

4A, 400V - 600V Hyperfast Dual Diodes

The RHRD440CC, RHRD460CC, RHRD440CCS and RHRD460CCS are hyperfast dual diodes with soft recovery characteristics ($t_{rr} < 30\text{ns}$). 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.

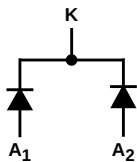
Formerly developmental type TA49055.

Ordering Information

PART NUMBER	PACKAGE	BRAND
RHRD440CC	TO-251AA	HR440C
RHRD460CC	TO-251AA	HR460C
RHRD440CCS	TO-252AA	HR440C
RHRD460CCS	TO-252AA	HR460C

NOTE: When ordering, use the entire part number. Add the suffix 9A to obtain the TO-252 variant in tape and reel, e.g. RHRD460CCS9A.

Symbol



Features

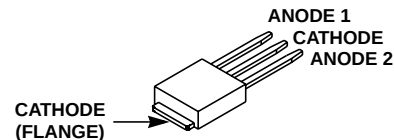
- Hyperfast with Soft Recovery <30ns
- Operating Temperature 175°C
- Reverse Voltage Up To 600V
- Avalanche Energy Rated
- Planar Construction
- Related Literature
 - TB334 "Guidelines for Soldering Surface Mount Components to PC Boards"

Applications

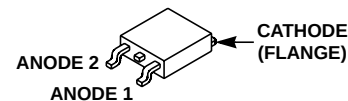
- Switching Power Supplies
- Power Switching Circuits
- General Purpose

Packaging

JEDEC TO-251AA



JEDEC TO-252AA



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

	RHRD440CC, RHRD440CCS	RHRD460CC, RHRD460CCS	UNITS
Peak Repetitive Reverse Voltage V_{RRM}	400	600	V
Working Peak Reverse Voltage V_{RWM}	400	600	V
DC Blocking Voltage V_R	400	600	V
Average Rectified Forward Current $I_{F(AV)}$ $T_C = 155^\circ\text{C}$	4	4	A
Repetitive Peak Surge Current I_{FRM} Square Wave, 20kHz	8	8	A
Nonrepetitive Peak Surge Current I_{FSM} Halfwave, 1 Phase, 60Hz	40	40	A
Maximum Power Dissipation P_D	50	50	W
Avalanche Energy (See Figures 10 and 11) E_{AVL}	10	10	mJ
Operating and Storage Temperature T_{STG}, T_J	-65 to 175	-65 to 175	°C
Maximum Temperature for Soldering			
Leads at 0.063in (1.6mm) from Case for 10s. T_L	300	300	°C
Package Body for 10s, see Tech Brief 334 T_{pkg}	260	260	°C

RHRD440CC, RHRD460CC, RHRD440CCS, RHRD460CCS

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

SYMBOL	TEST CONDITION	RHRD440CC, RHRD440CCS			RHRD460CC, RHRD460CCS			UNITS
		MIN	TYP	MAX	MIN	TYP	MAX	
V_F	$I_F = 4\text{A}$	-	-	2.1	-	-	2.1	V
	$I_F = 4\text{A}, T_C = 150^\circ\text{C}$	-	-	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}	$I_F = 1\text{A}, dI_F/dt = 200\text{A}/\mu\text{s}$	-	-	30	-	-	30	ns
	$I_F = 4\text{A}, dI_F/dt = 200\text{A}/\mu\text{s}$	-	-	35	-	-	35	ns
t_a	$I_F = 4\text{A}, dI_F/dt = 200\text{A}/\mu\text{s}$	-	16	-	-	16	-	ns
t_b	$I_F = 4\text{A}, dI_F/dt = 200\text{A}/\mu\text{s}$	-	7	-	-	7	-	ns
Q_{RR}	$I_F = 4\text{A}, dI_F/dt = 200\text{A}/\mu\text{s}$	-	45	-	-	45	-	nC
C_J	$V_R = 10\text{V}, I_F = 0\text{A}$	-	15	-	-	15	-	pf
$R_{\theta JC}$		-	-	3	-	-	3	$^\circ\text{C}/\text{W}$

DEFINITIONS

V_F = Instantaneous forward voltage (pw = 300 μs , 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 Unless Otherwise Specified

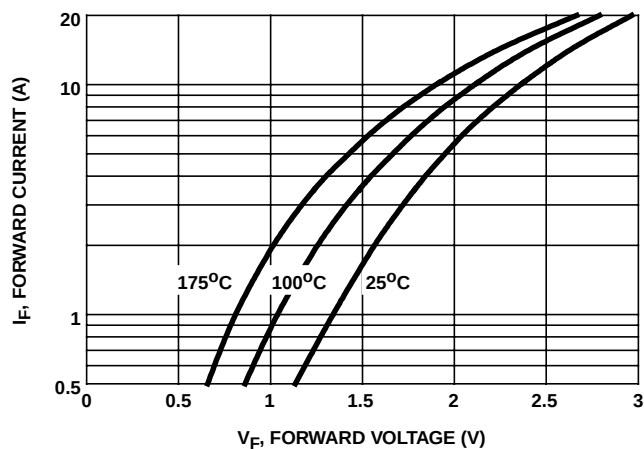


FIGURE 1. FORWARD CURRENT vs FORWARD VOLTAGE

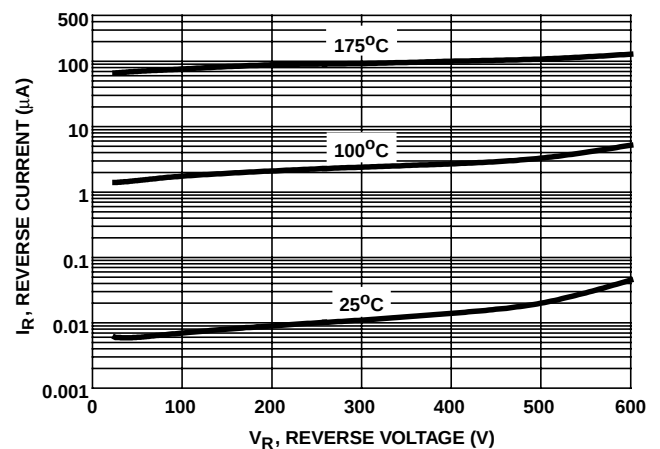


FIGURE 2. REVERSE CURRENT vs REVERSE VOLTAGE

Typical Performance Curves Unless Otherwise Specified (Continued)

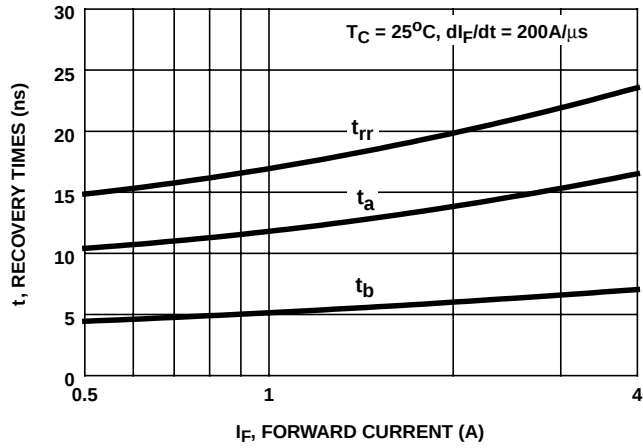


FIGURE 3. t_{rr} , t_a AND t_b CURVES vs FORWARD CURRENT

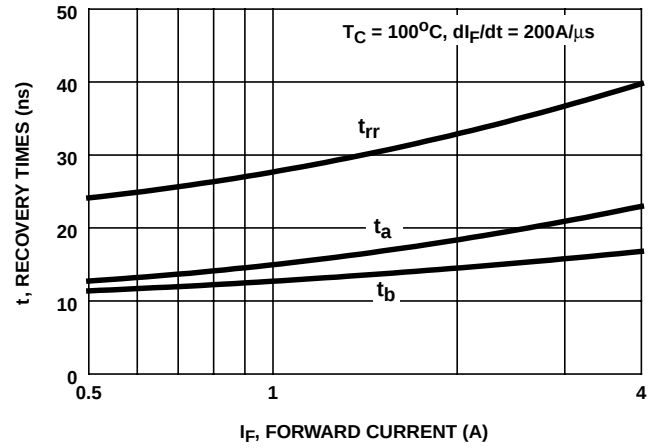


FIGURE 4. t_{rr} , t_a AND t_b CURVES vs FORWARD CURRENT

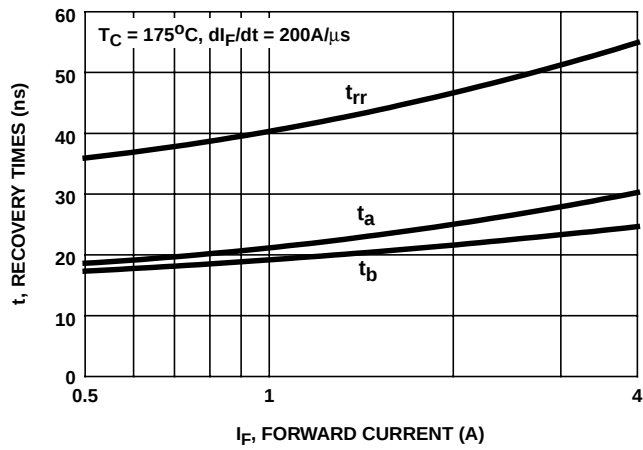


FIGURE 5. t_{rr} , t_a AND t_b CURVES vs FORWARD CURRENT

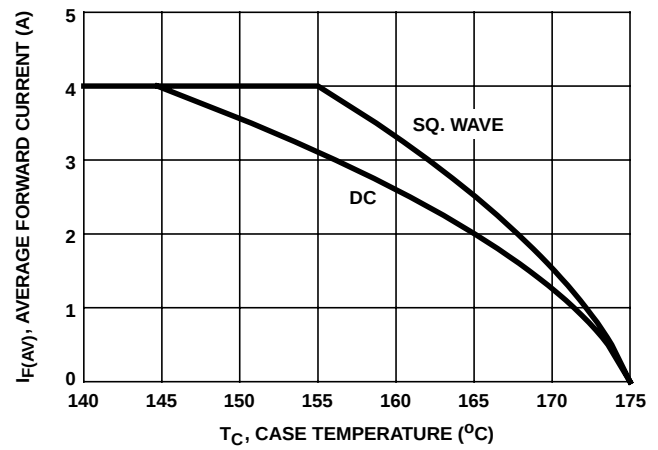


FIGURE 6. CURRENT DERATING CURVE

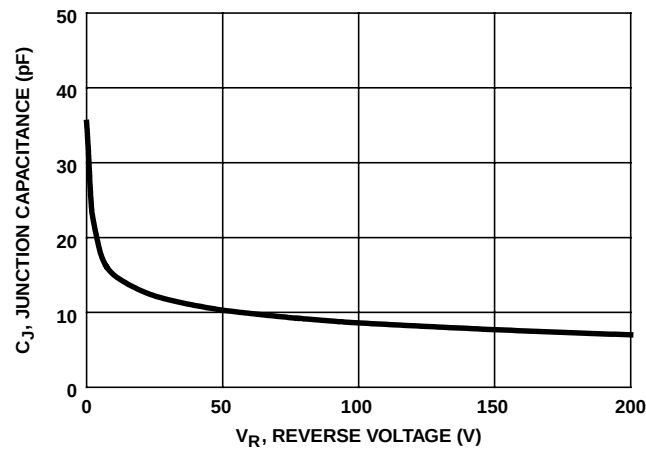


FIGURE 7. JUNCTION CAPACITANCE vs REVERSE VOLTAGE

Test Circuits and Waveforms

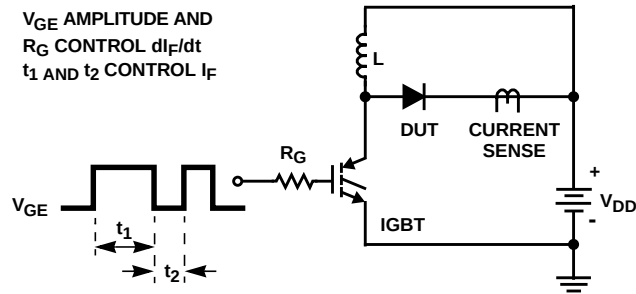


FIGURE 8. t_{rr} TEST CIRCUIT

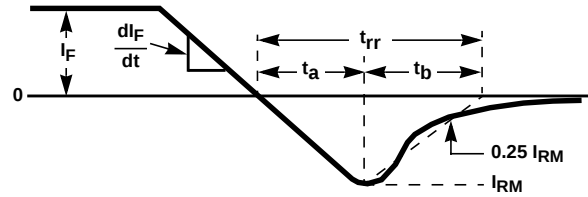


FIGURE 9. t_{rr} WAVEFORMS AND DEFINITIONS

$I_{MAX} = 1A$
 $L = 20mH$
 $R < 0.1\Omega$
 $E_{AVL} = 1/2LI^2 [V_{R(AVL)}/(V_{R(AVL)} - V_{DD})]$
 $Q_1 = IGBT (BV_{CES} > DUT V_{R(AVL)})$

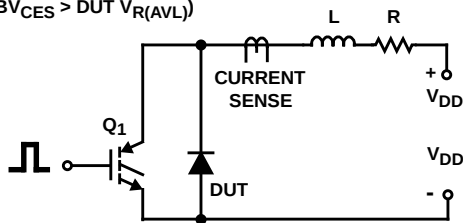


FIGURE 10. AVALANCHE ENERGY TEST CIRCUIT

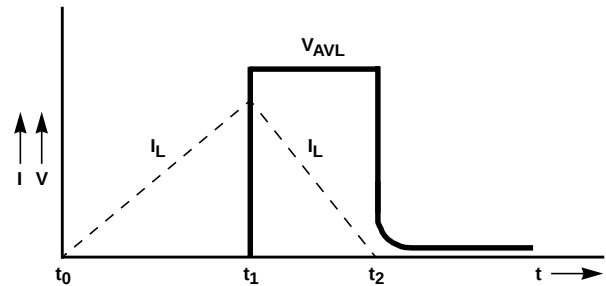


FIGURE 11. AVALANCHE CURRENT AND VOLTAGE WAVEFORMS

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



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.