

RURG30120

Data Sheet

January 2002

30A, 1200V Ultrafast Diode

The RURG30120 is an ultrafast diode with soft recovery characteristic ($t_{rr} < 110$ ns). It has low forward voltage drop and is silicon nitride passivated ion-implanted epitaxial planar construction.

This device is intended for use as a freewheeling/clamping diode and rectifier in a variety of switching power supplies and other power switching applications. Its low stored charge and ultrafast recovery with soft recovery characteristics minimize ringing and electrical noise in many power switching circuits, reducing power loss in the switching transistors.

Formally developmental type TA49031.

Ordering Information

PART NUMBER	PACKAGE	BRAND	
RURG30120	TO-247	RURG30120	

NOTE: When ordering, use the entire part number.

Symbol



Features

- Ultrafast with Soft Recovery.....

- Avalanche Energy Rated
- Planar Construction

Applications

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

Packaging

JEDEC STYLE 2 LEAD TO-247



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

	RURG30120	UNITS
Peak Repetitive Reverse Voltage	1200	V
Working Peak Reverse Voltage	1200	V
DC Blocking Voltage	1200	V
Average Rectified Forward Current	30	А
Repetitive Peak Surge Current I _{FRM} (Square Wave, 20kHz)	60	А
Nonrepetitive Peak Surge Current I _{FSM} (Halfwave, 1 Phase, 60Hz)	300	А
Maximum Power Dissipation	125	W
Avalanche Energy (See Figure 7 and 8) E _{AVL}	30	mJ
Operating and Storage Temperature	-65 to 175	°C

SYMBOL	TEST CONDITION	MIN	ТҮР	MAX	UNITS
V _F	I _F = 30A	-	-	2.1	V
	$I_{\rm F} = 30$ A, $T_{\rm C} = 150^{\rm o}$ C	-	-	1.9	V
I _R	V _R = 1200V	-	-	250	μA
	$V_{\rm R}$ = 1200V, $T_{\rm C}$ = 150°C	-	-	1	mA
t _{rr}	$I_F = 1A$, $dI_F/dt = 100A/\mu s$	-	-	110	ns
	I _F = 30A, dI _F /dt = 100A/μs	-	-	150	ns
t _a	I _F = 30A, dI _F /dt = 100A/μs	-	90	-	ns
t _b	I _F = 30A, dI _F /dt = 100A/μs	-	45	-	ns
R _{θJC}		-	-	1.2	°C/W

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

DEFINITIONS

 V_F = Instantaneous forward voltage (pw = 300µs, 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. trr, ta AND tb CURVES vs FORWARD CURRENT









FIGURE 7. AVALANCHE ENERGY TEST CIRCUIT



FIGURE 6. trr WAVEFORMS AND DEFINITIONS



FIGURE 8. AVALANCHE CURRENT AND VOLTAGE WAVEFORMS

Test Circuits and Waveforms

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