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Data Sheet **November 2013**

80 A, 1000 V, Ultrafast Diode

Description

The RURG80100 is an ultrafast diode with low forward voltage drop. This device is intended for use as freewheeling and clamping diodes in a variety of switching power supplies and other power switching applications. It is specially suited for use in switching power supplies and industrial application.

Ordering Information

PART NUMBER	PACKAGE	BRAND
RURG80100	TO-247-2L	RURG80100

NOTE: When ordering, use the entire part number.

Symbol

Features

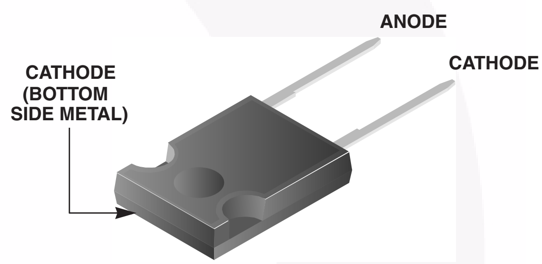
- Ultrafast Recovery t_{rr} = 200 ns (@ I_F = 80 A)
- Max Forward Voltage, V_F = 1.9 V (@ T_C = 25°C)
- 1000 V Reverse Voltage and High Reliability
- Avalanche Energy Rated
- RoHS Compliant

Applications

- Switching Power Supplies
- Power Switching Circuits
- General Purpose

Packaging

JEDEC STYLE 2 LEAD TO-247



Absolute Maximum Ratings $T_C = 25^oC$, Unless Otherwise Specified

		RURG80100	UNIT
Peak Repetitive Reverse Voltage	V_{RRM}	1000	V
Working Peak Reverse Voltage	V_{RWM}	1000	V
DC Blocking Voltage	V_R	1000	V
Average Rectified Forward Current ($T_C = 53^oC$)	$I_{F(AV)}$	80	A
Repetitive Peak Surge Current (Square Wave, 20kHz)	I_{FRM}	160	A
Nonrepetitive Peak Surge Current (Halfwave, 1 Phase, 60Hz)	I_{FSM}	500	A
Maximum Power Dissipation	P_D	180	W
Avalanche Energy (See Figures 7 and 8)	E_{AVL}	50	mJ
Operating and Storage Temperature	T_{STG}, T_J	-65 to 175	^oC

Electrical Specifications $T_C = 25^oC$, Unless Otherwise Specified

SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
V_F	I_F = 80 A	-	-	1.9	V
	I_F = 80 A, $T_C = 150^oC$	-	-	1.7	V
I_R	V_R = 1000 V	-	-	250	μA
	V_R = 1000 V, $T_C = 150^oC$	-	-	2	mA
t_{rr}	I_F = 1 A, dI_F/dt = 100 A/μs	-	-	125	ns
	I_F = 80 A, dI_F/dt = 100 A/μs	-	-	200	ns
t_a	I_F = 80 A, dI_F/dt = 100 A/μs	-	90	-	ns
t_b	I_F = 80 A, dI_F/dt = 100 A/μs	-	65	-	ns
$R_{\theta JC}$		-	-	0.83	$^oC/W$

DEFINITIONS

V_F = Instantaneous forward voltage (pw = 300μs, D = 2%).

I_R = Instantaneous reverse current.

T_{rr} = Reverse recovery time (See Figure 6), summation of $t_a + t_b$.

t_a = Time to reach peak reverse current (See Figure 6).

t_b = Time from peak I_{RM} to projected zero crossing of I_{RM} based on a straight line from peak I_{RM} through 25% of I_{RM} (See Figure 6).

$R_{\theta JC}$ = Thermal resistance junction to case.

pw = Pulse width.

D = Duty cycle.

Typical Performance Curves

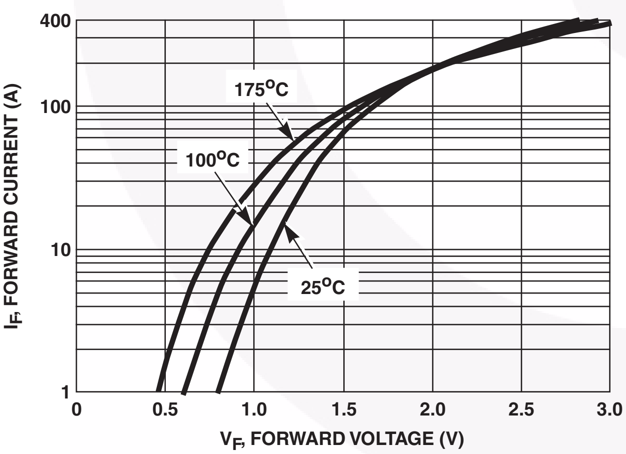


FIGURE 1. FORWARD CURRENT vs FORWARD VOLTAGE

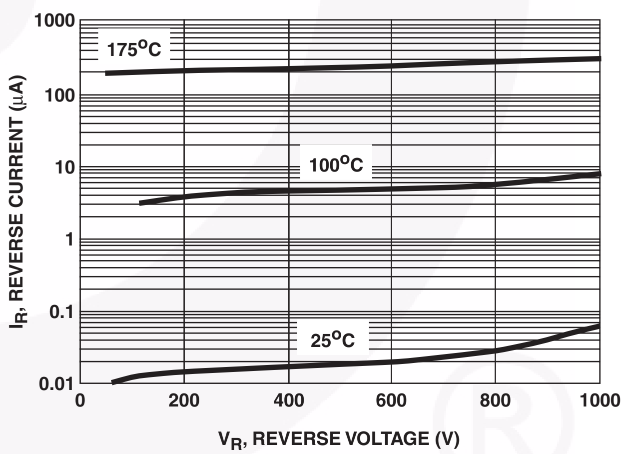


FIGURE 2. REVERSE CURRENT vs REVERSE VOLTAGE

Typical Performance Curves (Continued)

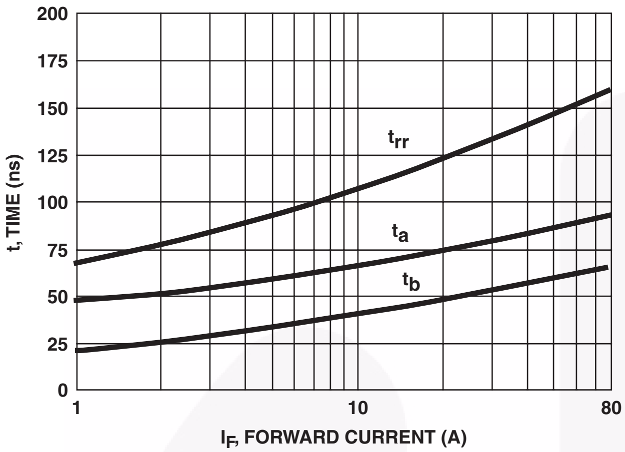


FIGURE 3. t_{rr}, t_a AND t_b CURVES vs FORWARD CURRENT

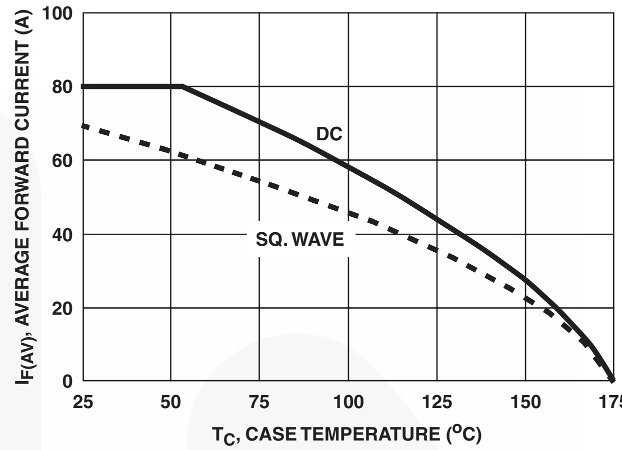


FIGURE 4. CURRENT DERATING CURVE

Test Circuits and Waveforms

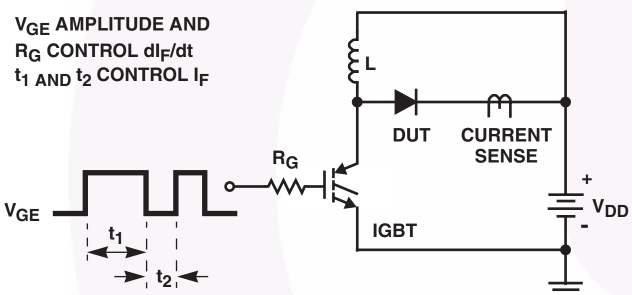


FIGURE 5. t_{rr} TEST CIRCUIT

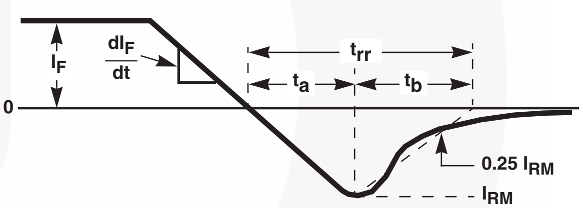


FIGURE 6. t_{rr} WAVEFORMS AND DEFINITIONS

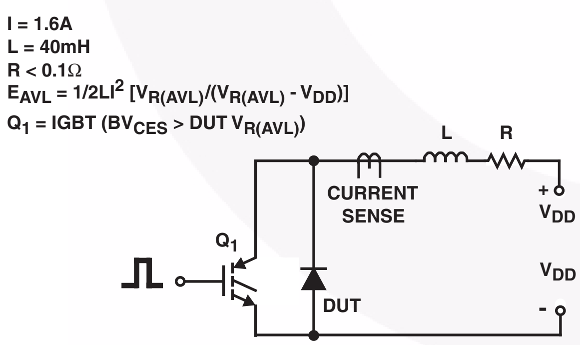


FIGURE 7. AVALANCHE ENERGY TEST CIRCUIT

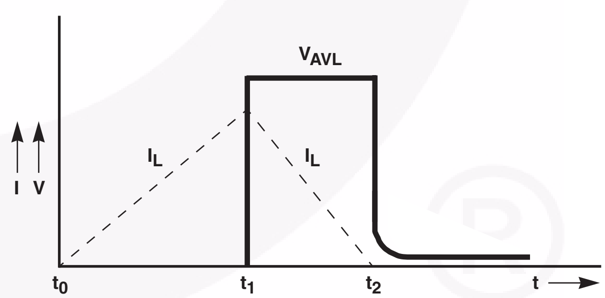


FIGURE 8. AVALANCHE CURRENT AND VOLTAGE WAVEFORMS

Mechanical Dimensions

TO247-2L

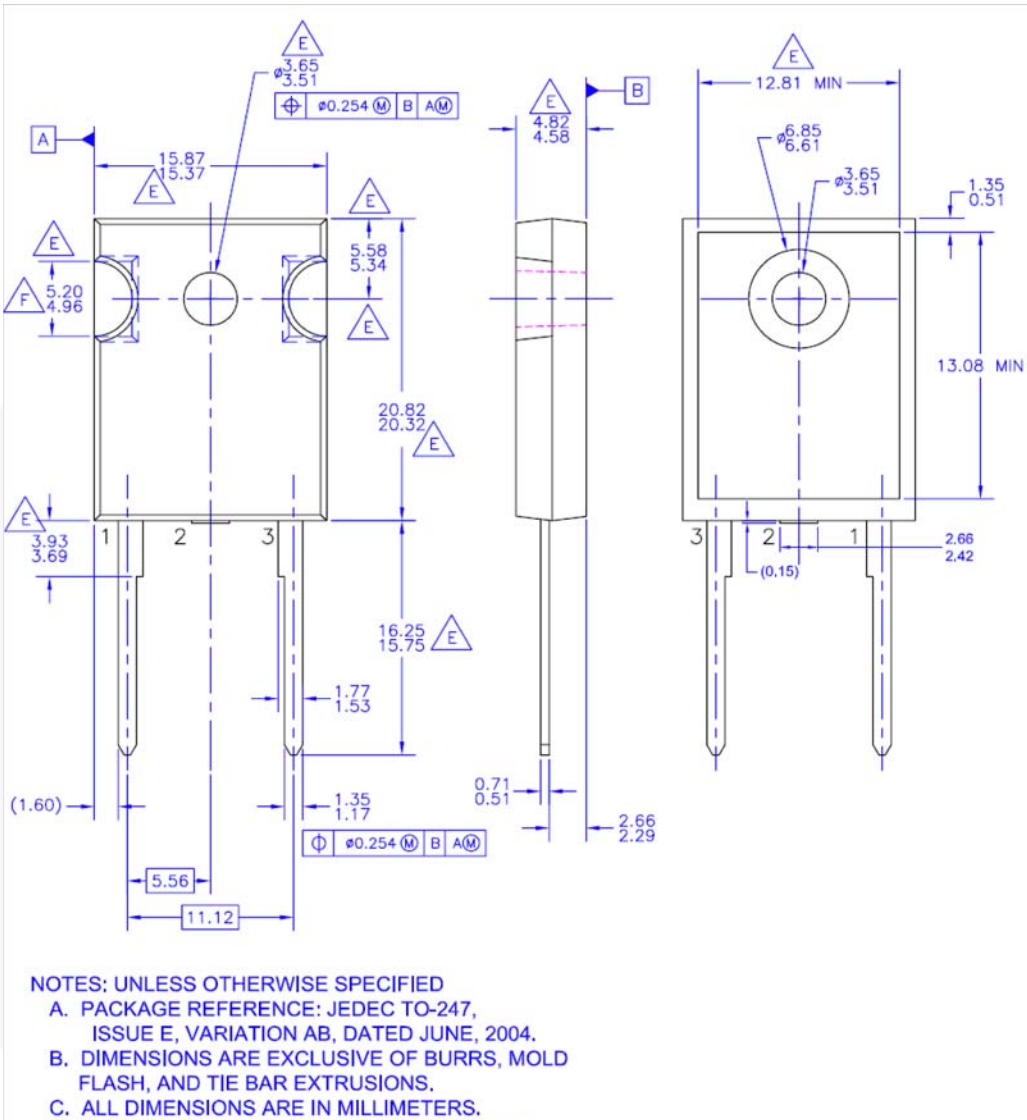


Figure 9. TO-247,Molded, 2LD, Jedec Option AB

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