

RURU10060 Datasheet

 onsemi

DiGi Electronics Part Number	RURU10060-DG
Manufacturer	onsemi
Manufacturer Product Number	RURU10060
Description	DIODE GEN PURP 600V 100A TO218
Detailed Description	Diode 600 V 100A Through Hole TO-218

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Purchase and inquiry

Manufacturer Product Number:

RURU10060

Series:

-

Technology:

Standard

Current - Average Rectified (Io):

100A

Speed:

Fast Recovery =< 500ns, > 200mA (Io)

Current - Reverse Leakage @ Vr:

250 μ A @ 600 V

Mounting Type:

Through Hole

Supplier Device Package:

TO-218

Base Product Number:

RURU10

Manufacturer:

onsemi

Product Status:

Obsolete

Voltage - DC Reverse (Vr) (Max):

600 V

Voltage - Forward (Vf) (Max) @ If:

1.6 V @ 100 A

Reverse Recovery Time (trr):

100 ns

Capacitance @ Vr, F:

-

Package / Case:

TO-218-1

Operating Temperature - Junction:

-65°C ~ 175°C

Environmental & Export classification

RoHS Status:

RoHS non-compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.10.0080

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

100A, 600V Ultrafast Diode

The RURU10060 is an ultrafast diode with soft recovery characteristics ($t_{rr} < 80\text{ns}$). It has low forward voltage drop and is of 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 characteristic minimizes ringing and electrical noise in many power switching circuits reducing power loss in the switching transistors.

Formerly development type TA49019.

Ordering Information

PART NUMBER	PACKAGE	BRAND
RURU10060	TO-218	RURU10060

NOTE: When ordering, use the entire part number.

Symbol



Features

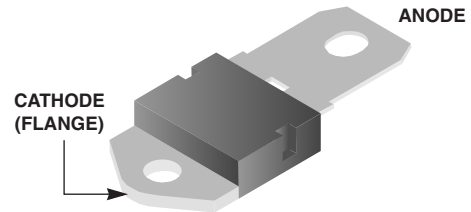
- Ultrafast with Soft Recovery <80ns
- Operating Temperature 175°C
- Reverse Voltage 600V
- Avalanche Energy Rated
- Planar Construction

Applications

- Switching Power Supplies
- Power Switching Circuits
- General Purpose

Packaging

JEDEC STYLE SINGLE LEAD TO-218



Absolute Maximum Ratings $T_C = 25^\circ\text{C}$

	RURU10060	UNITS
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 $I_{F(AV)}$ ($T_C = 70^\circ\text{C}$)	100	A
Repetitive Peak Surge Current I_{FRM} (Square Wave, 20kHz)	200	A
Nonrepetitive Peak Surge Current I_{FSM} (Halfwave, 1 Phase, 60Hz)	1000	A
Maximum Power Dissipation P_D	210	W
Avalanche Energy (See Figures 7 and 8) E_{AVL}	50	mJ
Operating and Storage Temperature T_{STG}, T_J	-65 to 175	°C

RURU10060**Electrical Specifications** $T_C = 25^\circ\text{C}$, Unless Otherwise Specified

SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNITS
V_F	$I_F = 100\text{A}$	-	-	1.6	V
	$I_F = 100\text{A}, T_C = 150^\circ\text{C}$	-	-	1.4	V
I_R	$V_R = 600\text{V}$	-	-	250	μA
	$V_R = 600\text{V}, T_C = 150^\circ\text{C}$	-	-	2.0	mA
t_{rr}	$I_F = 1\text{A}, dI_F/dt = 100\text{A}/\mu\text{s}$	-	-	80	ns
	$I_F = 100\text{A}, dI_F/dt = 100\text{A}/\mu\text{s}$	-	-	100	ns
t_a	$I_F = 100\text{A}, dI_F/dt = 100\text{A}/\mu\text{s}$	-	45	-	ns
t_b	$I_F = 100\text{A}, dI_F/dt = 100\text{A}/\mu\text{s}$	-	25	-	ns
$R_{\theta JC}$		-	-	0.71	$^\circ\text{C}/\text{W}$

DEFINITIONS

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

I_R = Instantaneous reverse current.

t_{rr} = Reverse recovery time 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.

p_w = Pulse width.

D = Duty cycle.

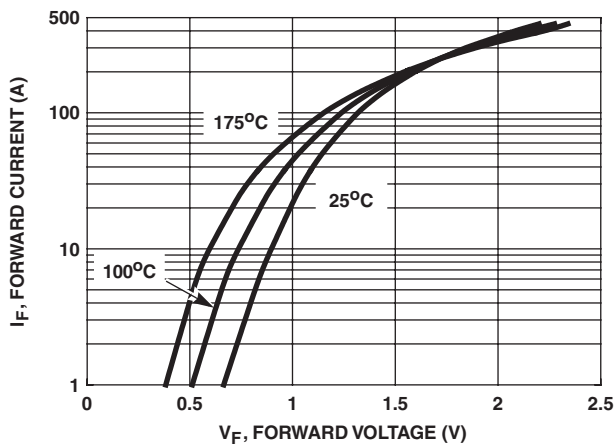
Typical Performance Curves

FIGURE 1. FORWARD CURRENT vs FORWARD VOLTAGE

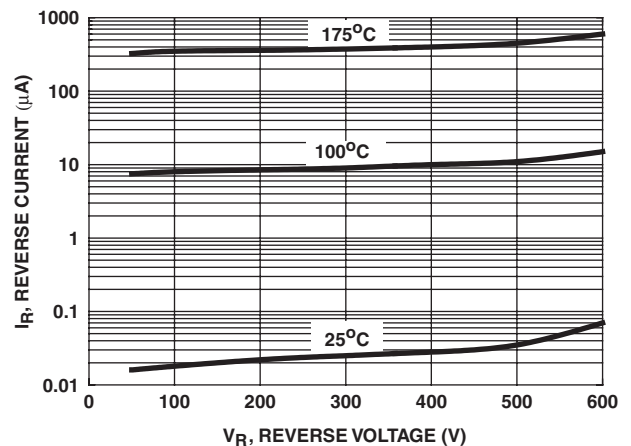


FIGURE 2. REVERSE CURRENT vs REVERSE VOLTAGE

RURU10060

Typical Performance Curves (Continued)

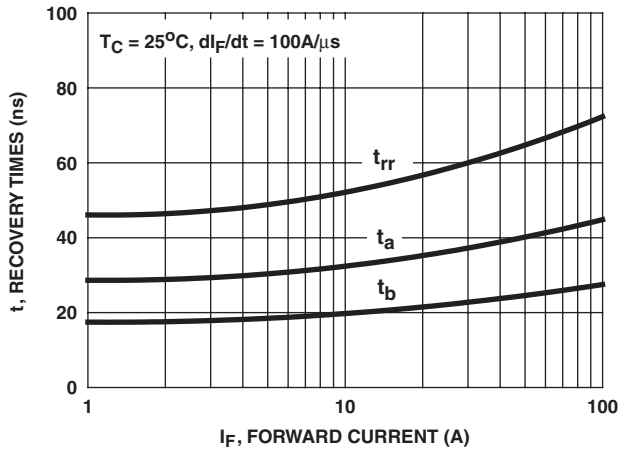


FIGURE 3. t_{rr} , t_a AND t_b CURVES vs FORWARD CURRENT

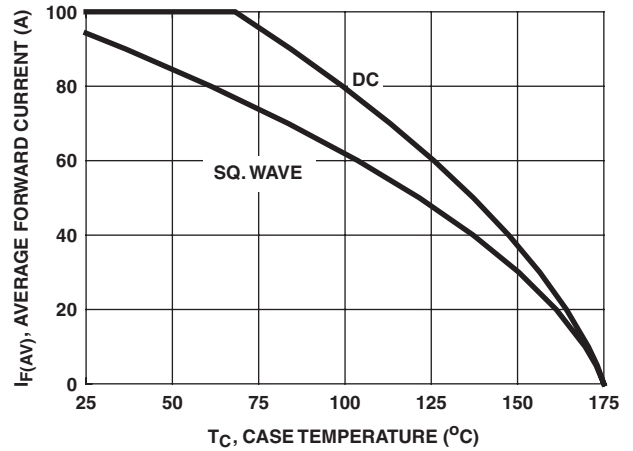


FIGURE 4. CURRENT DERATING CURVE

Test Circuits and Waveforms

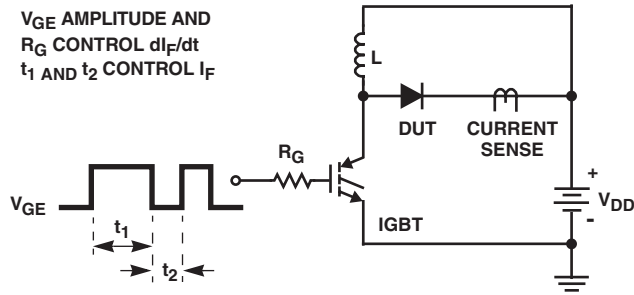


FIGURE 5. t_{rr} TEST CIRCUIT

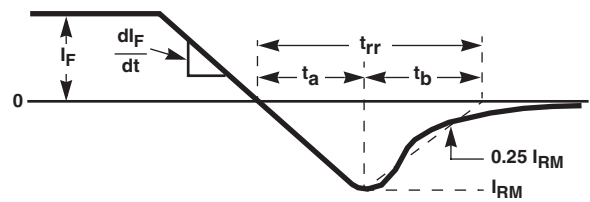


FIGURE 6. t_{rr} WAVEFORMS AND DEFINITIONS

$I = 1.6\text{A}$
 $L = 40\text{mH}$
 $R < 0.1\Omega$
 $E_{AVL} = 1/2LI^2 [V_{R(AVL)}/(V_{R(AVL)} - V_{DD})]$
 $Q_1 = \text{IGBT (}BV_{CES} > \text{DUT } V_{R(AVL)})$

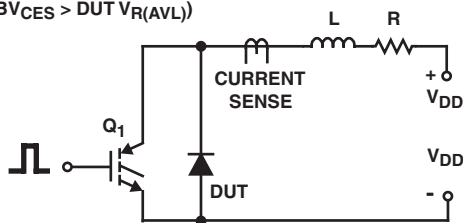


FIGURE 7. AVALANCHE ENERGY TEST CIRCUIT

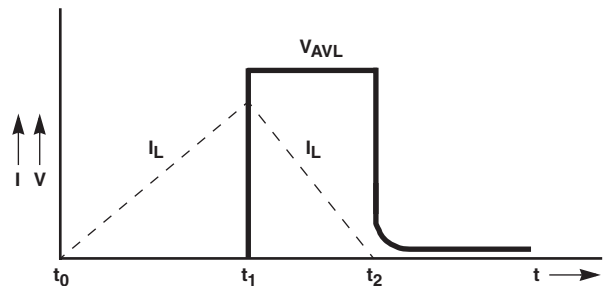


FIGURE 8. AVALANCHE CURRENT AND VOLTAGE WAVEFORMS

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