



Standard Recovery Diodes, (Stud Version), 320 A



DO-9 (DO-205AB)

FEATURES

- Diffused diode
- Wide current range
- High voltage ratings up to 1200 V
- High surge current capabilities
- Stud cathode and stud anode version
- Hermetic metal case
- Designed and qualified for industrial level
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT

TYPICAL APPLICATIONS

- Welders
- Power supplies
- Machine tool controls
- High power drives
- Medium traction applications
- Battery charges
- Freewheeling diodes

| PRIMARY CHARACTERISTICS | |
|-------------------------|-----------------|
| $I_{F(AV)}$ | 320 A |
| Package | DO-9 (DO-205AB) |
| Circuit configuration | Single |

| MAJOR RATINGS AND CHARACTERISTICS | | | |
|-----------------------------------|-----------------|-------------|-------------------|
| PARAMETER | TEST CONDITIONS | VALUES | UNITS |
| $I_{F(AV)}$ | | 320 | A |
| | T_C | 100 | °C |
| $I_{F(RMS)}$ | | 500 | A |
| I_{FSM} | 50 Hz | 4500 | A |
| | 60 Hz | 4700 | |
| I^2t | 50 Hz | 101 | kA ² s |
| | 60 Hz | 92 | |
| V_{RRM} | Range | 600 to 1200 | V |
| T_J | | -40 to +180 | °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 $T_J = T_J$ MAXIMUM mA |
| VS-240U(R).. | 60 | 600 | 700 | 15 |
| | 80 | 800 | 900 | |
| | 100 | 1000 | 1100 | |
| | 120 | 1200 | 1300 | |



| FORWARD CONDUCTION | | | | | |
|---|---------------|--|---------------------------|--------|--------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
| Maximum average forward current at case temperature | $I_{F(AV)}$ | 180° conduction, half sine wave | | 320 | A |
| | | | | 100 | °C |
| Maximum RMS forward current | $I_{F(RMS)}$ | DC at 80 °C case temperature | | 500 | A |
| Maximum peak, one cycle forward, non-repetitive surge current | I_{FSM} | t = 10 ms | No voltage reapplied | 4500 | |
| | | t = 8.3 ms | | 4700 | |
| | | t = 10 ms | 100 % V_{RRM} reapplied | 3800 | |
| | | t = 8.3 ms | | 4000 | |
| Maximum I^2t for fusing | I^2t | t = 10 ms | No voltage reapplied | 101 | kA ² s |
| | | t = 8.3 ms | | 92 | |
| | | t = 10 ms | 100 % V_{RRM} reapplied | 72 | |
| | | t = 8.3 ms | | 66 | |
| Maximum $I^2\sqrt{t}$ for fusing | $I^2\sqrt{t}$ | t = 0.1 to 10 ms, no voltage reapplied | | 1010 | kA ² √s |
| Slope resistance | r_f | $T_J = T_J$ maximum | | 0.6 | mΩ |
| Threshold voltage | $V_{F(T0)}$ | | | 0.83 | V |
| Maximum forward voltage drop | V_{FM} | $I_{pk} = 750$ A, $T_J = 25$ °C, $t_p = 10$ ms sinusoidal wave | | 1.33 | |

| THERMAL AND MECHANICAL SPECIFICATIONS | | | | |
|--|----------------|---|-----------------|---------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | VALUES | UNITS |
| Maximum junction operating and storage temperature range | T_J, T_{Stg} | | -40 to 180 | °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 allowable mounting torque +0 -20 % | | Not lubricated threads | 37 (330) | N · m (lbf · in) |
| | | Lubricated threads | 28 (250) | |
| Approximate weight | | | 250 | g |
| Case style | | See dimensions - link at the end of datasheet | DO-9 (DO-205AB) | |

| ΔR_{thJC} CONDUCTION | | | | |
|--|-----------------------|------------------------|---------------------|-------|
| CONDUCTION ANGLE | SINUSOIDAL CONDUCTION | RECTANGULAR CONDUCTION | TEST CONDITIONS | UNITS |
| 180° | 0.019 | 0.015 | $T_J = T_J$ maximum | K/W |
| 120° | 0.023 | 0.025 | | |
| 90° | 0.030 | 0.034 | | |
| 60° | 0.045 | 0.047 | | |
| 30° | 0.076 | 0.076 | | |

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

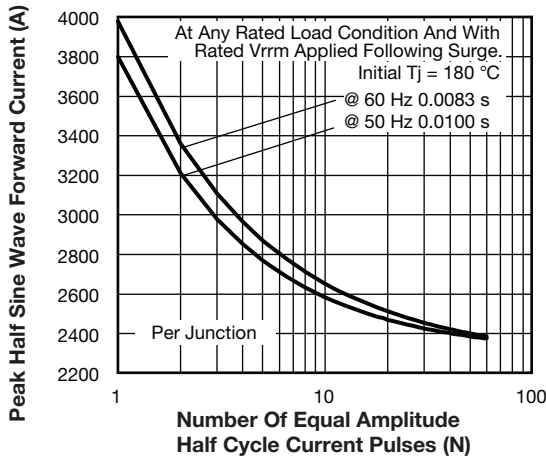


Fig. 5 - Maximum Non-Repetitive Surge Current

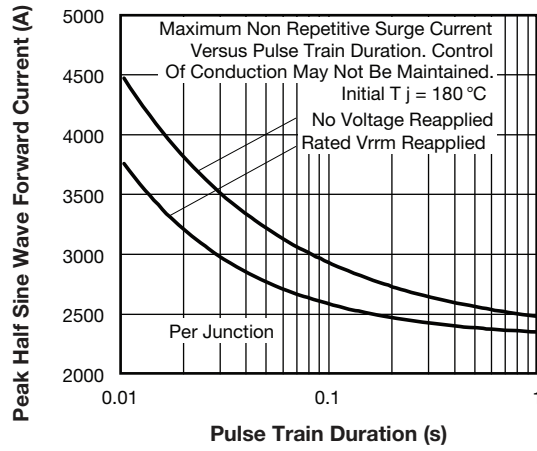


Fig. 6 - Maximum Non-Repetitive Surge Current

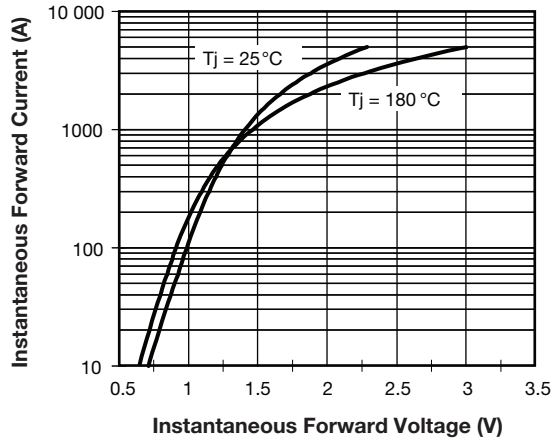


Fig. 7 - Forward Voltage Drop Characteristics

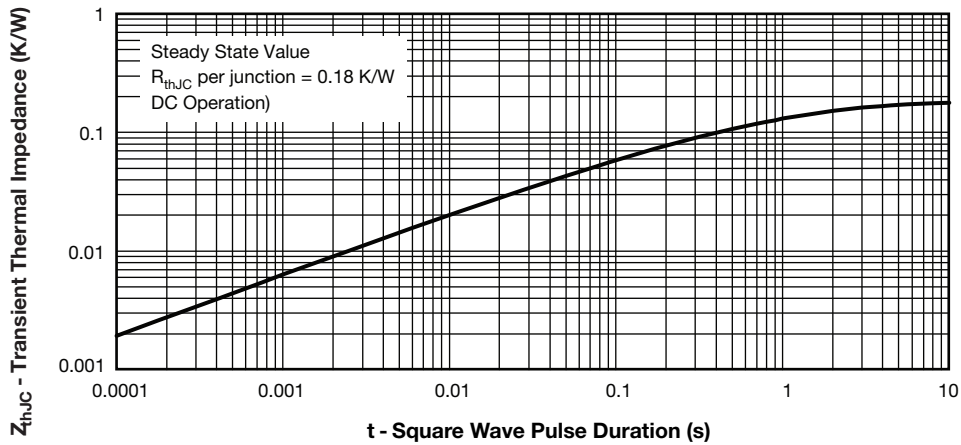
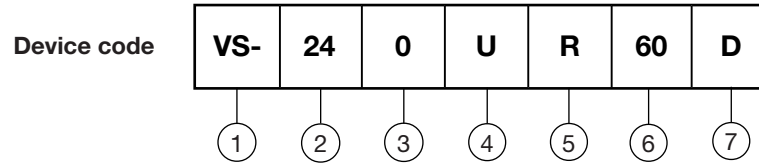


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic



ORDERING INFORMATION TABLE



- 1** - Vishay Semiconductors product
- 2** - 24 = essential part number
- 3** - 0 = standard device
- 4** - U = stud normal polarity (cathode to stud)
- 5** -
 - None = stud normal polarity (cathode to stud)
 - R = stud reverse polarity (anode to stud)
- 6** - Voltage code x 10 = V_{RRM} (see Voltage Ratings table)
- 7** - Diffused diode

Note

- For metric device M16 x 1.5 contact factory

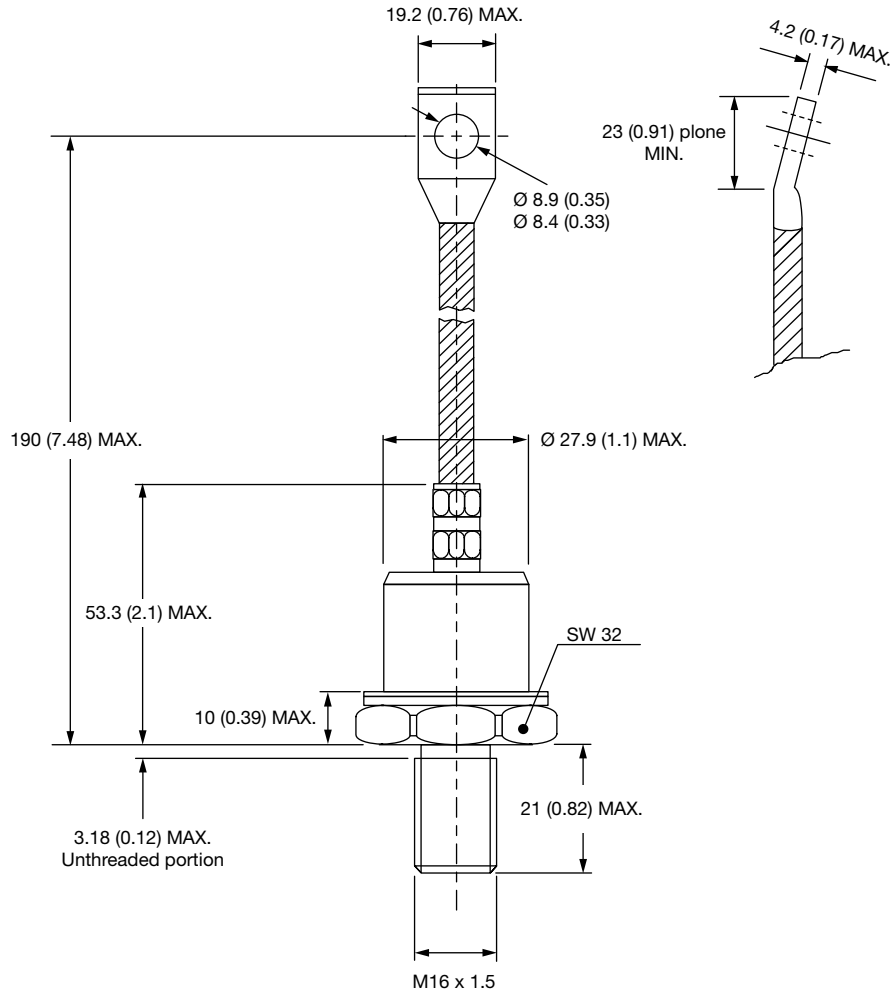
LINKS TO RELATED DOCUMENTS

| | |
|-----------------------------------|--|
| LINKS TO RELATED DOCUMENTS | |
| Dimensions | www.vishay.com/doc?95317 |



DO-205AB (DO-9) for 240U(R)

DIMENSIONS in millimeters (inches)





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