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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.

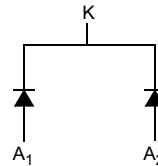
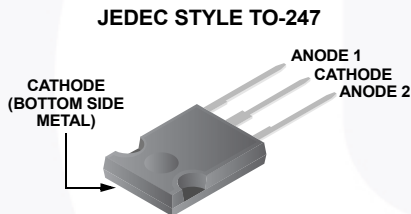
### Applications

- 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	$\mu\text{A}$
		$V_R = 200\text{ V}, T_C = 150^\circ\text{C}$			500	$\mu\text{A}$
$t_{rr}$	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

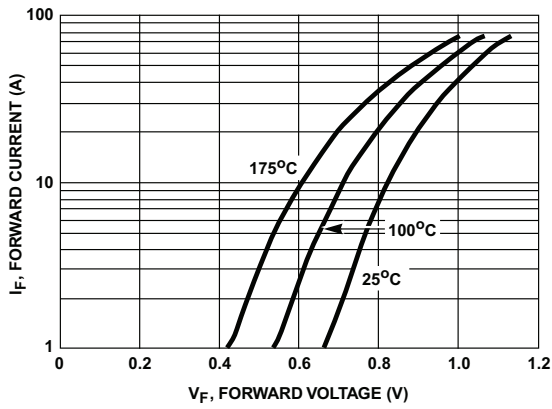


Figure 2. Reverse Current vs Reverse Voltage

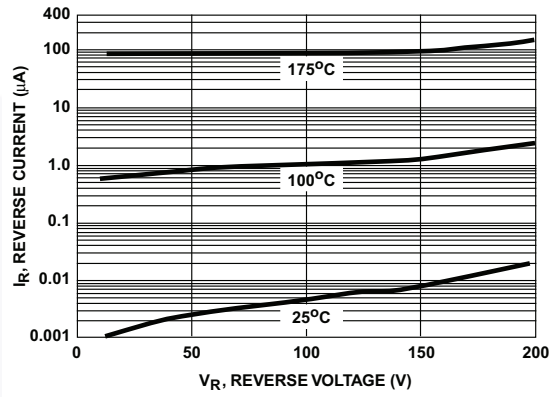


Figure 3.  $t_{rr}$ ,  $t_a$  and  $t_b$  Curves vs Forward Current

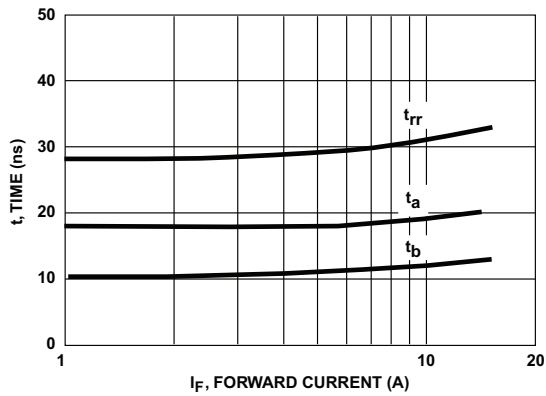
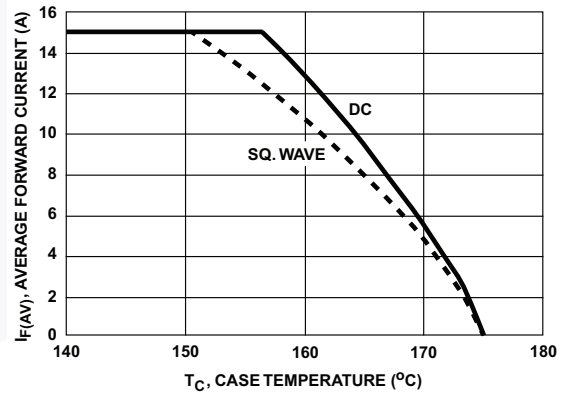


Figure 4. Current Derating Curve



### Test Circuits and Waveforms

Figure 5.  $t_{rr}$  Test Circuit

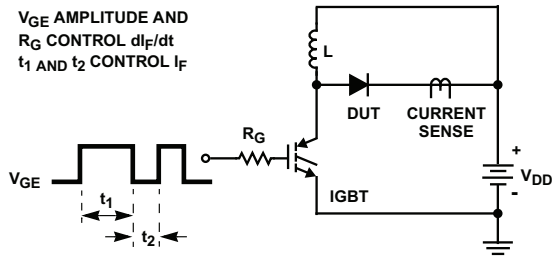


Figure 6.  $t_{rr}$  Waveforms and Definitions

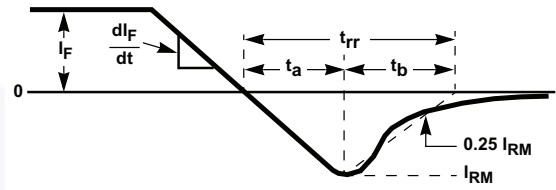


Figure 7. Avalanche Energy Test Circuit

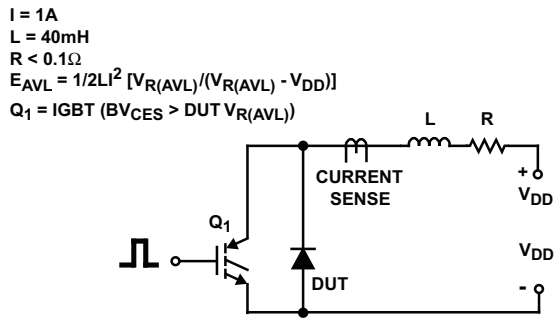
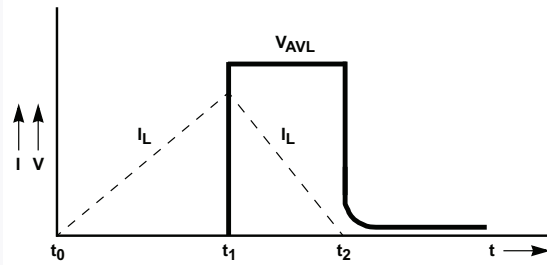
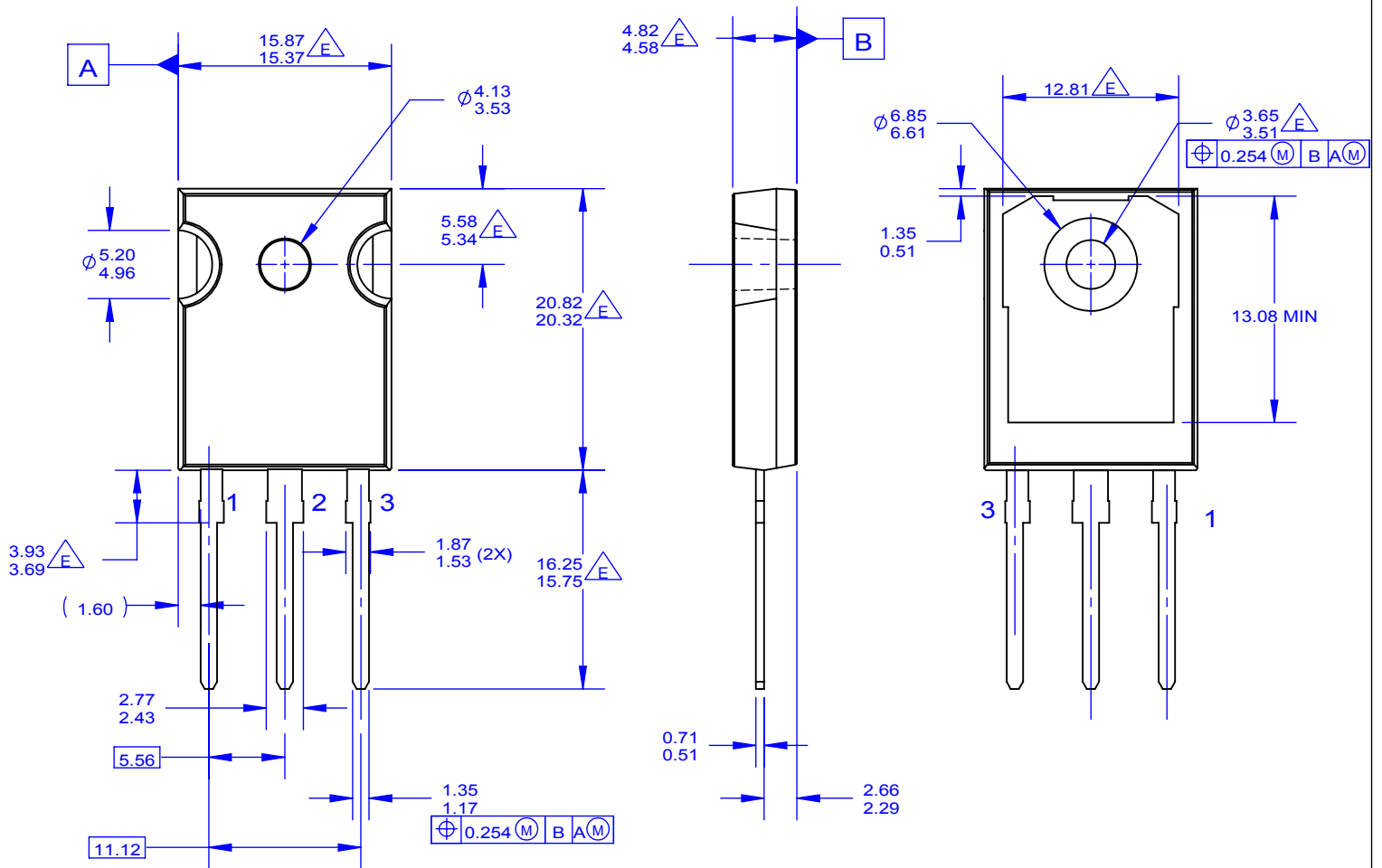



Figure 8. Avalanche Current and Voltage Waveforms





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