

HD74HC243

Quad. Bus Transceivers (with noninverted 3-state outputs)

REJ03D0596-0200
 (Previous ADE-205-473)
 Rev.2.00
 Jan 31, 2006

Description

The HD74HC243 is a noninverting buffer. Each device has one active high enable (GBA), and one active low enable ($\overline{\text{GAB}}$). GBA enables the A output and $\overline{\text{GAB}}$ enables the B outputs. The device does not have schmitt trigger inputs.

Features

- High Speed Operation: $t_{pd} = 10 \text{ ns typ}$ ($C_L = 50 \text{ pF}$)
- High Output Current: Fanout of 15 LSTTL Loads
- Wide Operating Voltage: $V_{CC} = 2 \text{ to } 6 \text{ V}$
- Low Input Current: $1 \mu\text{A max}$
- Low Quiescent Supply Current: $I_{CC}(\text{static}) = 4 \mu\text{A max}$ ($T_a = 25^\circ\text{C}$)
- Ordering Information

| Part Name | Package Type | Package Code (Previous Code) | Package Abbreviation | Taping Abbreviation (Quantity) |
|---------------|--------------------|------------------------------|----------------------|--------------------------------|
| HD74HC243P | DILP-14 pin | PRDP0014AB-B (DP-14AV) | P | — |
| HD74HC243FPEL | SOP-14 pin (JEITA) | PRSP0014DF-B (FP-14DAV) | FP | EL (2,000 pcs/reel) |

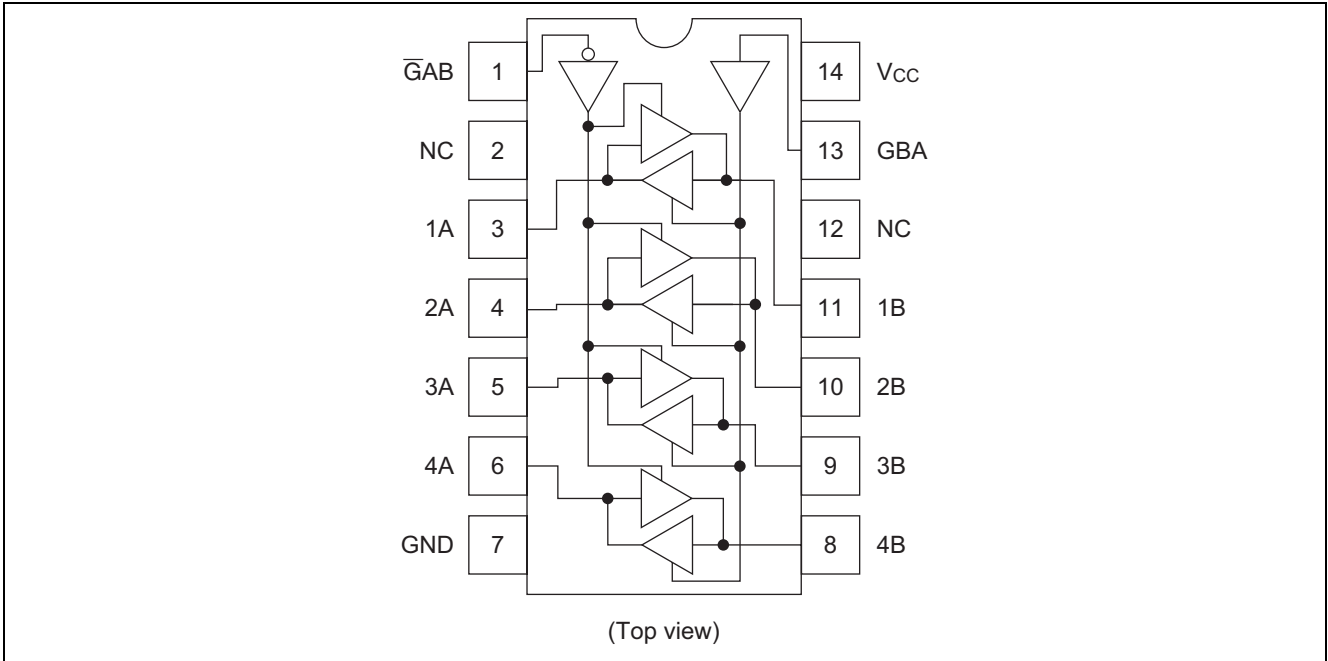
Note: Please consult the sales office for the above package availability.

Function Table

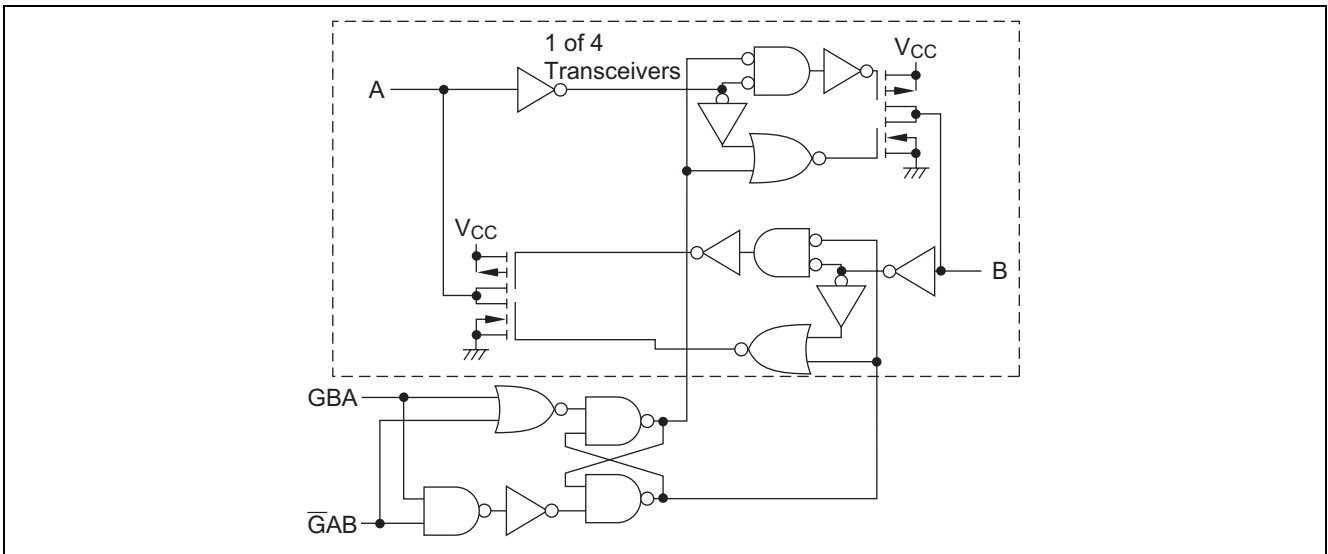
| Control Inputs | | Data Port Status | |
|-------------------------|-----|------------------|---|
| $\overline{\text{GAB}}$ | GBA | A | B |
| H | H | O | I |
| L | H | Z | Z |
| H | L | Z | Z |
| L | L | I | O |

H : high level
 L : low level
 X : irrelevant
 I : input
 O : output
 Z : high-impedance

Pin Arrangement



Logic Diagram



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} | ± 20 | mA |
| Output current | I_O | ± 35 | mA |
| V_{CC} , GND current | I_{CC} or I_{GND} | ± 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 ^{*1} | t_r, t_f | 0 to 1000 | ns | $V_{CC} = 2.0\text{ V}$ |
| | | 0 to 500 | | $V_{CC} = 4.5\text{ V}$ |
| | | 0 to 400 | | $V_{CC} = 6.0\text{ V}$ |

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

Electrical Characteristics

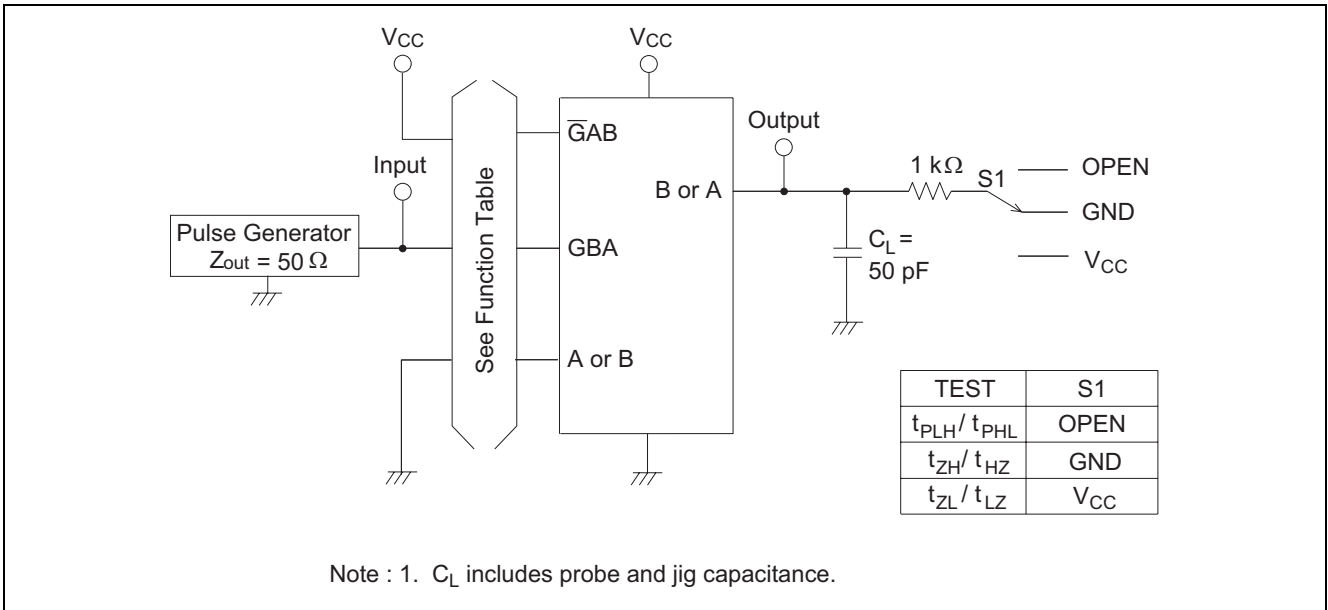
| Item | Symbol | V_{CC} (V) | $T_a = 25^\circ\text{C}$ | | | $T_a = -40\text{ to }+85^\circ\text{C}$ | | Unit | Test Conditions | |
|--------------------------|----------|--------------|--------------------------|-----|-----------|---|-----------|---------------|--|-----------------------------|
| | | | Min | Typ | Max | Min | Max | | | |
| Input voltage | V_{IH} | 2.0 | 1.5 | — | — | 1.5 | — | V | | |
| | | 4.5 | 3.15 | — | — | 3.15 | — | | | |
| | | 6.0 | 4.2 | — | — | 4.2 | — | | | |
| | V_{IL} | 2.0 | — | — | 0.5 | — | 0.5 | V | | |
| | | 4.5 | — | — | 1.35 | — | 1.35 | | | |
| | | 6.0 | — | — | 1.8 | — | 1.8 | | | |
| Output voltage | V_{OH} | 2.0 | 1.9 | 2.0 | — | 1.9 | — | V | $V_{in} = V_{IH}$ or V_{IL} | $I_{OH} = -20\ \mu\text{A}$ |
| | | 4.5 | 4.4 | 4.5 | — | 4.4 | — | | | $I_{OH} = -6\ \text{mA}$ |
| | | 6.0 | 5.9 | 6.0 | — | 5.9 | — | | | $I_{OH} = -7.8\ \text{mA}$ |
| | | 4.5 | 4.18 | — | — | 4.13 | — | | | |
| | | 6.0 | 5.68 | — | — | 5.63 | — | | | |
| | V_{OL} | 2.0 | — | 0.0 | 0.1 | — | 0.1 | V | $V_{in} = V_{IH}$ or V_{IL} | $I_{OL} = 20\ \mu\text{A}$ |
| | | 4.5 | — | 0.0 | 0.1 | — | 0.1 | | | |
| | | 6.0 | — | 0.0 | 0.1 | — | 0.1 | | | |
| | | 4.5 | — | — | 0.26 | — | 0.33 | | | $I_{OL} = 6\ \text{mA}$ |
| | | 6.0 | — | — | 0.26 | — | 0.33 | | | $I_{OL} = 7.8\ \text{mA}$ |
| Off-state output current | I_{OZ} | 6.0 | — | — | ± 0.5 | — | ± 5.0 | μA | $V_{in} = V_{IH}$ or V_{IL} , $V_{out} = V_{CC}$ or GND | |
| Input current | I_{in} | 6.0 | — | — | ± 0.1 | — | ± 1.0 | μA | $V_{in} = V_{CC}$ or GND | |
| Quiescent supply current | I_{CC} | 6.0 | — | — | 4.0 | — | 40 | μA | $V_{in} = V_{CC}$ or GND, $I_{out} = 0\ \mu\text{A}$ | |

Switching Characteristics

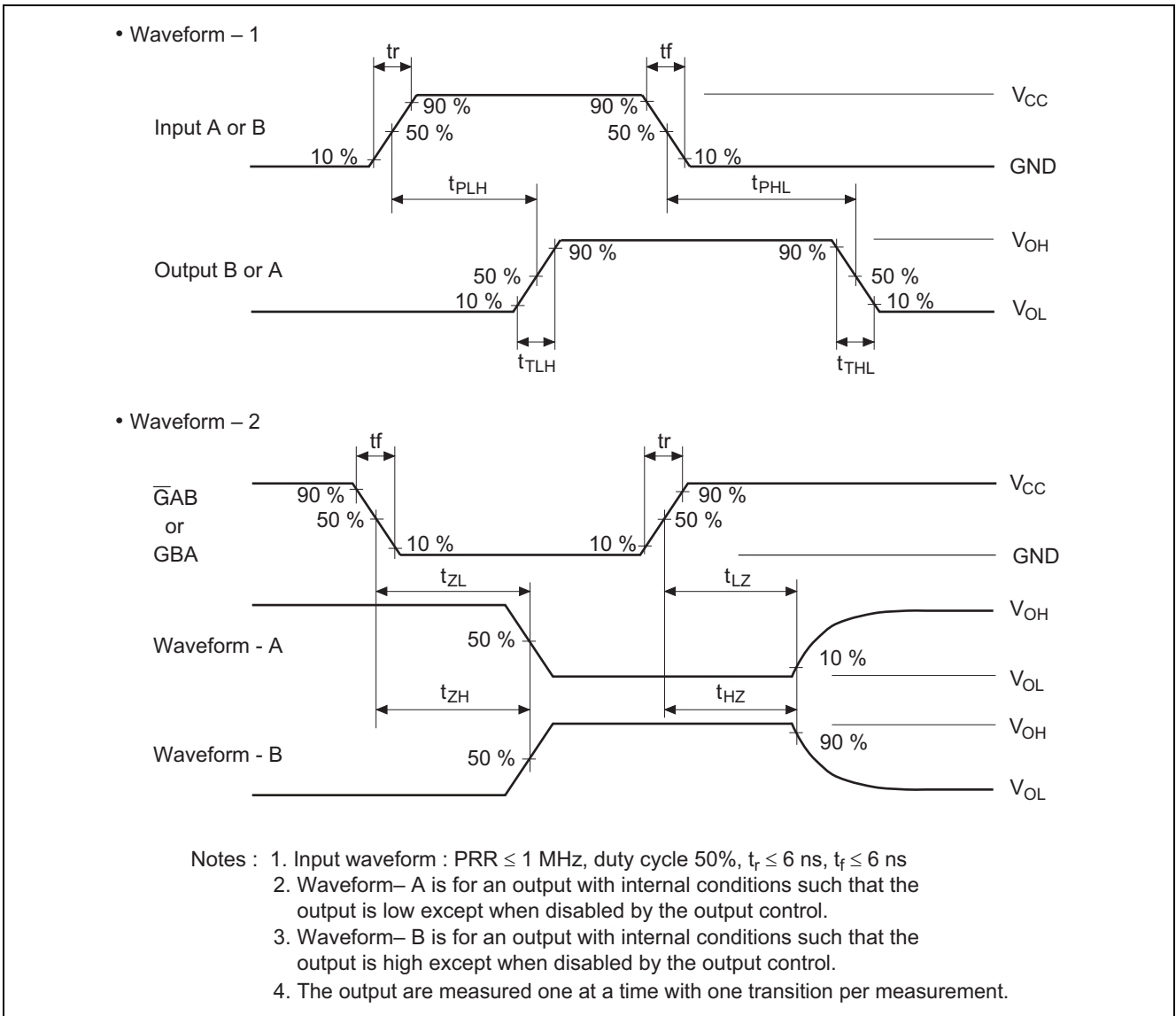
($C_L = 50$ pF, Input $t_r = t_f = 6$ ns)

| Item | Symbol | V _{CC} (V) | Ta = 25°C | | | Ta = -40 to +85°C | | Unit | Test Conditions |
|------------------------|------------------|---------------------|-----------|-----|-----|-------------------|-----|------|-----------------|
| | | | Min | Typ | Max | Min | Max | | |
| Propagation delay time | t _{PHL} | 2.0 | — | — | 90 | — | 115 | ns | |
| | | 4.5 | — | 10 | 18 | — | 23 | | |
| | | 6.0 | — | — | 15 | — | 20 | | |
| | t _{PLH} | 2.0 | — | — | 90 | — | 115 | ns | |
| | | 4.5 | — | 10 | 18 | — | 23 | | |
| | | 6.0 | — | — | 15 | — | 20 | | |
| Output enable time | t _{ZL} | 2.0 | — | — | 150 | — | 190 | ns | |
| | | 4.5 | — | 14 | 30 | — | 38 | | |
| | | 6.0 | — | — | 26 | — | 33 | | |
| | t _{ZH} | 2.0 | — | — | 150 | — | 190 | ns | |
| | | 4.5 | — | 15 | 30 | — | 38 | | |
| | | 6.0 | — | — | 26 | — | 33 | | |
| Output disable time | t _{LZ} | 2.0 | — | — | 150 | — | 190 | ns | |
| | | 4.5 | — | 18 | 30 | — | 38 | | |
| | | 6.0 | — | — | 26 | — | 33 | | |
| | t _{HZ} | 2.0 | — | — | 150 | — | 190 | ns | |
| | | 4.5 | — | 20 | 30 | — | 38 | | |
| | | 6.0 | — | — | 26 | — | 33 | | |
| Output rise/fall time | t _{TLH} | 2.0 | — | — | 60 | — | 75 | ns | |
| | t _{THL} | 4.5 | — | 4 | 12 | — | 15 | | |
| | t _{THL} | 6.0 | — | — | 10 | — | 13 | | |
| Input capacitance | C _{in} | — | — | 5 | 10 | — | 10 | pF | |

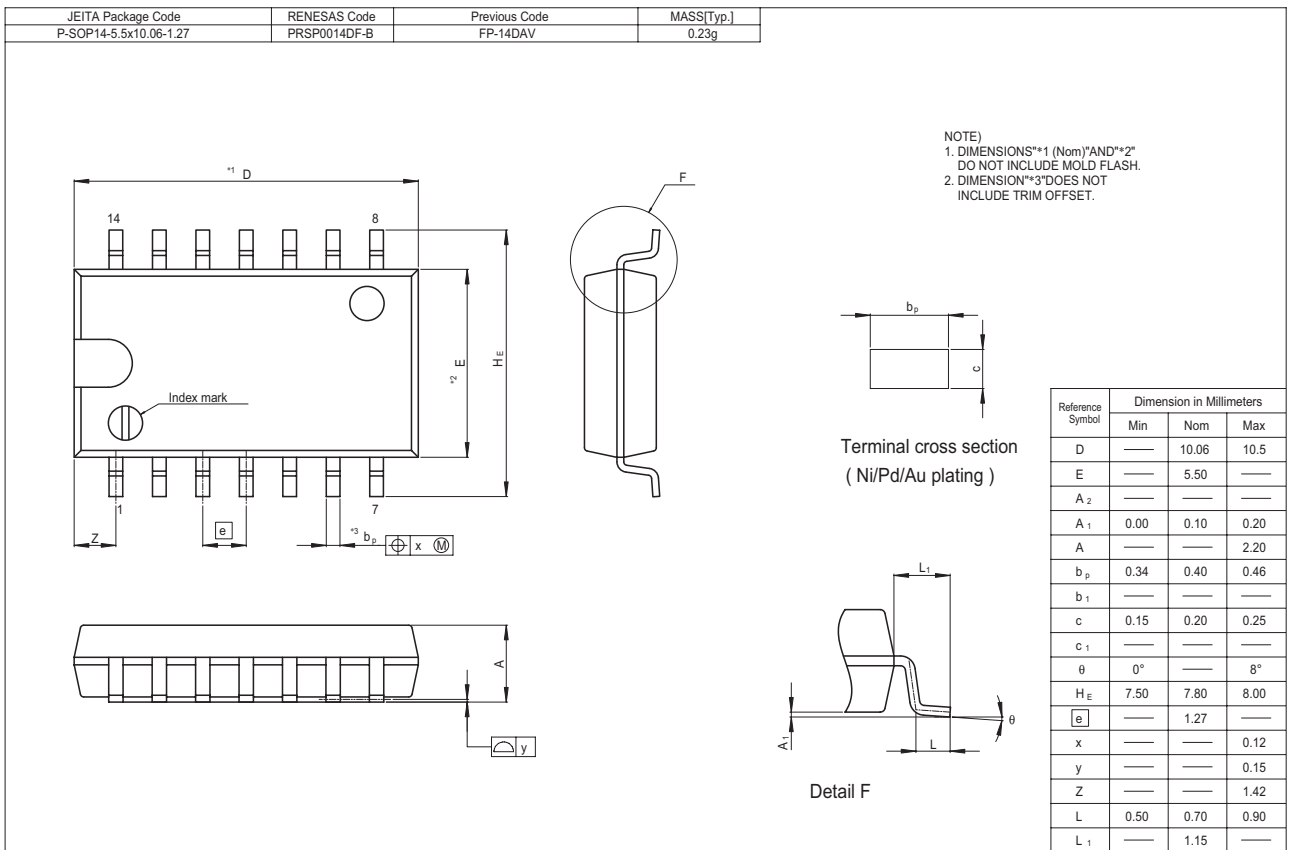
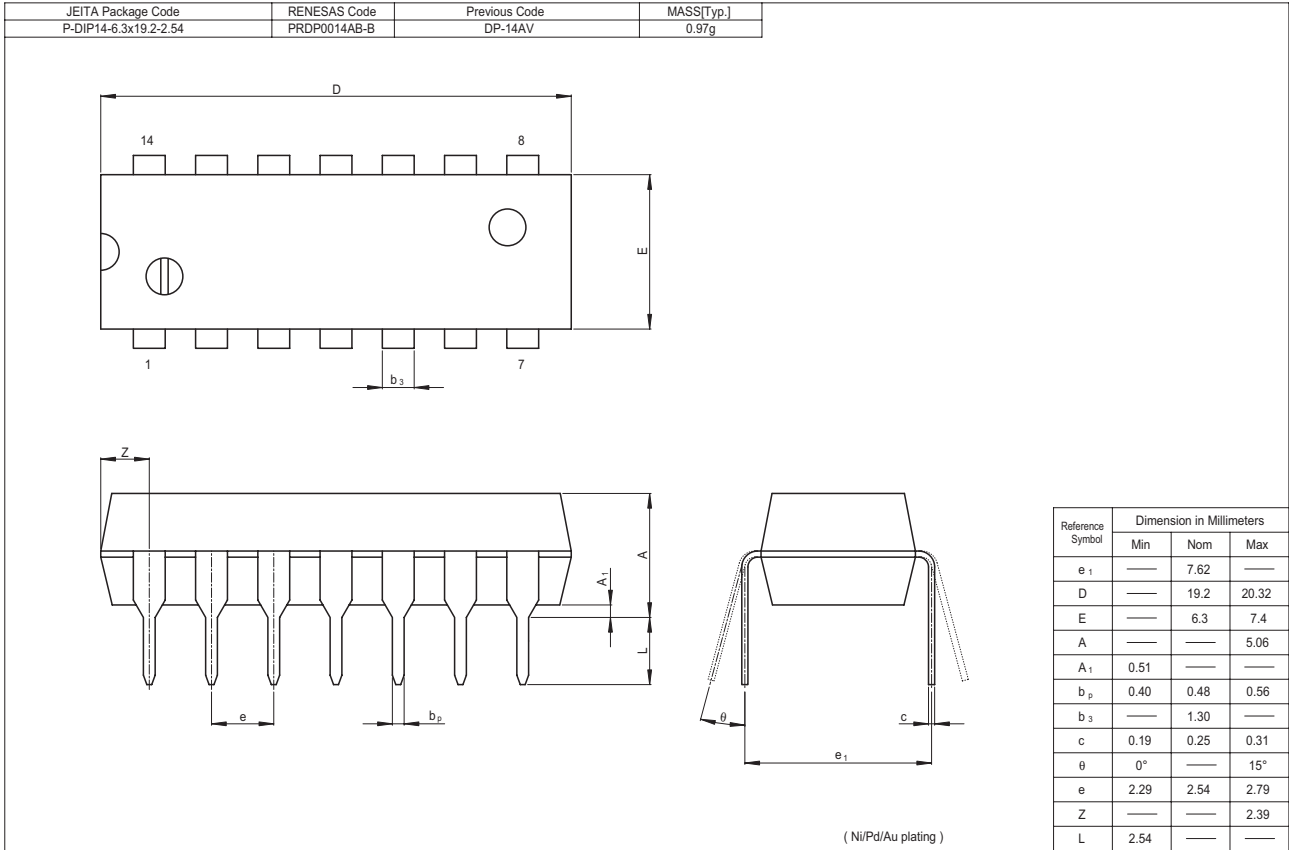
Test Circuit



Waveforms



Package Dimensions



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