                  |
| Maximum value of forward slope resistance                     | r <sub>f</sub>     |                                                 |                                  |                                                                       | 0.751  | mΩ                 |
| Maximum forward voltage drop                                  | V <sub>FM</sub>    | I <sub>pk</sub> = 942 A, T <sub>J</sub> = 25 °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

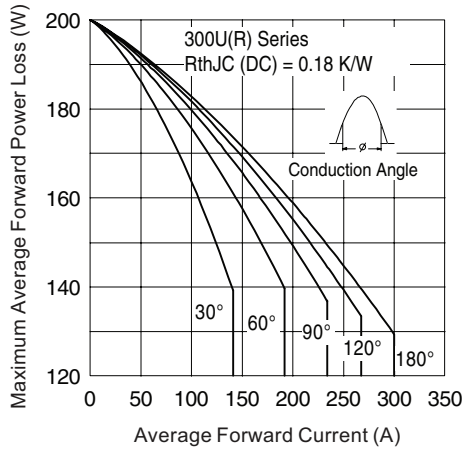


Fig. 1 - Current Ratings Characteristics

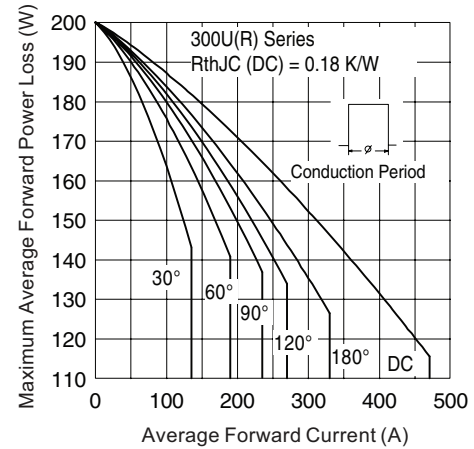


Fig. 2 - Current Ratings Characteristics

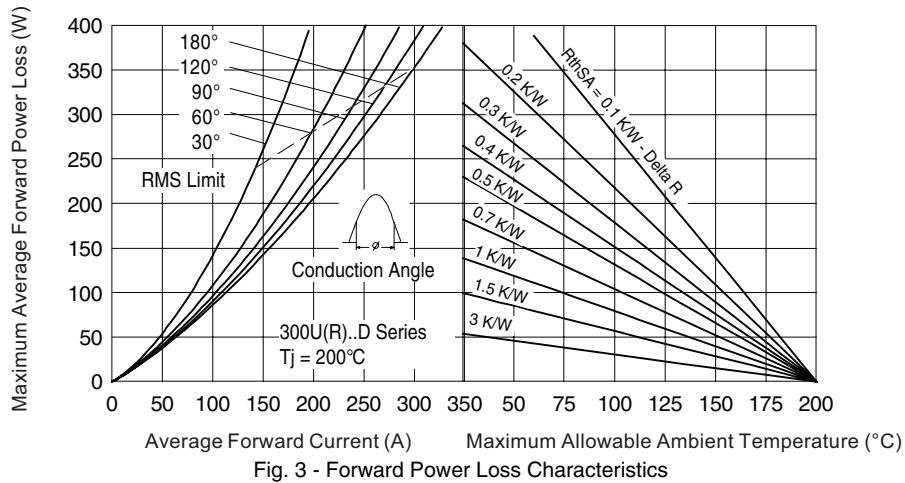


Fig. 3 - Forward Power Loss Characteristics

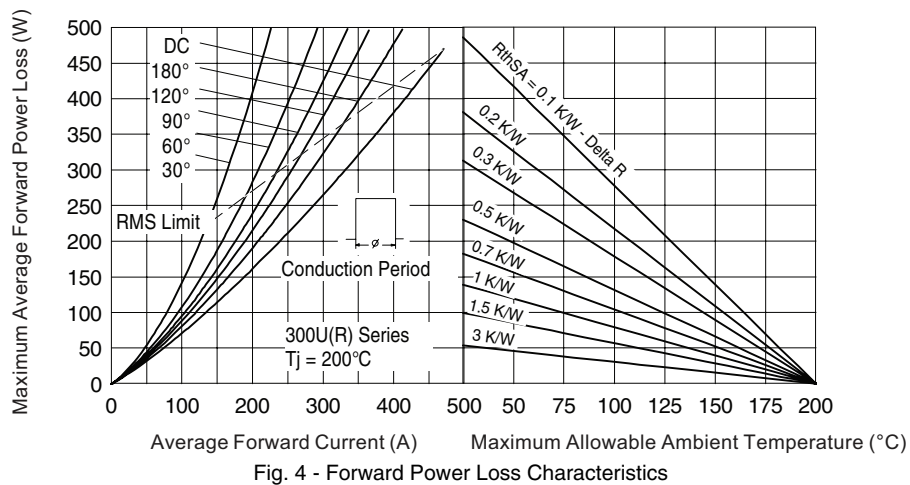


Fig. 4 - Forward Power Loss Characteristics

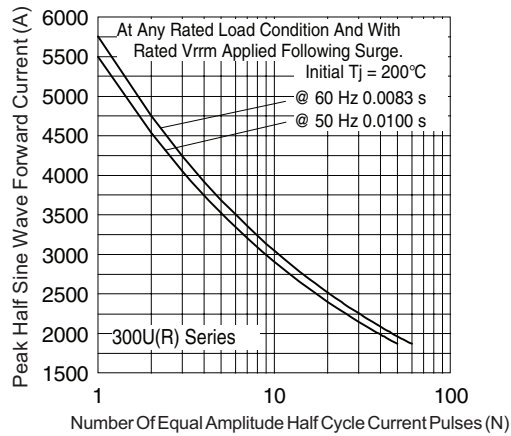


Fig. 5 - Maximum Non-Repetitive Surge Current

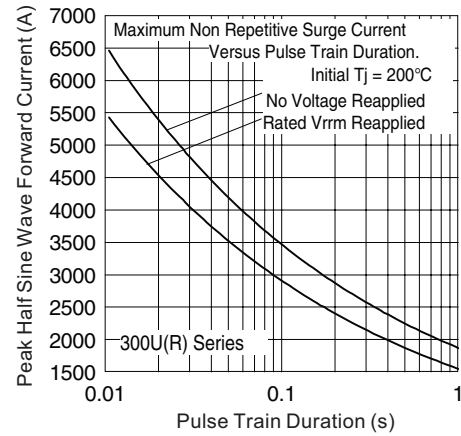


Fig. 6 - Maximum Non-Repetitive Surge Current

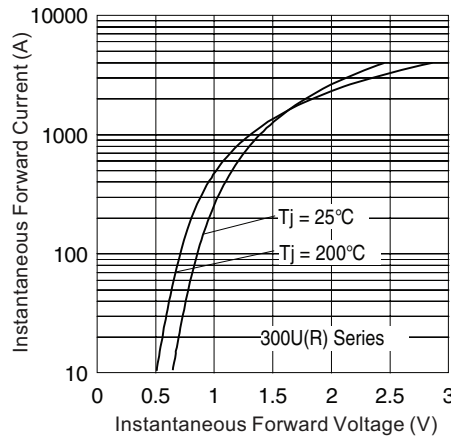


Fig. 7 - Forward Voltage Drop Characteristics

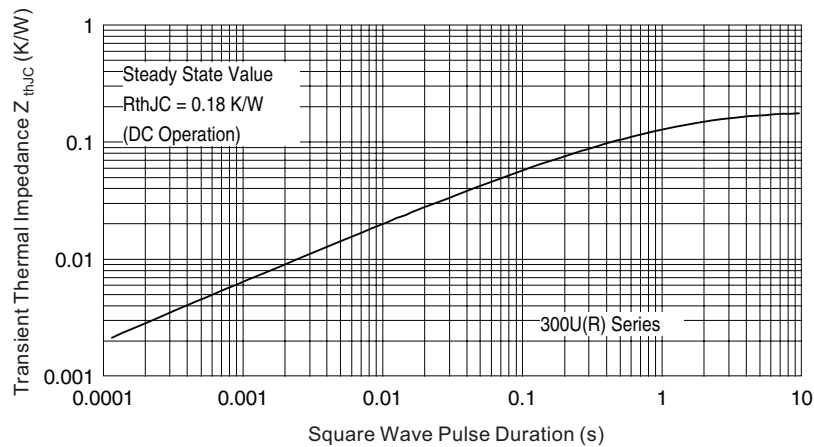


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristic



### ORDERING INFORMATION TABLE

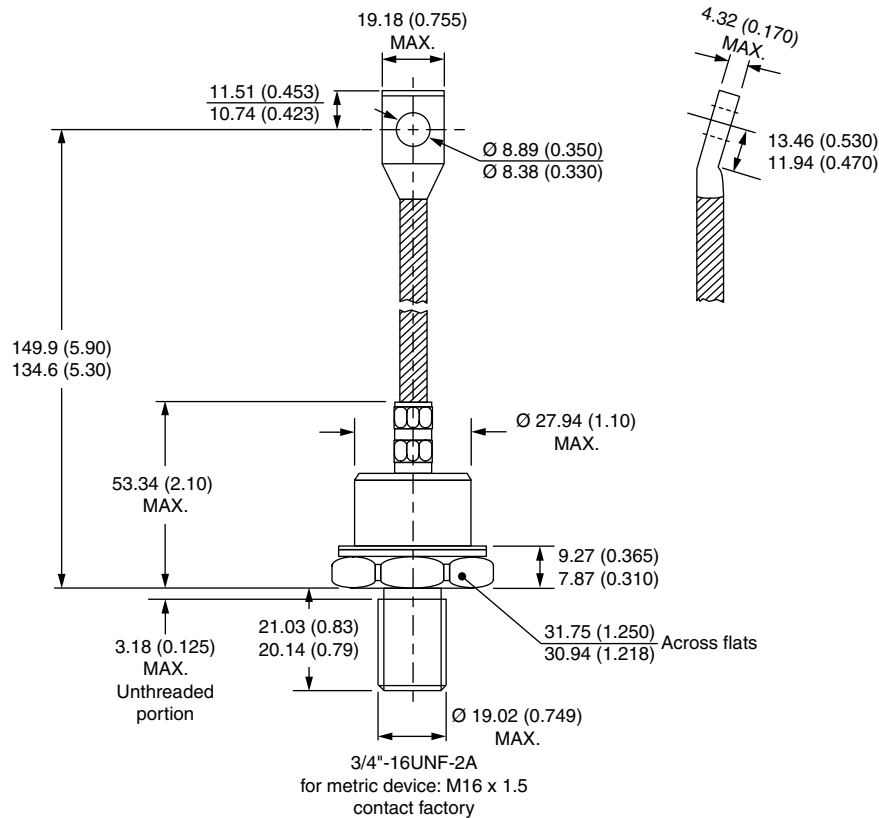
|             |                                                                                                                                                   |   |   |    |   |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------|---|---|----|---|
| Device code | 300                                                                                                                                               | U | R | 60 | A |
|             | 1                                                                                                                                                 | 2 | 3 | 4  | 5 |
| 1           | - <ul style="list-style-type: none"><li>300 = Standard 300U device</li><li>302 = 300U top threaded version</li></ul>                              |   |   |    |   |
| 2           | - U = Essential part number                                                                                                                       |   |   |    |   |
| 3           | - <ul style="list-style-type: none"><li>R = Stud reverse polarity (anode to stud)</li><li>None = Stud normal polarity (cathode to stud)</li></ul> |   |   |    |   |
| 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

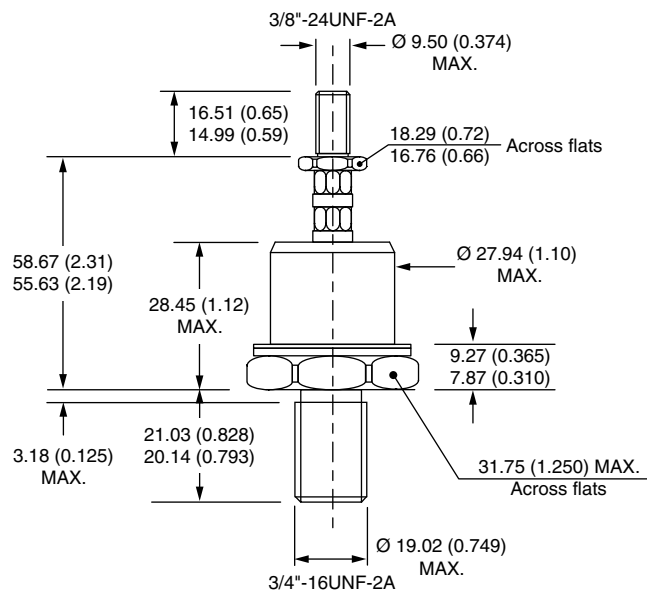
| LINKS TO RELATED DOCUMENTS |                                                                               |
|----------------------------|-------------------------------------------------------------------------------|
| Dimensions                 | <a href="http://www.vishay.com/doc?95340">http://www.vishay.com/doc?95340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