

Data Sheet September 2011

8A,600V Hyperfast Diodes

The RHRP860_F085 is hyperfast diodes with soft recovery characteristics (t_{rr} < 30ns). It has half the recovery time of ultrafast diodes and is silicon nitride passivated ion-implanted epitaxial planar construction.

This device is intended for use as freewheeling/clamping diodes and rectifiers 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 reducing power loss in the switching transistors.

Formerly developmental type TA49059.

Ordering Information

PART NUMBER	PACKAGE	BRAND	
RHRP860_F085	TO-220AC	RHRP860_F085	

NOTE: When ordering, use the entire part number.

Symbol



Features

•	Hyperfast with Soft Recovery<30ns
•	Operating Temperature
•	Reverse Voltage Up To600\

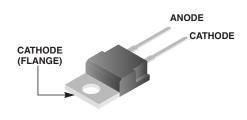
- Avalanche Energy Rated
- Planar Construction

Applications

- · Switching Power Supplies
- Power Switching Circuits
- General Purpose

Packaging

JEDEC TO-220AC



Absolute Maximum Ratings T_C = 25°C, Unless Otherwise Specified RHRP860 F085 UNITS 600 Working Peak Reverse Voltage V_{RWM} 600 DC Blocking Voltage V_R 600 Average Rectified Forward Current I_{F(AV)} 8 $(T_C = 150^{\circ}C)$ 16 Α (Square Wave, 20kHz) 100 Α (Halfwave, 1 Phase, 60Hz) 75 W 20 mJ

οС

-65 to 175

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

SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNITS
V _F	I _F = 8A	-	-	2.1	V
	I _F = 8A, T _C = 150°C	-	-	1.7	V
I _R	V _R = 400V	-	-	-	μΑ
	V _R = 600V	-	-	100	μΑ
	V _R = 400V, T _C = 150°C	-	-	-	μΑ
	V _R = 600V, T _C = 150°C	-	-	500	μΑ
t _{rr}	I _F = 1A, dI _F /dt = 200A/μs	-	-	30	ns
	$I_F = 8A$, $dI_F/dt = 200A/\mu s$	-	-	35	ns
ta	$I_F = 8A$, $dI_F/dt = 200A/\mu s$	-	18	-	ns
t _b	$I_F = 8A$, $dI_F/dt = 200A/\mu s$	-	10	-	ns
Q _{RR}	$I_F = 8A$, $dI_F/dt = 200A/\mu s$	-	56	-	nC
СЛ	V _R = 10V, I _F = 0A	-	25	-	pF
$R_{ heta JC}$		-	-	2	°C/W

DEFINITIONS

 V_F = Instantaneous forward voltage (pw = 300 μ s, 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.

CJ = Junction capacitance.

 $R_{\theta JC}$ = Thermal resistance junction to case.

pw = Pulse width.

D = Duty cycle.

Typical Performance Curves

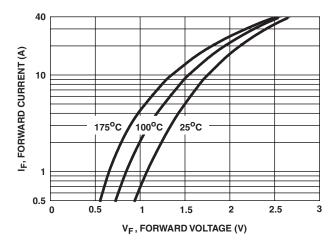


FIGURE 1. FORWARD CURRENT vs FORWARD VOLTAGE

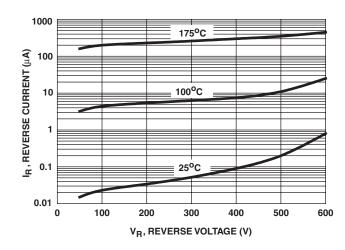


FIGURE 2. REVERSE CURRENT vs REVERSE VOLTAGE

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Typical Performance Curves (Continued)

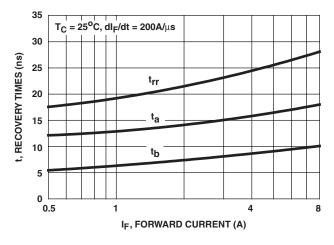


FIGURE 3. t_{rr} , t_a and t_b curves vs forward current

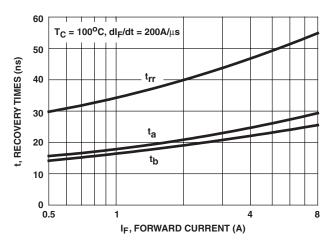


FIGURE 4. t_{rr}, t_a AND t_b CURVES vs FORWARD CURRENT

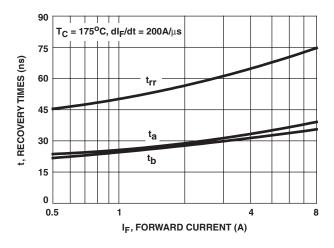


FIGURE 5. t_{rr} , t_a and t_b curves vs forward current

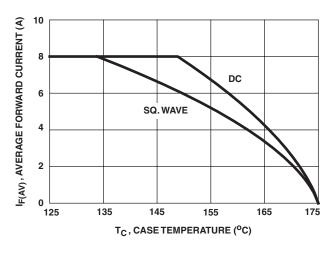


FIGURE 6. CURRENT DERATING CURVE

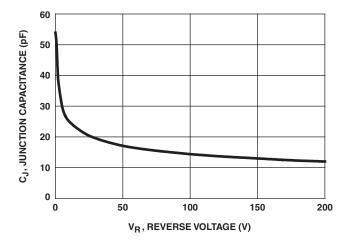


FIGURE 7. JUNCTION CAPACITANCE vs REVERSE VOLTAGE

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Test Circuits and Waveforms

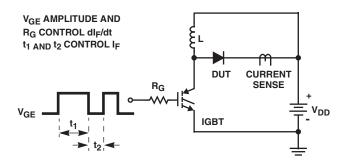


FIGURE 8. t_{rr} TEST CIRCUIT

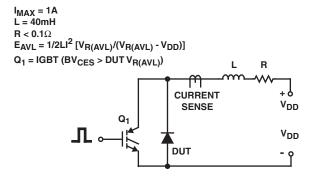


FIGURE 10. AVALANCHE ENERGY TEST CIRCUIT

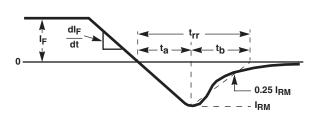


FIGURE 9. t_{rr} WAVEFORMS AND DEFINITIONS

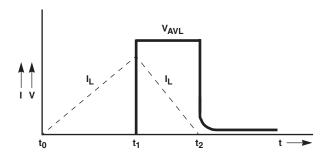


FIGURE 11. AVALANCHE CURRENT AND VOLTAGE WAVEFORMS





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