

Bulletin I2029 rev.D 09/03

International
IR 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

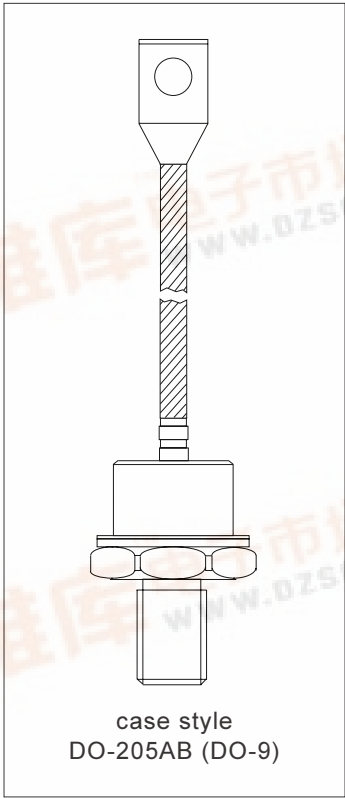
Typical Applications

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

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 ² s
@ 60Hz	92	KA ² s
V_{RRM} range	600 to 1200	V
T_J	- 40 to 180	°C

320A



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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
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 @ Case temperature	320 100	A °C	180° conduction, half sine wave
$I_{F(RMS)}$ Max. RMS forward current	500	A	DC @ 80°C case temperature
I_{FSM} Max. peak, one-cycle forward, non-repetitive surge current	4500 4700 3800 4000	A	t = 10ms t = 8.3ms No voltage reapplied t = 10ms t = 8.3ms 100% V_{RRM} reapplied Sinusoidal half wave,
I^2t Maximum I^2t for fusing	101 92 72 66	KA²s	t = 10ms t = 8.3ms No voltage reapplied t = 10ms t = 8.3ms 100% V_{RRM} reapplied Initial $T_J = T_J$ max.
$I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing	1010	KA²√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	$I_{pk} = 750A$, $T_J = 25^\circ C$, $t_p = 10ms$ 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) 28 (250)	Nm (lb.in)	Not lubricated threads
			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 resistance 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

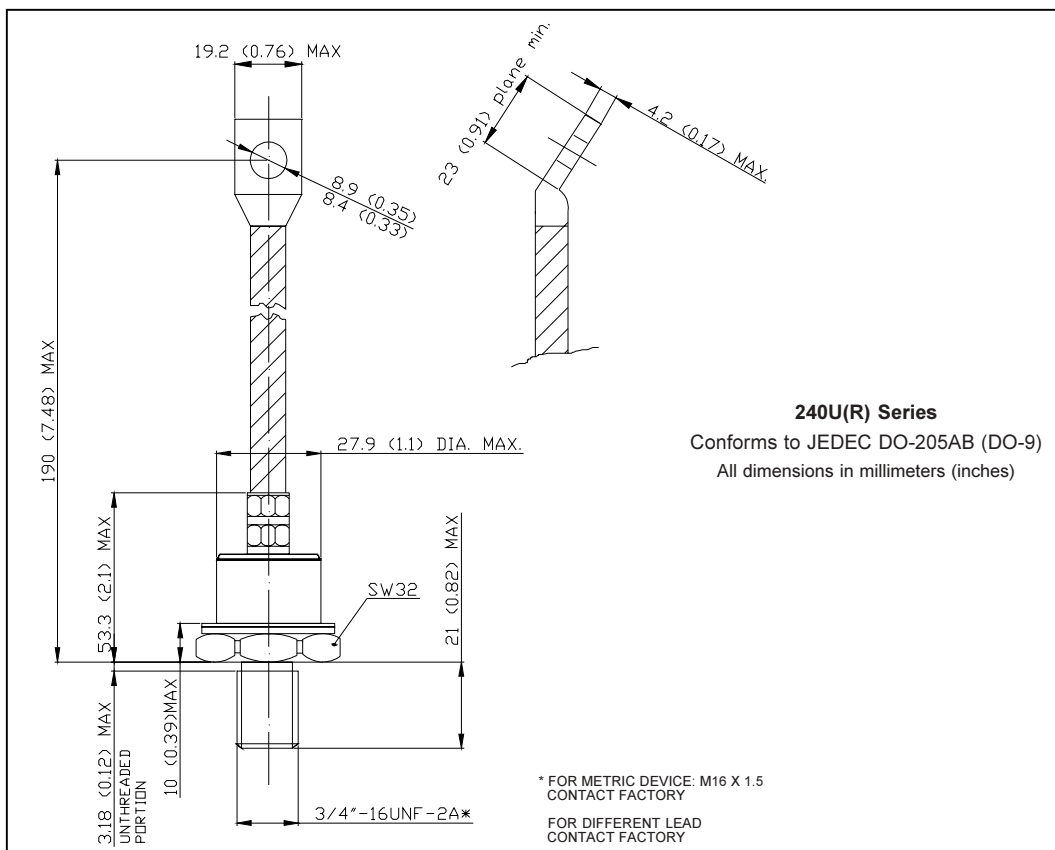
Device Code

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

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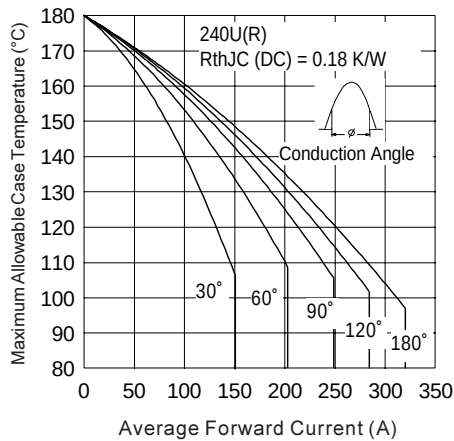


Fig. 1 - Current Ratings Characteristics

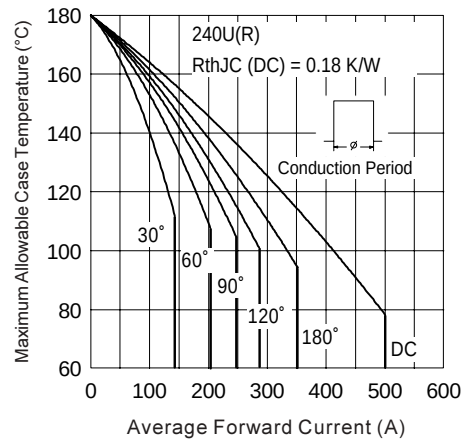


Fig. 2 - Current Ratings Characteristics

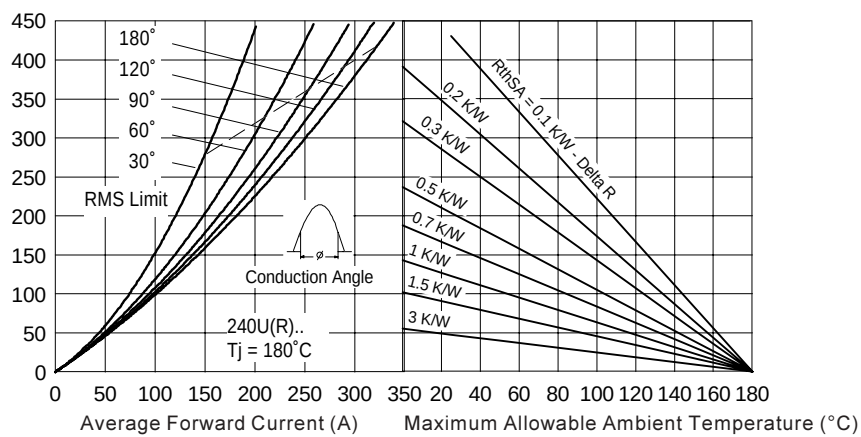


Fig. 3 - Forward Power Loss Characteristics

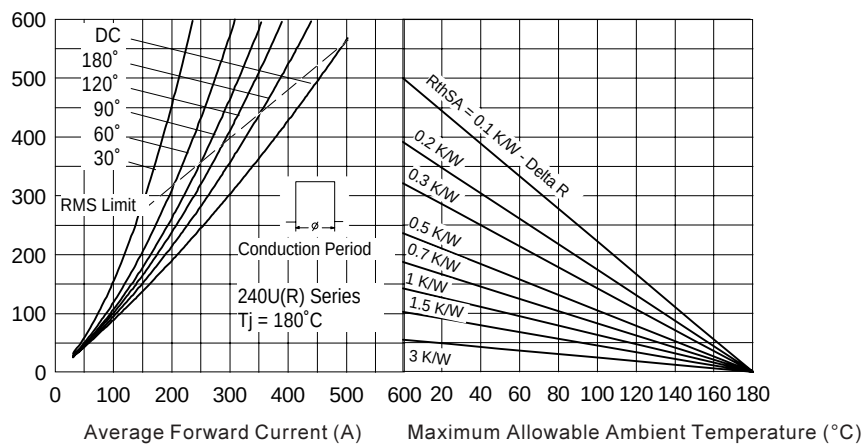


Fig. 4 - Forward Power Loss Characteristics

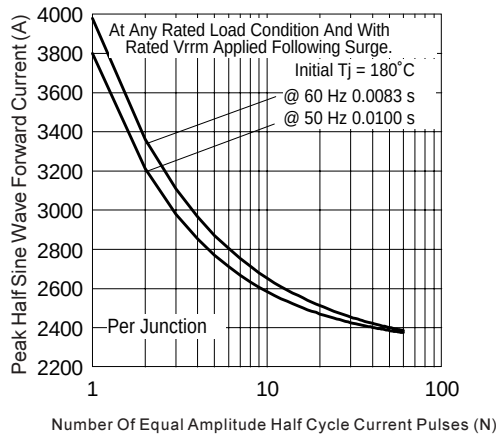


Fig. 5 - Maximum Non-Repetitive Surge Current

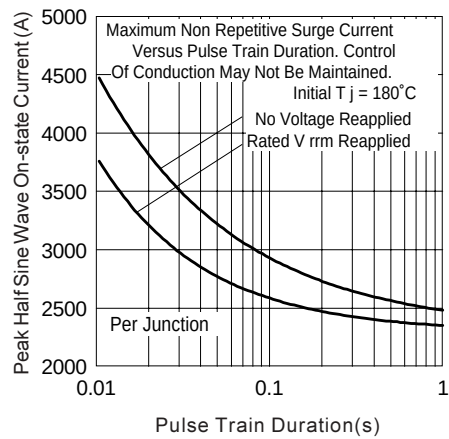


Fig. 6 - Maximum Non-Repetitive Surge Current

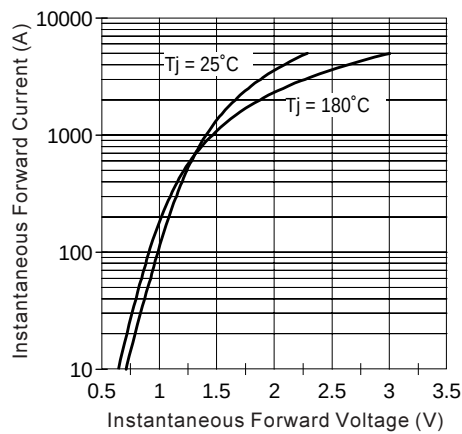


Fig. 7 - Forward Voltage Drop Characteristics

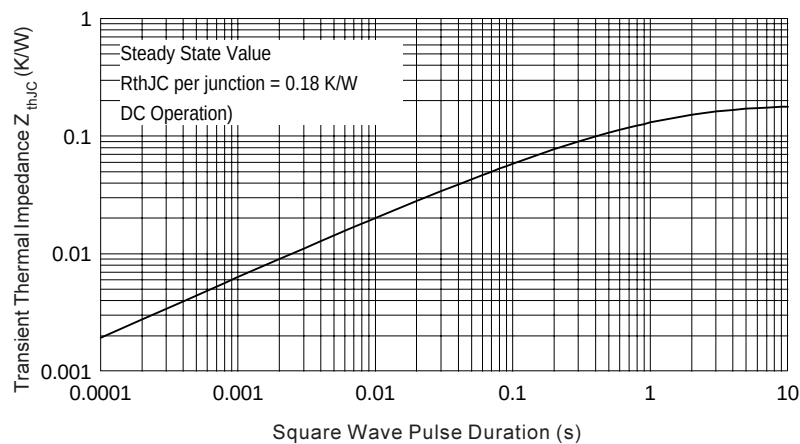


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic

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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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