

# International IR Rectifier

## 150U(R).. SERIES

### STANDARD RECOVERY DIODES

### Stud Version

#### Features

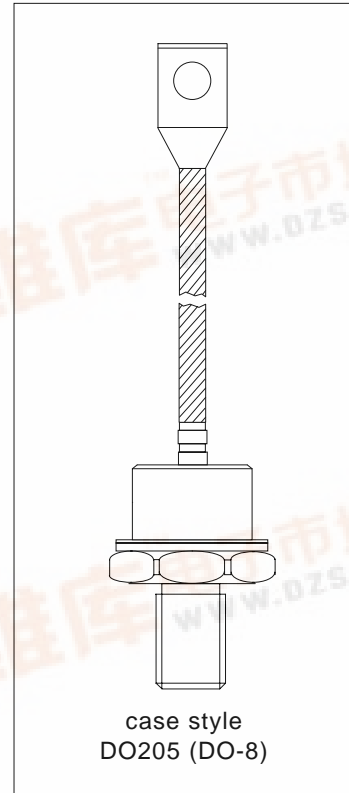
- Diffused diode
- Wide current range
- High voltage ratings up to 1200V
- High surge current capabilities
- Stud cathode and stud anode version
- Hermetic metal case

#### Typical Applications

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

#### 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 <sup>2</sup> s
@ 60Hz	41	KA <sup>2</sup> s
$V_{RRM}$ range	600 and 1200	V
$T_J$	- 40 to 180	°C



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### 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 @ Case temperature	150	A	180° conduction, half sine wave
	125	°C	
$I_{F(RMS)}$ Max. RMS forward current	235	A	Dc @ 110°C
$I_{FSM}$ Max. peak, one-cycle forward, non-repetitive surge current	3000	A	t = 10ms No voltage
	3140		t = 8.3ms reapplied
$I^2t$ Maximum $I^2t$ for fusing	45	KA <sup>2</sup> s	t = 10ms No voltage
	41		t = 8.3ms reapplied
$I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing	-	KA <sup>2</sup> √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	$I_{pk} = 600A$ , $T_J = 25^\circ C$ , $t_p = 10ms$ 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 resistance  $R_{thJC}$  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		

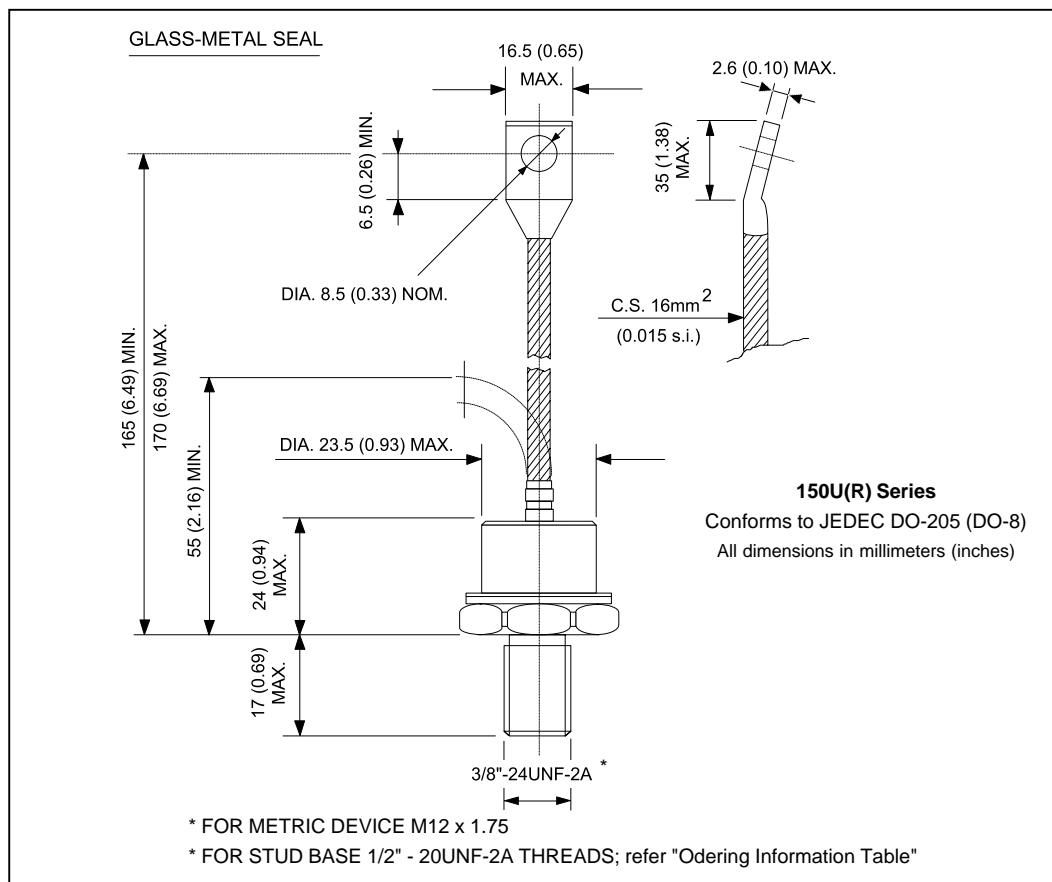
Ordering Information Table

Device Code					
1	2	3	4	5	6
150	U	R	120	D	L

- 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



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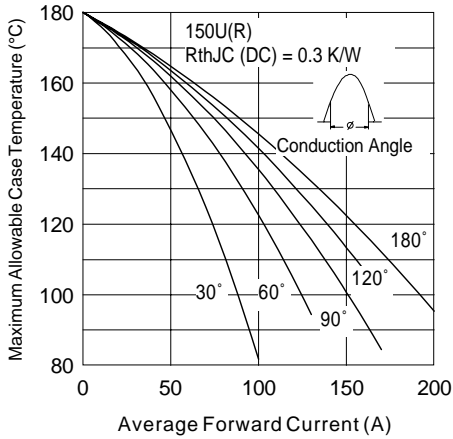


Fig. 1 - Current Ratings Characteristics

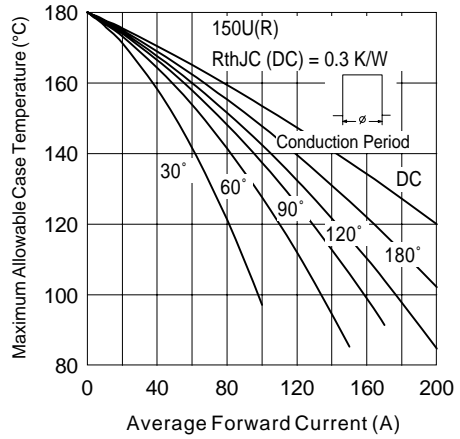


Fig. 2 - Current Ratings Characteristics

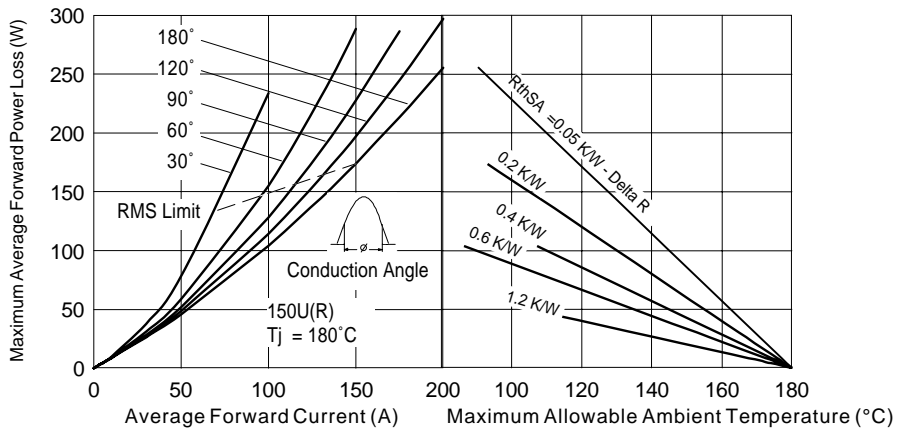


Fig. 3 - Forward Power Loss Characteristics

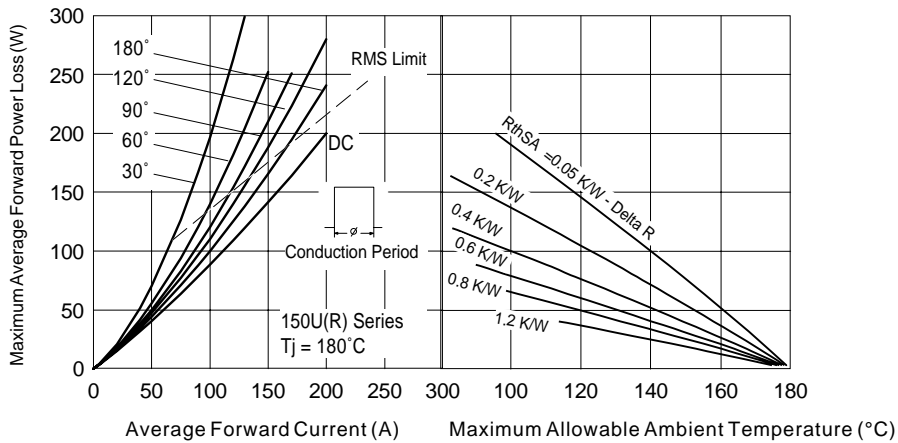


Fig. 4 - Forward Power Loss Characteristics

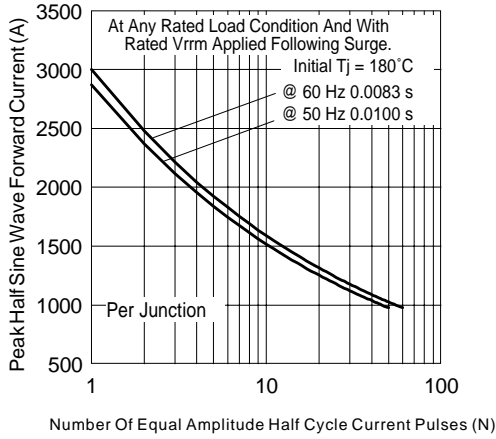


Fig. 5 - Maximum Non-Repetitive Surge Current

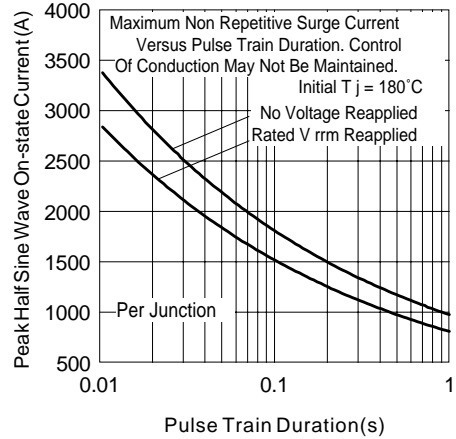


Fig. 6 - Maximum Non-Repetitive Surge Current

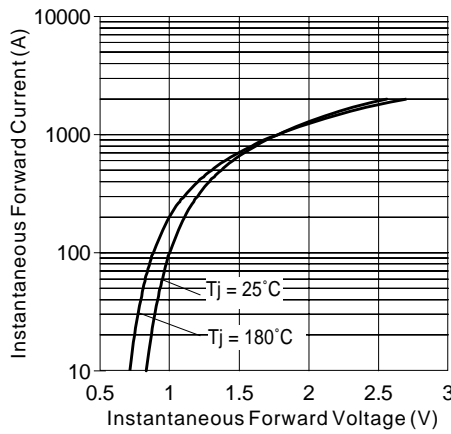


Fig. 7 - Forward Voltage Drop Characteristics

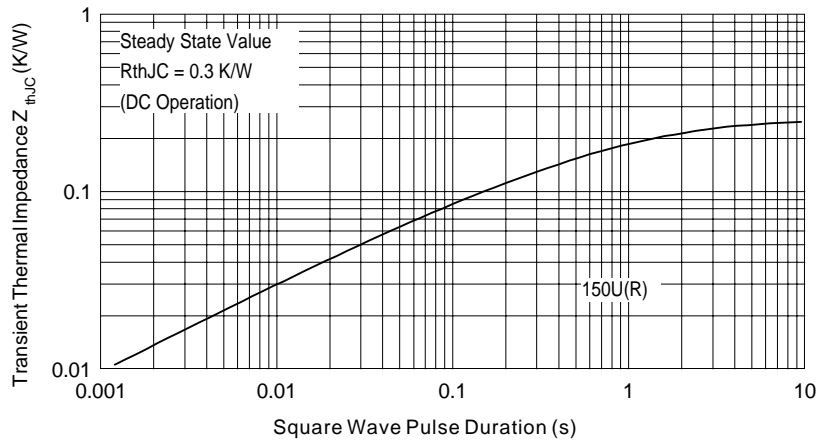


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristic

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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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**IR WORLD HEADQUARTERS:** 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105  
TAC Fax: (310) 252-7309

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