Bulletin I2029 rev. D 09/03

International
IOR Rectifier

240U(R).. SERIES

STANDARD RECOVERY DIODES **Stud Version**

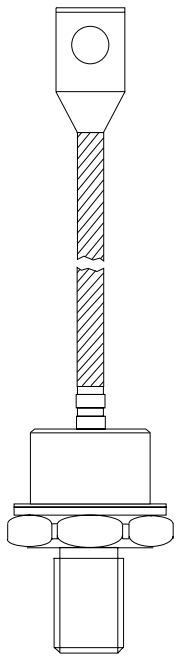
Features

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

320A

Typical Applications

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



case style
DO-205AB (DO-9)

Major Ratings and Characteristics

Parameters		240U(R)..	Units
$I_{F(AV)}$		320	A
	@ T_C	100	°C
$I_{F(RMS)}$		500	A
I_{FSM}	@ 50Hz	4500	A
	@ 60Hz	4700	A
I^2t	@ 50Hz	101	KA^2s
	@ 60Hz	92	KA^2s
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 rev. voltage V	I_{RRM} max. @ $T_J = T_J$ max. mA
240U(R)..	60	600	700	15
	80	800	900	
	100	1000	1100	
	120	1200	1300	

Forward Conduction

	Parameter	240U(R)..	Units	Conditions		
$I_{F(AV)}$	Max. average forward current	320	A	180° conduction, half sine wave		
	@ Case temperature	100	°C			
$I_{F(RMS)}$	Max. RMS forward current	500	A	DC @ 80°C case temperature		
I_{FSM}	Max. peak, one-cycle forward, non-repetitive surge current	4500	A	t = 10ms	No voltage reapplied	Sinusoidal half wave, Initial $T_J = T_J$ max.
		4700		t = 8.3ms		
		3800		t = 10ms	100% V_{RRM} reapplied	
		4000		t = 8.3ms		
I^2t	Maximum I^2t for fusing	101	KA^2s	t = 10ms	No voltage reapplied	
		92		t = 8.3ms		
		72		t = 10ms	100% V_{RRM} reapplied	
		66		t = 8.3ms		
$I^2\sqrt{t}$	Maximum $I^2\sqrt{t}$ for fusing	1010	$KA^2\sqrt{s}$	t = 0.1 to 10ms, no voltage reapplied		
r_f	Slope resistance	0.6	mΩ	@ $T_J = T_J$ max.		
$V_{F(T0)}$	Threshold voltage	0.83	V			
V_{FM}	Max. forward voltage drop	1.33	V	I_{pk}= 750A, T_J = 25°C, t_p = 10ms sinusoidal wave		

Thermal and Mechanical Specifications

	Parameter	240U(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	0.18	K/W	DC operation
R_{thCS}	Max. thermal resistance, case to heatsink	0.08		Mounting surface, smooth, flat and greased
T	Max. allowed mounting torque +0 -20%	37 (330)	Nm (lb.in)	Not lubricated threads
		28 (250)		Lubricated threads
wt	Approximate weight	250	g	
	Case style	DO-205AB (DO-9)		See Outline Table

ΔR_{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°	0.019	0.015	K/W	$T_J = T_J$ max.
120°	0.023	0.025		
90°	0.030	0.034		
60°	0.045	0.047		
30°	0.076	0.076		

Ordering Information Table

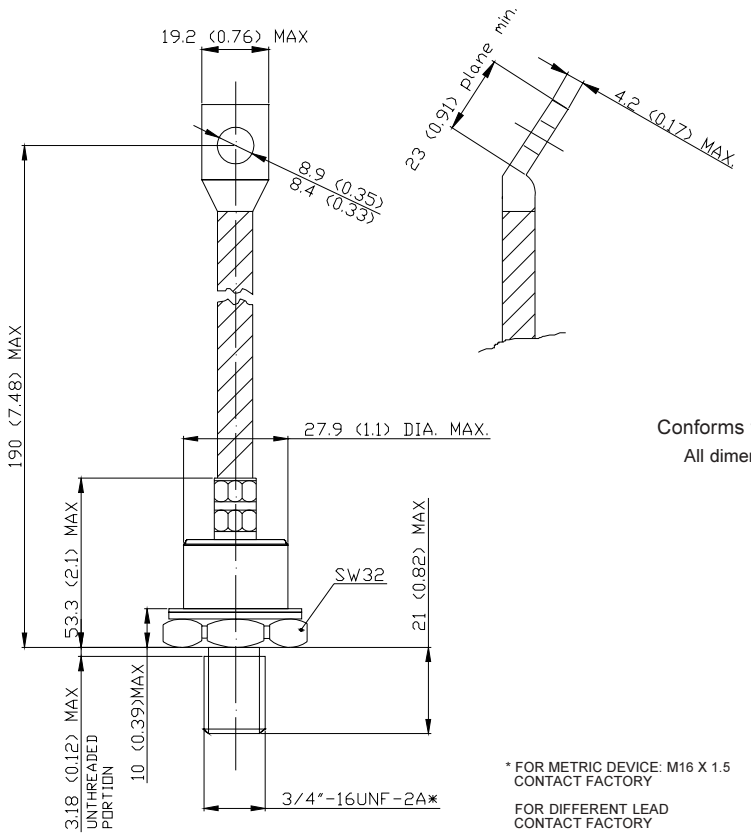
Device Code

24	0	U	R	120	D
1	2	3	4	5	6

1 - 24 = Essential Part Number
2 - 0 = Standard Device
3 - U = Stud Normal Polarity (Cathode to Stud)
4 - None = Stud Normal Polarity (Cathode to Stud)
R = Stud Reverse Polarity (Anode to Stud)
5 - Voltage code: Code x 10 = V_{RRM} (See Voltage Ratings table)
6 - Diffused diode

Note = For Metric Device M16 x 1.5 Contact Factory

Outline Table



240U(R) Series
Conforms to JEDEC DO-205AB (DO-9)
All dimensions in millimeters (inches)

* FOR METRIC DEVICE: M16 X 1.5 CONTACT FACTORY

FOR DIFFERENT LEAD CONTACT FACTORY

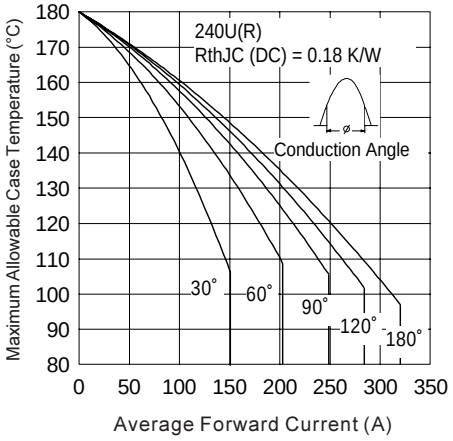


Fig. 1 - Current Ratings Characteristics

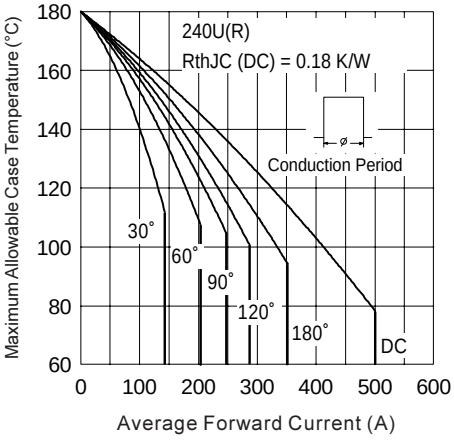


Fig. 2 - Current Ratings Characteristics

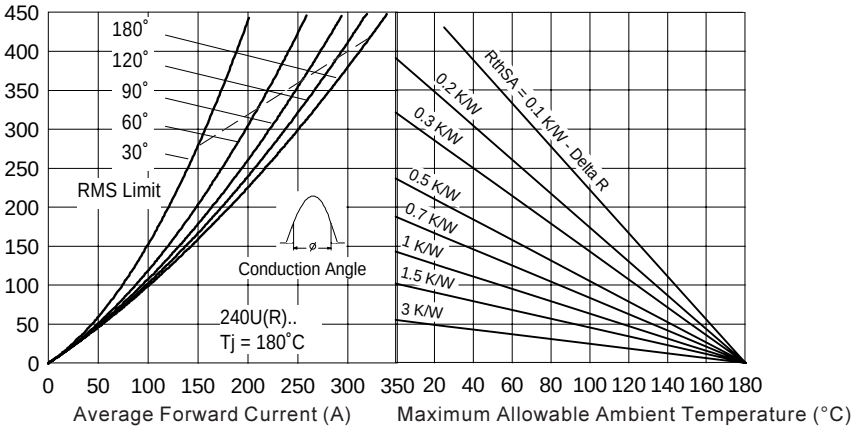


Fig. 3 - Forward Power Loss Characteristics

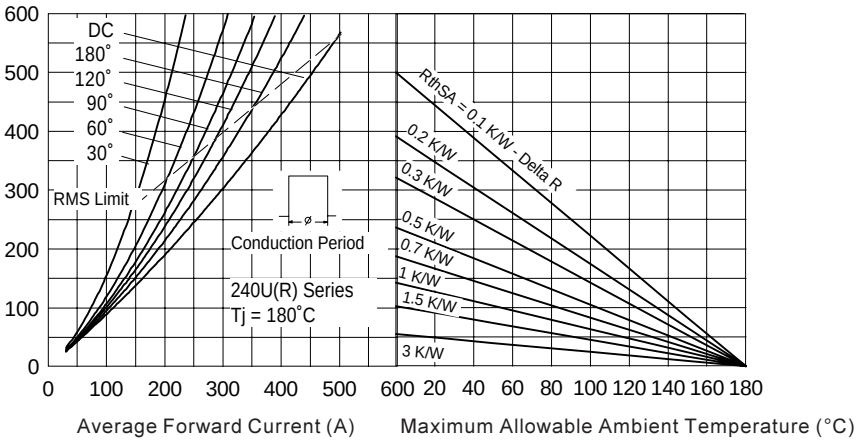


Fig. 4 - Forward Power Loss Characteristics

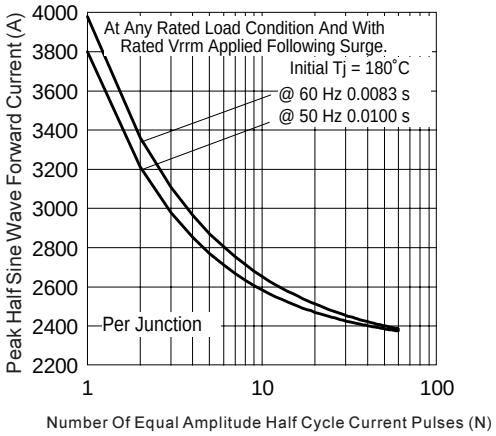


Fig. 5 - Maximum Non-Repetitive Surge Current

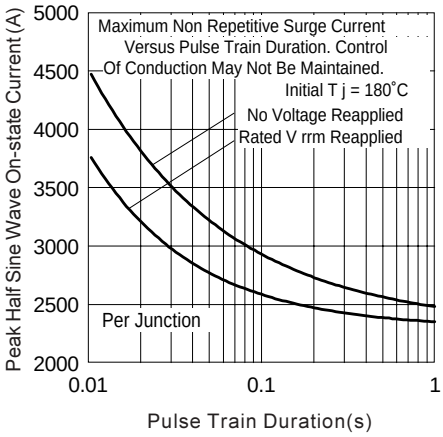


Fig. 6 - Maximum Non-Repetitive Surge Current

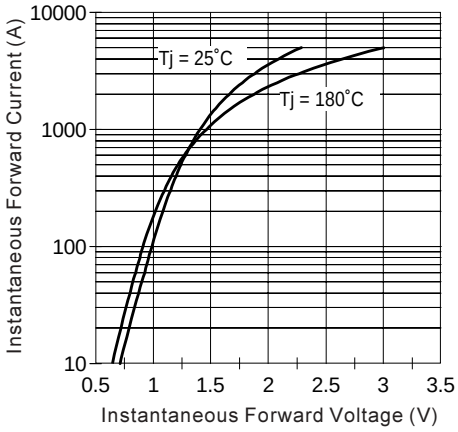


Fig. 7 - Forward Voltage Drop Characteristics

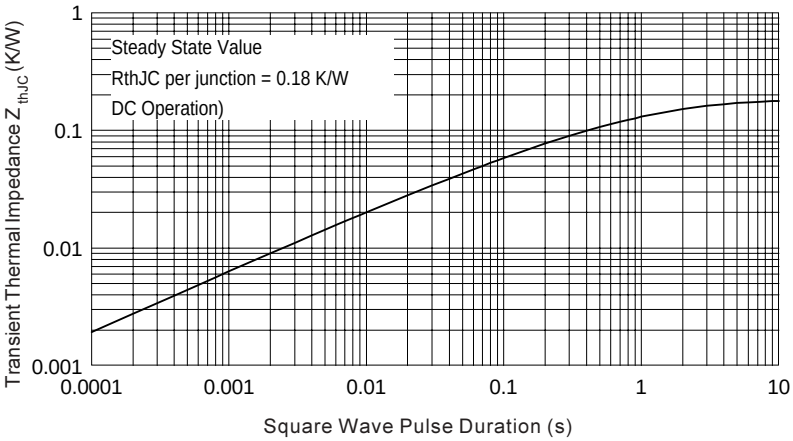


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic

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.

International IOR Rectifier

IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7309
Visit us at www.irf.com for sales contact information. 03/03