

To our customers,

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## Old Company Name in Catalogs and Other Documents

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April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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# HD74HC368

## Hex Bus Drivers (Inverted Data Outputs with 3-state outputs)

REJ03D0618-0200  
 (Previous ADE-205-497)  
 Rev.2.00  
 Mar 30, 2006

### Features

- High Speed Operation:  $t_{pd}$  (A to Y) = 9 ns typ ( $C_L = 50$  pF)
- High Output Current: Fanout of 15 LSTTL Loads
- Wide Operating Voltage:  $V_{CC} = 2$  to 6 V
- Low Input Current: 1  $\mu$ A max
- Low Quiescent Supply Current:  $I_{CC}$  (static) = 4  $\mu$ A max ( $T_a = 25^\circ\text{C}$ )
- Ordering Information

Part Name	Package Type	Package Code (Previous Code)	Package Abbreviation	Taping Abbreviation (Quantity)
HD74HC368P	DILP-16 pin	PRDP0016AE-B (DP-16FV)	P	—
HD74HC368FPEL	SOP-16 pin (JEITA)	PRSP0016DH-B (FP-16DAV)	FP	EL (2,000 pcs/reel)
HD74HC368RPEL	SOP-16 pin (JEDEC)	PRSP0016DG-A (FP-16DNV)	RP	EL (2,500 pcs/reel)

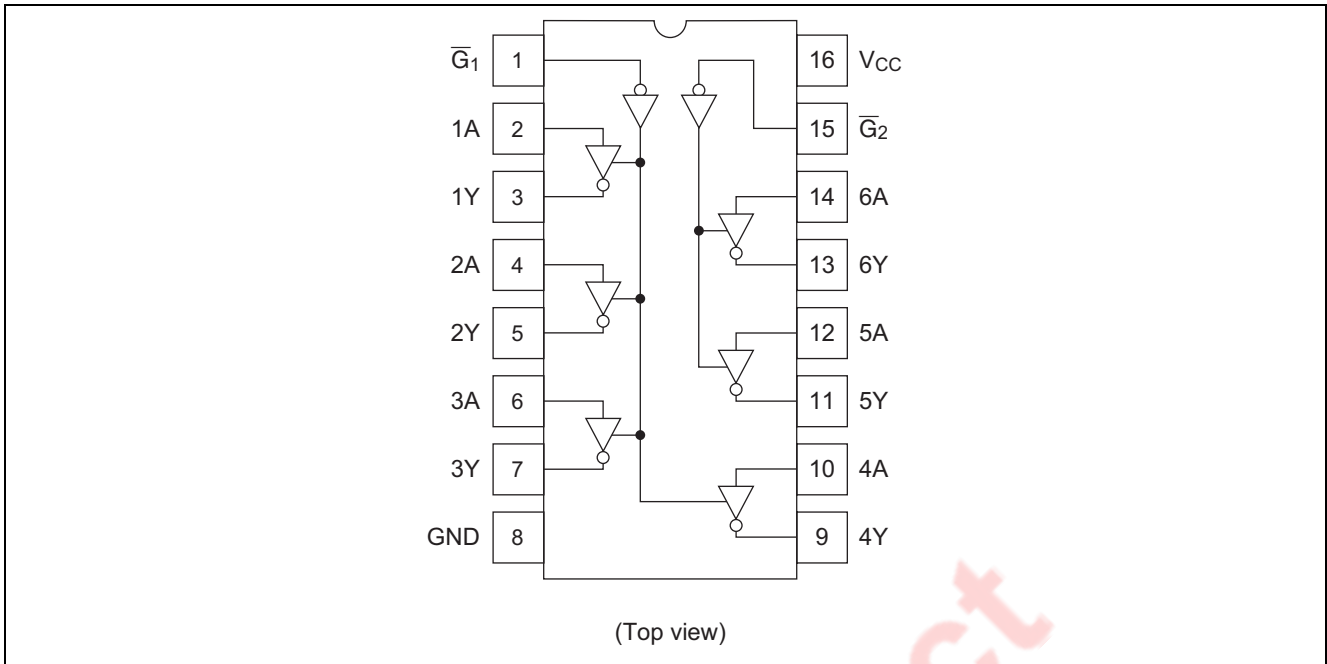
Note: Please consult the sales office for the above package availability.

### Function Table

Inputs		Output
$\bar{G}$	A	Y
H	X	Z
L	L	H
L	H	L

Note: 1. H; High level, L; Low level, X; Irrelevant, Z; High impedance

Pin Arrangement



Absolute Maximum Ratings

Item	Symbol	Ratings	Unit
Supply voltage range	$V_{CC}$	-0.5 to 7.0	V
Input / Output voltage	$V_{IN}, V_{OUT}$	-0.5 to $V_{CC} + 0.5$	V
Input / Output diode current	$I_{IK}, I_{OK}$	$\pm 20$	mA
Output current	$I_{OUT}$	$\pm 35$	mA
$V_{CC}, GND$ current	$I_{CC}$ or $I_{GND}$	$\pm 75$	mA
Power dissipation	$P_T$	500	mW
Storage temperature	$T_{stg}$	-65 to +150	°C

Note: The absolute maximum ratings are values, which must not individually be exceeded, and furthermore, no two of which may be realized at the same time.

Recommended Operating Conditions

Item	Symbol	Ratings	Unit	Conditions
Supply voltage	$V_{CC}$	2 to 6	V	
Input / Output voltage	$V_{IN}, V_{OUT}$	0 to $V_{CC}$	V	
Operating temperature	$T_a$	-40 to 85	°C	
Input rise / fall time <sup>*1</sup>	$t_r, t_f$	0 to 1000	ns	$V_{CC} = 2.0$ V
		0 to 500		$V_{CC} = 4.5$ V
		0 to 400		$V_{CC} = 6.0$ V

Note: 1. This item guarantees maximum limit when one input switches.  
Waveform: Refer to test circuit of switching characteristics.

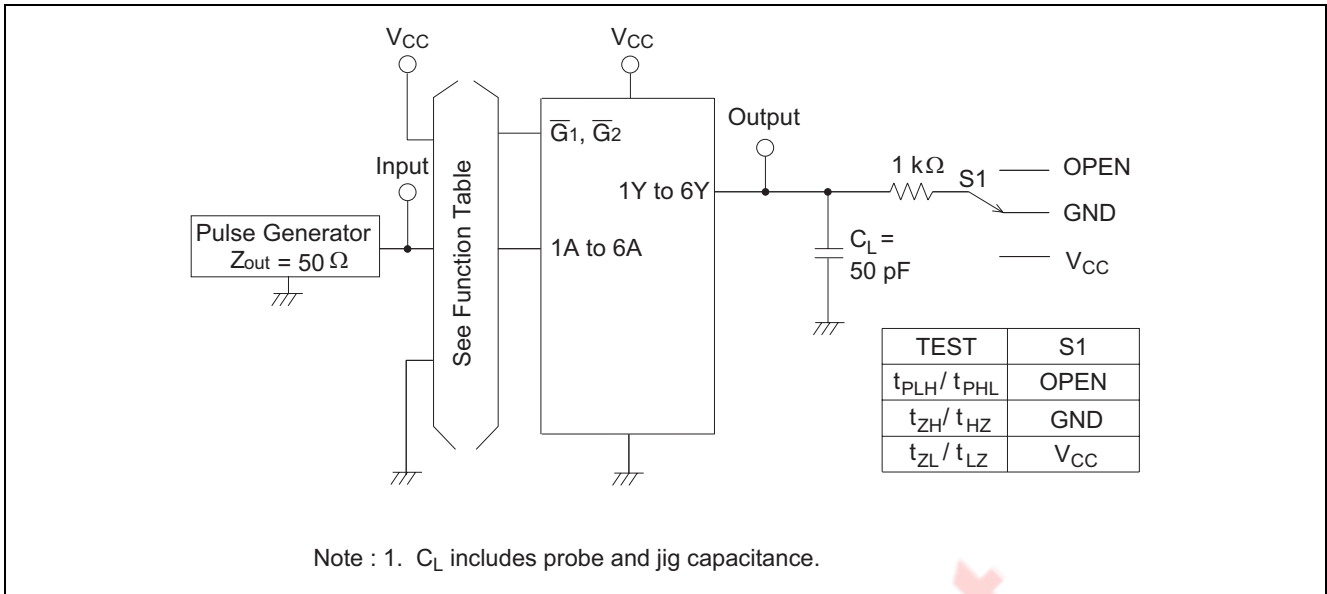
**Electrical Characteristics**

Item	Symbol	V <sub>CC</sub> (V)	Ta = 25°C			Ta = -40 to +85°C		Unit	Test Conditions	
			Min	Typ	Max	Min	Max			
Input voltage	V <sub>IH</sub>	2.0	1.5	—	—	1.5	—	V		
		4.5	3.15	—	—	3.15	—			
		6.0	4.2	—	—	4.2	—			
	V <sub>IL</sub>	2.0	—	—	0.5	—	0.5	V		
		4.5	—	—	1.35	—	1.35			
		6.0	—	—	1.8	—	1.8			
Output voltage	V <sub>OH</sub>	2.0	1.9	2.0	—	1.9	—	V	V <sub>in</sub> = V <sub>IH</sub> or V <sub>IL</sub>	I <sub>OH</sub> = -20 μA
		4.5	4.4	4.5	—	4.4	—			I <sub>OH</sub> = -6 mA
		6.0	5.9	6.0	—	5.9	—			I <sub>OH</sub> = -7.8 mA
		4.5	4.18	—	—	4.13	—			
		6.0	5.68	—	—	5.63	—			
	V <sub>OL</sub>	2.0	—	0.0	0.1	—	0.1	V	V <sub>in</sub> = V <sub>IH</sub> or V <sub>IL</sub>	I <sub>OL</sub> = 20 μA
		4.5	—	0.0	0.1	—	0.1			
		6.0	—	0.0	0.1	—	0.1			
		4.5	—	—	0.26	—	0.33			I <sub>OH</sub> = 6 mA
		6.0	—	—	0.26	—	0.33			I <sub>OH</sub> = 7.8 mA
Off-state output current	I <sub>oz</sub>	6.0	—	—	±0.5	—	±5.0	μA	V <sub>in</sub> = V <sub>IH</sub> or V <sub>IL</sub> , V <sub>out</sub> = V <sub>CC</sub> or GND	
Input current	I <sub>in</sub>	6.0	—	—	±0.1	—	±1.0	μA	V <sub>in</sub> = V <sub>CC</sub> or GND	
Quiescent supply current	I <sub>CC</sub>	6.0	—	—	4.0	—	40	μA	V <sub>in</sub> = V <sub>CC</sub> or GND, I <sub>out</sub> = 0 μA	

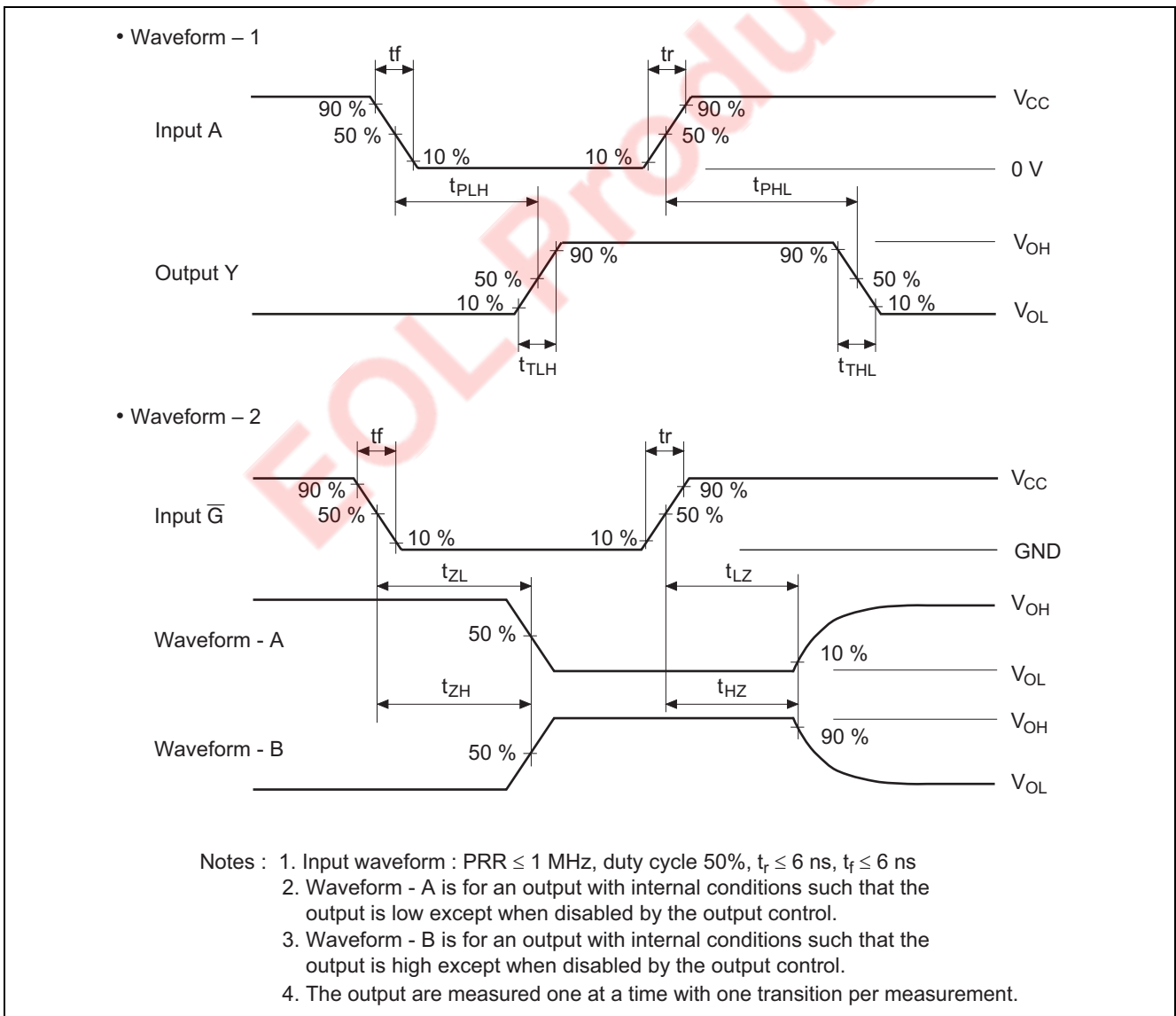
**Switching Characteristics (C<sub>L</sub> = 50 pF, Input t<sub>r</sub> = t<sub>f</sub> = 6 ns)**

Item	Symbol	V <sub>CC</sub> (V)	Ta = 25°C			Ta = -40 to +85°C		Unit	Test Conditions	
			Min	Typ	Max	Min	Max			
Propagation delay time	t <sub>PLH</sub>	2.0	—	—	95	—	120	ns		
	t <sub>PHL</sub>	4.5	—	9	19	—	24			
		6.0	—	—	16	—	20			
Output enable time	t <sub>ZH</sub>	2.0	—	—	190	—	240	ns		
	t <sub>ZL</sub>	4.5	—	13	38	—	48			
		6.0	—	—	32	—	41			
Output disable time	t <sub>HZ</sub>	2.0	—	—	175	—	220	ns		
	t <sub>LZ</sub>	4.5	—	15	35	—	44			
		6.0	—	—	30	—	37			
Output rise/fall time	t <sub>TLH</sub>	2.0	—	—	60	—	75	ns		
	t <sub>THL</sub>	4.5	—	4	12	—	15			
		6.0	—	—	10	—	13			
Input capacitance	C <sub>in</sub>	—	—	5	10	—	10	pF		

Test Circuit

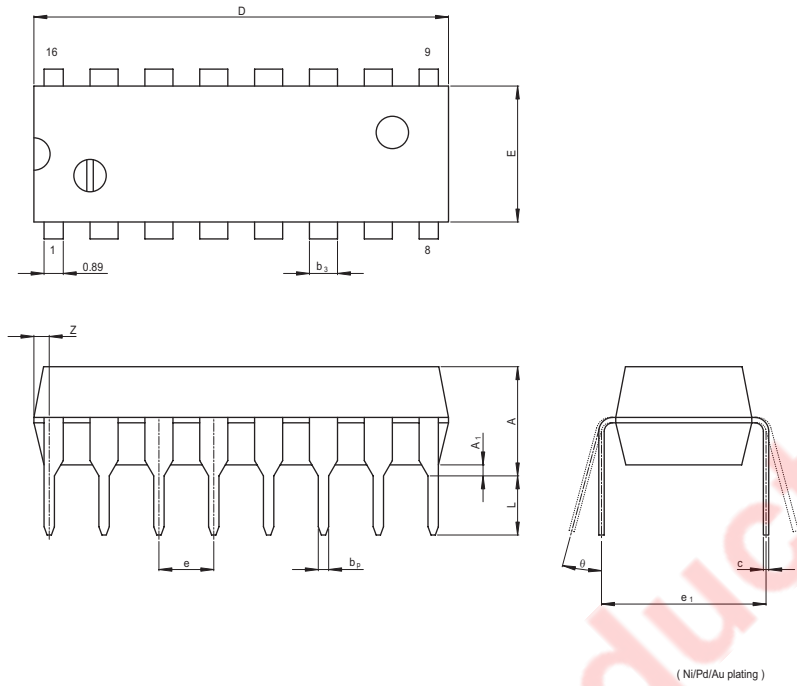


Waveforms



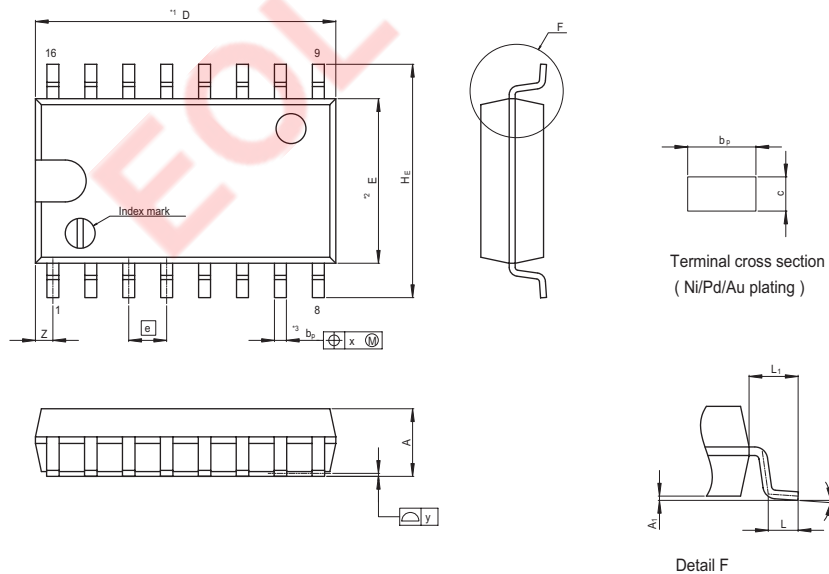
Package Dimensions

JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
P-DIP16-6.3x19.2-2.54	PRDP0016AE-B	DP-16FV	1.05g



Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
e <sub>1</sub>	—	7.62	—
D	—	19.2	20.32
E	—	6.3	7.4
A	—	—	5.06
A <sub>1</sub>	0.51	—	—
b <sub>p</sub>	0.40	0.48	0.56
b <sub>3</sub>	—	1.30	—
c	0.19	0.25	0.31
θ	0°	—	15°
e	2.29	2.54	2.79
Z	—	—	1.12
L	2.54	—	—

JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
P-SOP16-5.5x10.06-1.27	PRSP0016DH-B	FP-16DAV	0.24g

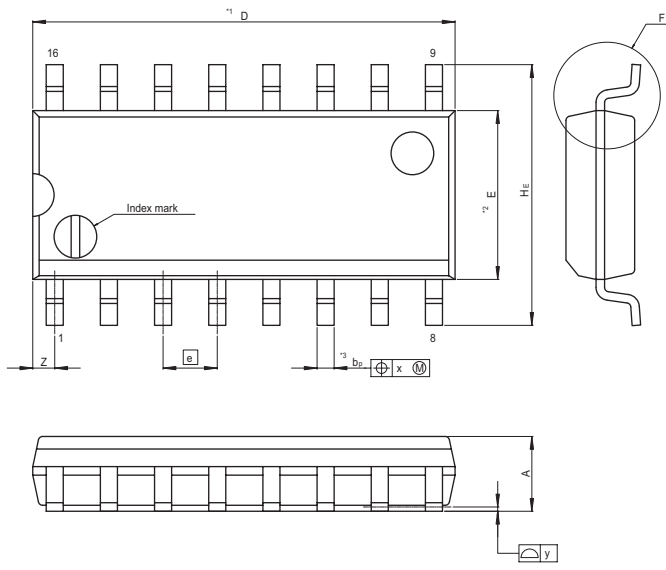


NOTE  
 1. DIMENSIONS\*\*1 (Nom)\*\*AND\*\*2\*  
 DO NOT INCLUDE MOLD FLASH.  
 2. DIMENSION\*\*3\*DOES NOT  
 INCLUDE TRIM OFFSET.

Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
D	—	10.06	10.5
E	—	5.50	—
A <sub>2</sub>	—	—	—
A <sub>1</sub>	0.00	0.10	0.20
A	—	—	2.20
b <sub>p</sub>	0.34	0.40	0.46
b <sub>1</sub>	—	—	—
c	0.15	0.20	0.25
c <sub>1</sub>	—	—	—
θ	0°	—	8°
HE	7.50	7.80	8.00
ⓐ	—	1.27	—
x	—	—	0.12
y	—	—	0.15
Z	—	—	0.80
L	0.50	0.70	0.90
L <sub>1</sub>	—	1.15	—

# HD74HC368

JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
P-SOP16-3.95x9.9-1.27	PRSP0016DG-A	FP-16DNV	0.15g



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

Terminal cross section  
 (Ni/Pd/Au plating)

Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
D	—	9.90	10.30
E	—	3.95	—
A <sub>2</sub>	—	—	—
A <sub>1</sub>	0.10	0.14	0.25
A	—	—	1.75
b <sub>p</sub>	0.34	0.40	0.46
b <sub>1</sub>	—	—	—
c	0.15	0.20	0.25
c <sub>1</sub>	—	—	—
θ	0°	—	8°
HE	5.80	6.10	6.20
Ⓧ	—	1.27	—
x	—	—	0.25
y	—	—	0.15
Z	—	—	0.635
L	0.40	0.60	1.27
L <sub>1</sub>	—	1.08	—

EOL Product



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