Data Sheet November 2013

30 A, 200 V, Ultrafast Dual Diode

Description

The RURG3020CC is an ultrafast dual 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.

Features

- Ultrafast Recovery t_{rr} = 50 ns (@ I_F = 30 A)
- Max Forward Voltage, V_F = 1.0 V (@ T_C = 25°C)
- Reverse Voltage, V_{RRM} = 200 V
- Avalanche Energy Rated
- RoHS Compliant

Applications

- Switching Power Supplies
- Power Switching Circuits
- General Purpose

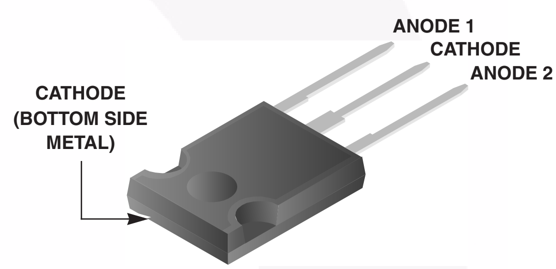
Ordering Information

PART NUMBER	PACKAGE	BRAND
RURG3020CC	TO-247	RURG3020C

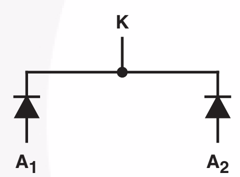
NOTE: When ordering, use the entire part number.

Packaging

JEDEC STYLE TO-247



Symbol



Absolute Maximum Ratings (Per Leg) $T_C = 25^oC$

		RURG3020CC	UNIT
Peak Repetitive Reverse Voltage	V_{RRM}	200	V
Working Peak Reverse Voltage	V_{RWM}	200	V
DC Blocking Voltage	V_R	200	V
Average Rectified Forward Current (Per Leg) ($T_C = 145^oC$)	$I_{F(AV)}$	30	A
Repetitive Peak Surge Current (Square Wave, 20 kHz)	I_{FRM}	70	A
Nonrepetitive Peak Surge Current (Halfwave, 1 Phase, 60 Hz)	I_{FSM}	325	A
Maximum Power Dissipation	P_D	125	W
Avalanche Energy (See Figures 7 and 8)	E_{AVL}	20	mJ
Operating and Storage Temperature	T_{STG}, T_J	-65 to 175	^oC

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Electrical Specifications (Per Leg) T_C = 25°C, Unless Otherwise Specified

SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
V_F	I_F = 30 A	-	-	1.0	V
	I_F = 30 A, T_C = 150°C	-	-	0.85	V
I_R	V_R = 200 V	-	-	250	µA
	V_R = 200 V, T_C = 150°C	-	-	1	mA
t_{rr}	I_F = 1 A, dI_F/dt = 100 A/µs	-	-	45	ns
	I_F = 30 A, dI_F/dt = 100 A/µs	-	-	50	ns
t_a	I_F = 30 A, dI_F/dt = 100 A/µs	-	20	-	ns
t_b	I_F = 30 A, dI_F/dt = 100 A/µs	-	15	-	ns
$R_{\theta JC}$		-	-	1.2	°C/W

DEFINITIONS

V_F = Instantaneous forward voltage (pw = 300 µs, 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

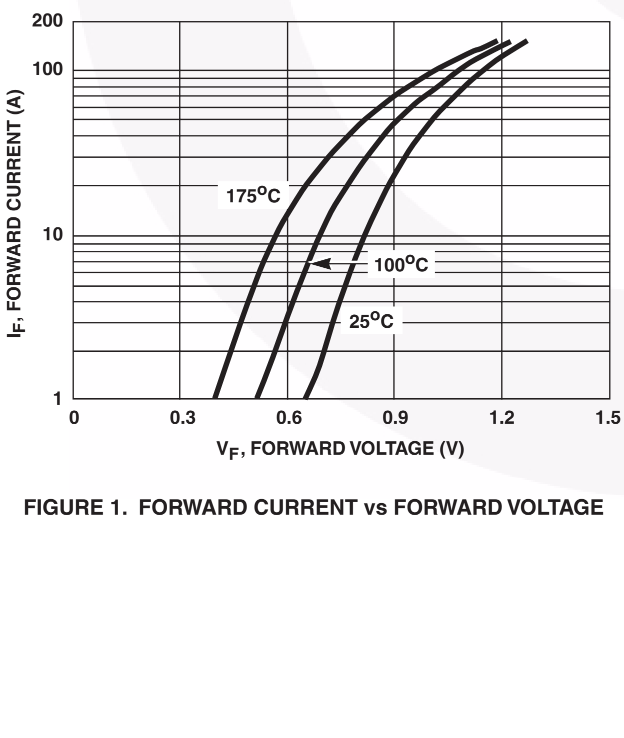

FIGURE 1. FORWARD CURRENT vs FORWARD VOLTAGE

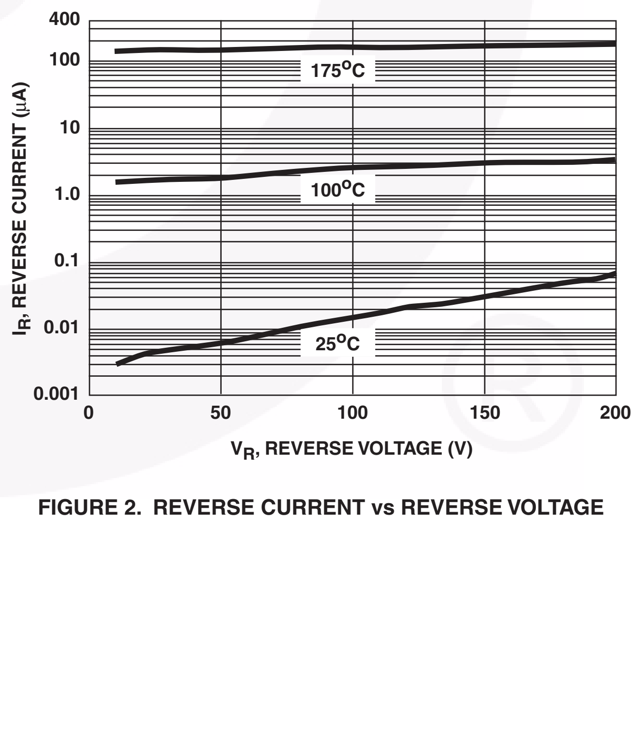

FIGURE 2. REVERSE CURRENT vs REVERSE VOLTAGE

Typical Performance Curves (Continued)

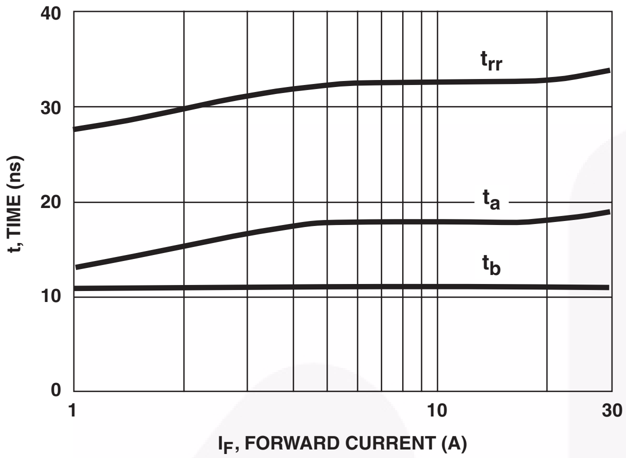

FIGURE 3. t_{rr}, t_a AND t_b CURVES vs FORWARD CURRENT

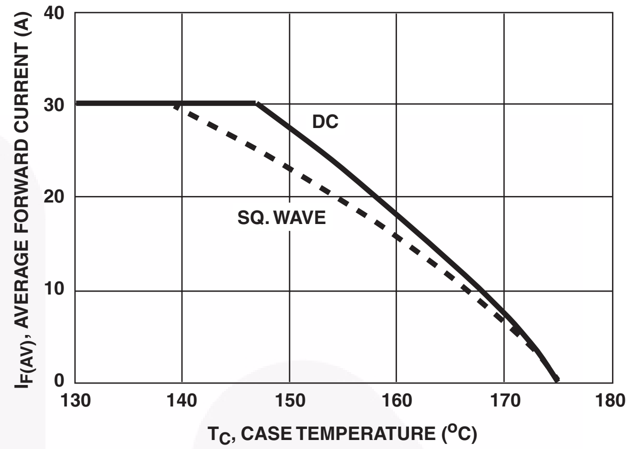

FIGURE 4. CURRENT DERATING CURVE

Test Circuits and Waveforms

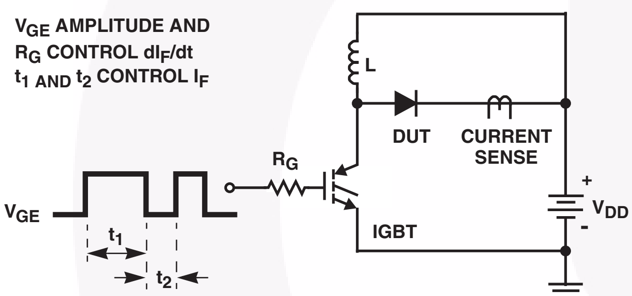

FIGURE 5. t_{rr} TEST CIRCUIT

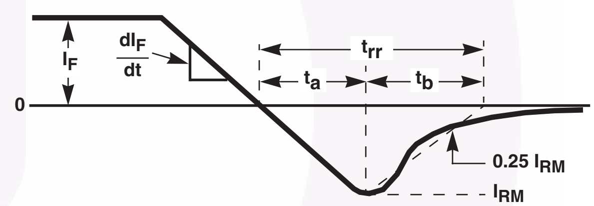

FIGURE 6. t_{rr} WAVEFORMS AND DEFINITIONS

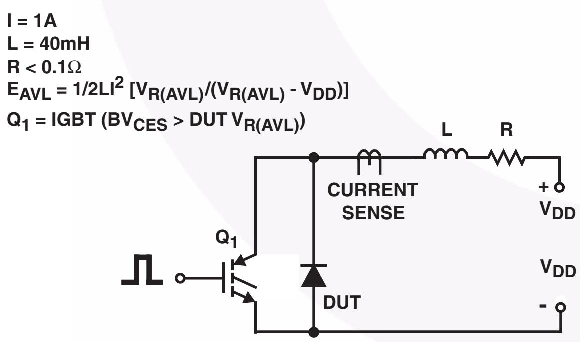

FIGURE 7. AVALANCHE ENERGY TEST CIRCUIT

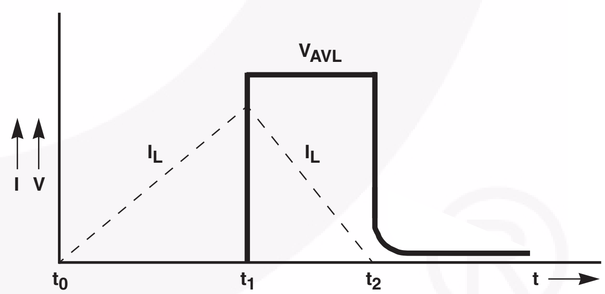

FIGURE 8. AVALANCHE CURRENT AND VOLTAGE WAVEFORMS

TO247-3L

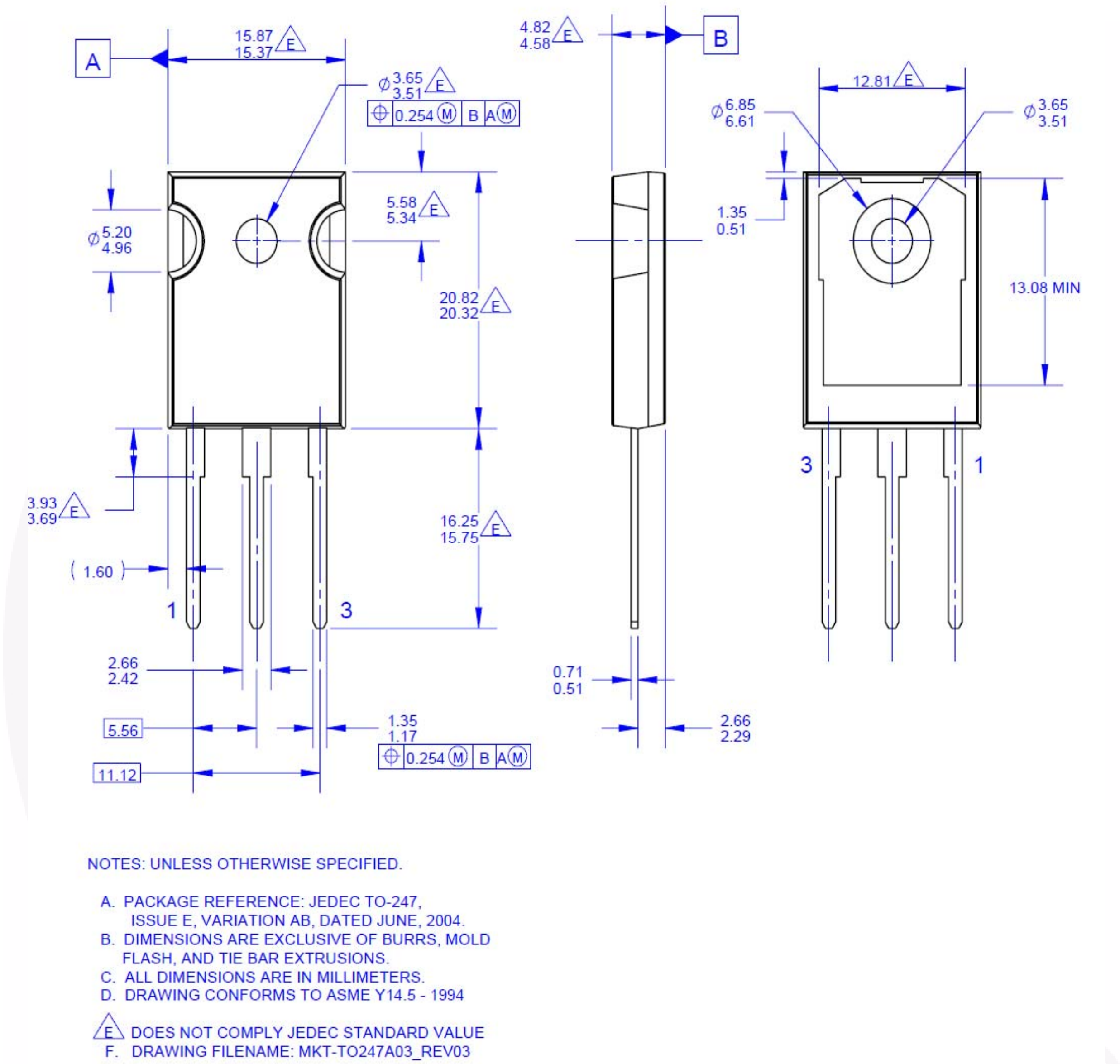

Figure 9. TO-247,Molded, 3LD, Jedec Option AB

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