

MUR3040PT, RURH1540CC, MUR3060PT, RURH1560CC

Data Sheet January 2002

15A, 400V - 600V Ultrafast Dual Diodes

MUR3040PT, RURH1540CC, MUR3060PT, and RURH1560CC are ultrafast dual diodes ($t_{rr} < 55$ ns) with soft recovery characteristics. They have a low forward voltage drop and are of planar, silicon nitride passivated, ion-implanted, epitaxial construction.

These devices are intended for use as energy steering/clamping diodes and rectifiers in a variety of switching power supplies and other power switching applications. Their low stored charge and ultrafast recovery with soft recovery characteristics minimizes ringing and electrical noise in many power switching circuits thus reducing power loss in the switching transistor.

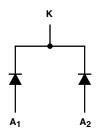
Formerly developmental type TA09905.

Ordering Information

PART NUMBER	PACKAGE	BRAND
MUR3040PT	TO-218AC	MUR3040PT
RURH1540CC	TO-218AC	RURH1540C
MUR3060PT	TO-218AC	MUR3060PT
RURH1560CC	TO-218AC	RURH1560C

NOTE: When ordering, use the entire part number.

Symbol



Features

5ns
5°C
V00

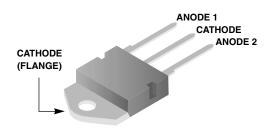
- Avalanche Energy Rated
- Planar Construction

Applications

- · Switching Power Supply
- · Power Switching Circuits
- · General Purpose

Packaging

JEDEC TO-218AC



Absolute Maximum Ratings	(Per Leg) $T_C = 25^{\circ}C$, Unless Otherwise Specified
	8411

	MUR3040PT RURH1540CC	MUR3060PT RURH1560CC	UNITS
Peak Repetitive Reverse Voltage	400	600	V
Working Peak Reverse Voltage	400	600	V
DC Blocking Voltage	400	600	V
Average Rectified Forward Current $I_{F(AV)}$ ($T_C = 145^{\circ}C$)	15	15	Α
Repetitive Peak Surge CurrentI _{FRM} (Square Wave 20kHz)	42	30	Α
Nonrepetitive Peak Surge Current	200	200	Α
Maximum Power Dissipation	100	100	W
Avalanche Energy (See Figures 7 and 8)	20	20	mJ
Operating and Storage Temperature	-55 to 175	-55 to 175	oC

MUR3040PT, RURH1540CC, MUR3060PT, RURH1560CC

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

			MUR3040PT, RURH1540CC		MUR3060PT, RURH1560CC			
SYMBOL	TEST CONDITION	MIN	TYP	MAX	MIN	TYP	MAX	UNITS
V _F	I _F = 15A	-	-	1.25	-	-	1.5	V
	I _F = 15A, T _C = 150°C	-	-	1.12	-	-	1.2	V
I _R	V _R = 400V	-	-	100	-	-	-	μΑ
	V _R = 600V	-	-	-	-	-	100	μΑ
	$V_R = 400V, T_C = 150^{\circ}C$	-	-	500	-	-	-	μА
	$V_R = 600V, T_C = 150^{\circ}C$	-	-	-	-	-	500	μΑ
t _{rr}	I _F = 1A, dI _F /dt = 100A/μs	-	-	55	-	-	55	ns
	I _F = 15A, dI _F /dt = 100A/μs	-	-	60	-	-	60	ns
ta	$I_F = 15A$, $dI_F/dt = 100A/\mu s$	-	30	-	-	30	-	ns
t _b	I _F = 15A, dI _F /dt = 100A/μs	-	17	-	-	20	-	ns
$R_{ heta JC}$		-	-	1.5	-	-	1.5	°C/W

DEFINITIONS

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

I_R = Instantaneous reverse current.

 t_{rr} = Reverse recovery time at $dI_F/dt = 100A/\mu s$ (See Figure 6), summation of $t_a + t_b$.

 t_a = Time to reach peak reverse current at dI_F/dt = 100A/ μ s (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

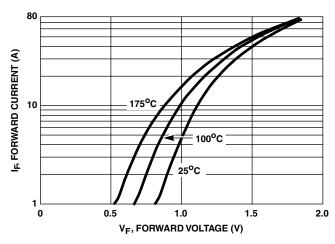


FIGURE 1. FORWARD CURRENT vs FORWARD VOLTAGE

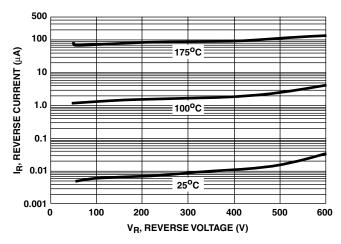


FIGURE 2. REVERSE CURRENT vs REVERSE VOLTAGE

Typical Performance Curves

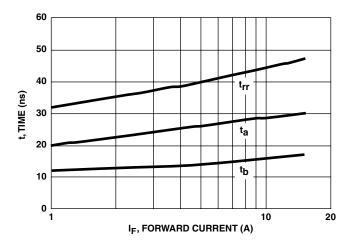


FIGURE 3. t_{rr}, t_a AND t_b CURVES vs FORWARD CURRENT

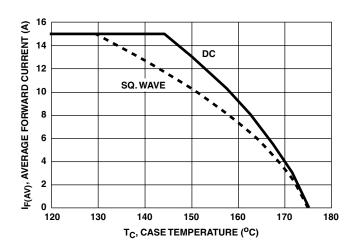


FIGURE 4. CURRENT DERATING CURVE

Test Circuits and Waveforms

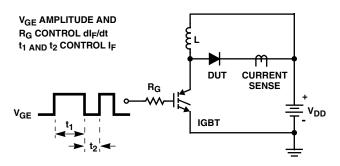


FIGURE 5. t_{rr} TEST CIRCUIT

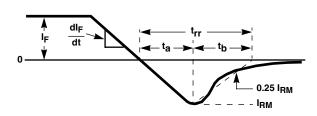


FIGURE 6. t_{rr} WAVEFORMS AND DEFINITIONS

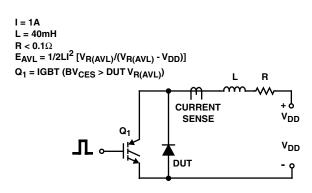


FIGURE 7. AVALANCHE ENERGY TEST CIRCUIT

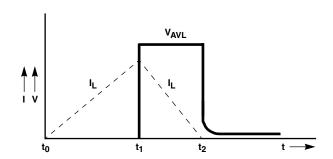


FIGURE 8. AVALANCHE CURRENT AND VOLTAGE WAVEFORMS

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