

## Standard Recovery Diodes (Stud Version), 150 A



DO-205AA (DO-8)

### FEATURES

- Diffused diode
- 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](http://www.vishay.com/doc?99912)


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### TYPICAL APPLICATIONS

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

### PRODUCT SUMMARY

|                       |                 |
|-----------------------|-----------------|
| $I_{F(AV)}$           | 150 A           |
| Package               | DO-205AA (DO-8) |
| Circuit configuration | Single diode    |

### MAJOR RATINGS AND CHARACTERISTICS

| PARAMETER    | TEST CONDITIONS | VALUES      | UNITS             |
|--------------|-----------------|-------------|-------------------|
| $I_{F(AV)}$  |                 | 150         | A                 |
|              | $T_C$           | 125         | °C                |
| $I_{F(RMS)}$ |                 | 235         | A                 |
| $I_{FSM}$    | 50 Hz           | 3000        |                   |
|              | 60 Hz           | 3140        |                   |
| $I^2t$       | 50 Hz           | 45          | kA <sup>2</sup> s |
|              | 60 Hz           | 41          |                   |
| $V_{RRM}$    | Range           | 600 to 1200 | V                 |
| $T_J$        |                 | -40 to 180  | °C                |

### ELECTRICAL SPECIFICATIONS

#### VOLTAGE RATINGS

| TYPE NUMBER  | VOLTAGE CODE | $V_{RRM}$ , MAXIMUM REPETITIVE<br>PEAK REVERSE VOLTAGE<br>V | $V_{RSM}$ , MAXIMUM NON-REPETITIVE<br>PEAK REVERSE VOLTAGE<br>V | $I_{RRM}$ MAXIMUM<br>AT $T_J = T_J$ MAXIMUM<br>mA |
|--------------|--------------|-------------------------------------------------------------|-----------------------------------------------------------------|---------------------------------------------------|
| VS-150U(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 <sub>F(AV)</sub>  | 180° conduction, half sine wave                                                         |                      |                                                                       | 150    | A     |
|                                                               |                     |                                                                                         |                      |                                                                       | 125    | °C    |
| Maximum RMS forward current                                   | I <sub>F(RMS)</sub> | DC at 110 °C                                                                            |                      |                                                                       | 235    | A     |
| 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 | 3000   |       |
|                                                               |                     | t = 8.3 ms                                                                              |                      |                                                                       | 3140   |       |
| Maximum I <sup>2</sup> t for fusing                           | I <sup>2</sup> t    | t = 10 ms                                                                               |                      |                                                                       |        |       |
|                                                               |                     | t = 8.3 ms                                                                              |                      |                                                                       | 41     |       |
| Slope resistance                                              | r <sub>f</sub>      | T <sub>J</sub> = T <sub>J</sub> maximum                                                 |                      |                                                                       | 0.97   | mΩ    |
| Threshold voltage                                             | V <sub>F(T0)</sub>  |                                                                                         |                      |                                                                       | 0.80   | V     |
| Maximum forward voltage drop                                  | V <sub>FM</sub>     | I <sub>pk</sub> = 600 A, T <sub>J</sub> = 25 °C, t <sub>p</sub> = 10 ms sinusoidal wave |                      |                                                                       | 1.47   |       |

**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                                  | 0.3             | K/W   |
| Maximum thermal resistance, case to heatsink             | $R_{thCS}$     | Mounting surface, smooth, flat and greased    | 0.1             |       |
| Maximum allowed mounting torque + 0 - 20 %               | minimum        | Not lubricated threads                        | 17              | N · m |
|                                                          | maximum        | Lubricated threads                            | 14.5            |       |
| Approximate weight                                       |                |                                               | 130             | g     |
| Case style                                               |                | See dimensions - link at the end of datasheet | DO-205AA (DO-8) |       |

 **$\Delta R_{thJC}$  CONDUCTION**

| CONDUCTION ANGLE | SINUSOIDAL CONDUCTION | RECTANGULAR CONDUCTION | TEST CONDITIONS     | UNITS |
|------------------|-----------------------|------------------------|---------------------|-------|
| 180°             | 0.031                 | 0.023                  | $T_J = T_J$ maximum | K/W   |
| 120°             | 0.038                 | 0.040                  |                     |       |
| 90°              | 0.048                 | 0.053                  |                     |       |
| 60°              | 0.071                 | 0.075                  |                     |       |
| 30°              | 0.120                 | 0.121                  |                     |       |

**Note**

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

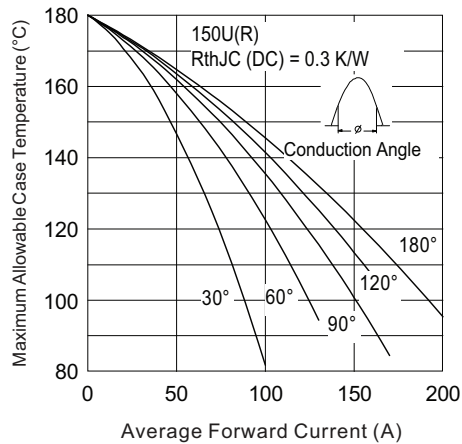


Fig. 1 - Current Ratings Characteristics

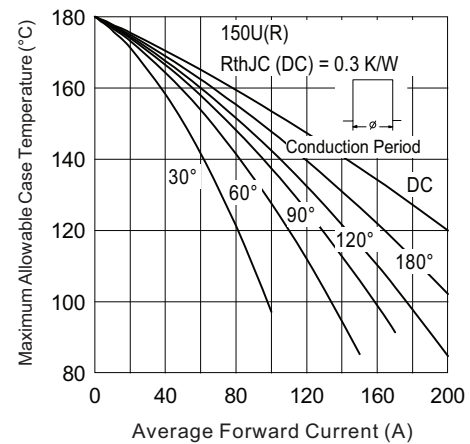


Fig. 2 - Current Ratings Characteristics

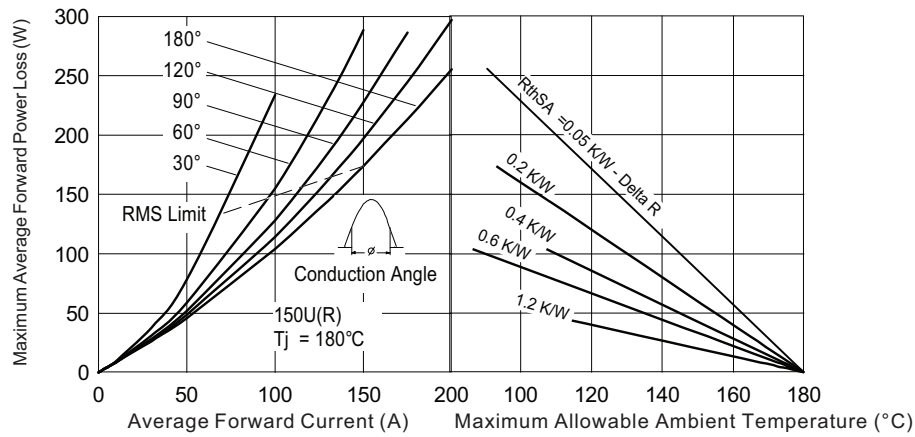


Fig. 3 - Forward Power Loss Characteristics

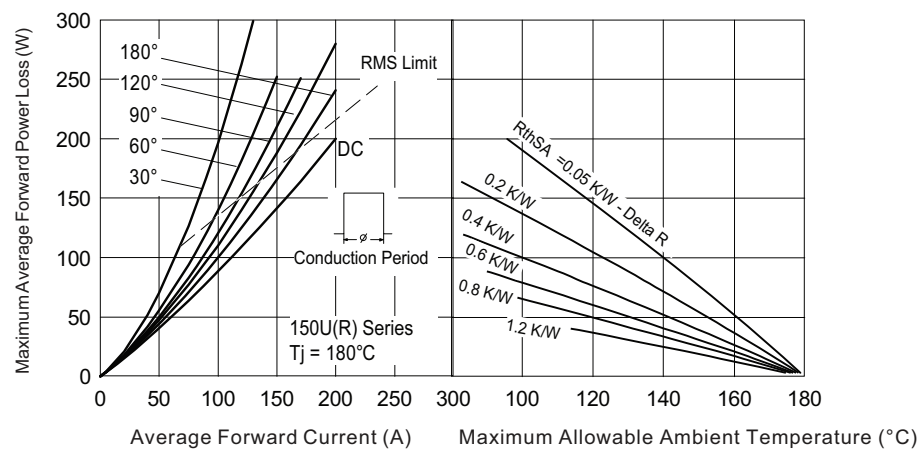


Fig. 4 - Forward Power Loss Characteristics

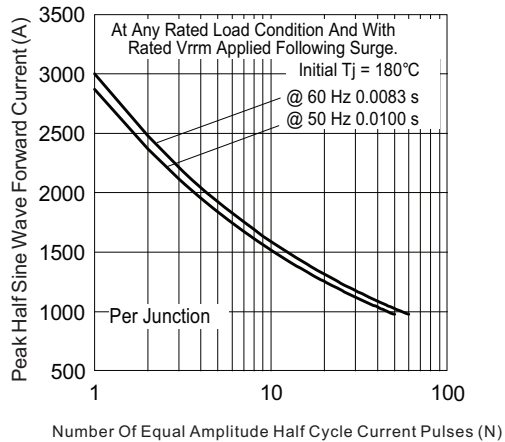


Fig. 5 - Maximum Non-Repetitive Surge Current

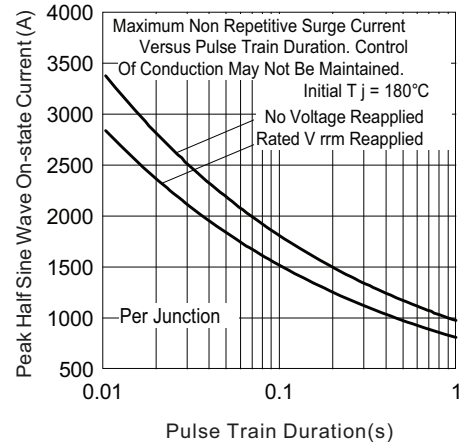


Fig. 6 - Maximum Non-Repetitive Surge Current

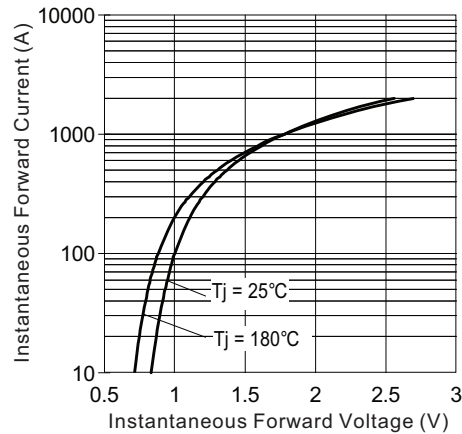
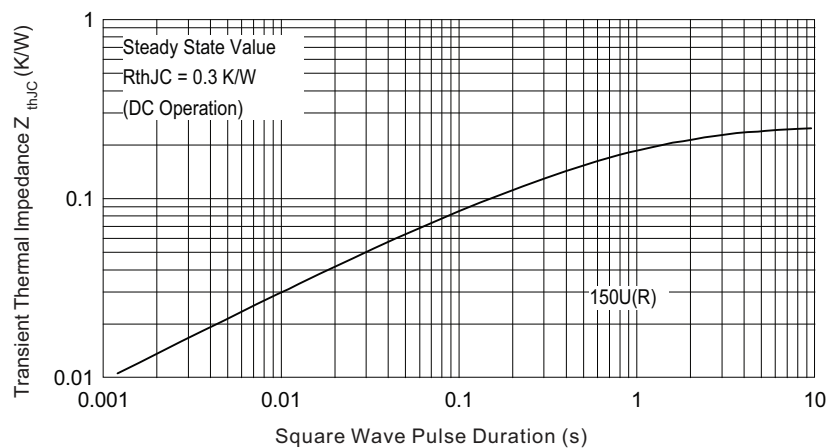


Fig. 7 - Forward Voltage Drop Characteristics


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



ORDERING INFORMATION TABLE

|             |     |    |   |   |   |     |   |   |
|-------------|-----|----|---|---|---|-----|---|---|
| Device code | VS- | 15 | 0 | U | R | 120 | D | L |
|             | 1   | 2  | 3 | 4 | 5 | 6   | 7 | 8 |

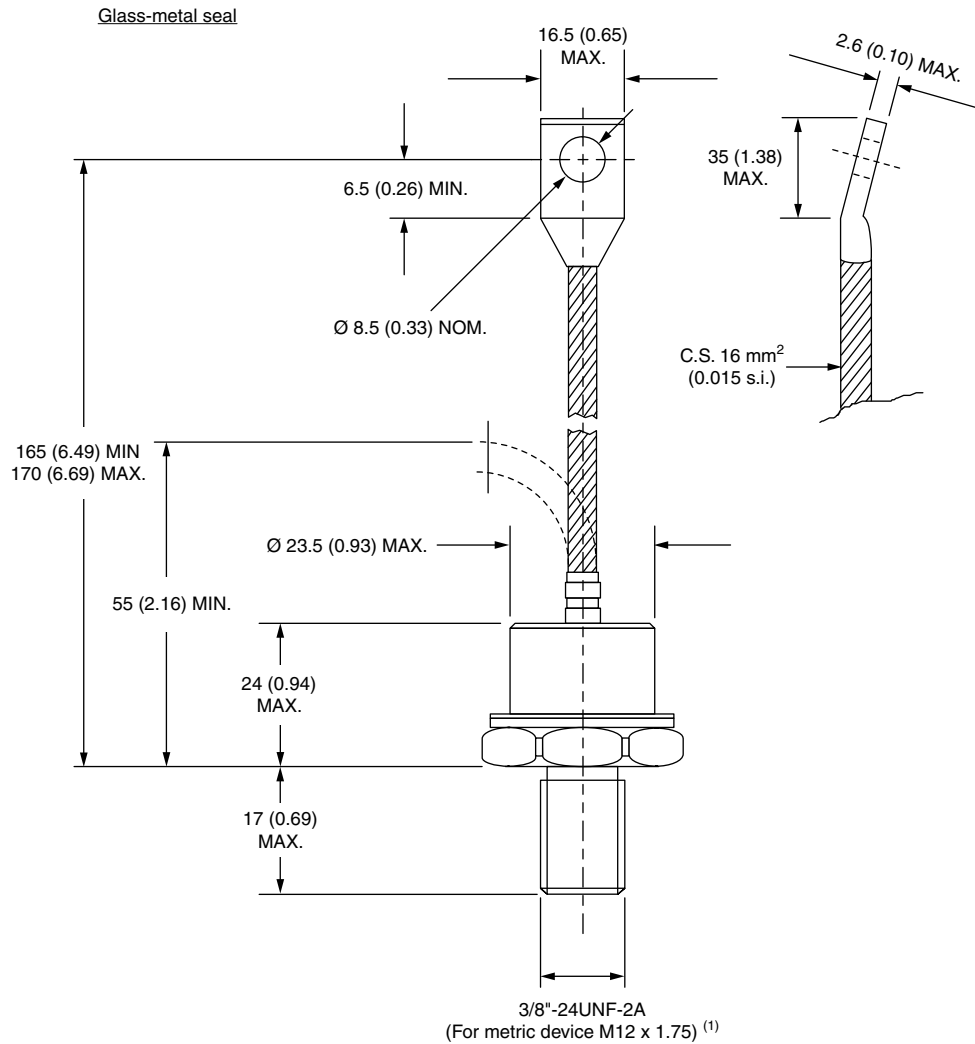
- 1 - Vishay Semiconductors product
- 2 - 15 = Essential part number
- 3 - 0 = Standard device
- 4 - U = Stud normal polarity (cathode to stud)
- 5 - None = Stud normal polarity (cathode to stud)  
R = Stud reverse polarity (anode to stud)
- 6 - Voltage code x 10 =  $V_{RRM}$  (see Voltage Ratings table)
- 7 - Diffused diode
- 8 - L = Stud base 1/2"-20UNF-2A threads  
None = Stud base 3/8"-24UNF-2A threads

Note: For metric device M12 x 1.75 contact factory

| LINKS TO RELATED DOCUMENTS |                                                                        |
|----------------------------|------------------------------------------------------------------------|
| Dimensions                 | <a href="http://www.vishay.com/doc?95315">www.vishay.com/doc?95315</a> |

## DO-205AA (DO-8) for 150U(R) Series

**DIMENSIONS** in millimeters (inches)



### Note

<sup>(1)</sup> For stud base 1/2"-20UNF-2A threads; refer to "Ordering Information Table"



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