

30 A, 600 V, Ultrafast Diode

The RURP3060 is an ultrafast 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 |
|-------------|-------------|----------|
| RURP3060 | TO-220AC-2L | RURP3060 |

NOTE: When ordering, use the entire part number.

Symbol



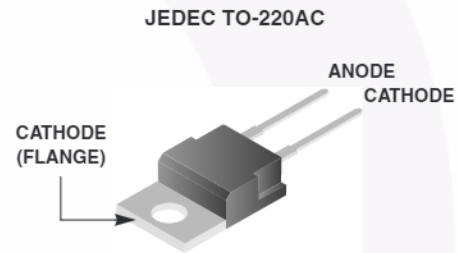
Features

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

Applications

- Switching Power Supply
- Power Switching Circuits
- General Purpose

Packaging



Absolute Maximum Ratings $T_C = 25^\circ\text{C}$, Unless Otherwise Specified

| | RURP3060 | UNIT |
|---|---------------------------|------------------|
| Peak Repetitive Reverse Voltage | V_{RRM} 600 | V |
| Working Peak Reverse Voltage | V_{RWM} 600 | V |
| DC Blocking Voltage | V_R 600 | V |
| Average Rectified Forward Current ($T_C = 130^\circ\text{C}$) | $I_{F(AV)}$ 30 | A |
| Repetitive Peak Surge Current | I_{FRM} 70 | A |
| (Square Wave, 20kHz) | | |
| Nonrepetitive Peak Surge Current | I_{FSM} 325 | A |
| (Halfwave 1 Phase 60Hz) | | |
| Maximum Power Dissipation | P_D 125 | W |
| Avalanche Energy (See Figures 7 and 8) | E_{AVL} 20 | mJ |
| Operating and Storage Temperature | T_{STG}, T_J -55 to 175 | $^\circ\text{C}$ |

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

| SYMBOL | TEST CONDITION | MIN | TYP | MAX | UNIT |
|-----------------|---|-----|-----|-----|---------------------------|
| V_F | $I_F = 30\text{ A}$ | - | - | 1.5 | V |
| | $I_F = 30\text{ A}, T_C = 150^\circ\text{C}$ | - | - | 1.3 | V |
| I_R | $V_R = 600\text{ V}$ | - | - | 250 | μA |
| | $V_R = 600\text{ V}, T_C = 150^\circ\text{C}$ | - | - | 1 | mA |
| t_{rr} | $I_F = 1\text{ A}, dl_F/dt = 100\text{ A}/\mu\text{s}$ | - | - | 55 | ns |
| | $I_F = 30\text{ A}, dl_F/dt = 100\text{ A}/\mu\text{s}$ | - | - | 60 | ns |
| t_a | $I_F = 30\text{ A}, dl_F/dt = 100\text{ A}/\mu\text{s}$ | - | 30 | - | ns |
| t_b | $I_F = 30\text{ A}, dl_F/dt = 100\text{ A}/\mu\text{s}$ | - | 20 | - | ns |
| $R_{\theta JC}$ | | - | - | 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 at $dl_F/dt = 100\text{A}/\mu\text{s}$ (See Figure 6), summation of $t_a + t_b$.

t_a = Time to reach peak reverse current at $dl_F/dt = 100\text{A}/\mu\text{s}$ (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

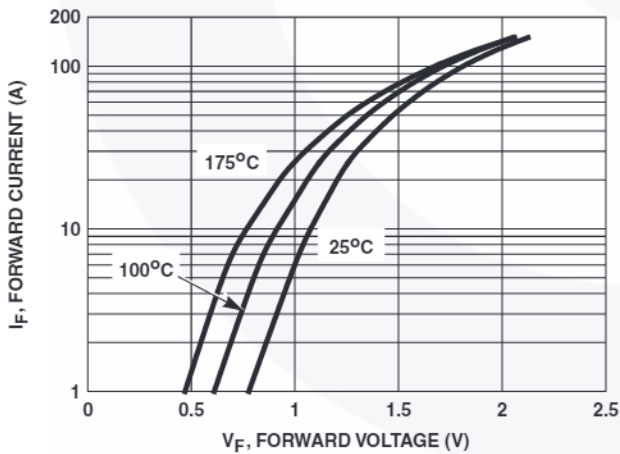


FIGURE 1. FORWARD CURRENT vs FORWARD VOLTAGE

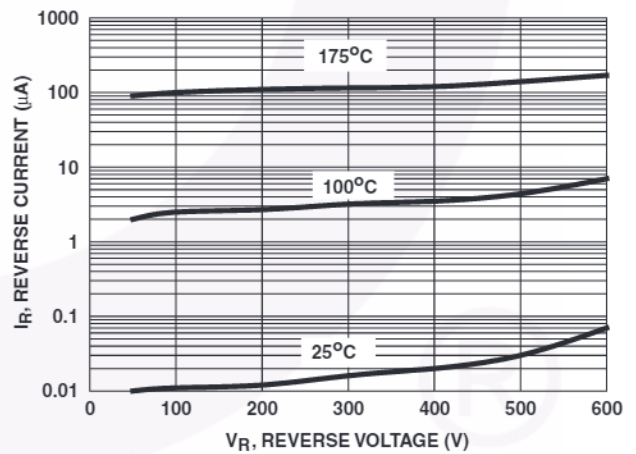


FIGURE 2. REVERSE CURRENT vs REVERSE VOLTAGE

Typical Performance Curves (Continued)

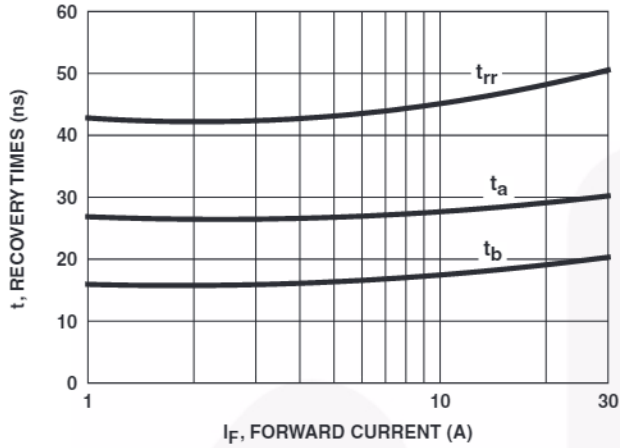


FIGURE 3. t_{rr} , t_a AND t_b CURVES vs FORWARD CURRENT

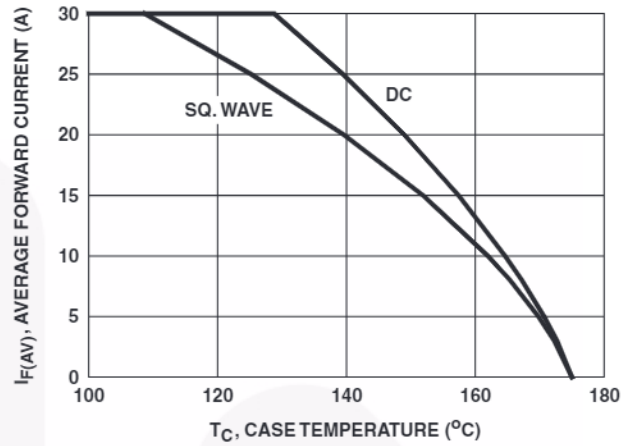


FIGURE 4. CURRENT DERATING CURVE

Test Circuits and Waveforms

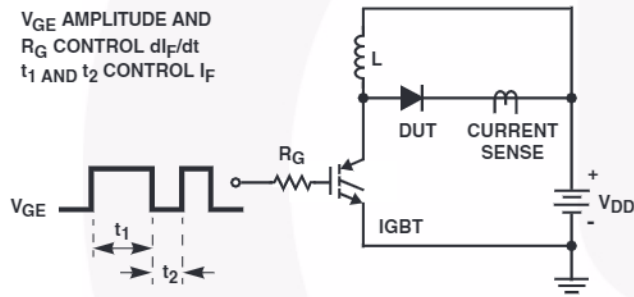


FIGURE 5. t_{rr} TEST CIRCUIT

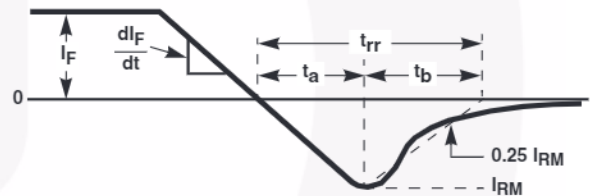


FIGURE 6. t_{rr} WAVEFORMS AND DEFINITIONS

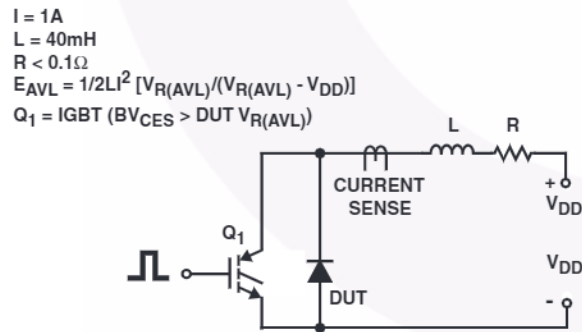


FIGURE 7. AVALANCHE ENERGY TEST CIRCUIT

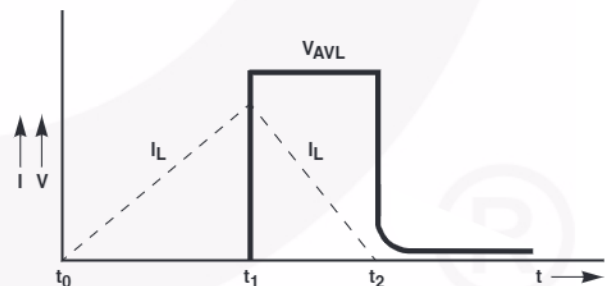


FIGURE 8. AVALANCHE CURRENT AND VOLTAGE WAVEFORMS

Mechanical Dimensions

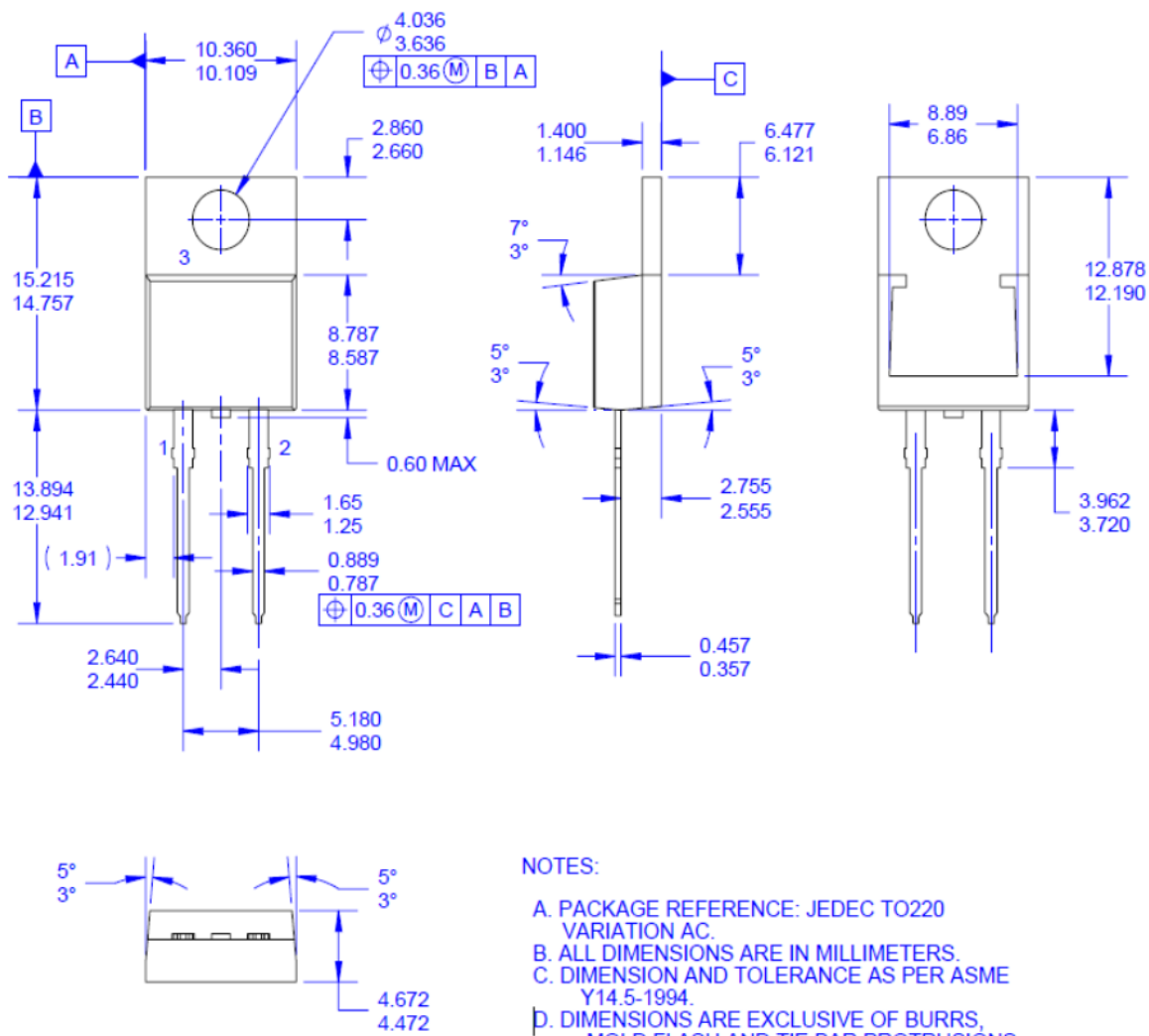


Figure 9. TO-220 2L - TO-220, MOLDED, 2LD

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