Ultrafast Dual Diode

12 A, 200 V

RURD620CCS9A

The RURD620CCS9A is an ultrafast dual 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.

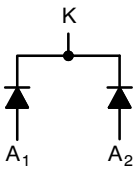
Features

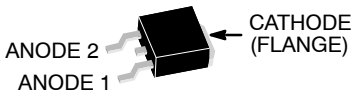
- Ultrafast Recovery t_{rr} = 30 ns (@ I_F = 6 A)
- Max Forward Voltage, V_F = 1.0 V (@ T_C = 25°C)
- Reverse Voltage, V_{RRM} = 200 V
- Avalanche Energy Rated
- RoHS Compliant

Applications

- Switching Power Supplies
- Power Switching Circuits
- General Purpose

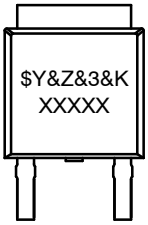
SYMBOL





DPAK3 (TO−252 3 LD)
JEDEC
CASE 369AS

MARMARKING DIAGRAM



$Y = **onsemi** Logo
&Z = Assembly Plant Code
&3 = 3−Digit Date Code
&K = 2−Digits Lot Run Traceability Code
XXXXX = Device Code (UR620C, RURD620)

ABSOLUTE MAXIMUM RATINGS (Per Leg)

(T_C = 25°C unless otherwise specified)

Symbol	Rating	Value	Unit
V_{RRM}	Peak Repetitive Reverse Voltage	200	V
V_{RWM}	Working Peak Reverse Voltage	200	V
V_R	DC Blocking Voltage	200	V
$I_{F(AV)}$	Average Rectified Forward Current T_C = 160°C	6	A
I_{FRM}	Repetitive Peak Surge Current Square Wave, 20 kHz	12	A
I_{FSM}	Nonrepetitive Peak Surge Current Halfwave, 1 Phase, 60 Hz	60	A
P_D	Maximum Power Dissipation	45	W
E_{AVL}	Avalanche Energy (See Figures 10 and 11)	10	mJ
T_{STG}, T_J	Operating and Storage Temperature	−65 to 175	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

ORDERING INFORMATION

Part Number	Package	Brand
RURD620CCS9A	TO−252−3L	UR620C
RURD620CCS9A−F085	TO−252−3L	RURD620

NOTE: When ordering, use the entire part number. Add the suffix, 9 A, to obtain the TO−252 variant in tape and reel, i.e., RURD620CCS9A.

ELECTRICAL CHARACTERISTICS (Per Leg) (T_C = 25°C unless otherwise specified)

Symbol	Test Condition	Min	Typ	Max	Unit
V_F	I_F = 6 A	–	–	1.0	V
	I_F = 6 A, T_C = 150°C	–	–	0.83	V
I_R	V_R = 200 V	–	–	100	μA
	V_R = 200 V, T_C = 150°C	–	–	500	μA
t_{rr}	I_F = 1 A, dI_F/dt = 200 A/μs	–	–	25	ns
	I_F = 6 A, dI_F/dt = 200 A/μs	–	–	30	ns
t_a	I_F = 6 A, dI_F/dt = 200 A/μs	–	13	–	ns
t_b	I_F = 6 A, dI_F/dt = 200 A/μs	–	6.5	–	ns
Q_{rr}	I_F = 6 A, dI_F/dt = 200 A/μs	–	20	–	nC
C_J	V_R = 10 V, I_F = 0 A	–	30	–	pF
$R_{\theta JC}$		–	–	3.5	°C/W

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

DEFINITIONS

V_F = Instantaneous forward voltage (pw = 300 μs, D = 2%).
I_R = Instantaneous reverse current.
T_{rr} = Reverse recovery time (See Figure 9), summation of t_a + t_b.
t_a = Time to reach peak reverse current (See Figure 9).
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 9).
Q_{rr} = Reverse recovery charge.
C_J = Junction Capacitance.
$R_{\theta JC}$ = Thermal resistance junction to case. pw = Pulse width.
D = Duty cycle.

TYPICAL PERFORMANCE CURVES

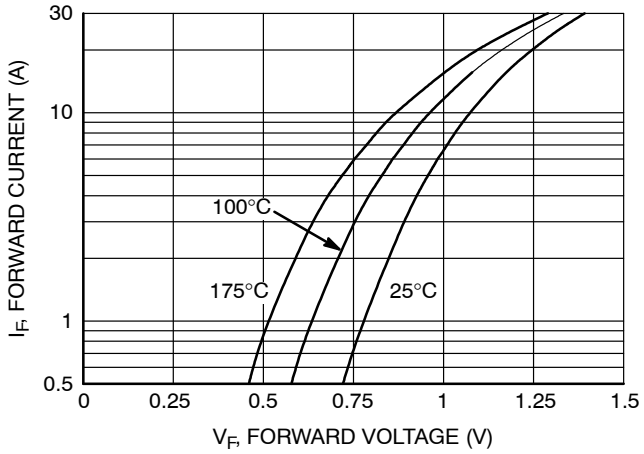


Figure 1. Forward Current vs. Forward Voltage

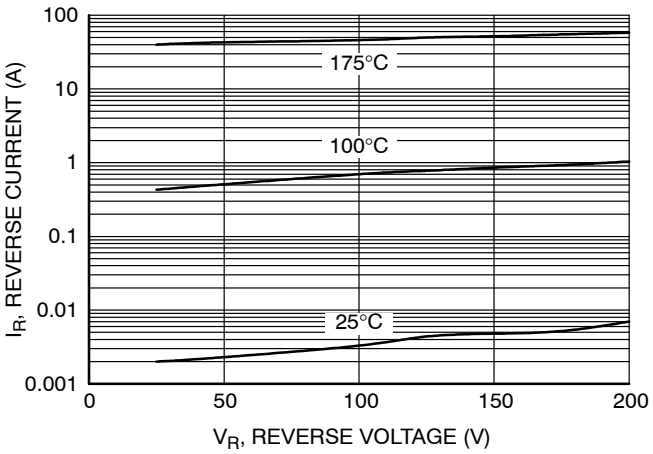


Figure 2. Reverse Current vs. Reverse Voltage

TYPICAL PERFORMANCE CURVES (Continued)

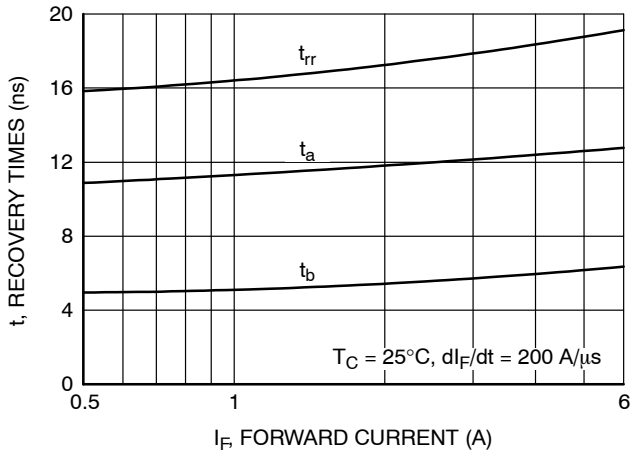


Figure 3. t_{rr}, t_a and t_b Curves vs. Forward Current

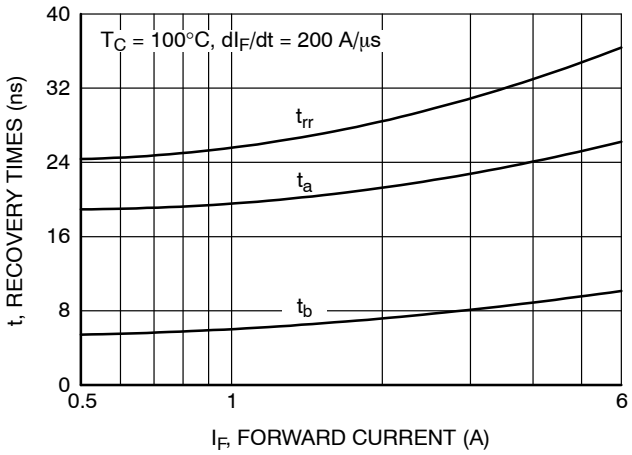


Figure 4. t_{rr}, t_a and t_b Curves vs. Forward Current

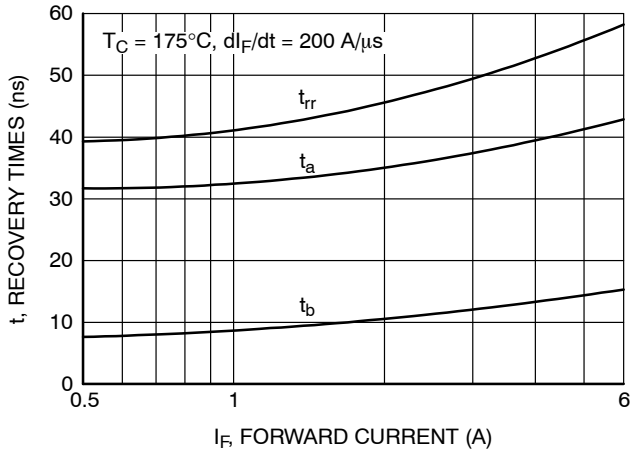


Figure 5. t_{rr}, t_a and t_b Curves vs. Forward Current

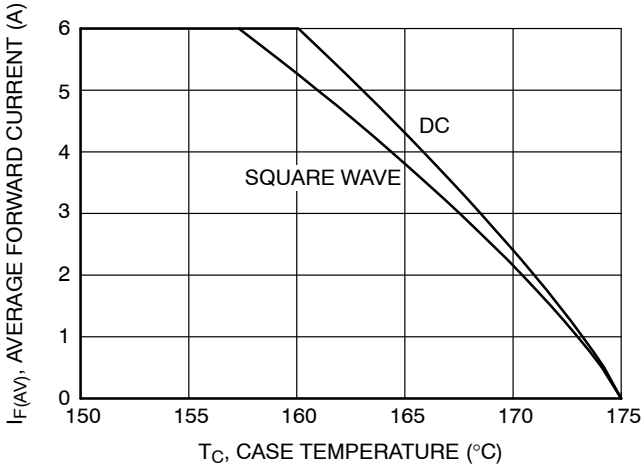


Figure 6. Current Derating Curve

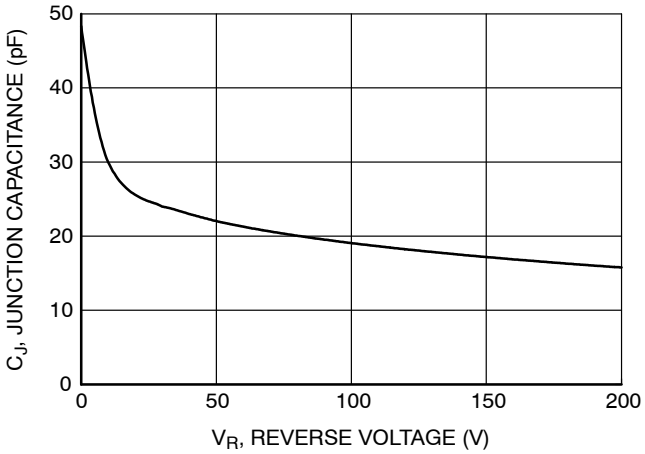


Figure 7. Junction Temperature vs. Reverse Voltage

TEST CIRCUITS AND WAVEFORMS

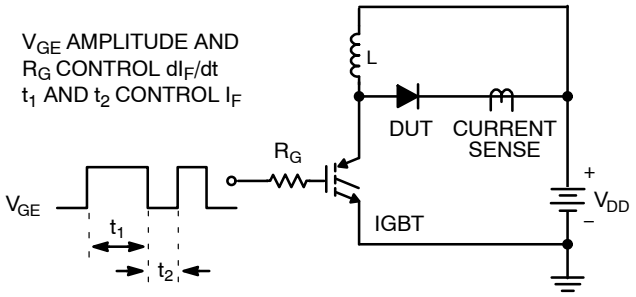


Figure 8. t_{rr} Test Circuit

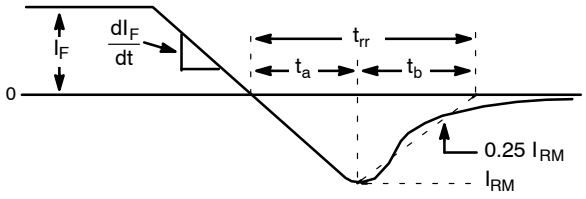


Figure 9. t_{rr} Waveforms and Definitions

I = 1 A
L = 20 mH
R < 0.1 Ω
$E_{AVL} = 1/2LI^2 [V_{R(AVL)} / (V_{R(AVL)} - V_{DD})]$
Q_1 = IGBT (BV_{CES} > DUT $V_{R(AVL)}$)

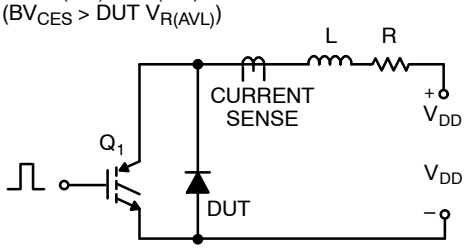


Figure 10. Avalanche Energy Test Circuit

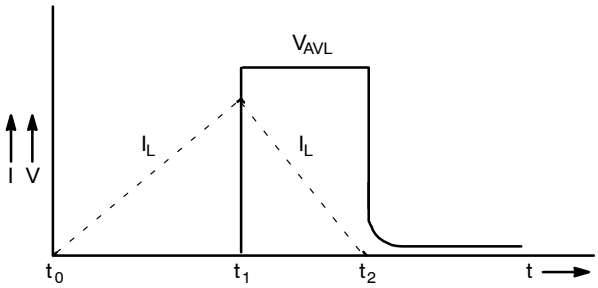
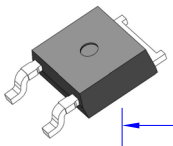


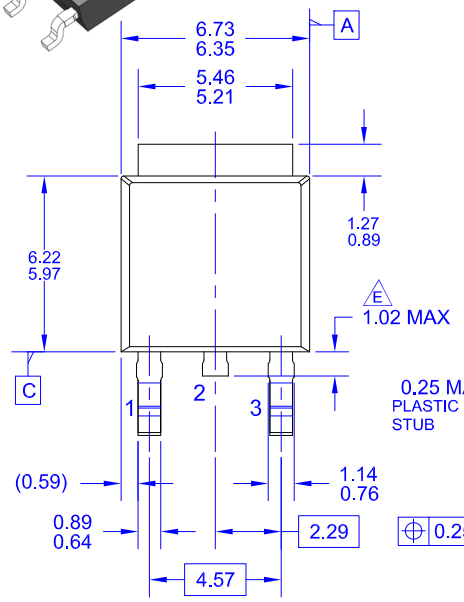
Figure 11. Avalanche Current and Voltage Waveforms

MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

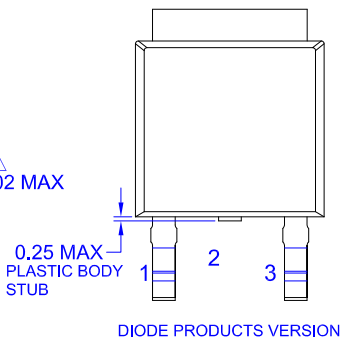
DPAK3 (TO−252 3 LD)
CASE 369AS
ISSUE O

DATE 30 SEP 2016



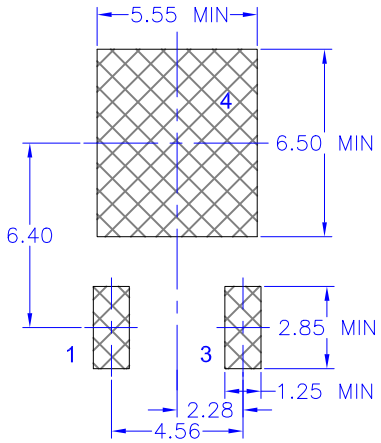


NON-DIODE PRODUCTS VERSION

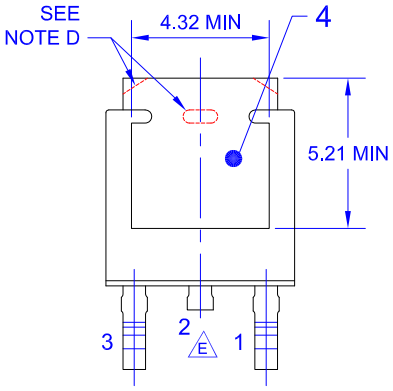


DIODE PRODUCTS VERSION

0.25 M A M C



LAND PATTERN RECOMMENDATION



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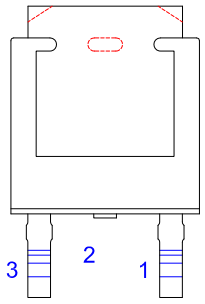

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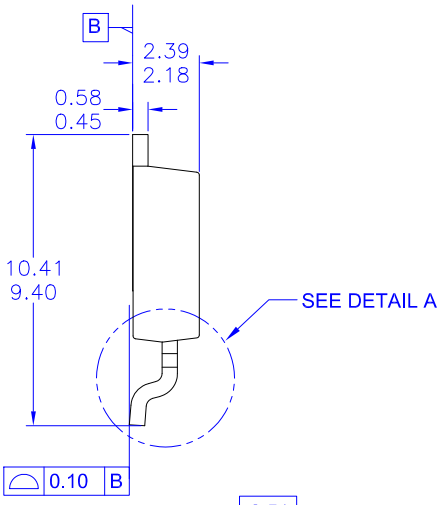
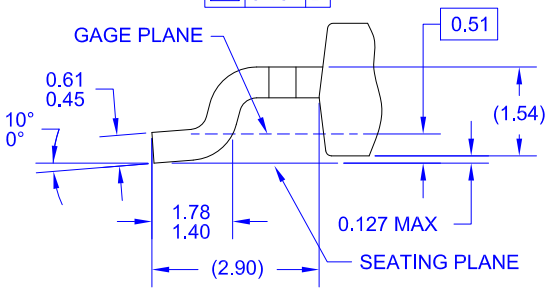


NOTES: UNLESS OTHERWISE SPECIFIED
A) THIS PACKAGE CONFORMS TO JEDEC, TO-252, ISSUE C, VARIATION AA.
B) ALL DIMENSIONS ARE IN MILLIMETERS.
C) DIMENSIONING AND TOLERANCING PER ASME Y14.5M-2009.
D) SUPPLIER DEPENDENT MOLD LOCKING HOLES OR CHAMFERED CORNERS OR EDGE PROTRUSION.
E) TRIMMED CENTER LEAD IS PRESENT ONLY FOR DIODE PRODUCTS
F) DIMENSIONS ARE EXCLUSSIVE OF BURSS, MOLD FLASH AND TIE BAR EXTRUSIONS.
G) LAND PATTERN RECOMENDATION IS BASED ON IPC7351A STD TO228P991X239-3N.



DETAIL A
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DESCRIPTION:	**DPAK3 (TO−252 3 LD)**	**PAGE 1 OF 1**

PUBLICATION ORDERING INFORMATION

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