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Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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HD74LS136

Quadruple 2-Input Exclusive-OR Gates
(with open collector outputs)

REJ03D0433-0300

Rev.3.00

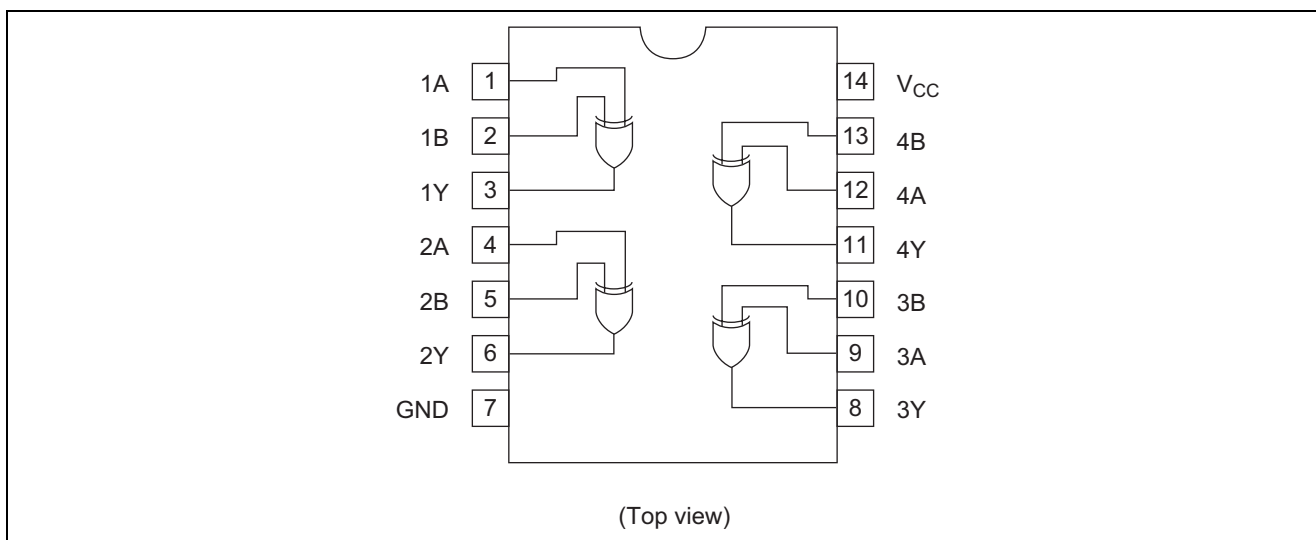
Jul.13.2005

Features

- Ordering Information

Part Name	Package Type	Package Code (Previous Code)	Package Abbreviation	Taping Abbreviation (Quantity)
HD74LS136FPEL	SOP-14 pin (JEITA)	PRSP0014DF-B (FP-14DAV)	FP	EL (2,000 pcs/reel)

Pin Arrangement



Function Table

Inputs		Output
A	B	Y
L	L	L
L	H	H
H	L	H
H	H	L

Note: H ; high level,
L ; low level,
X ; irrelevant.

Absolute Maximum Ratings

Item	Symbol	Ratings	Unit
Supply voltage	V_{CC}	7	V
Input voltage	V_{IN}	7	V
Power dissipation	P_T	400	mW
Storage temperature	T_{stg}	-65 to +150	°C

Note: Voltage value, unless otherwise noted, are with respect to network ground terminal.

Recommended Operating Conditions

Item	Symbol	Min	Typ	Max	Unit
Supply voltage	V_{CC}	4.75	5.00	5.25	V
High level output voltage	V_{OH}	—	—	5.5	V
Low level output current	I_{OL}	—	—	8	mA
Operating temperature	T_{opr}	-20	25	75	°C

Electrical Characteristics

($T_a = -20$ to $+75$ °C)

Item	Symbol	min.	typ.*	max.	Unit	Condition
Input voltage	V_{IH}	2.0	—	—	V	
	V_{IL}	—	—	0.8	V	
Output current	I_{OH}	—	—	100	μA	$V_{CC} = 4.75$ V, $V_{IH} = 2$ V, $V_{IL} = 0.8$ V, $V_{OH} = 5.5$ V
Output voltage	V_{OL}	—	—	0.4	V	$V_{CC} = 4.75$ V, $V_{IH} = 2$ V, $V_{IL} = 0.8$ V,
		—	—	0.5		
Input current	I_{IH}	—	—	40	μA	$V_{CC} = 5.25$ V, $V_I = 2.7$ V
	I_{IL}	—	—	-0.8	mA	$V_{CC} = 5.25$ V, $V_I = 0.4$ V
	I_I	—	—	0.2	mA	$V_{CC} = 5.25$ V, $V_I = 7$ V
Supply current**	I_{CC}	—	6.1	10	mA	$V_{CC} = 5.25$ V
Input clamp voltage	V_{IR}	—	—	-1.5	V	$V_{CC} = 4.75$ V, $I_{IN} = -18$ mA

Notes: * $V_{CC} = 5$ V, $T_a = 25$ °C

** I_{CC} is measured with one input of each gate at 4.5 V, the other inputs grounded, and the outputs open.

Switching Characteristics

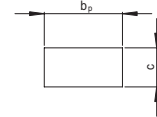
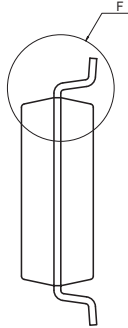
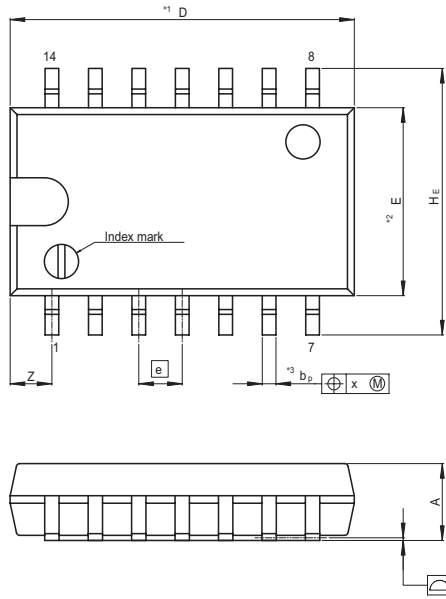
($V_{CC} = 5$ V, $T_a = 25$ °C)

Item	Symbol	min.	typ.	max.	Unit	Inputs	Condition
Propagation delay time	t_{PLH}	—	18	30	ns	A or B	$C_L = 15$ pF, $R_L = 2$ kΩ
	t_{PHL}	—	18	30			
	t_{PLH}	—	18	30	ns	A or B	
	t_{PLH}	—	18	30			

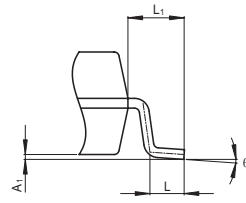
Note: Refer to Test Circuit and Waveform of the Common Item "TTL Common Matter (Document No.: REJ27D0005-0100)".

Package Dimensions

JEITA Package Code P-SOP14-5.5x10.06-1.27	RENESAS Code PRSP0014DF-B	Previous Code FP-14DAV	MASS[Typ.] 0.23g
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Terminal cross section
(Ni/Pd/Au plating)



Detail F

NOTE)
1. DIMENSIONS*1 (Nom)*AND*2*
DO NOT INCLUDE MOLD FLASH.
2. DIMENSION*3*DOES NOT
INCLUDE TRIM OFFSET.

Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
D	—	10.06	10.5
E	—	5.50	—
A ₂	—	—	—
A ₁	0.00	0.10	0.20
A	—	—	2.20
b _p	0.34	0.40	0.46
b ₁	—	—	—
c	0.15	0.20	0.25
c ₁	—	—	—
θ	0°	—	8°
H _E	7.50	7.80	8.00
e	—	1.27	—
x	—	—	0.12
y	—	—	0.15
Z	—	—	1.42
L	0.50	0.70	0.90
L ₁	—	1.15	—

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