

Data Sheet January 2002

15A, 400V - 600V Ultrafast Dual Diodes

The RURG1540CC and RURG1560CC are ultrafast dual diodes with soft recovery characteristics ($t_{rr} < 55 ns$). They have low forward voltage drop and are of silicon nitride passivated ion-implanted epitaxial planar construction.

These devices are intended for use as freewheeling/clamping diodes and rectifiers in a variety of switching power supplies and other power switching applications. Their low stored charge and ultrafast recovery with soft recovery characteristics minimize ringing and electrical noise in many power switching circuits reducing power loss in the switching transistors.

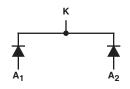
Formerly developmental type TA09905.

Ordering Information

PART NUMBER	PACKAGE	BRAND		
RURG1540CC	TO-247	RURG1540C		
RURG1560CC	TO-247	RURG1560C		

NOTE: When ordering, use the entire part number.

Symbol



Features

Ultrafast with Soft Recovery	:55ns
Operating Temperature1	75 ⁰ C
Reverse Voltage Up to	600V
•	Operating Temperature1

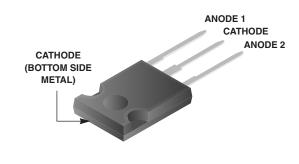
- Avalanche Energy Rated
- Planar Construction

Applications

- · Switching Power Supplies
- · Power Switching Circuits
- General Purpose

Packaging

JEDEC STYLE TO-247



Absolute Maximum Ratings (Per Leg) T _C = 25°C			
	RURG1540CC	RURG1560CC	UNITS
Peak Repetitive Reverse Voltage	400	600	V
Working Peak Reverse Voltage	400	600	V
DC Blocking Voltage	400	600	V
Average Rectified Forward Current I _{F(AV)}	15	15	Α
$(T_C = 145^{\circ}C)$			
Repetitive Peak Surge CurrentI _{FRM}	30	30	Α
(Square Wave, 20kHz)			
Nonrepetitive Peak Surge Current	200	200	Α
(Halfwave, 1 Phase, 60Hz)			
Maximum Power Dissipation	100	100	W
Avalanche Energy (See Figures 7 and 8)	20	20	mJ
Operating and Storage Temperature	-65 to 175	-65 to 175	°С

RURG1540CC, RURG1560CC

Electrical Specifications (Per Leg) $T_C = 25^{\circ}C$, Unless Otherwise Specified

		RURG1540CC		RURG1560CC				
SYMBOL	TEST CONDITION	MIN	TYP	MAX	MIN	TYP	MAX	UNITS
V _F	I _F = 15A	-	-	1.5	-	-	1.5	V
	I _F = 15A, T _C = 150°C	-	-	1.3	-	-	1.3	V
I _R	V _R = 400V	-	-	100	-	-	-	μΑ
	V _R = 600V	-	-	-	-	-	100	μΑ
	V _R = 400V, T _C = 150°C	-	-	500	-	-	-	μΑ
	V _R = 600V, T _C = 150°C	-	-	-	-	-	500	μΑ
t _{rr}	$I_F = 1A$, $dI_F/dt = 100A/\mu s$	-	-	55	-	-	55	ns
	$I_F = 15A$, $dI_F/dt = 100A/\mu s$	-	-	60	-	-	60	ns
t _a	$I_F = 15A$, $dI_F/dt = 100A/\mu s$	-	30	-	-	30	-	ns
t _b	$I_F = 15A$, $dI_F/dt = 100A/\mu s$	-	17	-	-	17	-	ns
$R_{ heta JC}$		-	-	1.5	-	-	1.5	°C/W

DEFINITIONS

 V_F = Instantaneous forward voltage (pw = 300 μ 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

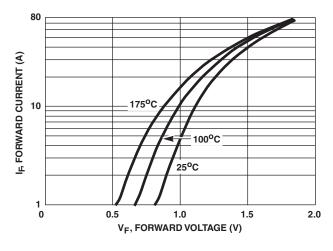


FIGURE 1. FORWARD CURRENT vs FORWARD VOLTAGE

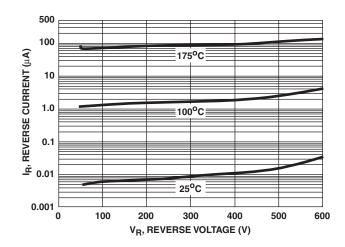


FIGURE 2. REVERSE CURRENT vs REVERSE VOLTAGE

Typical Performance Curves (Continued)

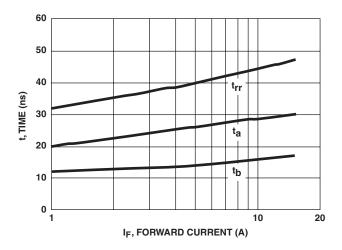


FIGURE 3. t_{rr}, t_a AND t_b CURVES vs FORWARD CURRENT

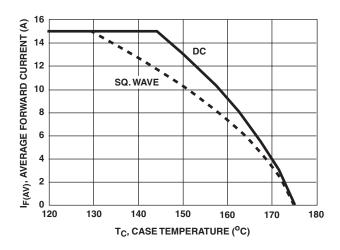


FIGURE 4. CURRENT DERATING CURVE

Test Circuits and Waveforms

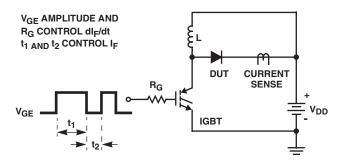


FIGURE 5. t_{rr} TEST CIRCUIT

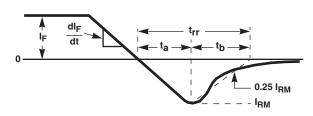


FIGURE 6. t_{rr} WAVEFORMS AND DEFINITIONS

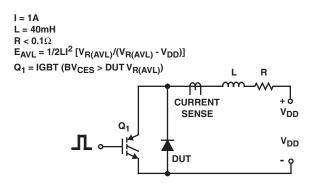


FIGURE 7. AVALANCHE ENERGY TEST CIRCUIT

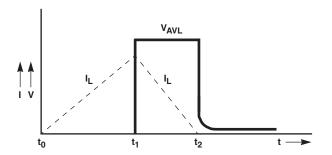


FIGURE 8. AVALANCHE CURRENT AND VOLTAGE WAVEFORMS

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Definition of Terms

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Rev. H4