15A, 200V Ultrafast Dual Diodes

The MUR3020PT and RURH1520CC are ultrafast dual diodes (t_{rr} < 30ns) 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.

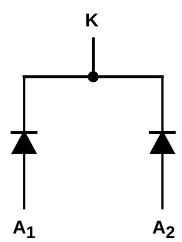
Formerly developmental type TA09926.

Ordering Information

PART NUMBER	PACKAGE	BRAND
MUR3020PT	TO-218AC	MUR3020PT
RURH1520CC	TO-218AC	RURH1520C

NOTE: When ordering, use the entire part number.

Symbol



Features

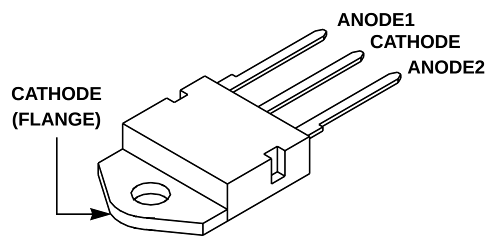
- Ultrafast with Soft Recovery . . . . <30ns
- Operating Temperature. . . . . .175^{o}C
- Reverse Voltage 200V
- Avalanche Energy Rated
- Planar Construction

Applications

- Switching Power Supply
- Power Switching Circuits
- General Purpose

Packaging

JEDEC TO-218AC



Absolute Maximum Ratings (Per Leg) T_C = 25^{o}C

		MUR3020PT, RUR1520CC	UNITS
Peak Repetitive Reverse Voltage	V_{RRM}	200	V
Working Peak Reverse Voltage	V_{RWM}	200	V
DC Blocking Voltage	V_R	200	V
Average Rectified Forward Current (T_C = 157^{o}C)	$I_{F(AV)}$	15	A
Repetitive Peak Surge Current (Square Wave 20kHz)	I_{FRM}	30	A
Nonrepetitive Peak Surge Current (Halfwave 1 Phase 60Hz)	I_{FSM}	200	A
Maximum Power Dissipation	P_D	100	W
Avalanche Energy (See Figures 7 and 8)	E_{AVL}	20	mJ
Operating and Storage Temperature	T_{STG}, T_J	-55 to 175	^{o}C

Electrical Specifications (Per Leg) $T_C = 25^oC$, Unless Otherwise Specified

SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNITS
V_F	I_F = 15A	-	-	1.05	V
	I_F = 15A, $T_C = 150^oC$	-	-	0.85	V
I_R	V_R = 200V	-	-	100	µA
	V_R = 200V, $T_C = 150^oC$	-	-	500	µA
t_{rr}	I_F = 1A, dI_F/dt = 100A/µs	-	-	30	ns
	I_F = 15A, dI_F/dt = 100A/µs	-	-	35	ns
t_a	I_F = 15A, dI_F/dt = 100A/µs	-	20	-	ns
t_b	I_F = 15A, dI_F/dt = 100A/µs	-	10	-	ns
$R_{\theta JC}$		-	-	1.5	$^oC/W$

DEFINITIONS

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

I_R = Instantaneous reverse current.

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

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

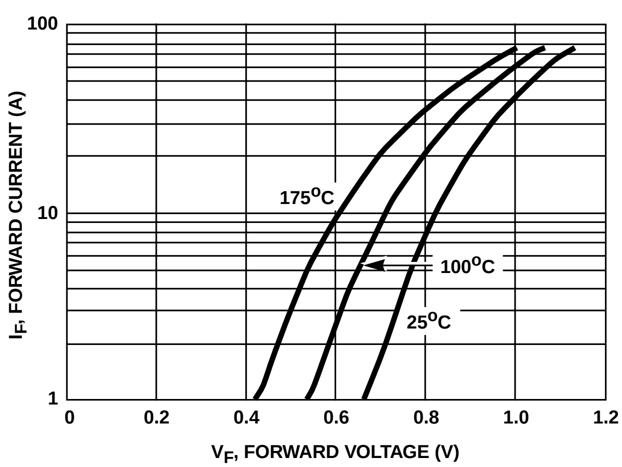


FIGURE 1. FORWARD CURRENT vs FORWARD VOLTAGE

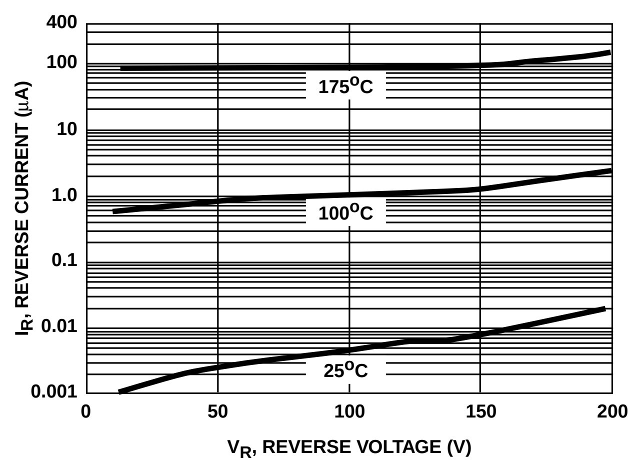


FIGURE 2. REVERSE CURRENT vs REVERSE VOLTAGE

Typical Performance Curves

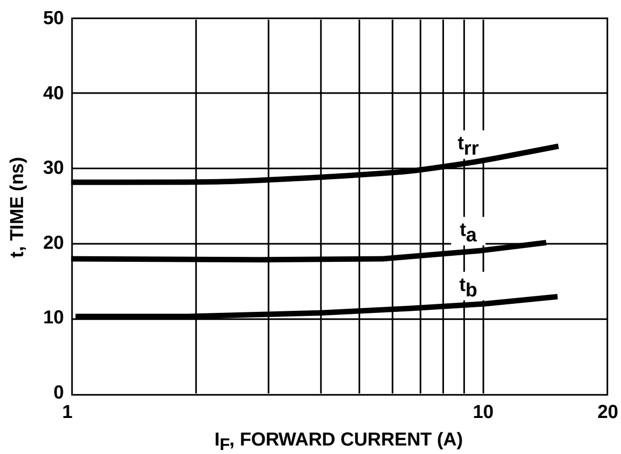


FIGURE 3. t_{rr}, t_a AND t_b CURVES vs FORWARD CURRENT

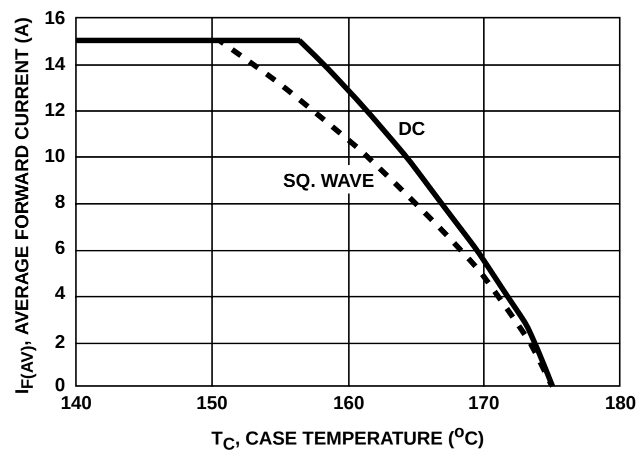


FIGURE 4. CURRENT DERATING CURVE

Test Circuits and Waveforms

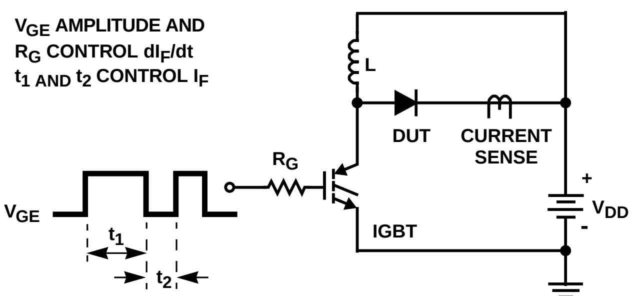


FIGURE 5. t_{rr} TEST CIRCUIT

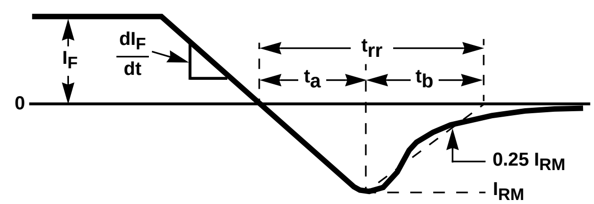


FIGURE 6. t_{rr} WAVEFORMS AND DEFINITIONS

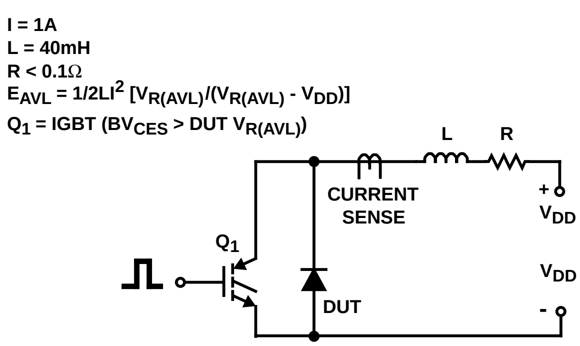


FIGURE 7. AVALANCHE ENERGY TEST CIRCUIT

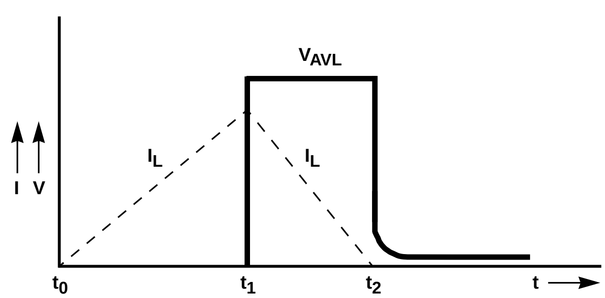


FIGURE 8. AVALANCHE CURRENT AND VOLTAGE WAVEFORMS