

## 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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COMPLIANT

### 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 PEAK REVERSE VOLTAGE<br>V | $V_{RSM}$ , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE<br>V | $I_{RRM}$ MAXIMUM 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           | $I_{F(AV)}$  | 180° conduction, half sine wave                                |                      | 150   | A     |                   |
|   |              |  |                      | 125   | °C    |                   |
| Maximum RMS forward current                                   | $I_{F(RMS)}$ | DC at 110 °C   |                      | 235   | A     |                   |
| Maximum peak, one cycle forward, non-repetitive surge current | $I_{FSM}$    | t = 10 ms  | No voltage reapplied | Sinusoidal half wave, initial $T_J = T_J$ maximum |       | 3000              |
|   |              | t = 8.3 ms   |                      |   |       | 3140              |
| Maximum $I^2t$ for fusing                                     | $I^2t$       | t = 10 ms  |                      |   | 45    | kA <sup>2</sup> s |
|   |              | t = 8.3 ms   |                      |   | 41    |                   |
| Slope resistance  | $r_f$        | $T_J = T_J$ maximum  |                      | 0.97  | mΩ    |                   |
| Threshold voltage   | $V_{F(T0)}$  |  |                      | 0.80  | V     |                   |
| Maximum forward voltage drop                                  | $V_{FM}$     | $I_{pk} = 600$ A, $T_J = 25$ °C, $t_p = 10$ 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

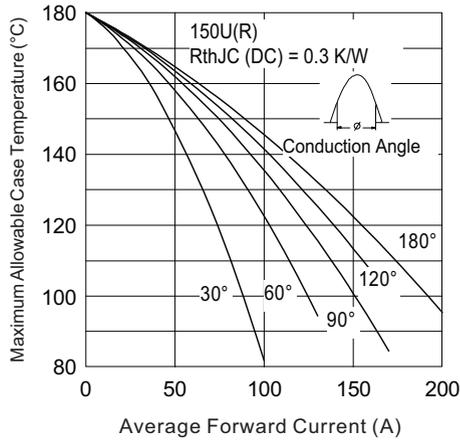


Fig. 1 - Current Ratings Characteristics

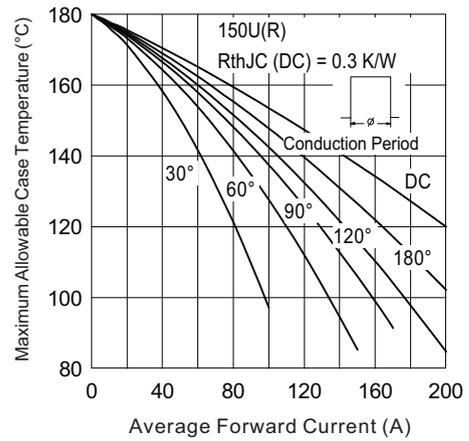


Fig. 2 - Current Ratings Characteristics

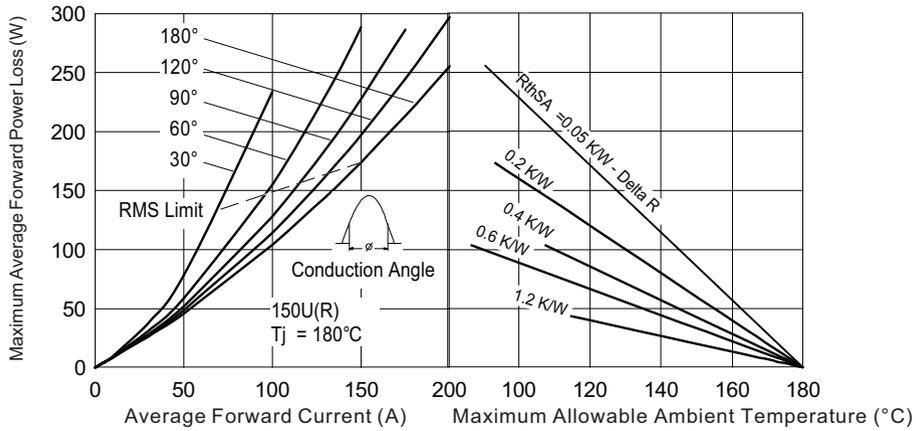


Fig. 3 - Forward Power Loss Characteristics

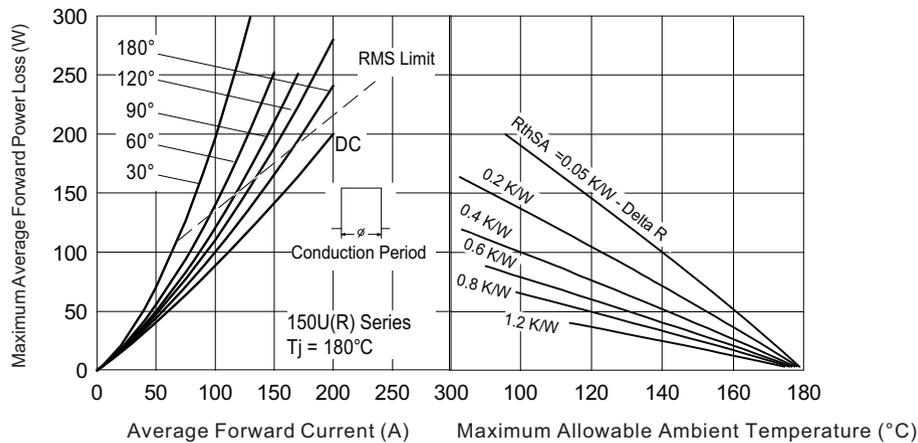


Fig. 4 - Forward Power Loss Characteristics

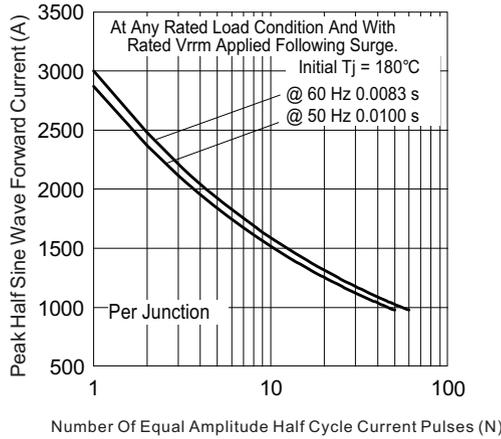


Fig. 5 - Maximum Non-Repetitive Surge Current

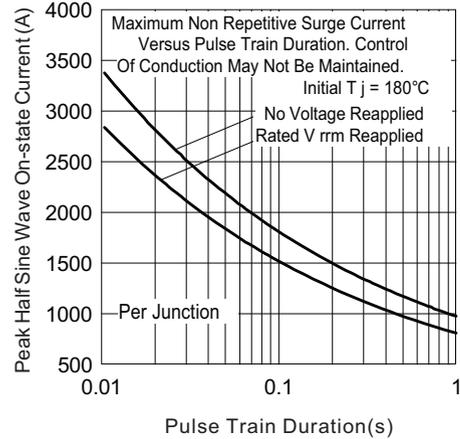


Fig. 6 - Maximum Non-Repetitive Surge Current

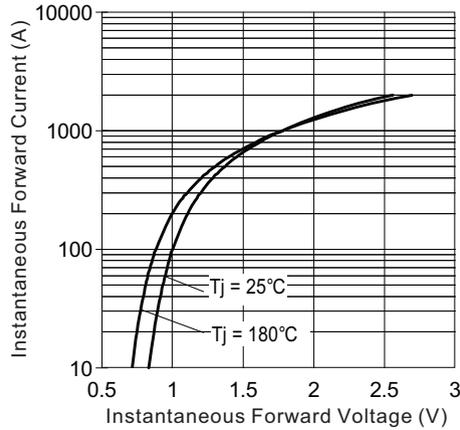


Fig. 7 - Forward Voltage Drop Characteristics

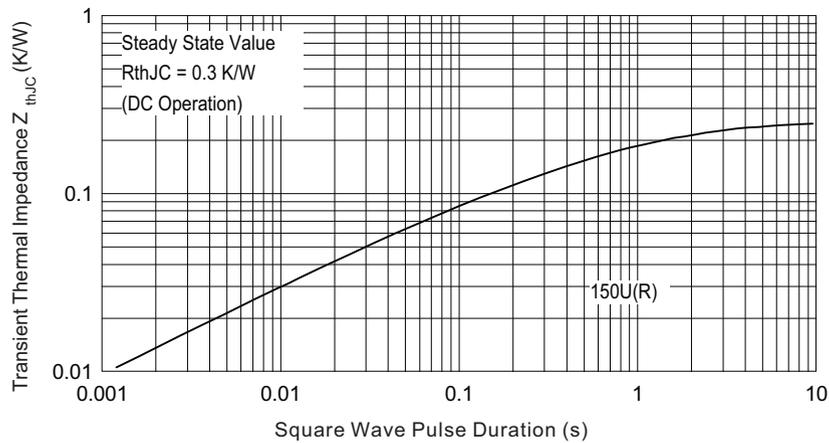
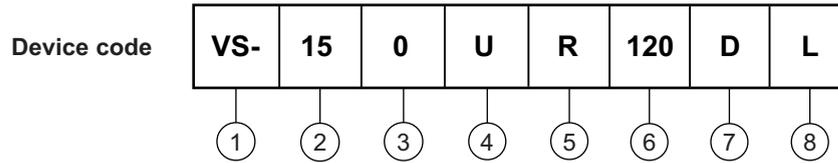


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristic



### ORDERING INFORMATION TABLE



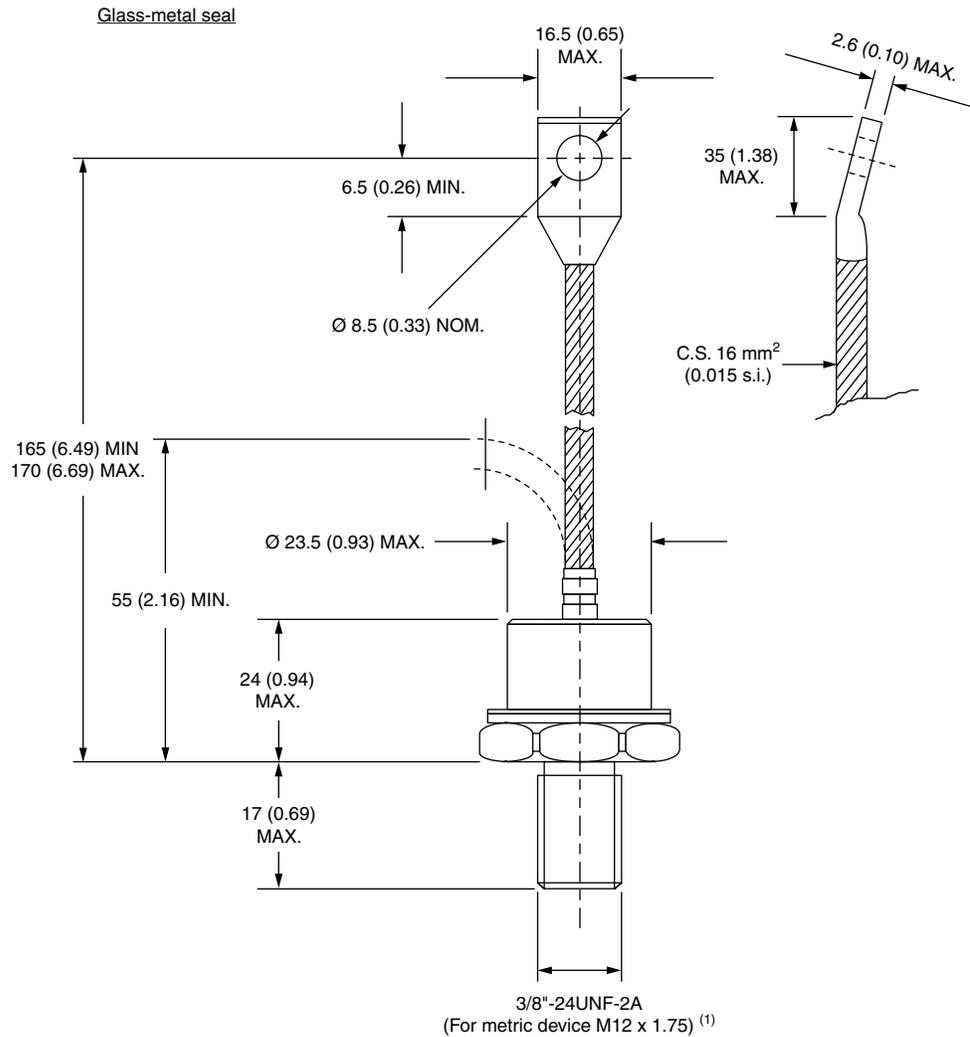
- 1** - Vishay Semiconductors product
- 2** - 15 = Essential part number
- 3** - 0 = Standard device
- 4** - U = Stud normal polarity (cathode to stud)
- 5** - None = Stud normal polarity (cathode to stud)  
R = Stud reverse polarity (anode to stud)
- 6** - Voltage code x 10 =  $V_{RRM}$  (see Voltage 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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