RHRU10060

100A, 600V Hyperfast Diode

The RHRU10060 is a hyperfast diode with soft recovery characteristics (t_{rr} < 50ns). It has half the recovery time of ultrafast diodes 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 hyperfast soft recovery minimize ringing and electrical noise in many power switching circuits, thus reducing power loss in the switching transistors.

Formerly developmental type TA49069.

Ordering Information

PART NUMBER	PACKAGE	BRAND
RHRU10060	TO-218	RHRU10060

NOTE: When ordering, use the entire part number.

Symbol

Features

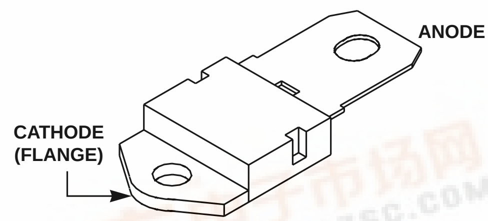
- Hyperfast with Soft Recovery . . . . < 50ns
- Operating Temperature. . . . .175^oC
- Reverse Voltage 600V
- Avalanche Energy Rated
- Planar Construction

Applications

- Switching Power Supplies
- Power Switching Circuits
- General Purpose

Packaging

JEDEC STYLE TO-218



Absolute Maximum Ratings $T_C = 25^oC$

		RHRU10060	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 . . . . ($T_C = 60^oC$)	$I_{F(AV)}$	100	A
Repetitive Peak Surge Current . . . . (Square Wave, 20kHz)	I_{FRM}	200	A
Nonrepetitive Peak Surge Current . . . . (Halfwave, 1 Phase, 60Hz)	I_{FSM}	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	^oC

Electrical Specifications $T_C = 25^oC$, Unless Otherwise Specified

SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNITS
V_F	I_F = 100A	-	-	2.1	V
	I_F = 100A, T_C = 150^{o}C	-	-	1.7	V
I_R	V_R = 600V	-	-	250	µA
	V_R = 600V, T_C = 150^{o}C	-	-	2.0	mA
t_{rr}	I_F = 1A, dI_F/dt = 100A/µs	-	-	50	ns
	I_F = 100A, dI_F/dt = 100A/µs	-	-	60	ns
t_a	I_F = 100A, dI_F/dt = 100A/µs	-	28	-	ns
t_b	I_F = 100A, dI_F/dt = 100A/µs	-	18	-	ns
$R_{\theta JC}$		-	-	0.71	^{o}C/W

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

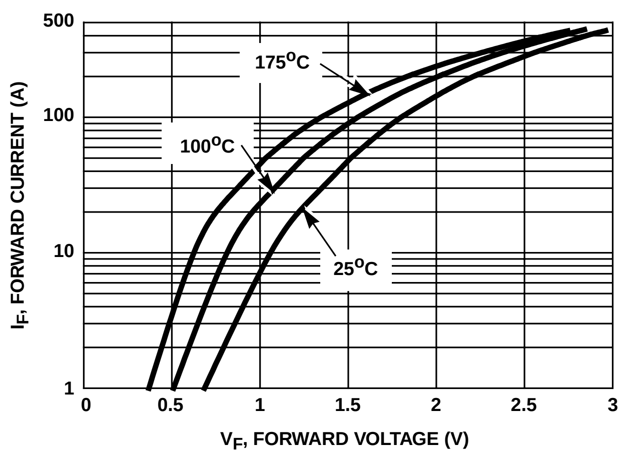


FIGURE 1. FORWARD CURRENT vs FORWARD VOLTAGE

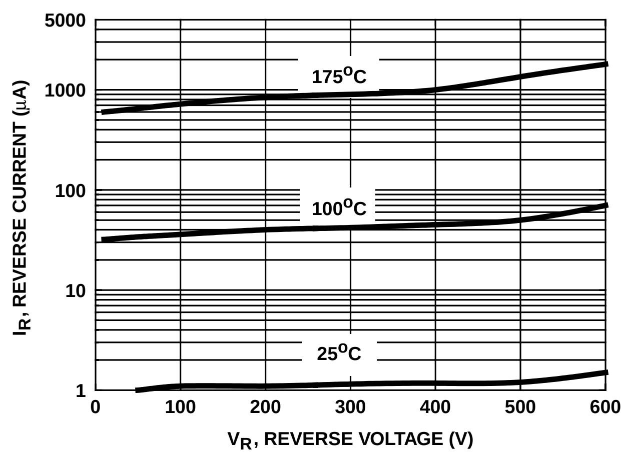


FIGURE 2. REVERSE CURRENT vs REVERSE VOLTAGE

Typical Performance Curves (Continued)

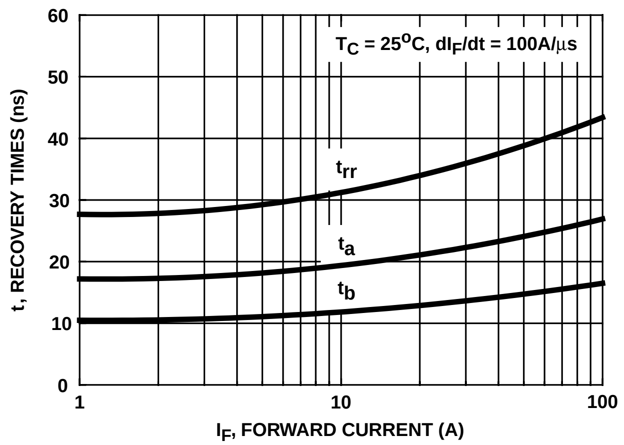


FIGURE 3. t_{rr}, t_a AND t_b CURVES vs FORWARD CURRENT

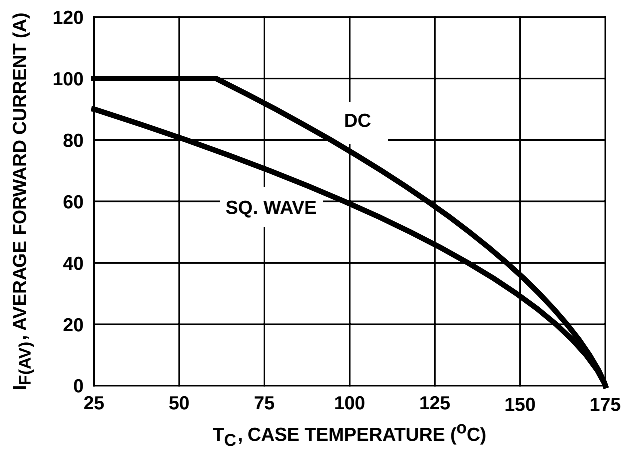


FIGURE 4. CURRENT DERATING CURVE

Test Circuits and Waveforms

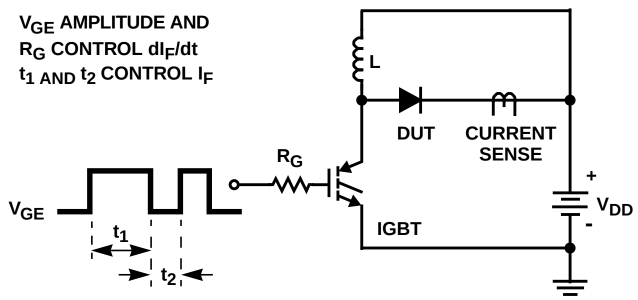


FIGURE 5. t_{rr} TEST CIRCUIT

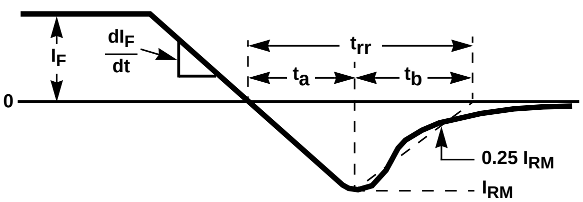


FIGURE 6. t_{rr} WAVEFORMS AND DEFINITIONS

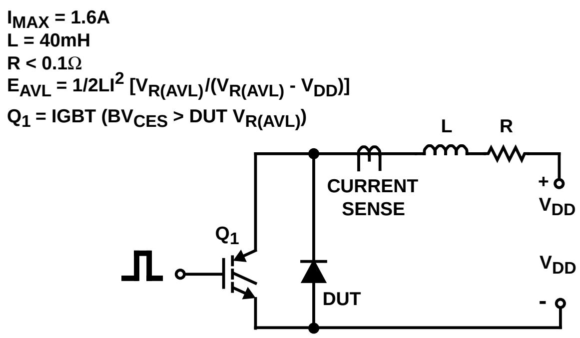


FIGURE 7. AVALANCHE ENERGY TEST CIRCUIT

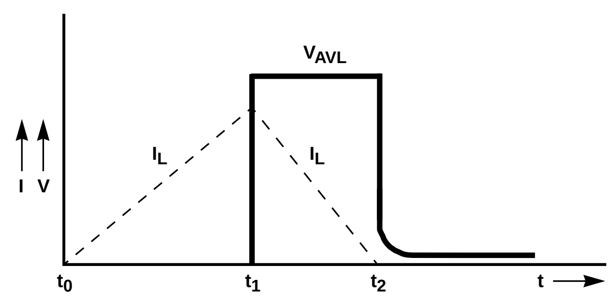


FIGURE 8. AVALANCHE CURRENT AND VOLTAGE WAVEFORMS