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**60 A, 400 V - 600 V,
Ultrafast Dual Diode**

Description

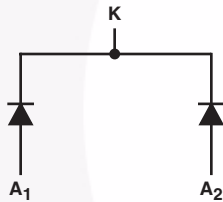
The RURG3040CC, RURG3060CC is an ultrafast dual diode with low forward voltage drop. This device is intended for use as freewheeling and clamping diodes in a variety of switching power supplies and other power switching applications. It is specially suited for use in switching power supplies and industrial application.

Ordering Information

| PART NUMBER | PACKAGE | BRAND |
|-------------|-----------|-----------|
| RURG3040CC | TO-247-3L | RURG3040C |
| RURG3060CC | TO-247-3L | RURG3060C |

NOTE: When ordering, use the entire part number.

Symbol



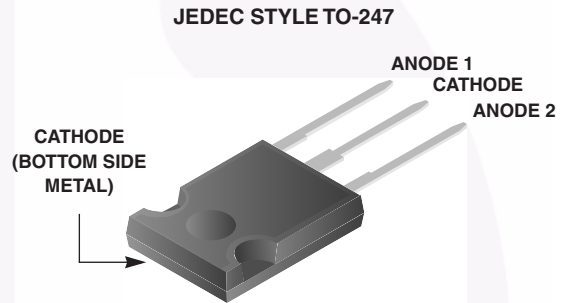
Features

- Ultrafast Recovery $t_{rr} = 60 \text{ ns}$ (@ $I_F = 30 \text{ A}$)
- Max Forward Voltage, $V_F = 1.5 \text{ V}$ (@ $T_C = 25^\circ\text{C}$)
- 400 V, 600 V Reverse Voltage and High Reliability
- Avalanche Energy Rated
- RoHS Compliant

Applications

- Switching Power Supplies
- Power Switching Circuits
- General Purpose

Packaging



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

| | RURG3040CC | RURG3060CC | UNIT |
|--|---------------------------|------------|------------------|
| Peak Repetitive Reverse Voltage | V_{RRM} 400 | 600 | V |
| Working Peak Reverse Voltage | V_{RWM} 400 | 600 | V |
| DC Blocking Voltage | V_R 400 | 600 | V |
| Average Rectified Forward Current | $I_{F(AV)}$ 30 | 30 | A |
| ($T_C = 130^\circ\text{C}$) | | | |
| Repetitive Peak Surge Current | I_{FRM} 70 | 70 | A |
| (Square Wave, 20kHz) | | | |
| Nonrepetitive Peak Surge Current | I_{FSM} 325 | 325 | A |
| (Halfwave, 1 Phase, 60Hz) | | | |
| Maximum Power Dissipation | P_D 125 | 125 | W |
| Avalanche Energy (See Figures 7 and 8) | E_{AVL} 20 | 20 | mJ |
| Operating and Storage Temperature | T_{STG}, T_J -65 to 175 | -65 to 175 | $^\circ\text{C}$ |

RURG3040CC, RURG3060CC

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

| SYMBOL | TEST CONDITION | MIN | TYP | MAX | MIN | TYP | MAX | UNIT |
|-----------------|---|-----|-----|-----|-----|-----|-----|---------------------------|
| V_F | $I_F = 30\text{ A}$ | - | - | 1.5 | - | - | 1.5 | V |
| | $I_F = 30\text{ A}, T_C = 150^\circ\text{C}$ | - | - | 1.3 | - | - | 1.3 | V |
| I_R | $V_R = 400\text{ V}$ | - | - | 250 | - | - | - | μA |
| | $V_R = 600\text{ V}$ | - | - | - | - | - | 250 | μA |
| | $V_R = 400\text{ V}, T_C = 150^\circ\text{C}$ | - | - | 1.0 | - | - | - | mA |
| | $V_R = 600\text{ V}, T_C = 150^\circ\text{C}$ | - | - | - | - | - | 1.0 | mA |
| T_{rr} | $I_F = 1\text{ A}, dI_F/dt = 100\text{ A}/\mu\text{s}$ | - | - | 55 | - | - | 55 | ns |
| t_{rr} | $I_F = 30\text{ A}, dI_F/dt = 100\text{ A}/\mu\text{s}$ | - | - | 60 | - | - | 60 | ns |
| t_a | $I_F = 30\text{ A}, dI_F/dt = 100\text{ A}/\mu\text{s}$ | - | 30 | - | - | 30 | - | ns |
| t_b | $I_F = 30\text{ A}, dI_F/dt = 100\text{ A}/\mu\text{s}$ | - | 20 | - | - | 20 | - | ns |
| $R_{\theta JC}$ | | - | - | 1.2 | - | - | 1.2 | $^\circ\text{C}/\text{W}$ |

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

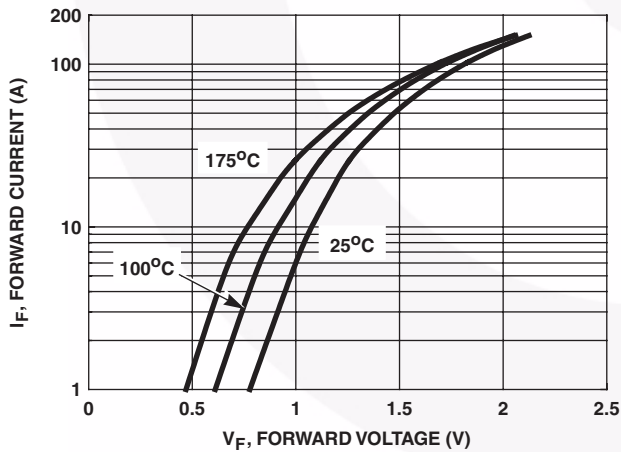


FIGURE 1. FORWARD CURRENT vs FORWARD VOLTAGE

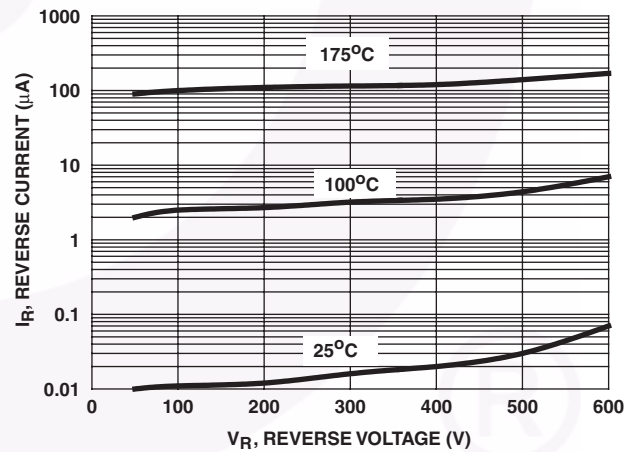


FIGURE 2. REVERSE CURRENT vs REVERSE VOLTAGE

Typical Performance Curves (Continued)

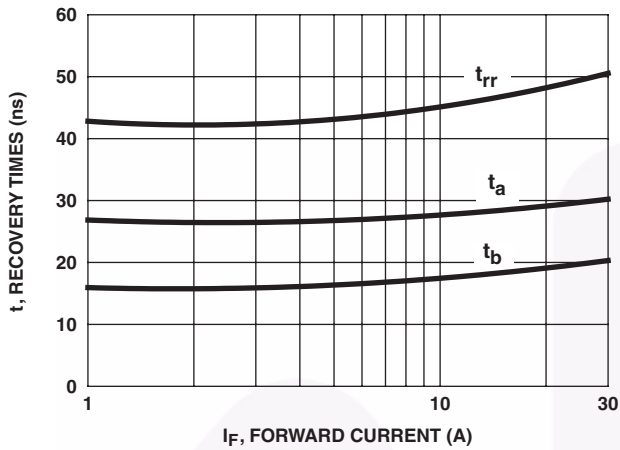


FIGURE 3. t_{rr} , t_a AND t_b CURVES vs FORWARD CURRENT

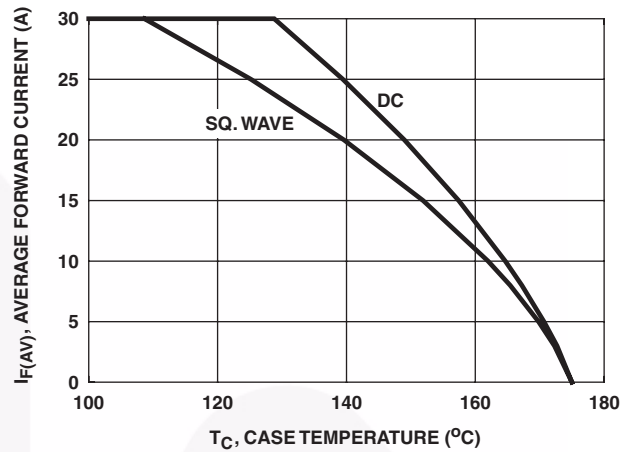


FIGURE 4. CURRENT DERATING CURVE

Test Circuits and Waveforms

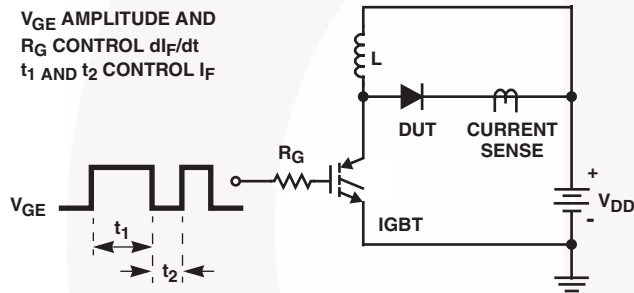


FIGURE 5. t_{rr} TEST CIRCUIT

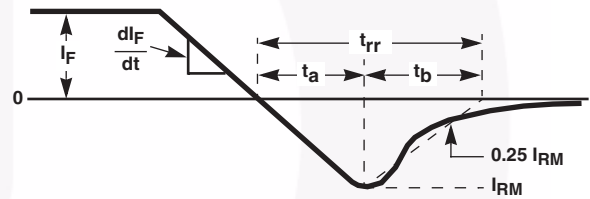


FIGURE 6. t_{rr} WAVEFORMS AND DEFINITIONS

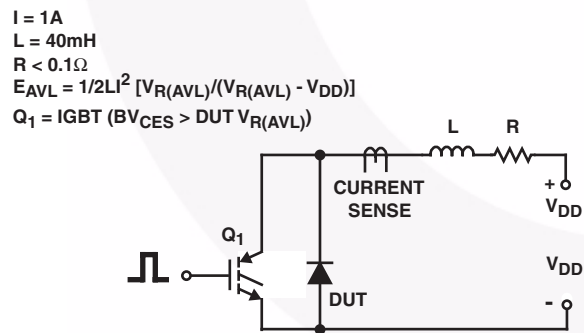


FIGURE 7. AVALANCHE ENERGY TEST CIRCUIT

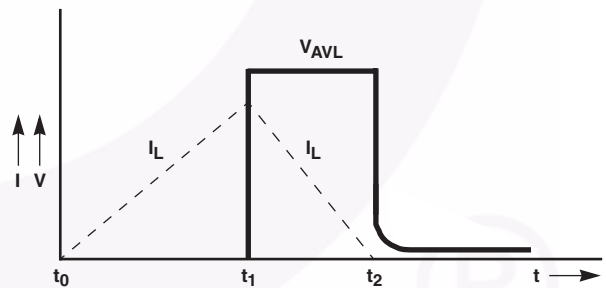
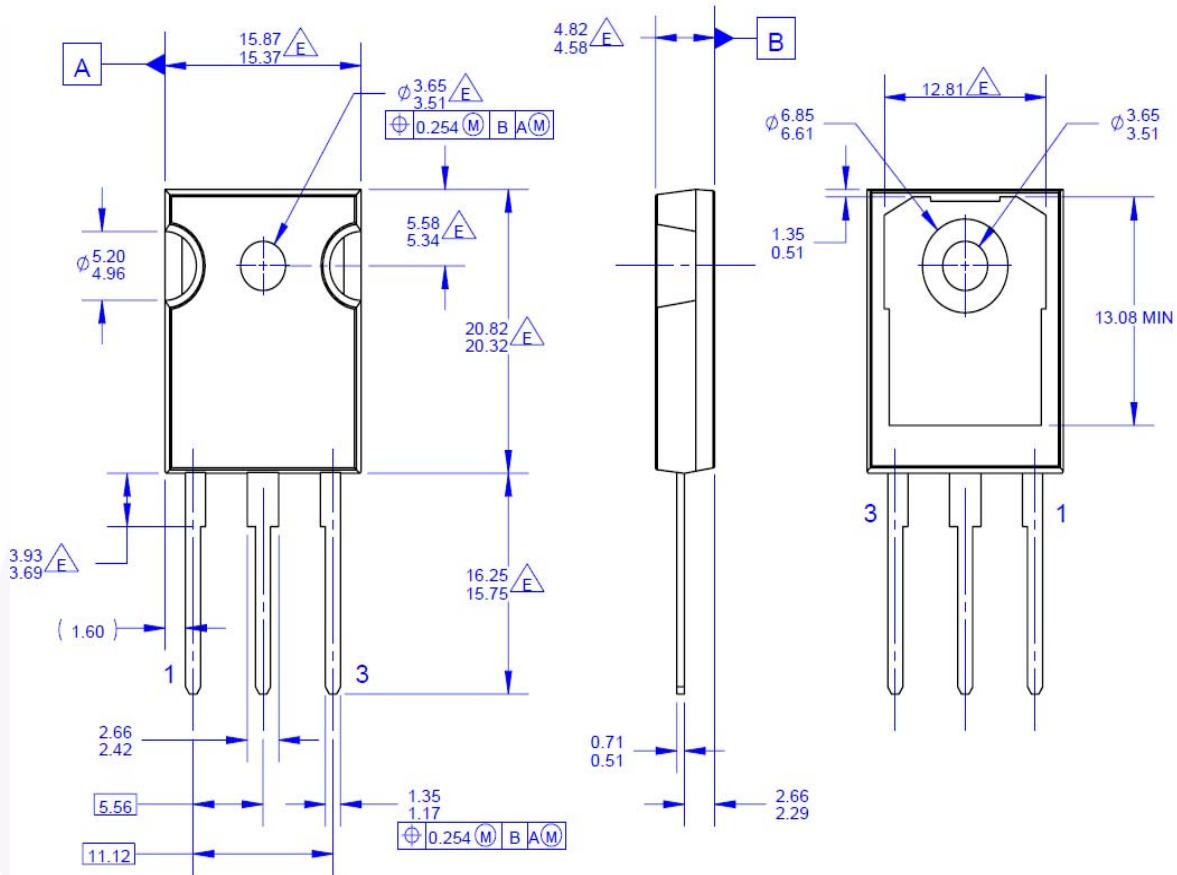


FIGURE 8. AVALANCHE CURRENT AND VOLTAGE WAVEFORMS

TO247-3L



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

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