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Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

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Keep safety first in your circuit designs!

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   Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of nonflammable material or (iii) prevention against any malfunction or mishap.

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HD29029

Dual CCD Drivers

ADE-205-580 (Z)
1st. Edition
Dec. 2000

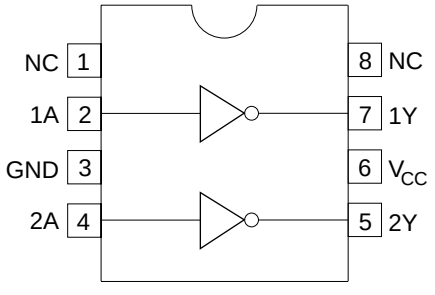
Description

The HD29029 is optimum for CCD drive and has two drivers in a package. The input circuit is operated at TTL level. The outputs are capable of source or sink currents of 0.5 A.

Features

- High-speed operation 7 ns typ in transition times (t_{TLH}, t_{THL}) at C_L = 200 pF
- No external components needed because direct drive is available at TTL level inputs
- Output swing voltage: 12 V
- Sink/Sourse currents: 0.5 A (for each)
- Output cross voltage: 50% typ

Pin Arrangement



(Top view)

Function Table

Input A	Output Y
H	L
L	H

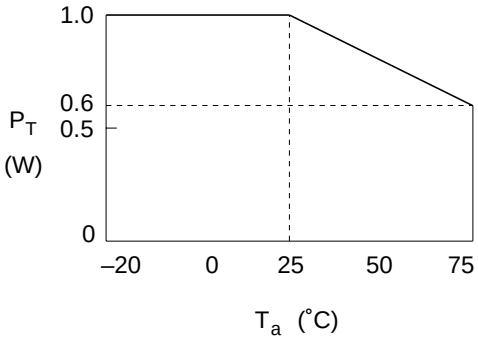
H: High level
L: Low level

Absolute Maximum Ratings

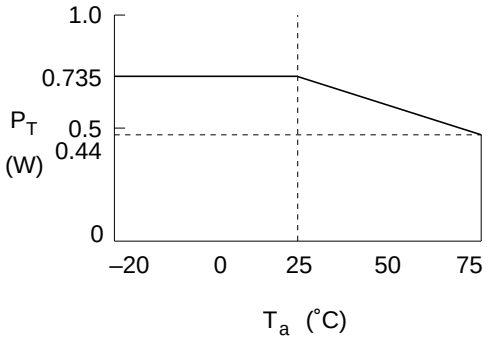
Item	Symbol		Ratings	Unit
Supply Voltage	V_{CC}*1		15	V
Input Voltage	V_{IN}		7	V
Output Current	$I_{O(peak)}$		±0.5	A
Operating Temperature	Ta		–20 to +75	°C
Storage Temperature	Tstg		–65 to +150	°C
Junction Temperature	Tj		150	°C
Power Dissipation per Package	P_T*2	DP-8	1	W
		FP-8	0.735	

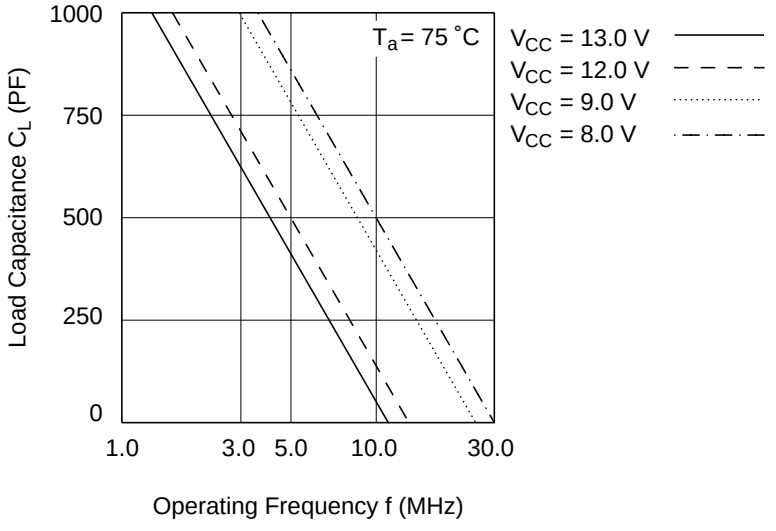
Notes: 1. The voltage value is defined with respect to grund terminal unless otherwise noted.
2. The total power dissipation is at Ta = 25°C. When driving large capacity with high frequency radiation is needed. There fore, delating with 8 mW/°C (DP-8) or 5.9 mW/°C (FP-8) must be done as shown below.
3. The absolute maximum ratings are values which must not individually be eceeded, and furthermore, no two of which may be realized at same time.

(DP–8)


1.0
0.6
0.5
0
P_T
(W)
–20
0
25
50
75
T_a (˚C)

(FP–8D)


1.0
0.735
0.5
0.44
0
P_T
(W)
–20
0
25
50
75
T_a (˚C)


1000
750
500
250
0
Load Capacitance C_L (PF)
T_a = 75 ˚C
V_{CC} = 13.0 V
V_{CC} = 12.0 V
V_{CC} = 9.0 V
V_{CC} = 8.0 V
1.0
3.0
5.0
10.0
30.0
Operating Frequency f (MHz)

Recommended Operating Conditions

Item	Symbol	Min	Typ	max	Unit
Supply Voltage	V_{CC}	8.0	9.0	13.0	V
Operating Temperature	Ta	–20	25	75	°C

Electrical Characteristics (V_{CC} = 8 to 13 V, Ta = –20 to 75°C)

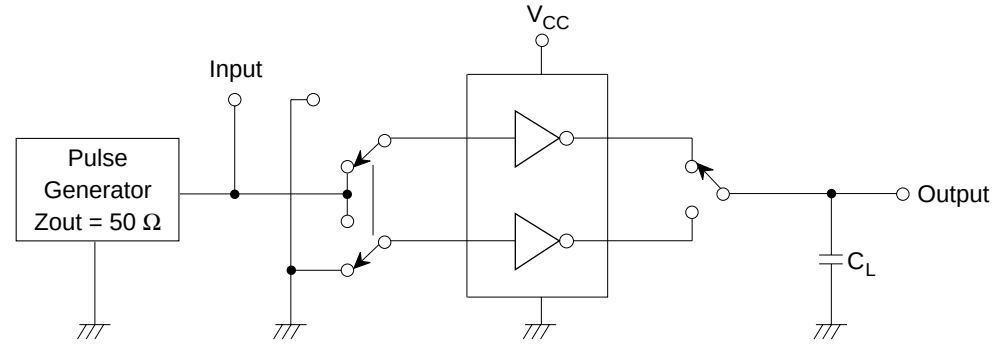
Item	Symbol	Min	Typ	Max	Unit	Conditions
Input Voltage	V_{IH}	2.0	—	—	V	
	V_{IL}	—	—	0.6	V	
Output Voltage	V_{OH}	V_{CC}–2	—	—	V	V_{IL} = 0.6 V, I_{OH} = –1 mA
	V_{OL}	—	—	0.5	V	V_{IH} = 2.0 V, I_{OH} = 1 mA
Input Current	I_{IH}	—	—	20	µA	V_I = 2.7 V
	V_{IL}	—	—	–100	µA	V_I = 0.4 V
Supply Current	I_{CCH}	—	—	10	mA	
	I_{CCL}	—	—	25	mA	
Input Current	I_{LI}	—	—	100	µA	V_I = 7 V
Input Clamp Voltage	V_{IK}	—	—	–1.5	V	I_{IN} = –18 mA

Switching Characteritics (C_L = 200 pF, Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Conditions
Propagation Delay Time	t_{PHL}	—	4.0	15.0	ns	V_{CC} = 9 V
		—	4.0	13.0	ns	V_{CC} = 12 V
	t_{PLH}	—	6.0	15.0	ns	V_{CC} = 9 V
		—	6.0	13.0	ns	V_{CC} = 12 V
Transition Time	t_{THL}	—	8.0	14.0	ns	V_{CC} = 9 V
		—	7.0	12.0	ns	V_{CC} = 12 V
	t_{TLH}	—	8.0	14.0	ns	V_{CC} = 9 V
		—	7.0	12.0	ns	V_{CC} = 12 V

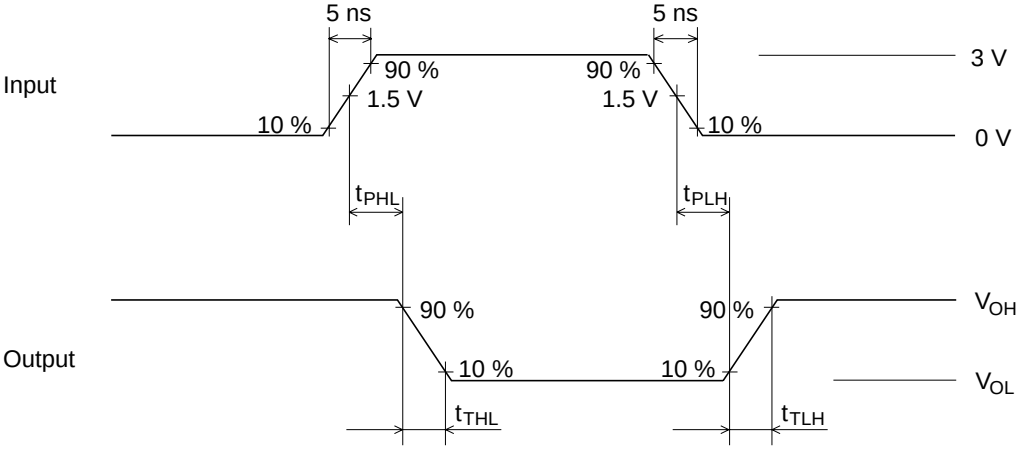
Switching Time Test Method

Test circuit



Note: 1. C_L includes probe and jig capacitance.

Waveforms

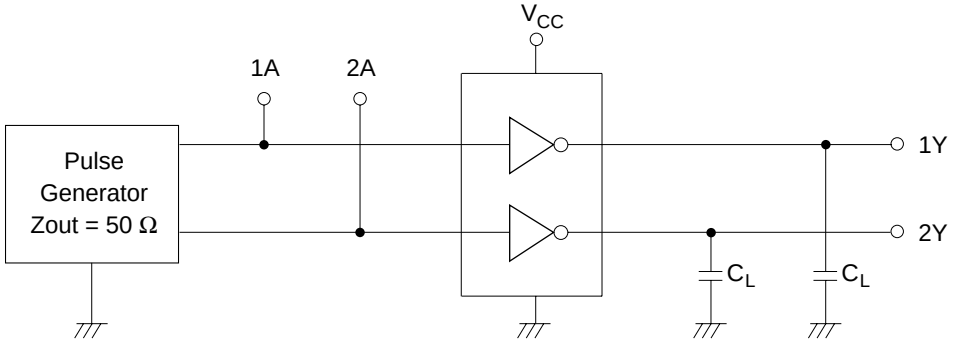


Note: 1. Input Waveforms: f = 1 MHz, duty cycle 50%

Output Characteristics (C_L = 200 pF, Ta = 25°C)

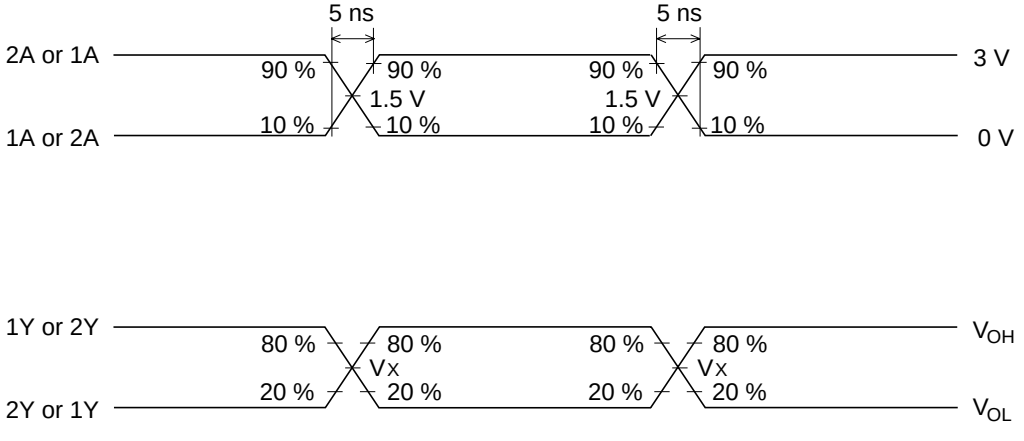
Item	Symbol	Min	Typ	Max	Unit	Conditions
Output Cross Voltage	V_x	20	50	80	%	V_{cc} = 9 V
		20	50	80	%	V_{cc} = 12 V

Test circuit



Note: 1. C_L includes probe and jig capacitance.

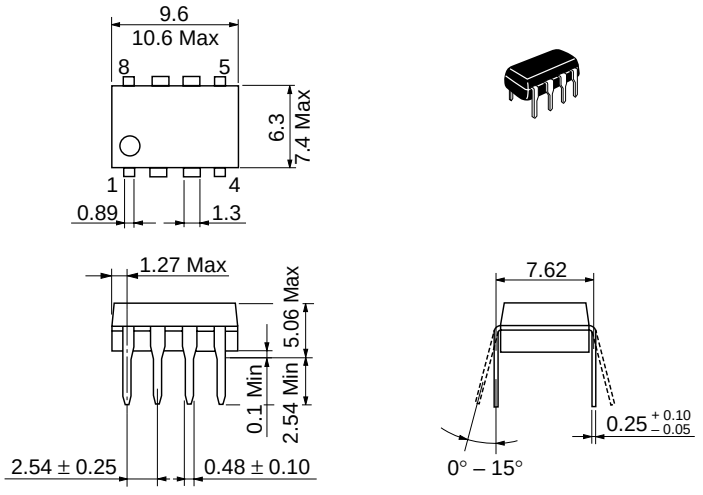
Waveforms



Note: 1. Input Waveforms: f = 1 MHz, duty cycle 50%

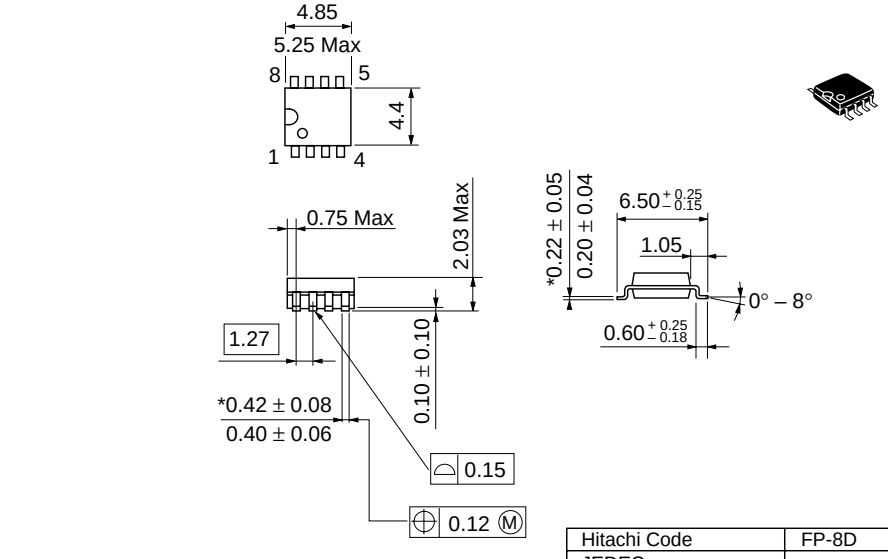
Package Dimensions

Unit: mm



Hitachi Code	DP-8
JEDEC	Conforms
EIAJ	Conforms
Mass (reference value)	0.54 g

Unit: mm



*Dimension including the plating thickness
Base material dimension

Hitachi Code	FP-8D
JEDEC	—
EIAJ	Conforms
Mass (reference value)	0.10 g

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HITACHI

Hitachi, Ltd.
Semiconductor & Integrated Circuits.
Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan
Tel: Tokyo (03) 3270-2111 Fax: (03) 3270-5109

URL NorthAmerica : http://semiconductor.hitachi.com/
Europe : http://www.hitachi-eu.com/hel/ecg
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For further information write to:

Hitachi Semiconductor (America) Inc.
179 East Tasman Drive,
San Jose,CA 95134
Tel: <1> (408) 433-1990
Fax: <1>(408) 433-0223

Hitachi Europe GmbH
Electronic Components Group
Dornacher Straβe 3
D-85622 Feldkirchen, Munich
Germany
Tel: <49> (89) 9 9180-0
Fax: <49> (89) 9 29 30 00

Hitachi Europe Ltd.
Electronic Components Group.
Whitebrook Park
Lower Cookham Road
Maidenhead
Berkshire SL6 8YA, United Kingdom
Tel: <44> (1628) 585000
Fax: <44> (1628) 585160

Hitachi Asia Ltd.
Hitachi Tower
16 Collyer Quay #20-00,
Singapore 049318
Tel : <65>-538-6533/538-8577
Fax : <65>-538-6933/538-3877
URL : http://www.hitachi.com.sg

Hitachi Asia Ltd.
(Taipei Branch Office)
4/F, No. 167, Tun Hwa North Road,
Hung-Kuo Building,
Taipei (105), Taiwan
Tel : <886>-(2)-2718-3666
Fax : <886>-(2)-2718-8180
Telex : 23222 HAS-TP
URL : http://www.hitachi.com.tw

Hitachi Asia (Hong Kong) Ltd.
Group III (Electronic Components)
7/F., North Tower,
World Finance Centre,
Harbour City, Canton Road
Tsim Sha Tsui, Kowloon,
Hong Kong
Tel : <852>-(2)-735-9218
Fax : <852>-(2)-730-0281
URL : http://www.hitachi.com.hk

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