

15A, 400V - 600V Hyperfast Dual Diodes

The RHRG1540CC and RHRG1560CC are hyperfast dual diodes with soft recovery characteristics ($t_{rr} < 35\text{ns}$). They have half the recovery time of ultrafast diodes and are silicon nitride passivated ion-implanted epitaxial planar construction.

These devices are intended for use as freewheeling/clamping diodes and rectifiers in a variety of switching power supplies and other power switching applications. Their low stored charge and hyperfast soft recovery minimize ringing and electrical noise in many power switching circuits reducing power loss in the switching transistors.

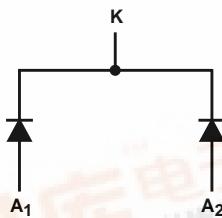
Formerly developmental type TA49061.

Ordering Information

PART NUMBER	PACKAGE	BRAND
RHRG1540CC	TO-247	RHRG1540C
RHRG1560CC	TO-247	RHRG1560C

NOTE: When ordering, use the entire part number.

Symbol



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

	RHRG1540CC	RHRG1560CC	UNITS
Peak Repetitive Reverse Voltage	V_{RRM}	400	600
Working Peak Reverse Voltage	V_{RWM}	400	600
DC Blocking Voltage	V_R	400	600
Average Rectified Forward Current	$I_{F(AV)}$	15	15
($T_C = 140^\circ\text{C}$)			A
Repetitive Peak Surge Current	I_{FRM}	30	30
(Square Wave, 20kHz)			A
Nonrepetitive Peak Surge Current	I_{FSM}	200	200
(Halfwave, 1 Phase, 60Hz)			A
Maximum Power Dissipation	P_D	100	100
Avalanche Energy (See Figure 10 and 11)	E_{AVL}	20	20
Operating and Storage Temperature	T_{STG, T_J}	-65 to 175	$^\circ\text{C}$

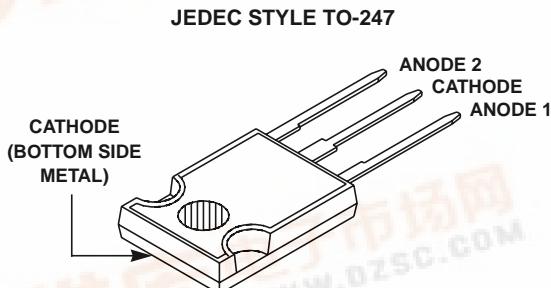
Features

- Hyperfast with Soft Recovery $< 35\text{ns}$
- Operating Temperature 175°C
- Reverse Voltage Up To 600V
- Avalanche Energy Rated
- Planar Construction

Applications

- Switching Power Supplies
- Power Switching Circuits
- General Purpose

Packaging



RHRG1540CC, RHRG1560CC

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

SYMBOL	TEST CONDITION	RHRG1540CC			RHRG1560CC			UNITS
		MIN	TYP	MAX	MIN	TYP	MAX	
V_F	$I_F = 15\text{A}$	-	-	2.1	-	-	2.1	V
	$I_F = 15\text{A}, T_C = 150^\circ\text{C}$	-	-	1.7	-	-	1.7	V
I_R	$V_R = 400\text{V}$	-	-	100	-	-	-	μA
	$V_R = 600\text{V}$	-	-	-	-	-	100	μA
	$V_R = 400\text{V}, T_C = 150^\circ\text{C}$	-	-	500	-	-	-	μA
	$V_R = 600\text{V}, T_C = 150^\circ\text{C}$	-	-	-	-	-	500	μA
t_{rr}	$I_F = 1\text{A}, dI_F/dt = 100\text{A}/\mu\text{s}$	-	-	35	-	-	35	ns
	$I_F = 15\text{A}, dI_F/dt = 100\text{A}/\mu\text{s}$	-	-	40	-	-	40	ns
t_a	$I_F = 15\text{A}, dI_F/dt = 100\text{A}/\mu\text{s}$	-	20	-	-	20	-	ns
t_b	$I_F = 15\text{A}, dI_F/dt = 100\text{A}/\mu\text{s}$	-	15	-	-	15	-	ns
Q_{RR}	$I_F = 15\text{A}, dI_F/dt = 100\text{A}/\mu\text{s}$	-	40	-	-	40	-	nC
C_J	$V_R = 10\text{V}, I_F = 0\text{A}$	-	60	-	-	60	-	pF
$R_{\theta JC}$		-	-	1.5	-	-	1.5	$^\circ\text{C}/\text{W}$

DEFINITIONS

V_F = Instantaneous forward voltage ($pw = 300\mu\text{s}$, $D = 2\%$).

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.

C_J = Junction Capacitance.

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

pw = pulse width.

D = duty cycle.

Typical Performance Curves

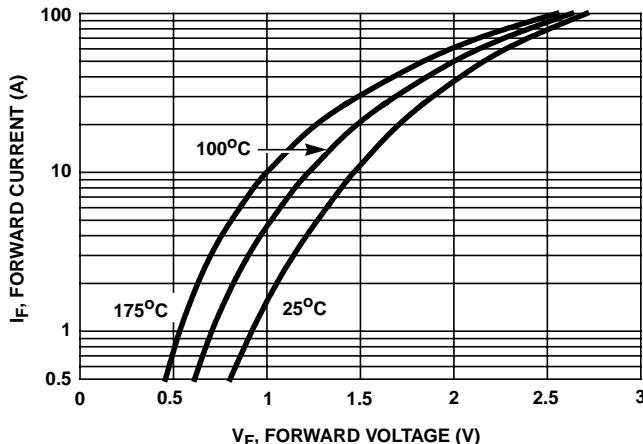


FIGURE 1. FORWARD CURRENT vs FORWARD VOLTAGE

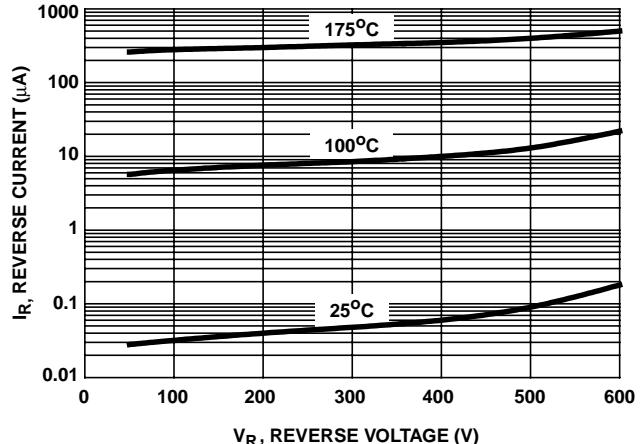


FIGURE 2. REVERSE CURRENT vs REVERSE VOLTAGE

RHRG1540CC, RHRG1560CC

Typical Performance Curves (Continued)

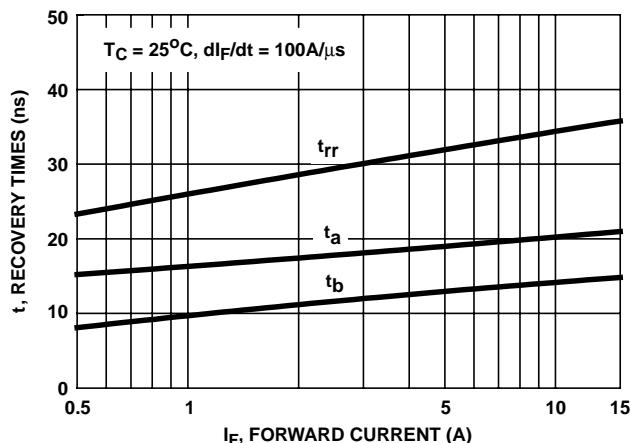


FIGURE 3. t_{rr} , t_a AND t_b CURVES vs FORWARD CURRENT

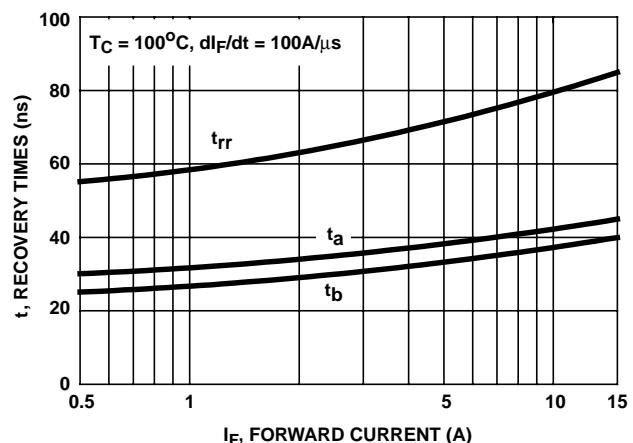


FIGURE 4. t_{rr} , t_a AND t_b CURVES vs FORWARD CURRENT

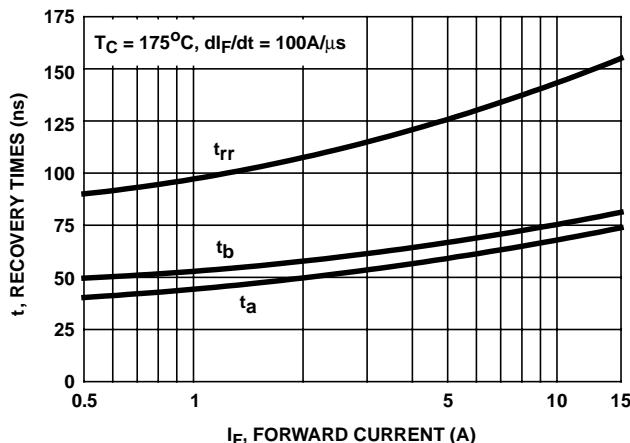


FIGURE 5. t_{rr} , t_a AND t_b CURVES vs FORWARD CURRENT

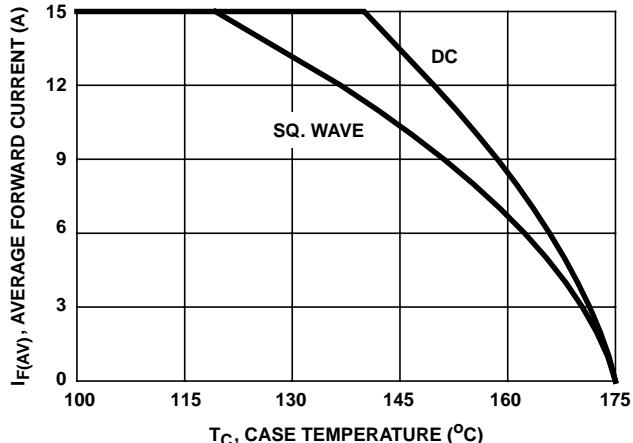


FIGURE 6. CURRENT DERATING CURVE

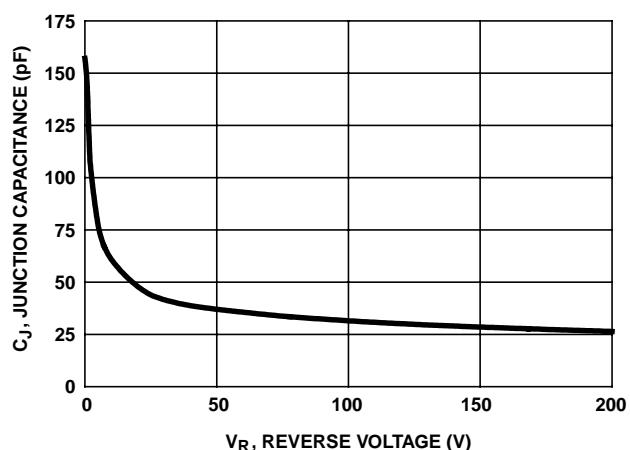


FIGURE 7. JUNCTION CAPACITANCE vs REVERSE VOLTAGE

Test Circuits and Waveforms

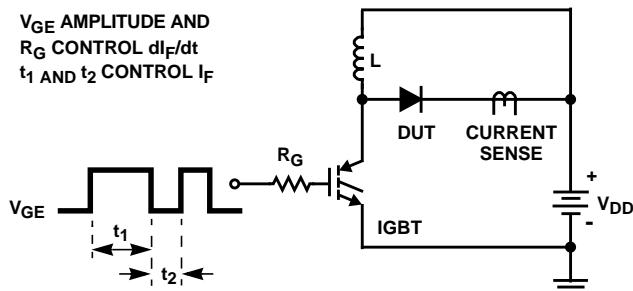


FIGURE 8. t_{rr} TEST CIRCUIT

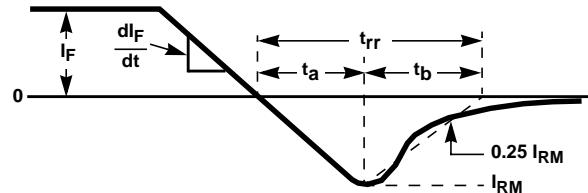


FIGURE 9. t_{rr} WAVEFORMS AND DEFINITIONS

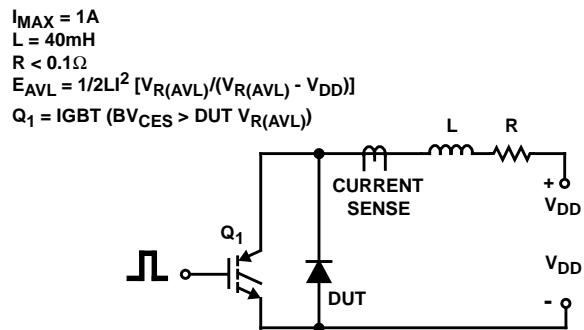


FIGURE 10. AVALANCHE ENERGY TEST CIRCUIT

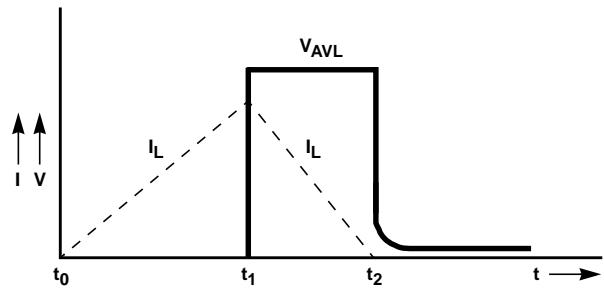


FIGURE 11. AVALANCHE CURRENT AND VOLTAGE WAVEFORMS

All Intersil semiconductor products are manufactured, assembled and tested under **ISO9000** quality systems certification.

Intersil semiconductor products are sold by description only. Intersil Corporation reserves the right to make changes in circuit design and/or specifications at any time without notice. Accordingly, the reader is cautioned to verify that data sheets are current before placing orders. Information furnished by Intersil is believed to be accurate and reliable. However, no responsibility is assumed by Intersil or its subsidiaries for its use; nor for any infringements of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Intersil or its subsidiaries.

For information regarding Intersil Corporation and its products, see web site www.intersil.com