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15 A, 600 V, Ultrafast Diode

The RURP1560 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
RURP1560	TO-220AC-2L	RURP1560

NOTE: When ordering, use the entire part number

Symbol



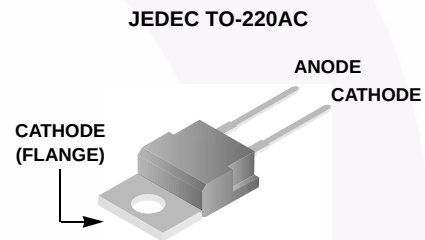
Features

- Ultrafast Recovery $t_{rr} = 60 \text{ ns}$ (@ $I_F = 15 \text{ A}$)
- Max Forward Voltage, $V_F = 1.5 \text{ V}$ (@ $T_C = 25^\circ\text{C}$)
- 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

	RURP1560	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 $I_{F(AV)}$ ($T_C = 145^\circ\text{C}$)	15	A
Repetitive Peak Surge Current I_{FRM} (Square Wave 20kHz)	30	A
Nonrepetitive Peak Surge Current I_{FSM} (Halfwave 1 Phase 60Hz)	200	A
Maximum Power Dissipation P_D	100	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	RURP1560			UNIT
		MIN	TYP	MAX	
V_F	$I_F = 15\text{ A}$	-	-	1.5	V
	$I_F = 15\text{ A}$, $T_C = 150^\circ\text{C}$	-	-	1.2	V
I_R	$V_R = 600\text{ V}$	-	-	100	μA
	$V_R = 600\text{ V}$, $T_C = 150^\circ\text{C}$	-	-	500	μA
t_{rr}	$I_F = 1\text{ A}$, $dI_F/dt = 100\text{ A}/\mu\text{s}$	-	-	55	ns
	$I_F = 15\text{ A}$, $dI_F/dt = 100\text{ A}/\mu\text{s}$	-	-	60	ns
t_a	$I_F = 15\text{ A}$, $dI_F/dt = 100\text{ A}/\mu\text{s}$	-	30	-	ns
t_b	$I_F = 15\text{ A}$, $dI_F/dt = 100\text{ A}/\mu\text{s}$	-	20	-	ns
$R_{\theta JC}$		-	-	1.5	$^\circ\text{C}/\text{W}$

DEFINITIONS

V_F = Instantaneous forward voltage ($p_w = 300\mu\text{s}$, $D = 2\%$).

I_R = Instantaneous reverse current.

T_{rr} = Reverse recovery time at $dI_F/dt = 100\text{ A}/\mu\text{s}$ (See Figure 6), summation of $t_a + t_b$.

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

p_w = pulse width.

D = duty cycle.

Typical Performance Curves

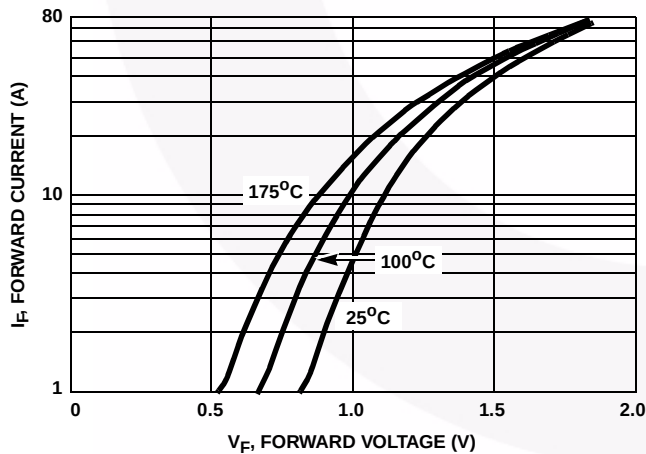


FIGURE 1. FORWARD CURRENT vs FORWARD VOLTAGE

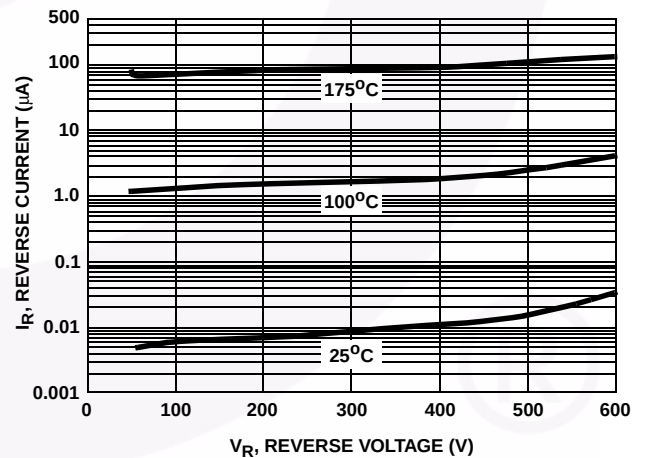


FIGURE 2. REVERSE CURRENT vs REVERSE VOLTAGE

Typical Performance Curves (Continued)

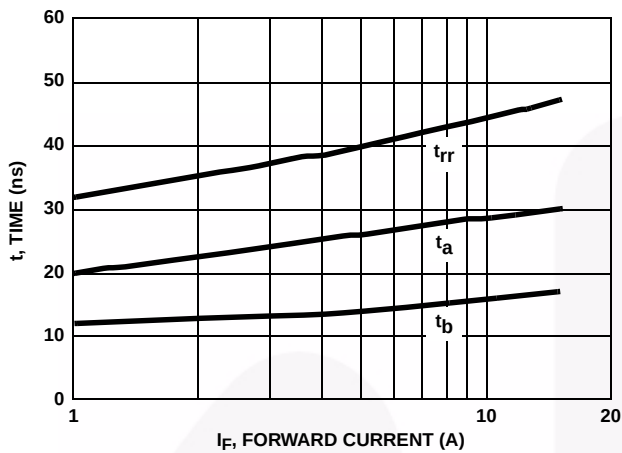


FIGURE 3. t_{rr} , t_a AND t_b CURVES vs FORWARD CURRENT

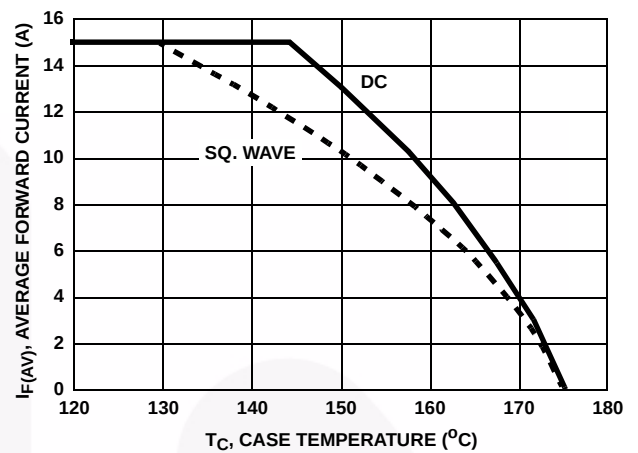


FIGURE 4. CURRENT DERATING CURVE

Test Circuits and Waveforms

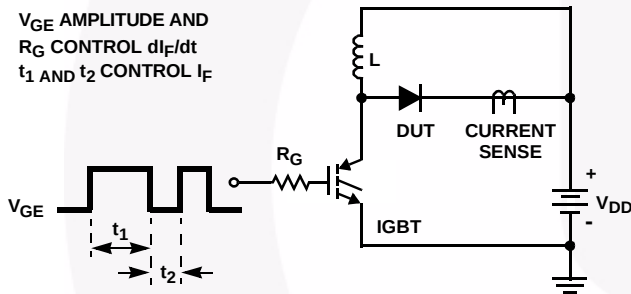


FIGURE 5. t_{rr} TEST CIRCUIT

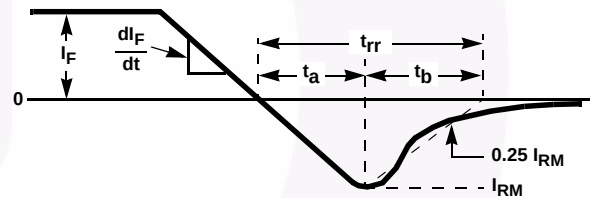


FIGURE 6. t_{rr} WAVEFORMS AND DEFINITIONS

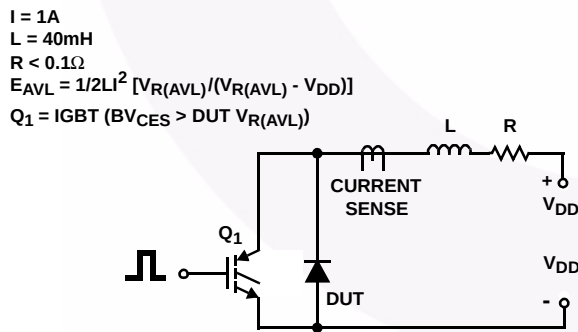


FIGURE 7. AVALANCHE ENERGY TEST CIRCUIT

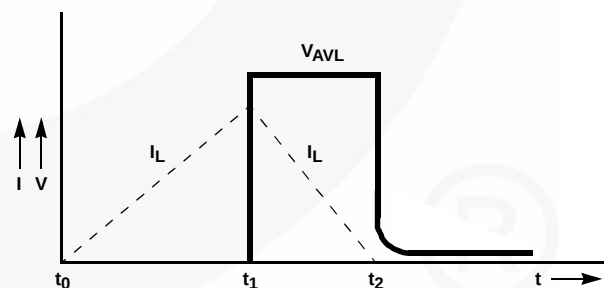
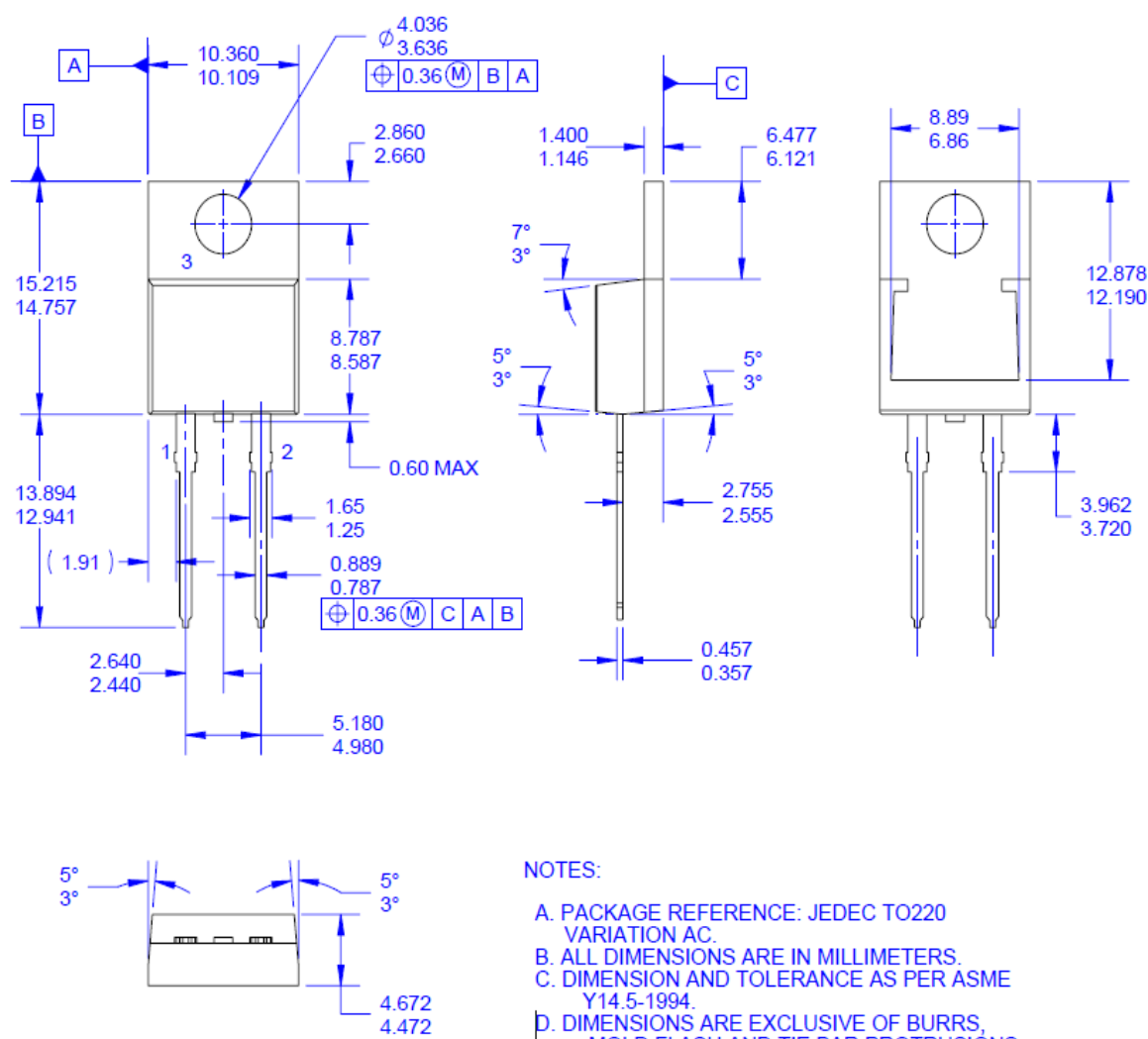


FIGURE 8. AVALANCHE CURRENT AND VOLTAGE WAVEFORMS

Mechanical Dimensions



NOTES:

- A. PACKAGE REFERENCE: JEDEC TO220 VARIATION AC.
- B. ALL DIMENSIONS ARE IN MILLIMETERS.
- C. DIMENSION AND TOLERANCE AS PER ASME Y14.5-1994.
- D. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUSIONS.
- E. THIS PACKAGE IS FSSZ INTERNAL PRODUCTION AND INTENDED FOR DELTA CUSTOMER ONLY.
- F. DRAWING FILE NAME: TO220B02REV4

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

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