Bulletin I2025 rev. C 10/02

International
IOR Rectifier

# 150U(R).. SERIES

**STANDARD RECOVERY DIODES** **Stud Version**

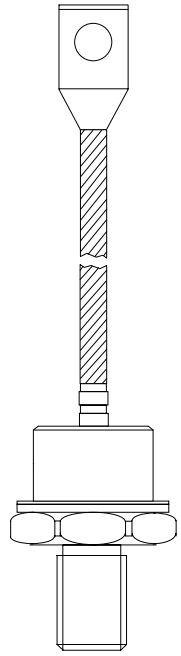
150A

## Features

- Diffused diode
- Wide current range
- High voltage ratings up to 1200V
- High surge current capabilities
- Stud cathode and stud anode version
- Hermetic metal case

## Typical Applications

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



case style
DO205 (DO-8)

## Major Ratings and Characteristics

| Parameters | | 150U(R).. | Units |
|---|---|---|---|
| $I_{F(AV)}$ | | 150 | A |
| | @ $T_C$ | 125 | °C |
| $I_{F(RMS)}$ | | 235 | A |
| $I_{FSM}$ | @50Hz | 3000 | A |
| | @ 60Hz | 3140 | A |
| $I^2t$ | @50Hz | 45 | $KA^2s$ |
| | @ 60Hz | 41 | $KA^2s$ |
| $V_{RRM}$ range | | 600 and 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 rev. voltage V | $I_{RRM}$ max. @ $T_J = T_J$ max. mA |
|---|---|---|---|---|
| 150U(R).. | 60 | 600 | 700 | 15 |
| | 80 | 800 | 900 | |
| | 100 | 1000 | 1100 | |
| | 120 | 1200 | 1300 | |

### Forward Conduction

| | Parameter | 150U(R).. | Units | Conditions | | |
|---|---|---|---|---|---|---|
| $I_{F(AV)}$ | Max. average forward current | 150 | A | 180° conduction, half sine wave | | |
| | @ Case temperature | 125 | °C | | | |
| $I_{F(RMS)}$ | Max. RMS forward current | 235 | A | Dc @ 110°C | | |
| $I_{FSM}$ | Max. peak, one-cycle forward, | 3000 | A | t = 10ms | No voltage | Sinusoidal half wave, Initial $T_J = T_J$ max. |
| | non-repetitive surge current | 3140 | | t = 8.3ms | reapplied | |
| $I^2t$ | Maximum $I^2t$ for fusing | 45 | $KA^2s$ | t = 10ms | No voltage | |
| | | 41 | | t = 8.3ms | reapplied | |
| $I^2\sqrt{t}$ | Maximum $I^2\sqrt{t}$ for fusing | - | $KA^2\sqrt{s}$ | t = 0.1 to 10ms, no voltage reapplied | | |
| $r_f$ | Slope resistance | 0.97 | mΩ | @ $T_J = T_J$ max. | | |
| $V_{F(T0)}$ | Threshold voltage | 0.80 | V | | | |
| $V_{FM}$ | Max. forward voltage drop | 1.47 | V | $I_{pk}$= 600A, $T_J$ = 25°C, $t_p$ = 10ms sinusoidal wave | | |

### Thermal and Mechanical Specifications

| | Parameter | 150U(R).. | Units | Conditions |
|---|---|---|---|---|
| $T_J$ | Max. junction operating temperature range | -40 to 180 | °C | |
| $T_{stg}$ | Max. storage temperature range | -40 to 180 | | |
| $R_{thJC}$ | Max. thermal resistance, junction to case | 0.3 | K/W | DC operation |
| $R_{thCS}$ | Max. thermal resistance, case to heatsink | 0.1 | | Mounting surface, smooth, flat and greased |
| T | Max. allowed mounting torque +0 -20% | 17 | Nm | Not lubricated threads |
| | | 14.5 | | Lubricated threads |
| wt | Approximate weight | 130 | g | |
| | Case style | DO-205 (DO-8) | | See Outline Table |

### $\Delta R_{thJC}$ Conduction

(The following table shows the increment of thermal resistence $R_{thJC}$ when devices operate at different conduction angles than DC)

| Conduction angle | Sinusoidal conduction | Rectangular conduction | Units | Conditions |
|---|---|---|---|---|
| 180° | 0.031 | 0.023 | K/W | $T_J = T_J$ max. |
| 120° | 0.038 | 0.040 | | |
| 90° | 0.048 | 0.053 | | |
| 60° | 0.071 | 0.075 | | |
| 30° | 0.120 | 0.121 | | |

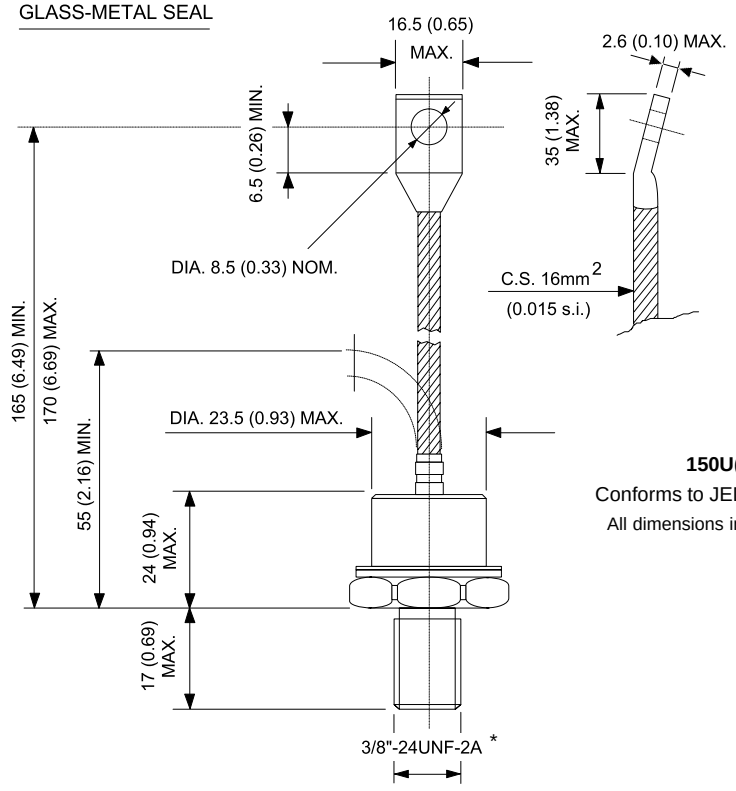
Ordering Information Table

**Device Code**

| 150 | U | R | 120 | D | L |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |

**1** - 150 = Standard xx0U device
**2** - U = Essential Part Number
**3** - R = Stud Reverse Polarity (Anode to Stud)
None = Stud Normal Polarity (Cathode to Stud)
**4** - Voltage code: Code x 10 = $V_{RRM}$ (See Voltage Ratings table)
**5** - D = Diffused diode
**6** - L = Stud base 1/2" - 20UNF-2A threads
M = Metric base M12 x 1.75
None = Stud base 3/8" - 24UNF-2A threads

Outline Table




**150U(R) Series**
Conforms to JEDEC DO-205 (DO-8)
All dimensions in millimeters (inches)

* FOR METRIC DEVICE M12 x 1.75
* FOR STUD BASE 1/2" - 20UNF-2A THREADS; refer "Odering Information Table"

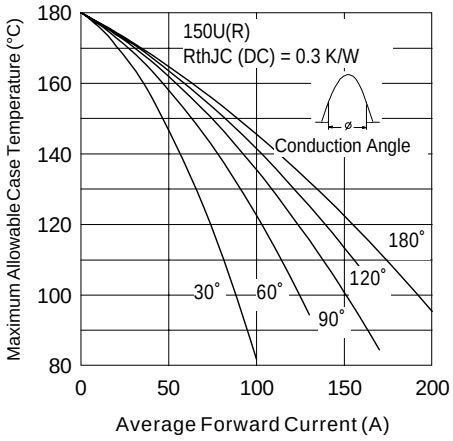



Fig. 1 - Current Ratings Characteristics

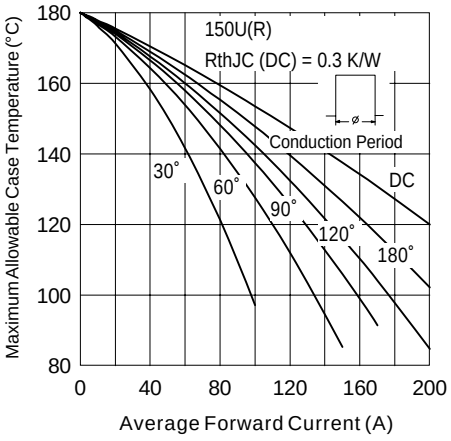



Fig. 2 - Current Ratings Characteristics

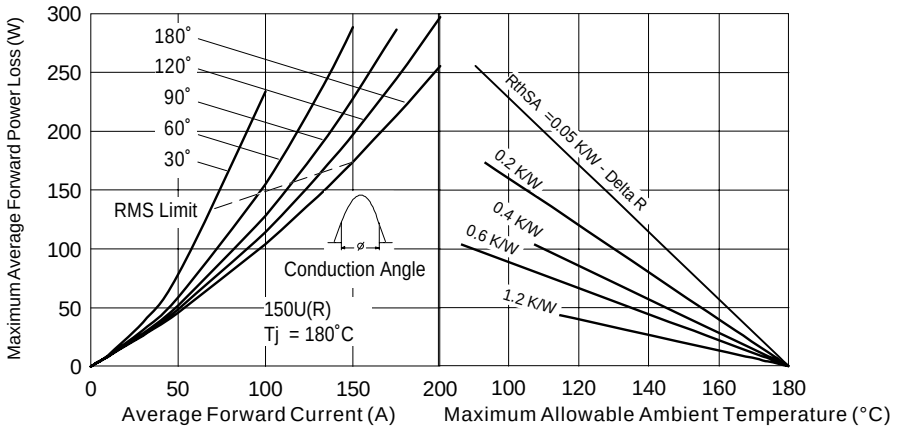



Fig. 3 - Forward Power Loss Characteristics

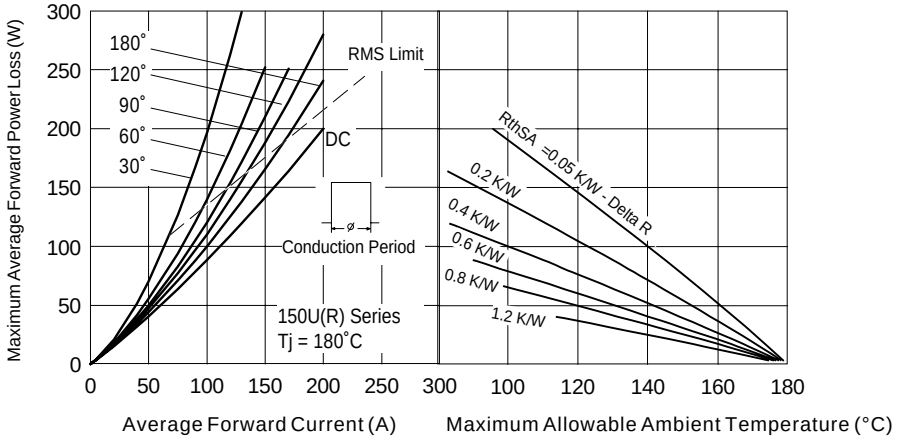



Fig. 4 - Forward Power Loss Characteristics

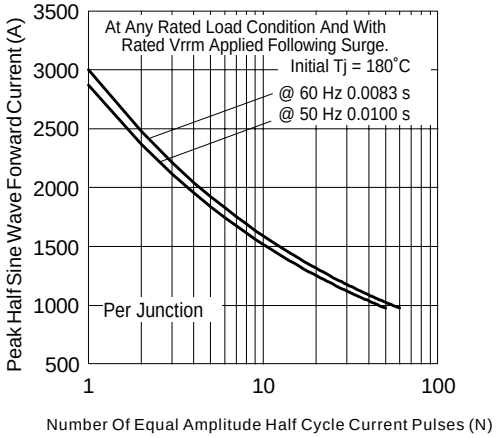



Fig. 5 - Maximum Non-Repetitive Surge Current

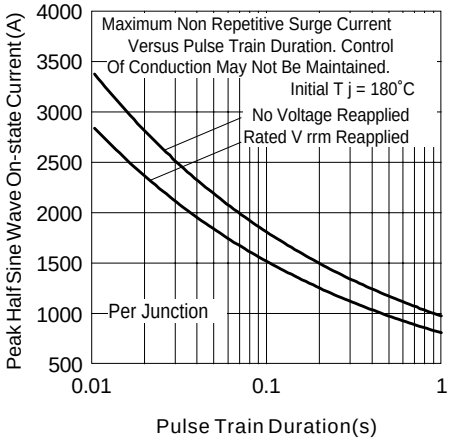



Fig. 6 - Maximum Non-Repetitive Surge Current

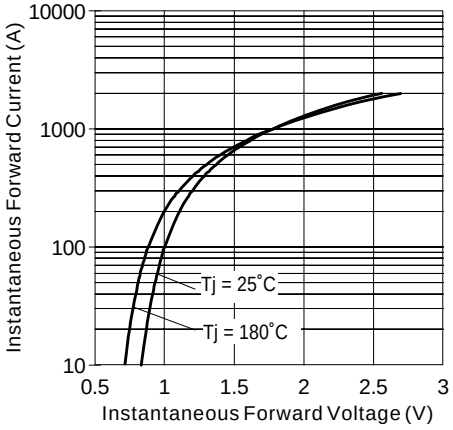



Fig. 7 - Forward Voltage Drop Characteristics

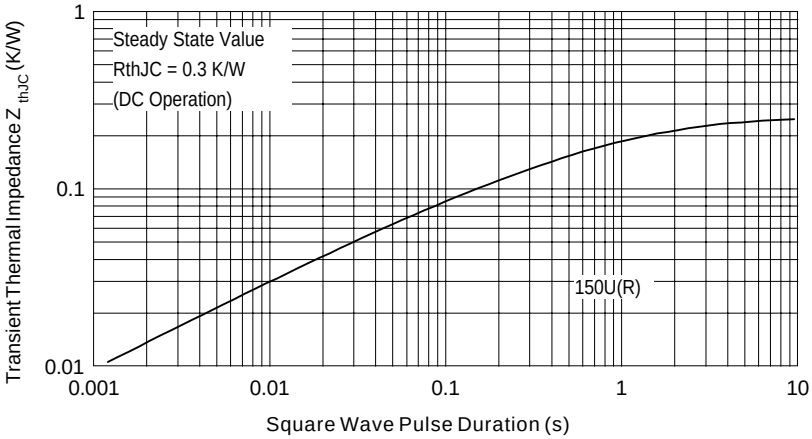



Fig. 8 - Thermal Impedance $Z_{thJC}$ Characteristic

Data and specifications subject to change without notice.
This product has been designed and qualified for Industrial Level.
Qualification Standards can be found on IR's Web site.

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