

HD29029

Dual CCD Drivers

HITACHI

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

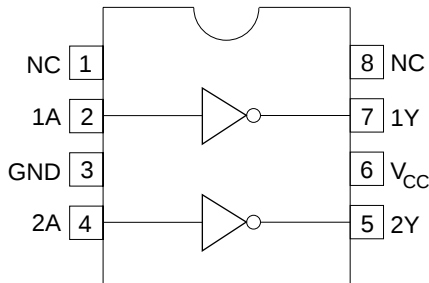
Description

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/Source 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

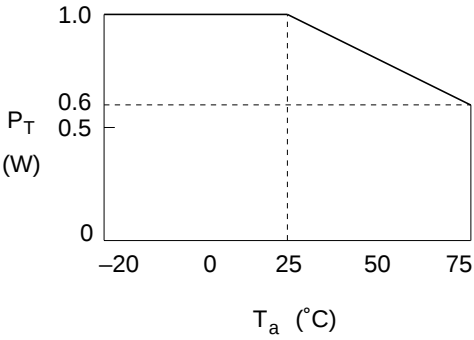
H: High level
L: Low level

Absolute Maximum Ratings

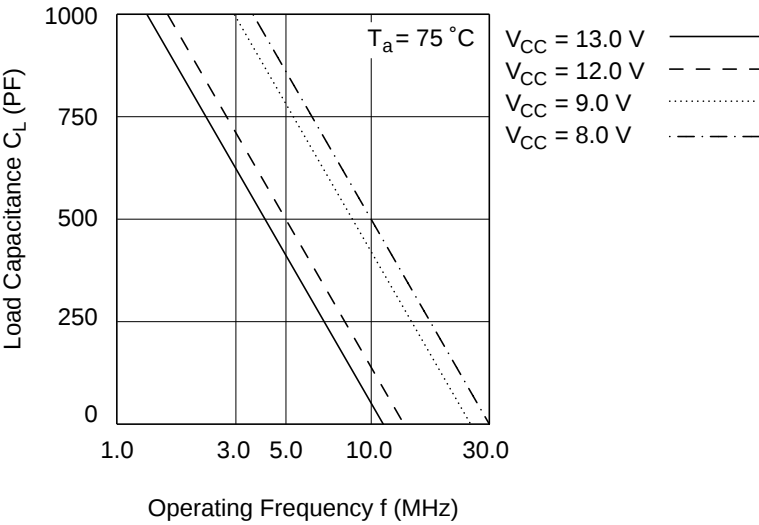
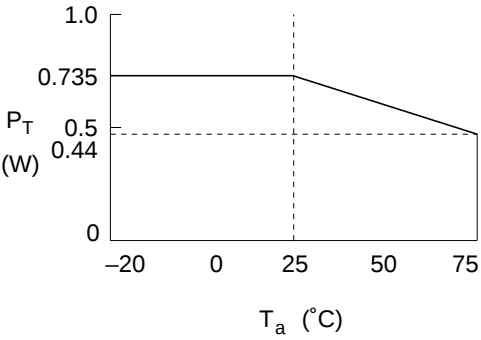
Item	Symbol	Ratings	Unit
Supply Voltage	V_{CC}^{*1}	15	V
Input Voltage	V_{IN}	7	V
Output Current	$I_{O(peak)}$	±0.5	A
Operating Temperature	Ta	−20 to +75	°C
Storage Temperature	Tstg	−65 to +150	°C
Junction Temperature	Tj	150	°C
Power Dissipation per Package	P_T^{*2}	DP-8	1
		FP-8	0.735

- Notes:
1. The voltage value is defined with respect to ground 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)



(FP-8D)



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)

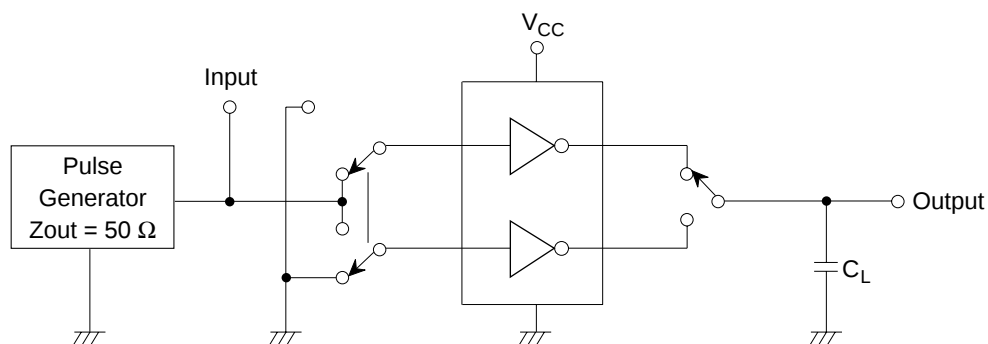
Item	Symbol	Min	Typ	Max	Unit	Conditions
Input Voltage	V _{IH}	2.0	—	—	V	
	V _{IL}	—	—	0.6	V	
Output Voltage	V _{OH}	V _{CC} −2	—	—	V	V _{IL} = 0.6 V, I _{OH} = −1 mA
	V _{OL}	—	—	0.5	V	V _{IH} = 2.0 V, I _{OH} = 1 mA
Input Current	I _{IH}	—	—	20	μA	V _I = 2.7 V
	V _{IL}	—	—	−100	μA	V _I = 0.4 V
Supply 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

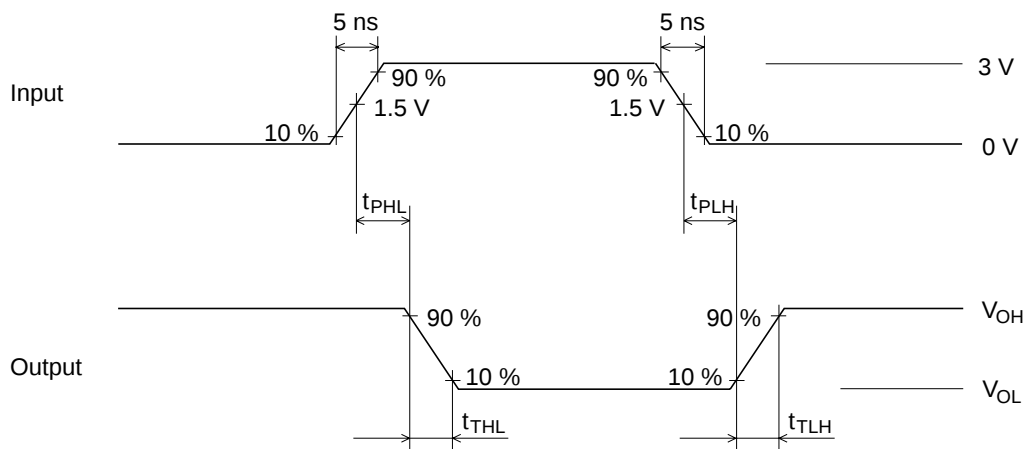
Switching Time Test Method

Test circuit



Note: 1. C_L includes probe and jig capacitance.

Waveforms

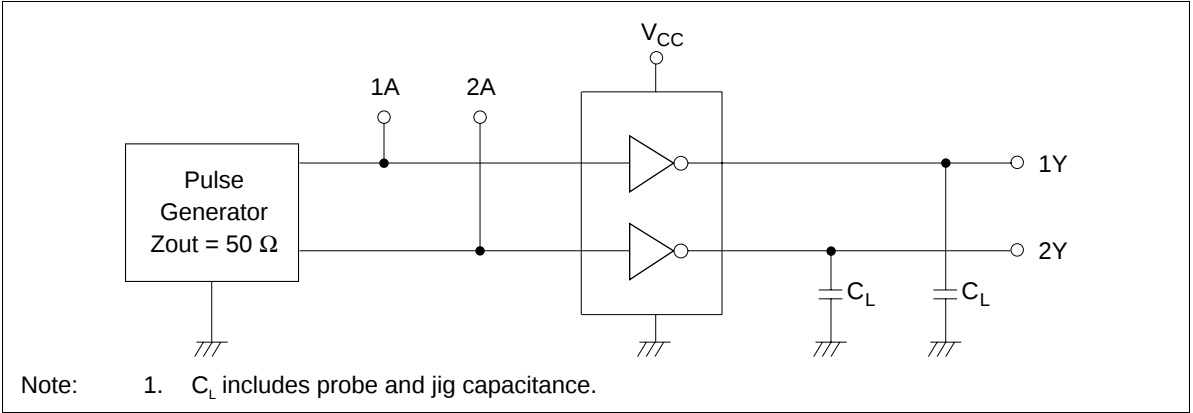


Note: 1. Input Waveforms: $f = 1\text{ MHz}$, duty cycle 50%

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

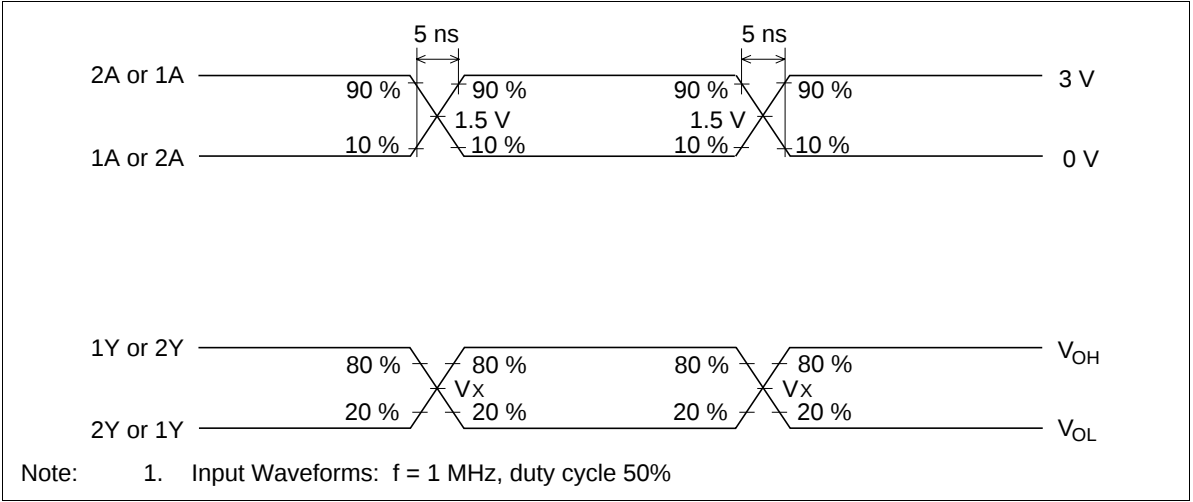
Item	Symbol	Min	Typ	Max	Unit	Conditions
Output Cross Voltage	V _x	20	50	80	%	V _{cc} = 9 V
		20	50	80	%	V _{cc} = 12 V

Test circuit



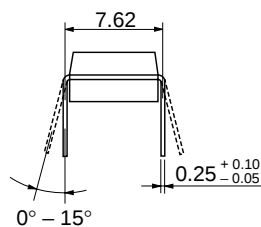
Note: 1. C_L includes probe and jig capacitance.

Waveforms



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

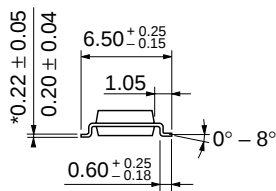
The drawing shows the mechanical specifications of the 10-pin package. The top view indicates a square body with a width of 9.6 mm and a maximum width of 10.6 mm. The pin pitch is 1.27 mm. The side view shows a maximum height of 6.3 mm and a maximum pin height of 7.4 mm. The pin diameter is 0.89 mm. The drawing also shows a detail of the pin base with a width of 2.54 ± 0.25 mm and a height of 0.48 ± 0.10 mm. The pin height is 2.54 mm minimum to 5.06 mm maximum. The pin diameter is 0.1 mm minimum.



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

Technical drawing of a mechanical part with dimensions and tolerances:

- Overall width: 4.85
- Top width: 5.25 Max
- Top edge features: 8 (left), 5 (right)
- Right edge height: 4.4
- Bottom edge features: 1 (left), 4 (right)
- Internal feature: 0.75 Max
- Overall height: 2.03 Max
- Internal feature height: 0.10 ± 0.10
- Internal feature width: 0.42 ± 0.08 / 0.40 ± 0.06
- Internal feature depth: 1.27
- Internal feature radius: 0.15
- Internal feature diameter: 0.12 (M)



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

$$\frac{\text{*Dimension including the plating thickness}}{\text{Base material dimension}}$$

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