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4 A, 600 V, Ultrafast Diode

The RURD460, RURD460S 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.

Features

- Ultrafast Recovery t_{rr} = 60 ns (@I_F = 4 A)
- Max Forward Voltage, V_F = 1.5 V (@ T_C = 25°C)
- 600 V Reverse Voltage and High Reliability
- Avalanche Energy Rated
- RoHS Compliant

Applications

- Switching Power Supplies
- Power Switching Circuits
- General Purpose

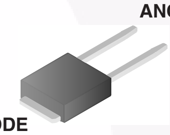
Ordering Information

PART NUMBER	PACKAGE	BRAND
RURD460	TO-251-2L	RUR460
RURD460S	TO-252-3L	RUR460

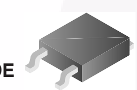
NOTE: When ordering, use the entire part number. Add suffix 9A to obtain the TO-252 variant in tape and reel, i.e., RURD460S9A.

Packaging

JEDEC STYLE TO-251



JEDEC STYLE TO-252



Symbol

Absolute Maximum Ratings T_C = 25°C, Unless Otherwise Specified

		RURD460 RURD460S	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 = 160°C)	$I_{F(AV)}$	4	A
Repetitive Peak Surge Current (Square Wave, 20 kHz)	I_{FRM}	8	A
Nonrepetitive Peak Surge Current (Halfwave, 1 phase, 60 Hz)	I_{FSM}	40	A
Maximum Power Dissipation	P_D	50	W
Avalanche Energy (See Figures 9 and 10)	E_{AVL}	10	mJ
Operating and Storage Temperature	T_{STG}, T_J	-65 to 175	°C
Maximum Lead Temperature for Soldering			
Leads at 0.063 in. (1.6mm) from case for 10s	T_L	300	°C
Package Body for 10s, see Tech Brief 334	T_{PKG}	260	°C

Electrical Specifications $T_C = 25^oC$, Unless Otherwise Specified

SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
V_F	I_F = 4 A	-	-	1.5	V
	I_F = 4 A, T_C = 150^{o}C	-	-	1.2	V
I_R	V_R = 600 V	-	-	100	μA
	V_R = 600 V, T_C = 150^{o}C	-	-	500	μA
t_{rr}	I_F = 1 A, dI_F/dt = 100 A/μs	-	-	55	ns
	I_F = 4 A, dI_F/dt = 100 A/μs	-	-	60	ns
t_a	I_F = 4 A, dI_F/dt = 100 A/μs	-	32	-	ns
t_b	I_F = 4 A, dI_F/dt = 100 A/μs	-	15	-	ns
Q_{rr}	I_F = 4 A, dI_F/dt = 100 A/μs	-	50	-	nC
C_J	V_R = 10 V, I_F = 0 A	-	15	-	pF
$R_{\theta JC}$		-	-	3	^{o}C/W

DEFINITIONS

V_F = Instantaneous forward voltage (pw = 300μs, D = 2%).

I_R = Instantaneous reverse current.

T_{rr} = Reverse recovery time (See Figure 8), summation of $t_a + t_b$.

t_a = Time to reach peak reverse current (See Figure 8).

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 8).

Q_{rr} = Reverse recovery time.

C_J = Junction capacitance.

$R_{\theta JC}$ = Thermal resistance junction to case.

pw = Pulse width.

D = Duty cycle.

Typical Performance Curves

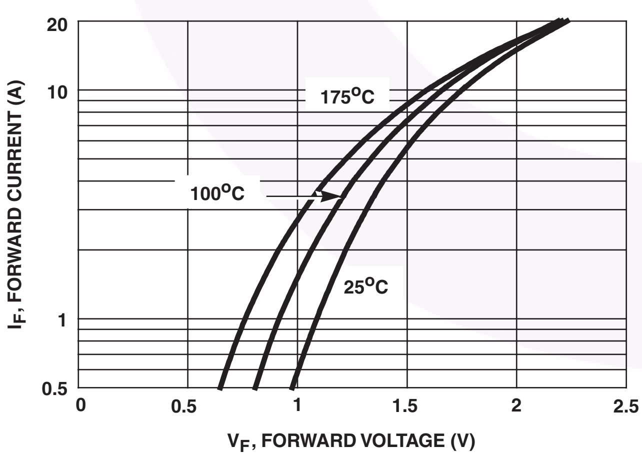


FIGURE 1. FORWARD CURRENT vs FORWARD VOLTAGE

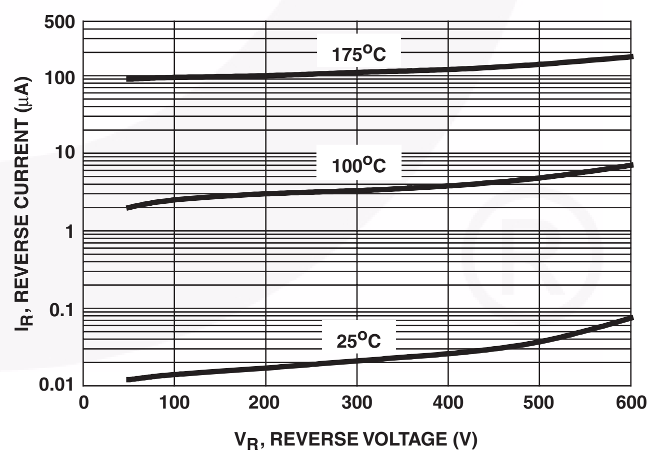


FIGURE 2. REVERSE CURRENT vs REVERSE VOLTAGE

Typical Performance Curves (Continued)

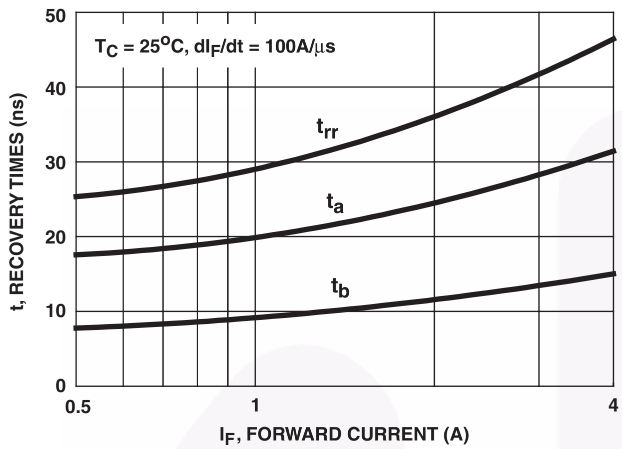


FIGURE 3. t_{rr}, t_a AND t_b CURVES vs FORWARD CURRENT

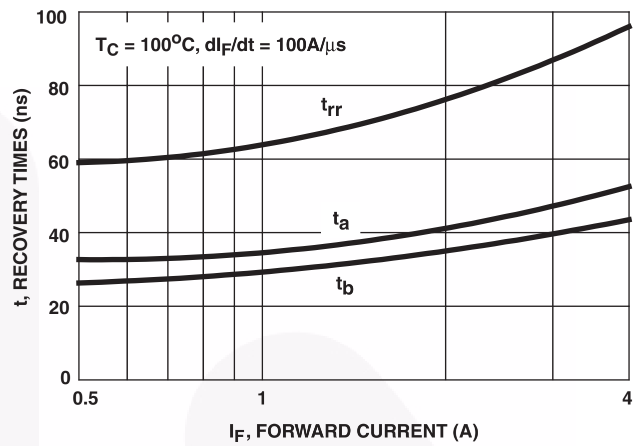


FIGURE 4. t_{rr}, t_a AND t_b CURVES vs FORWARD CURRENT

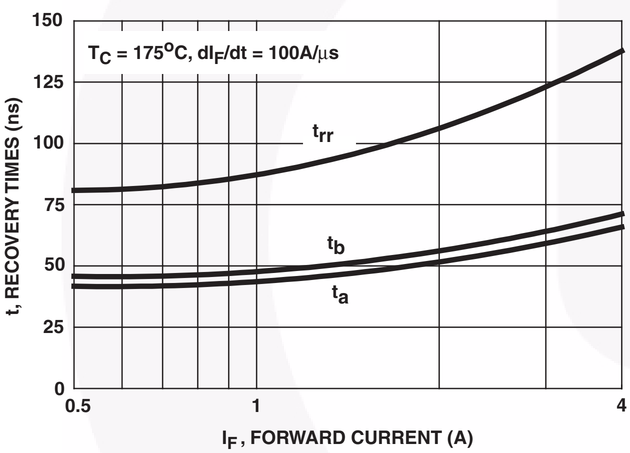


FIGURE 5. t_{rr}, t_a AND t_b CURVES vs FORWARD CURRENT

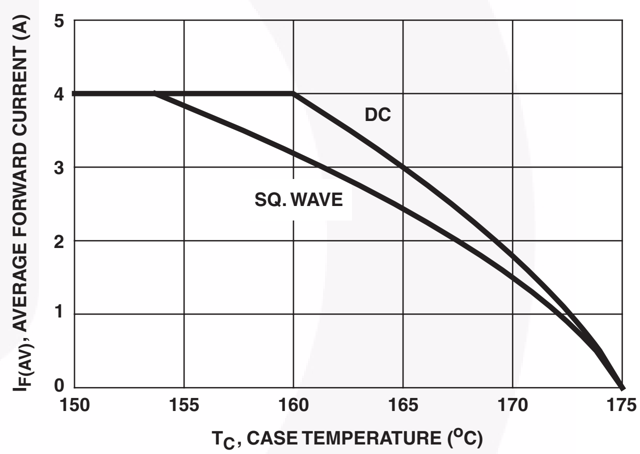


FIGURE 6. CURRENT DERATING CURVE

Test Circuits and Waveforms

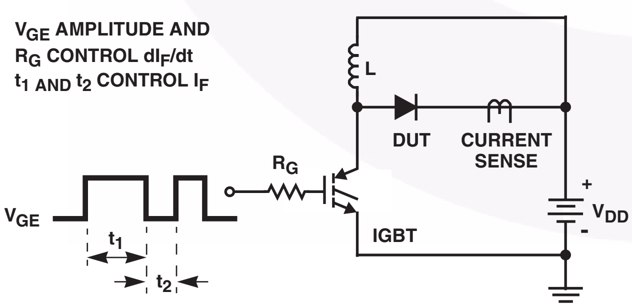


FIGURE 7. t_{rr} TEST CIRCUIT

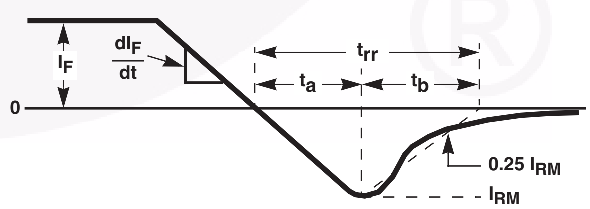


FIGURE 8. t_{rr} WAVEFORMS AND DEFINITIONS

Test Circuits and Waveforms (Continued)

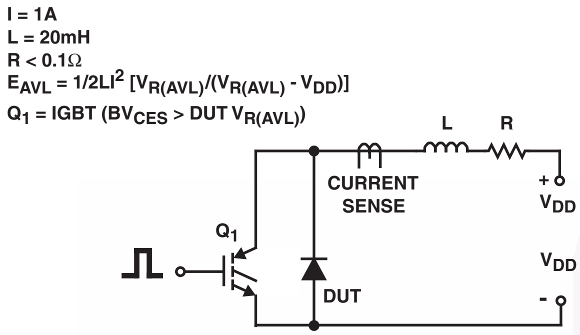


FIGURE 9. AVALANCHE ENERGY TEST CIRCUIT

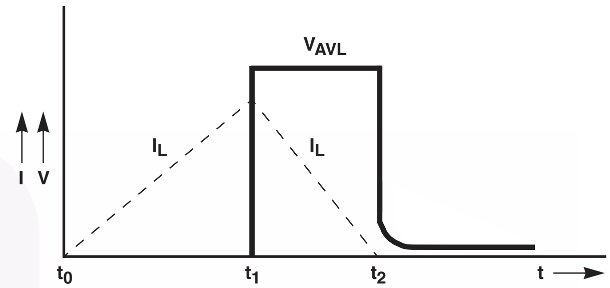


FIGURE 10. AVALANCHE CURRENT AND VOLTAGE WAVEFORMS

Mechanical Dimensions

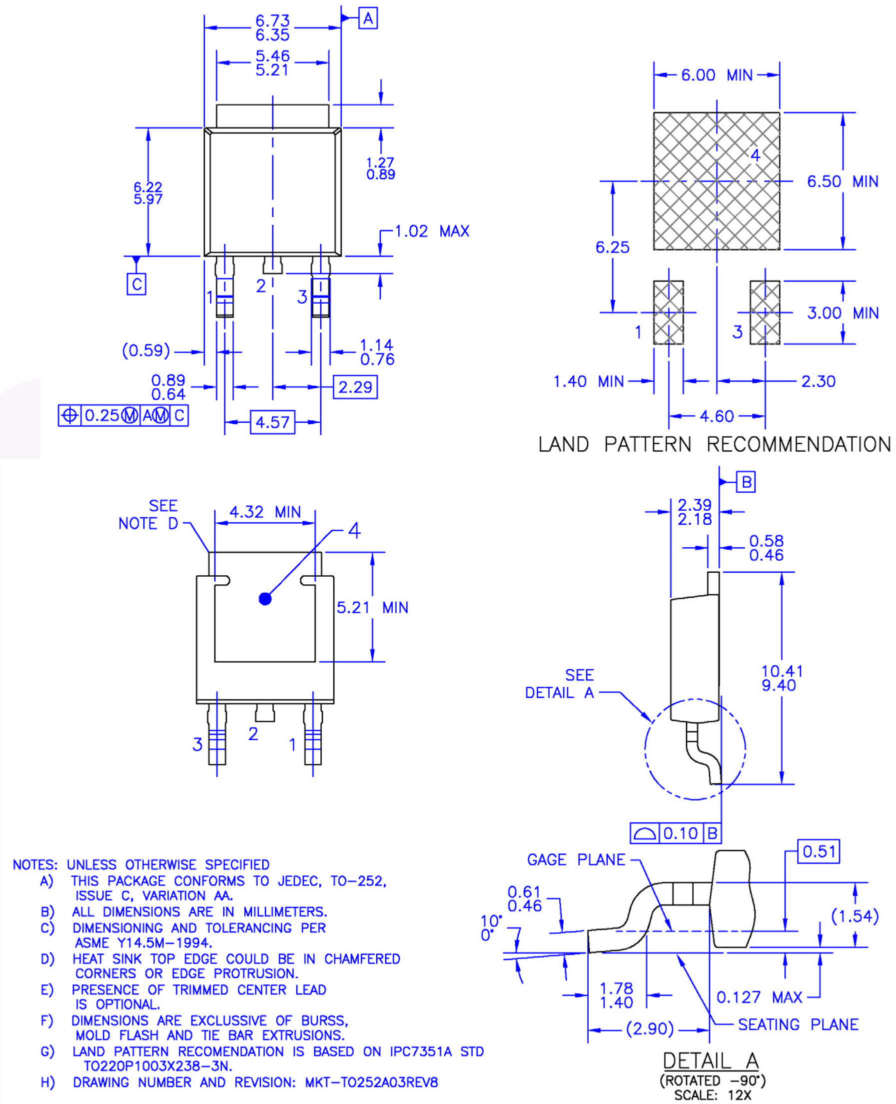


Figure 9. TO-252 3L (DPAK) - TO252 (D-PAK), MOLDED, 3 LEAD,OPTION AA&AB

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