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May 2016

RURG1520CC

30 A, 200 V, Ultrafast Dual Diode

RURG1520CC — Ultrafast Dual Diode

Feature

- Ultrafast Recovery $t_{rr} = 35 \text{ ns}$ (@ $I_F = 15 \text{ A}$)
- Max Forward Voltage, $V_F = 1.05 \text{ V}$ (@ $T_C = 25^\circ\text{C}$)
- Reverse Voltage, $V_{RRM} = 200 \text{ V}$
- Avalanche Energy Rated
- RoHS Compliant

Description

The RURG1520CC 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.

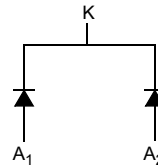
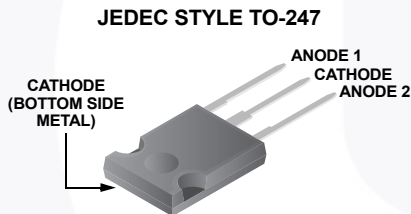
Applications

- Switching Power Supplies
- Power Switching Circuits
- General Purpose

Ordering Informations

Part Number	Package	Brand
RURG1520CC	TO-247-3L	RURG1520C

Note: When ordering, use the entire part number.



Absolute Maximum Ratings (Per Leg) $T_C = 25^\circ\text{C}$

Symbol	Parameter	RURG1520CC	Unit
V_{RRM}	Peak Repetitive Reverse Voltage	200	V
V_{RWM}	Working Peak Reverse Voltage	200	V
V_R	DC Blocking Voltage	200	V
$I_{F(AV)}$	Average Rectified Forward Current ($T_C = 157^\circ\text{C}$)	15	A
I_{FRM}	Repetitive Peak Surge Current (Square Wave, 20 kHz)	30	A
I_{FSM}	Nonrepetitive Peak Surge Current (Halfwave, 1 phase, 60 Hz)	200	A
P_D	Maximum Power Dissipation	100	W
E_{AVL}	Avalanche Energy (See Figures 8 and 9)	20	mJ
T_{STG}, T_J	Operating and Storage Temperature	-65 to 175	$^\circ\text{C}$

Electrical Characteristics (Per Leg) $T_C = 25^\circ\text{C}$, unless otherwise specified

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_F	Forward Voltage	$I_F = 15\text{ A}$			1.05	V
		$I_F = 15\text{ A}, T_C = 150^\circ\text{C}$			0.85	V
I_R	Reverse Leakage	$V_R = 200\text{ V}$			100	μA
		$V_R = 200\text{ V}, T_C = 150^\circ\text{C}$			500	μA
t_{rr}	Reverse Recovery Time	$I_F = 1\text{ A}, di_F/dt = 100\text{ A}/\mu\text{s}$			30	ns
		$I_F = 15\text{ A}, di_F/dt = 100\text{ A}/\mu\text{s}$			35	ns
t_a		$I_F = 15\text{ A}, di_F/dt = 100\text{ A}/\mu\text{s}$		20		ns
t_b		$I_F = 15\text{ A}, di_F/dt = 100\text{ A}/\mu\text{s}$		10		ns
$R_{\theta JC}$					1.5	$^\circ\text{C}/\text{W}$

DEFINITIONS

V_F = Instantaneous forward voltage ($pw = 300\ \mu\text{s}$, $D = 2\%$)

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

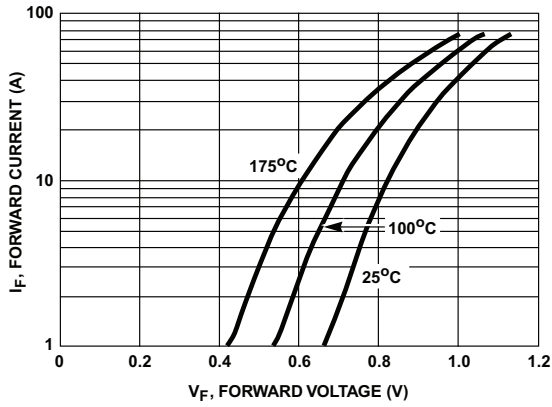


Figure 2. Reverse Current vs Reverse Voltage

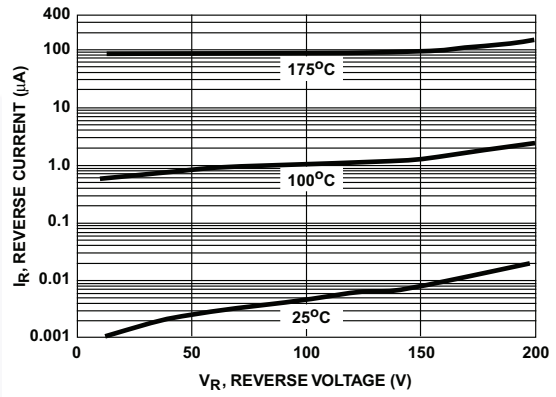


Figure 3. t_{rr} , t_a and t_b Curves vs Forward Current

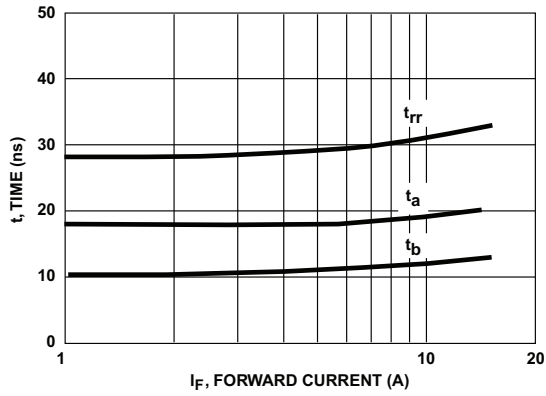
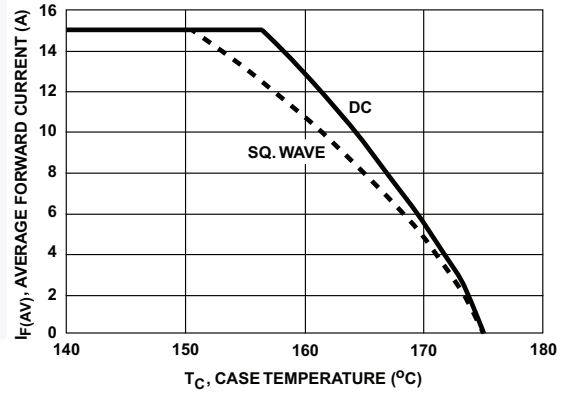


Figure 4. Current Derating Curve



Test Circuits and Waveforms

Figure 5. t_{rr} Test Circuit

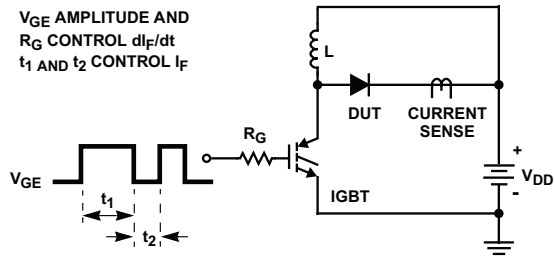


Figure 6. t_{rr} Waveforms and Definitions

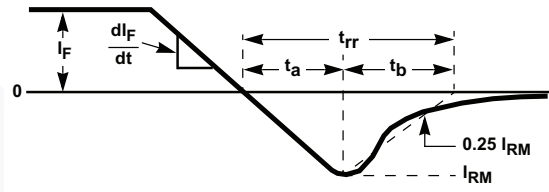


Figure 7. Avalanche Energy Test Circuit

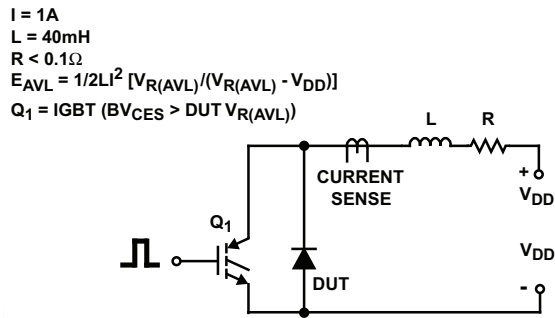
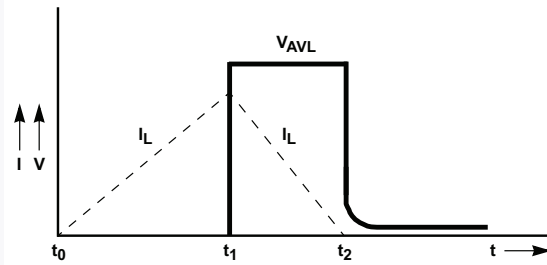
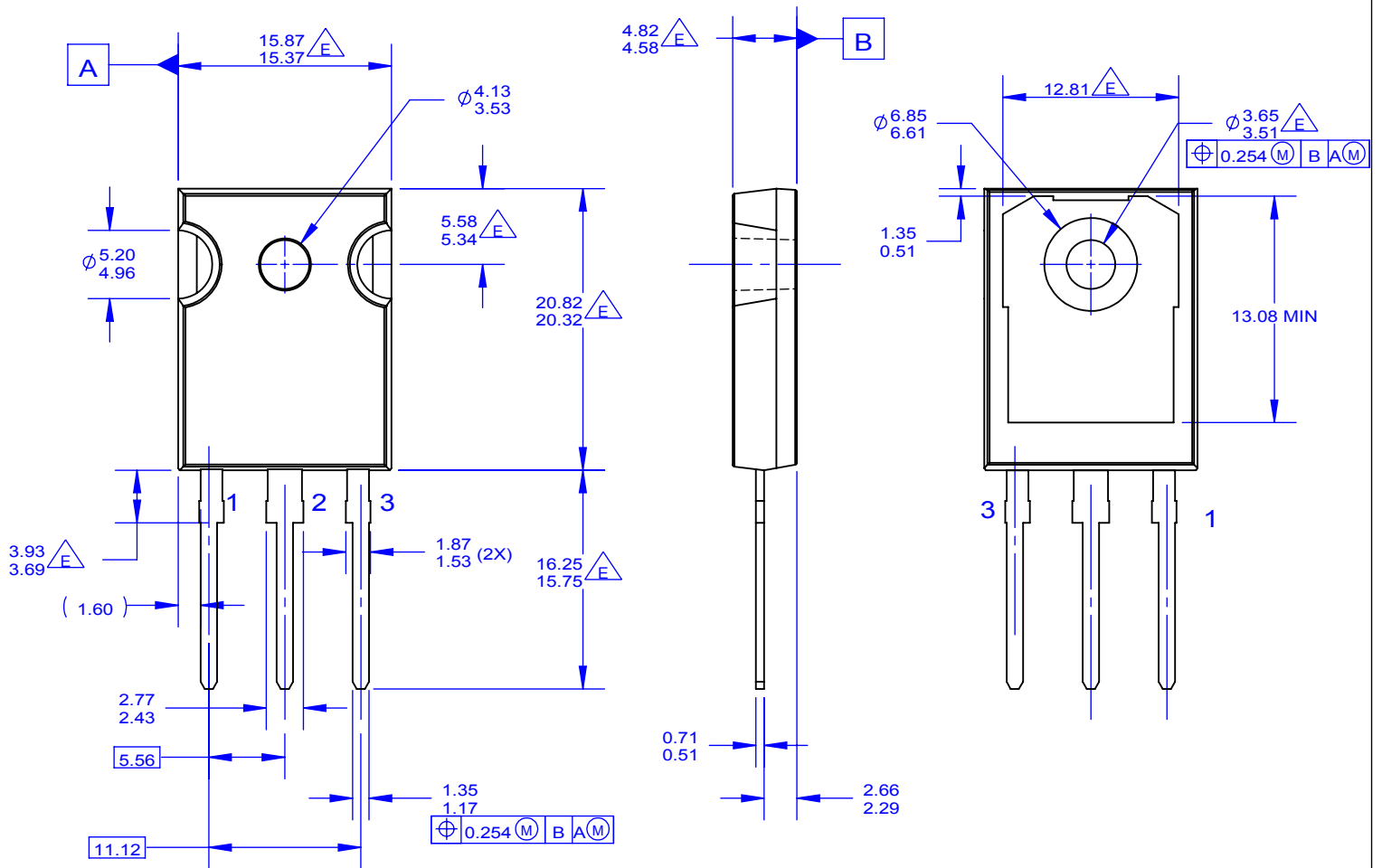


Figure 8. Avalanche Current and Voltage Waveforms





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