

Standard Recovery Diodes, (Stud Version), 300 A



DO-9 (DO-205AB)


RoHS
COMPLIANT

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

TYPICAL APPLICATIONS

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

PRIMARY CHARACTERISTICS

| | |
|-----------------------|-----------------|
| $I_{F(AV)}$ | 300 A |
| Package | DO-9 (DO-205AB) |
| Circuit configuration | Single |

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 ² s |
| | 60 Hz | 195 | |
| V_{RRM} | Range | 400 | V |
| T_J | | -65 to +200 | °C |

ELECTRICAL SPECIFICATIONS
VOLTAGE RATINGS

| TYPE NUMBER | VOLTAGE CODE | V_{RRM} , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V | V_{RSM} , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V | I_{RRM} MAXIMUM AT $T_J = 175\text{ °C}$ mA |
|--------------|--------------|--|--|---|
| VS-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 | | | |
| | | t = 10 ms | 100 % V_{RRM} reapplied | 5500 | |
| | | t = 8.3 ms | | | |
| Maximum I^2t for fusing | I^2t | t = 10 ms | No voltage reapplied | 214 | kA ² s |
| | | t = 8.3 ms | | | |
| | | t = 10 ms | 100 % V_{RRM} reapplied | 195 | |
| | | t = 8.3 ms | | | |
| Maximum $I^2\sqrt{t}$ for fusing | $I^2\sqrt{t}$ | t = 0.1 to 10 ms, no voltage reapplied | | 2140 | kA ² √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-9 (DO-205AB) ⁽¹⁾ | |

Note

⁽¹⁾ 302U-A uses case style B-26

| ΔR_{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

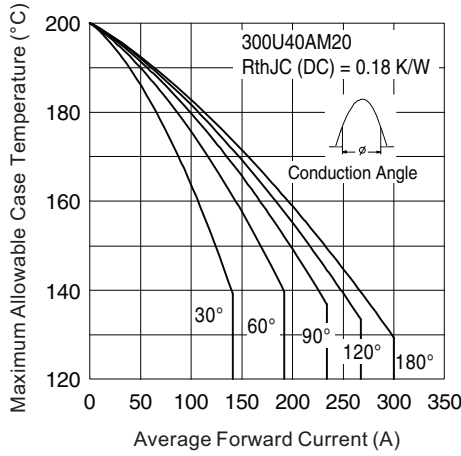


Fig. 1 - Current Ratings Characteristics

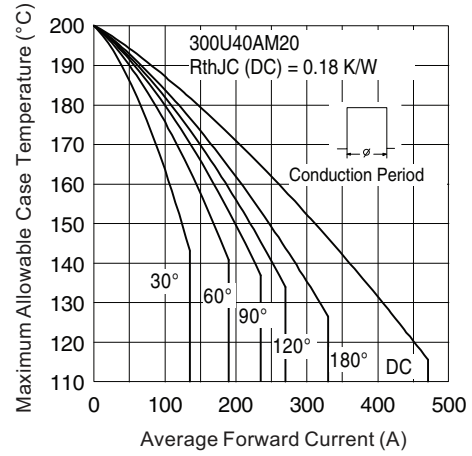


Fig. 2 - Current Ratings Characteristics

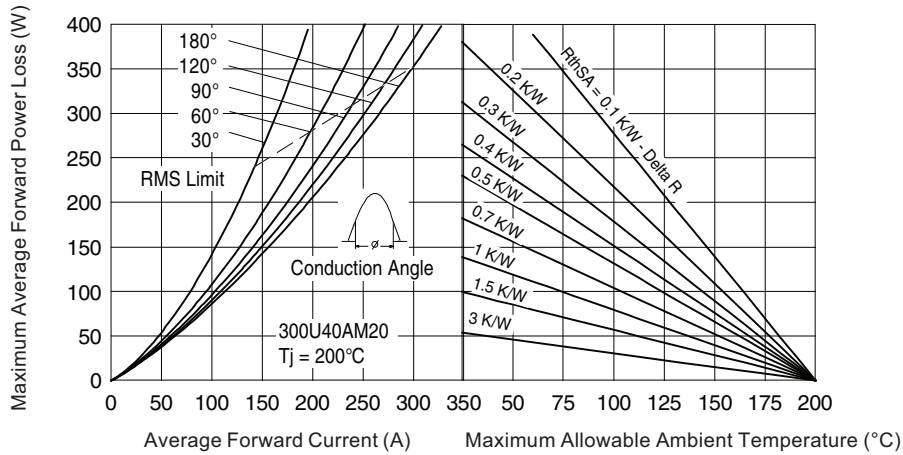


Fig. 3 - Forward Power Loss Characteristics

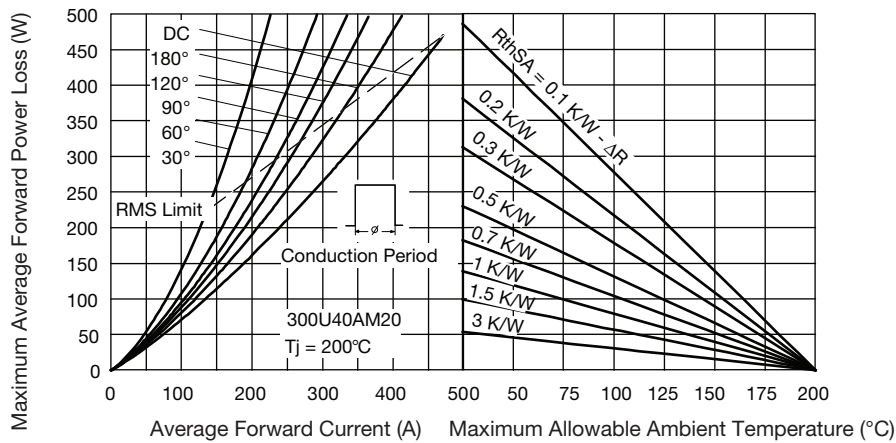


Fig. 4 - Forward Power Loss Characteristics

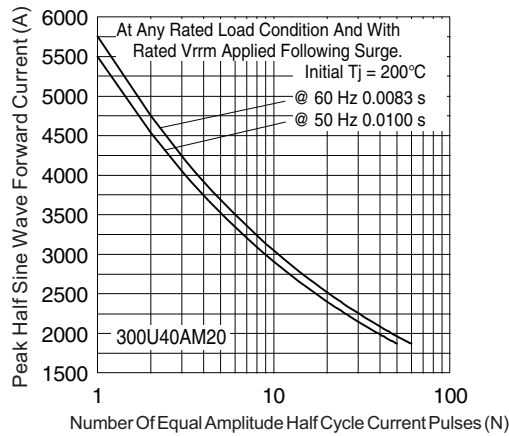


Fig. 5 - Maximum Non-Repetitive Surge Current

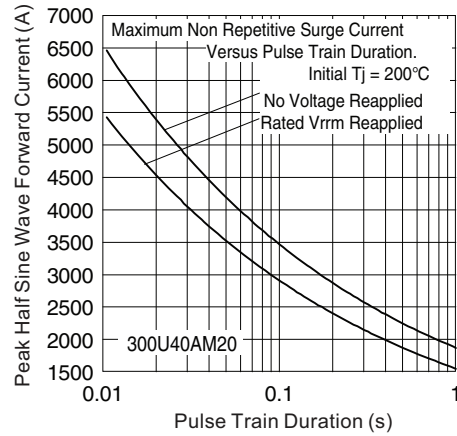


Fig. 6 - Maximum Non-Repetitive Surge Current

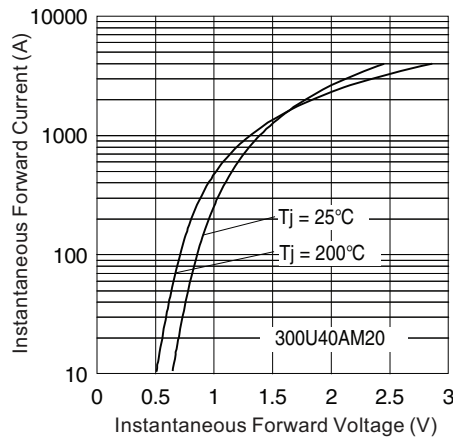


Fig. 7 - Forward Voltage Drop Characteristics

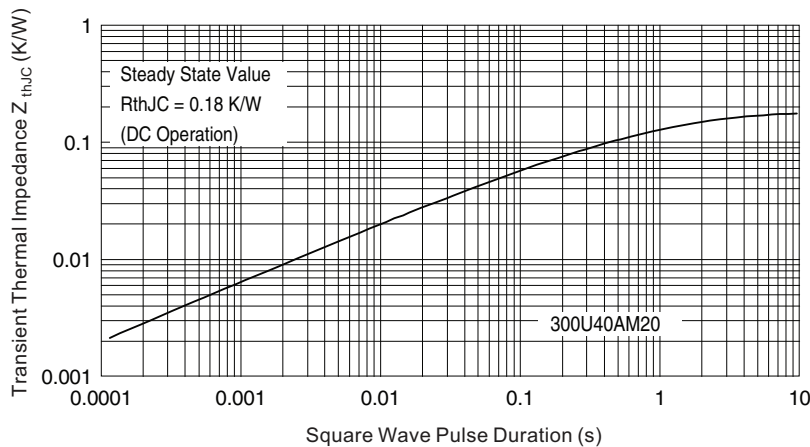


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic



ORDERING INFORMATION TABLE

| | | | | | | | |
|-------------|------------|-----------|----------|----------|-----------|----------|------------|
| Device code | VS- | 30 | 0 | U | 40 | A | M20 |
| | ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ |

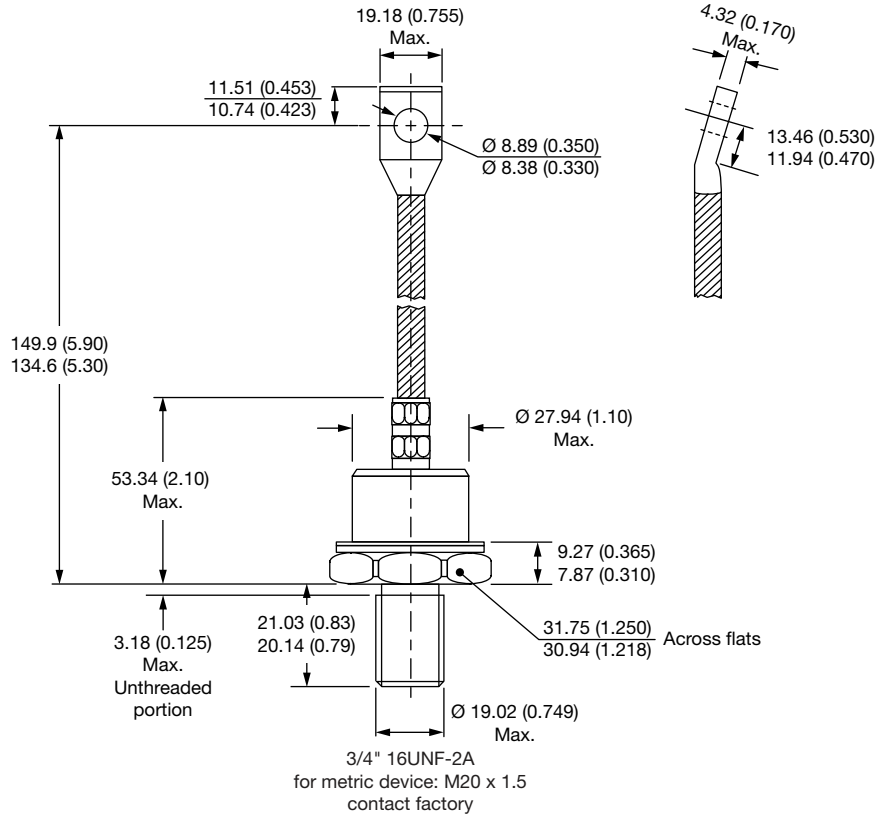
- 1** - Vishay Semiconductors product
- 2** - 30 = essential part number
- 3** - 0 = standard device
2 = 300U top threaded version
- 4** - • U = stud normal polarity (cathode to stud)
• UR = stud reverse polarity (anode to stud)
- 5** - Voltage code x 10 = V_{RRM} (see Voltage Ratings table)
- 6** - A = essential part number
- 7** - None = stud base DO-9 (DO-205AB) 3/4" 16UNF-2A
M20 = Metric device M20 x 1.5 (available with standard device only)

| LINKS TO RELATED DOCUMENTS | |
|----------------------------|--|
| Dimensions | www.vishay.com/doc?95340 |

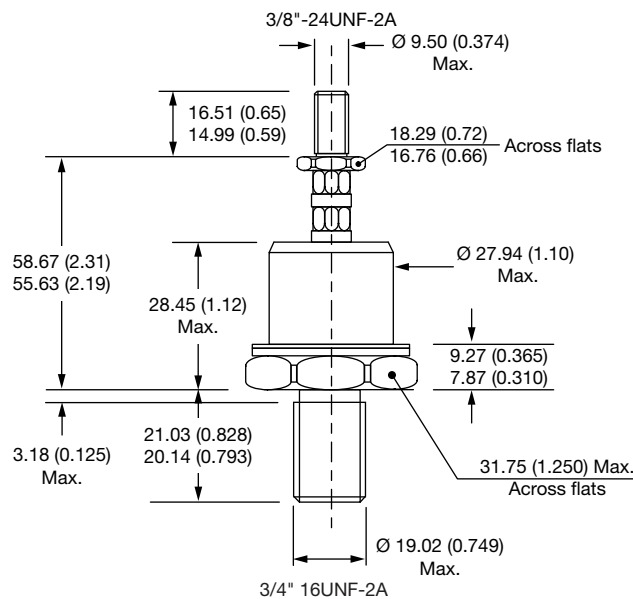


DO-9 (DO-205AB) and B-26 for 300U(R) Series

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



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





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