

# RURG1520CC

## 15A, 200V Ultrafast Dual Diode

### Features

- Ultrafast with Soft Recovery.....<30ns
- Operating Temperature ..... 175°C
- Reverse Voltage.....200V
- Avalanche Energy Rated
- Planar Construction

### Applications

- Switching Power Supplies
- Power Switching Circuits
- General Purpose

### Ordering Informations

Part Number	Package	Brand
RURG1520CC	TO-247	RURG1520C

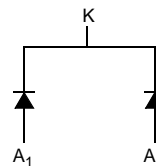
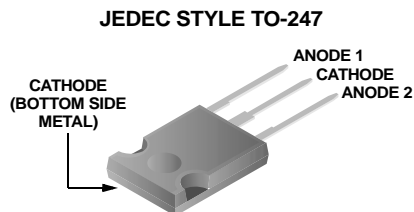
Note: When ordering, use the entire part number.

### Description

The RURG1520CC is an ultrafast dual diode with soft recovery characteristics ( $t_{rr}<30ns$ ). It has low forward voltage drop and is of silicon nitride passivated ion-implanted epitaxial planar construction.

This device is intended for use as a freewheeling/clamping diode and rectifier in a variety of switching power supplies and other power switching applications. Its low stored charge and ultrafast recovery with soft recovery characteristic minimizes ringing and electrical noise in many power switching circuits, reducing power loss in the switching transistors.

Formerly developmental type TA09926.



### Absolute Maximum Ratings (Per Leg) $T_C = 25^\circ C$

Symbol	Parameter	RURG1520C	Units
$V_{RRM}$	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 ( $T_C = 157^\circ C$ )	15	A
$I_{FRM}$	Repetitive Peak Surge Current (Square Wave, 20kHz)	30	A
$I_{FSM}$	Nonrepetitive Peak Surge Current (Halfwave, 1 phase, 60Hz)	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	°C

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$V_F$	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

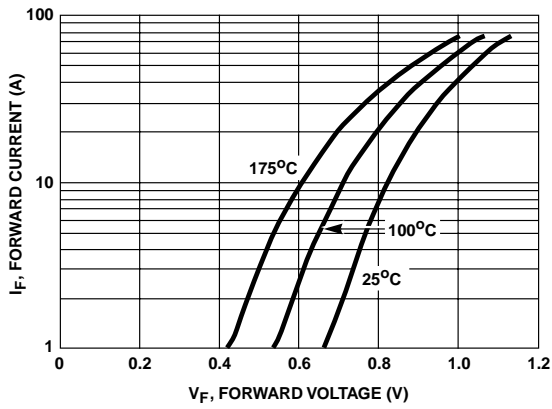


Figure 2. Reverse Current vs Reverse Voltage

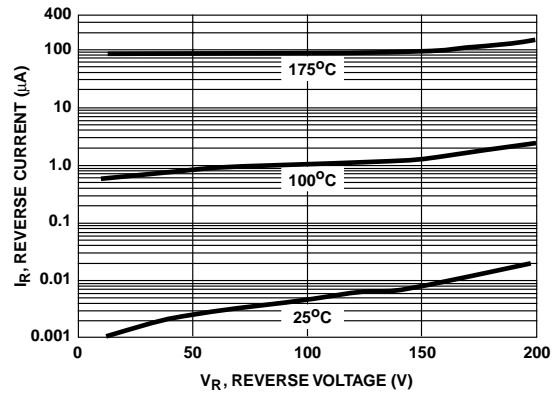


Figure 3.  $t_{rr}$ ,  $t_a$  and  $t_b$  Curves vs Forward Current

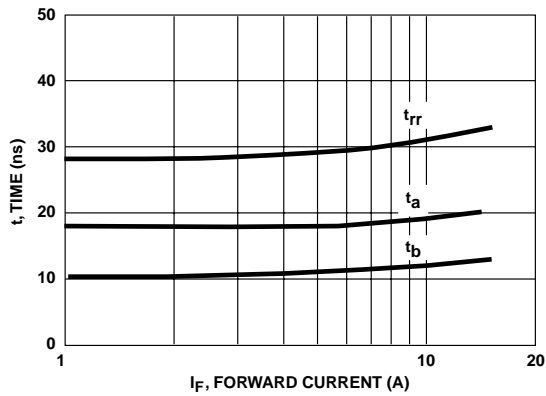
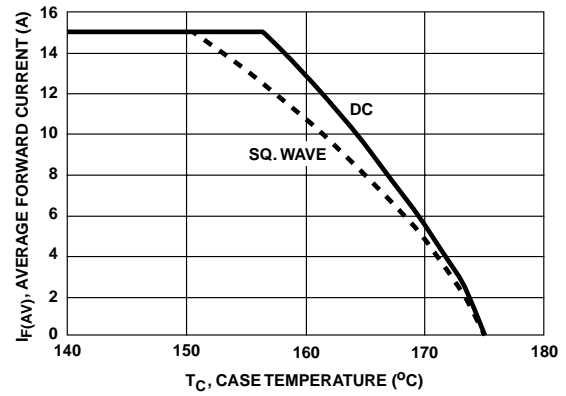


Figure 4. Current Derating Curve



## Test Circuits and Waveforms

Figure 5.  $t_{rr}$  Test Circuit

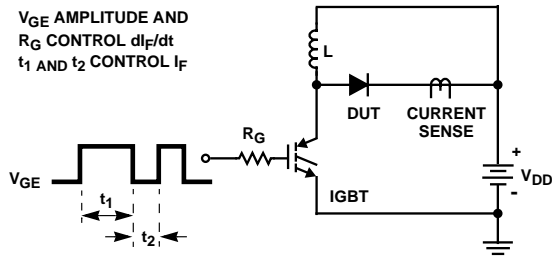


Figure 6.  $t_{rr}$  Waveforms and Definitions

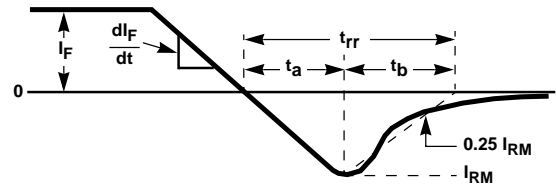


Figure 7. Avalanche Energy Test Circuit

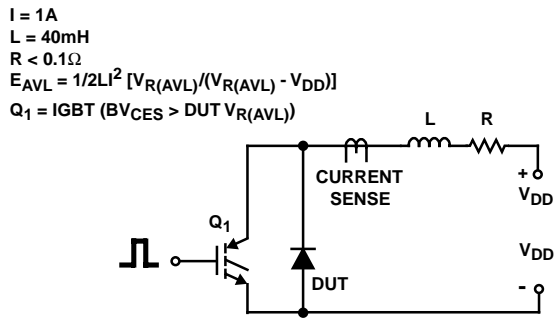
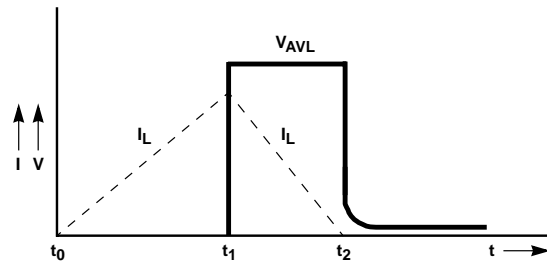


Figure 8. Avalanche Current and Voltage Waveforms



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DOME™	GTO™	MicroPak™	QFET <sup>®</sup>	SuperSOT™-8
EcoSPARK™	HiSeC™	MICROWIRE™	QS™	SyncFET™
E <sup>2</sup> CMOST™	I <sup>2</sup> C™	MSX™	QT Optoelectronics™	TinyLogic <sup>®</sup>
EnSigna™	<i>i-Lo</i> ™	MSXPro™	Quiet Series™	TINYOPTO™
FACT™	ImpliedDisconnect™	OCX™	RapidConfigure™	TruTranslation™
FACT Quiet Series™		OCXPro™	RapidConnect™	UHC™
Across the board. Around the world.™		OPTOLOGIC <sup>®</sup>	$\mu$ SerDes™	UltraFET <sup>®</sup>
The Power Franchise <sup>®</sup>		OPTOPLANAR™	SILENT SWITCHER <sup>®</sup>	UniFET™
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