

Data Sheet January 2000 File Number 3750.2

6A, 600V Ultrafast Diodes

The RURD660 and RURD660S are ultrafast diodes with soft recovery characteristics (t_{rr} < 55ns). They have low forward voltage drop and are 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 soft recovery minimize ringing and electrical noise in many power switching circuits reducing power loss in the switching transistors.

Formerly developmental type TA49038.

Ordering Information

PART NUMBER	PACKAGE	BRAND		
RURD660	TO-251	RUR660		
RURD660S	TO-252	RUR660		

NOTE: When ordering, use the entire part number. Add the suffix 9A to obtain the TO-252 variant in the tape and reel, i.e., RURD660 S9A.

Features

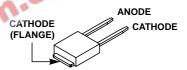
- · Avalanche Energy Rated
- Planar Construction

Applications

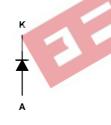
- · Switching Power Supplies
- · Power Switching Circuits
- General Purpose

Packaging

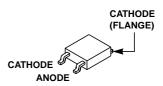
JEDEC STYLE TO-251



Symbol



JEDEC STYLE TO-252



RURD660

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

	RURD660S	UNITS
Peak Repetitive Reverse VoltageV _{RRM}	600	V
Working Peak Reverse VoltageV _{RWM}	600	V
DC Blocking Voltage	600	V
Average Rectified Forward Current $I_{F(AV)}$ ($T_C = 155^{\circ}C$)	6	Α
Repetitive Peak Surge Current	12	Α
Nonrepetitive Peak Surge Current	60	Α
Maximum Power Dissipation	50	W
Avalanche Energy (See Figures 10 and 11)	10	mJ
Operating and Storage Temperature	-65 to 175	°C
Maximum Lead Temperature for Soldering		
Leads at 0.063 in. (1.6mm) from case for 10s	300	°C
Package Body for 10s, see Tech Brief 334T _{PKG}	260	°C

RURD660, RURD660S

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

SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNITS
V _F	I _F = 6A	-	-	1.5	V
	I _F = 6A, T _C = 150°C	-	-	1.2	V
I _R	V _R = 600V	-	-	100	μΑ
	$V_R = 600V, T_C = 150^{\circ}C$	-	-	500	μΑ
t _{rr}	I _F = 1A, dI _F /dt = 200A/μs	-	-	55	ns
	I _F = 6A, dI _F /dt = 200A/μs	-	-	60	ns
t _a	I _F = 6A, dI _F /dt = 200A/μs	-	28	-	ns
t _b	I _F = 6A, dI _F /dt = 200A/μs	-	16	-	ns
Q _{RR}	I _F = 6A, dI _F /dt = 200A/μs	-	150	-	nC
СЈ	V _R = 10V, I _F = 0A	-	25	=	pF
R _{θJC}		-	-	3	°C/W
I_R = Instantaneous re t_{rr} = Reverse recover t_a = Time to reach p	ry time (See Figure 9), summation of eak reverse current (See Figure 9).). f t _a + t _b .	it line from peak Ipm	n	
t _b = Time from peak Q _{RR} = Reverse recover	I_{RM} to projected zero crossing of I_{RI} ry charge.	M based on a straigh	t line from peak I _{RM}	through 25% of I _{RM}	(See Figure 9).
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DEFINITIONS

C_J = Junction capacitance.

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

pw = Pulse width.

D = Duty cycle.

Typical Performance Curves

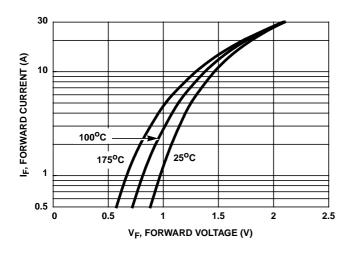


FIGURE 1. FORWARD CURRENT vs FORWARD VOLTAGE

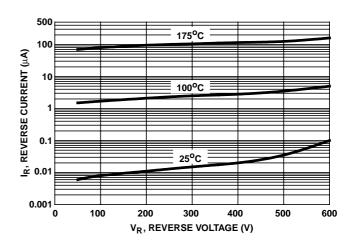


FIGURE 2. REVERSE CURRENT vs REVERSE VOLTAGE

RURD660, RURD660S

Typical Performance Curves (Continued)

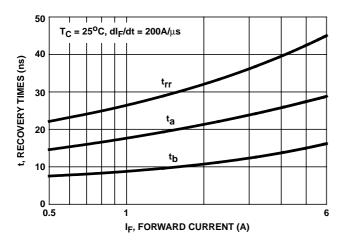


FIGURE 3. t_{rr} , t_a AND t_b CURVES vs FORWARD CURRENT

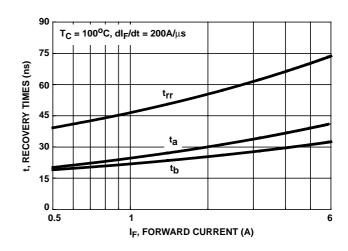


FIGURE 4. t_{rr}, t_a AND t_b CURVES vs FORWARD CURRENT

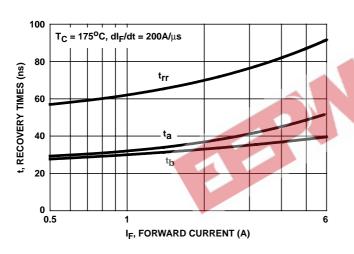


FIGURE 5. t_{rr} , t_a and t_b curves vs forward current

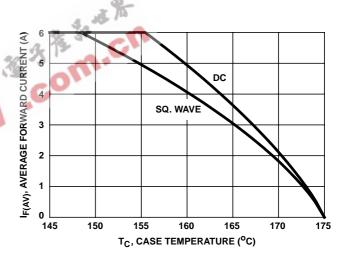


FIGURE 6. CURRENT DERATING CURVE

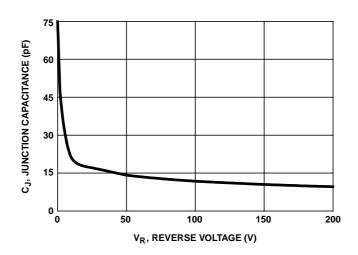


FIGURE 7. JUNCTION CAPACITANCE vs REVERSE VOLTAGE

RURD660, RURD660S

Test Circuits and Waveforms

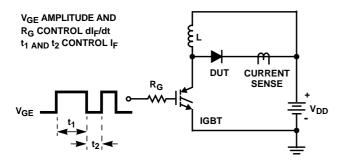


FIGURE 8. t_{rr} TEST CIRCUIT

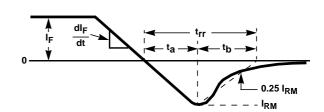


FIGURE 9. t_{rr} WAVEFORMS AND DEFINITIONS

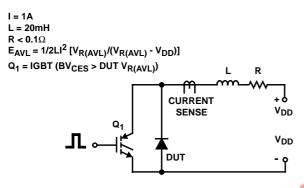


FIGURE 10. AVALANCHE ENERGY TEST CIRCUIT

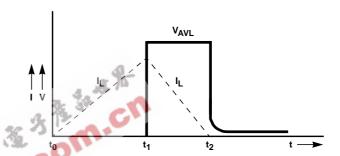


FIGURE 11. AVALANCHE CURRENT AND VOLTAGE WAVEFORMS

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