

HD74HC365

Hex Bus Drivers (with 3-state outputs)

REJ03D0615-0200
 (Previous ADE-205-494)
 Rev.2.00
 Jan 31, 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 μ A max
- Low Quiescent Supply Current: I_{CC} (static) = 4 μ A max ($T_a = 25^\circ\text{C}$)
- Ordering Information

| Part Name | Package Type | Package Code (Previous Code) | Package Abbreviation | Taping Abbreviation (Quantity) |
|---------------|--------------------|------------------------------|----------------------|--------------------------------|
| HD74HC365P | DILP-16 pin | PRDP0016AE-B (DP-16FV) | P | — |
| HD74HC365FPEL | SOP-16 pin (JEITA) | PRSP0016DH-B (FP-16DAV) | FP | EL (2,000 pcs/reel) |
| HD74HC365RPEL | SOP-16 pin (JEDEC) | PRSP0016DG-A (FP-16DNV) | RP | EL (2,500 pcs/reel) |

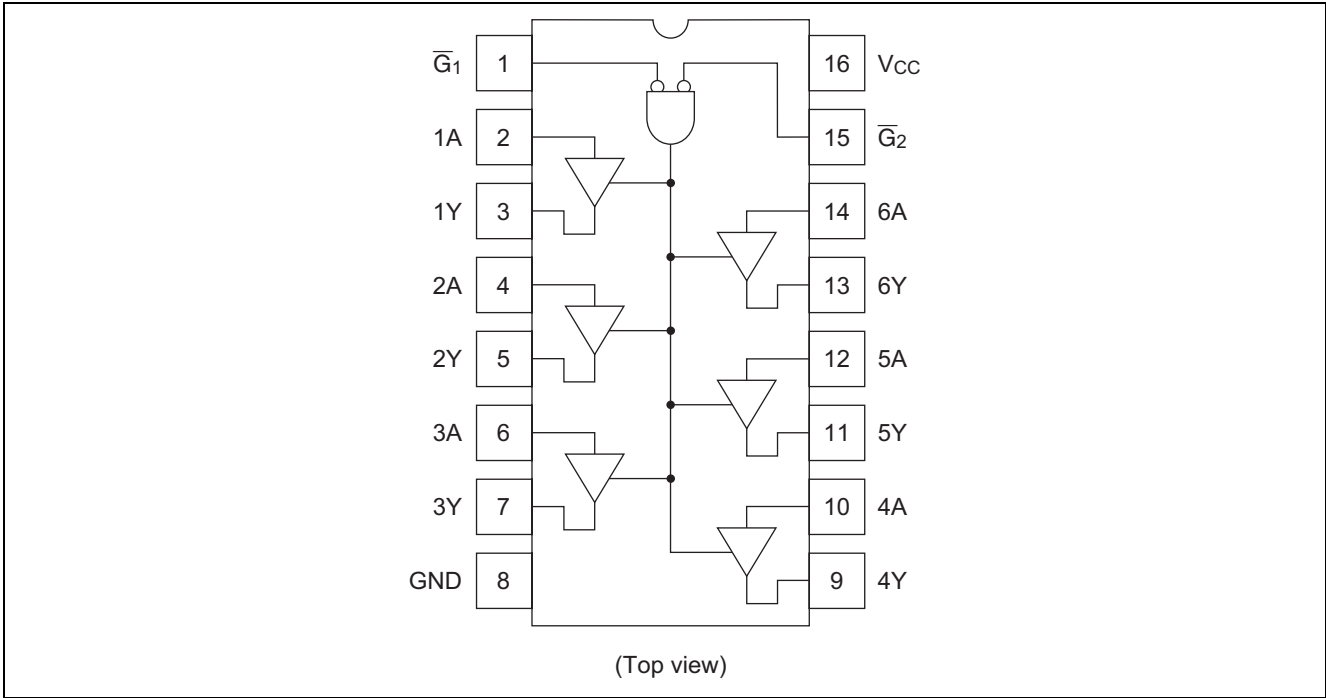
Note: Please consult the sales office for the above package availability.

Function Table

| Inputs | | | Output |
|------------------|------------------|---|--------|
| \overline{G}_1 | \overline{G}_2 | A | Y |
| H | X | X | Z |
| X | H | X | Z |
| L | L | L | L |
| L | L | H | H |

Notes: 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} | ± 20 | mA |
| Output current | I_{OUT} | ± 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 | $^{\circ}C$ |

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 | $^{\circ}C$ | |
| Input rise / fall time ^{*1} | t_r, t_f | 0 to 1000 | ns | $V_{CC} = 2.0 V$ |
| | | 0 to 500 | | $V_{CC} = 4.5 V$ |
| | | 0 to 400 | | $V_{CC} = 6.0 V$ |

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

Electrical Characteristics

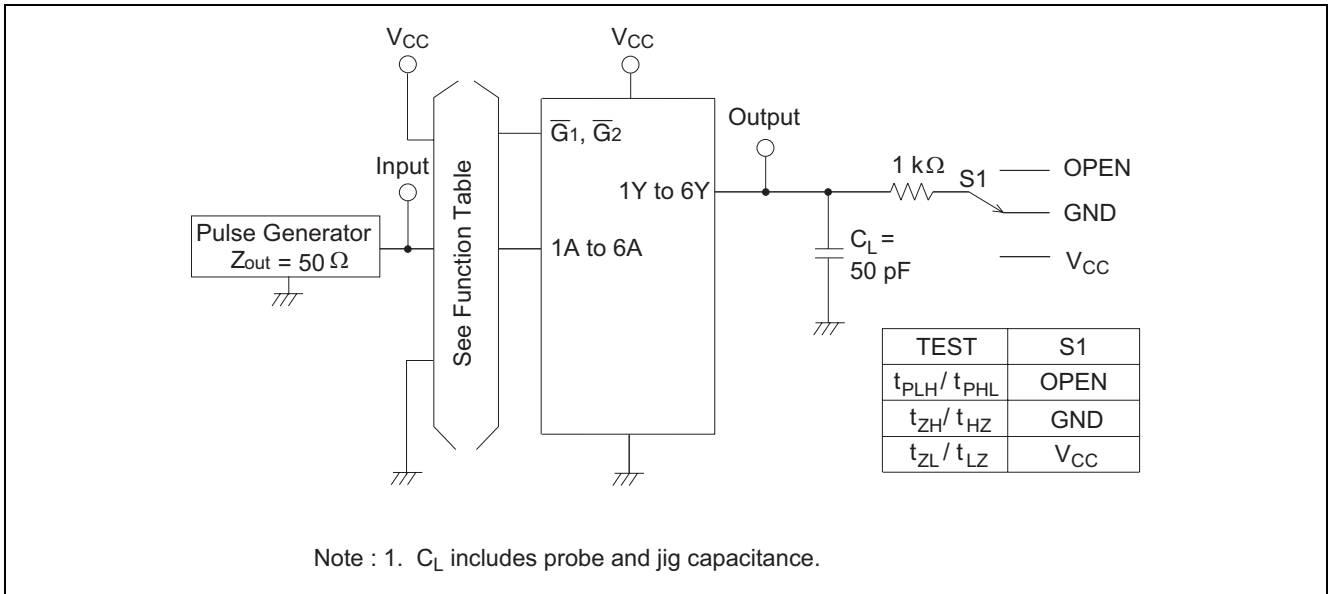
| Item | Symbol | V _{CC} (V) | Ta = 25°C | | | Ta = -40 to +85°C | | Unit | Test Conditions | | |
|--------------------------|-----------------|---------------------|-----------|-----|------|-------------------|------|------|---|---------------------------|--|
| | | | Min | Typ | Max | Min | Max | | | | |
| 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 | Vin = V _{IH} or V _{IL} | I _{OH} = -20 μA | |
| | | 4.5 | 4.4 | 4.5 | — | 4.4 | — | | | I _{OH} = -6 mA | |
| | | 6.0 | 5.9 | 6.0 | — | 5.9 | — | | | I _{OH} = -7.8 mA | |
| | | 4.5 | 4.18 | — | — | 4.13 | — | | | | |
| | | 6.0 | 5.68 | — | — | 5.63 | — | | | | |
| | V _{OL} | 2.0 | — | 0.0 | 0.1 | — | 0.1 | V | Vin = V _{IH} or V _{IL} | I _{OL} = 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 _{OH} = 6 mA | |
| | | 6.0 | — | — | 0.26 | — | 0.33 | | | I _{OH} = 7.8 mA | |
| Off-state output current | I _{oz} | 6.0 | — | — | ±0.5 | — | ±5.0 | μA | Vin = V _{IH} or V _{IL} , Vout = V _{CC} or GND | | |
| Input current | I _{in} | 6.0 | — | — | ±0.1 | — | ±1.0 | μA | Vin = V _{CC} or GND | | |
| Quiescent supply current | I _{CC} | 6.0 | — | — | 4.0 | — | 40 | μA | Vin = V _{CC} or GND, Iout = 0 μA | | |

Switching Characteristics

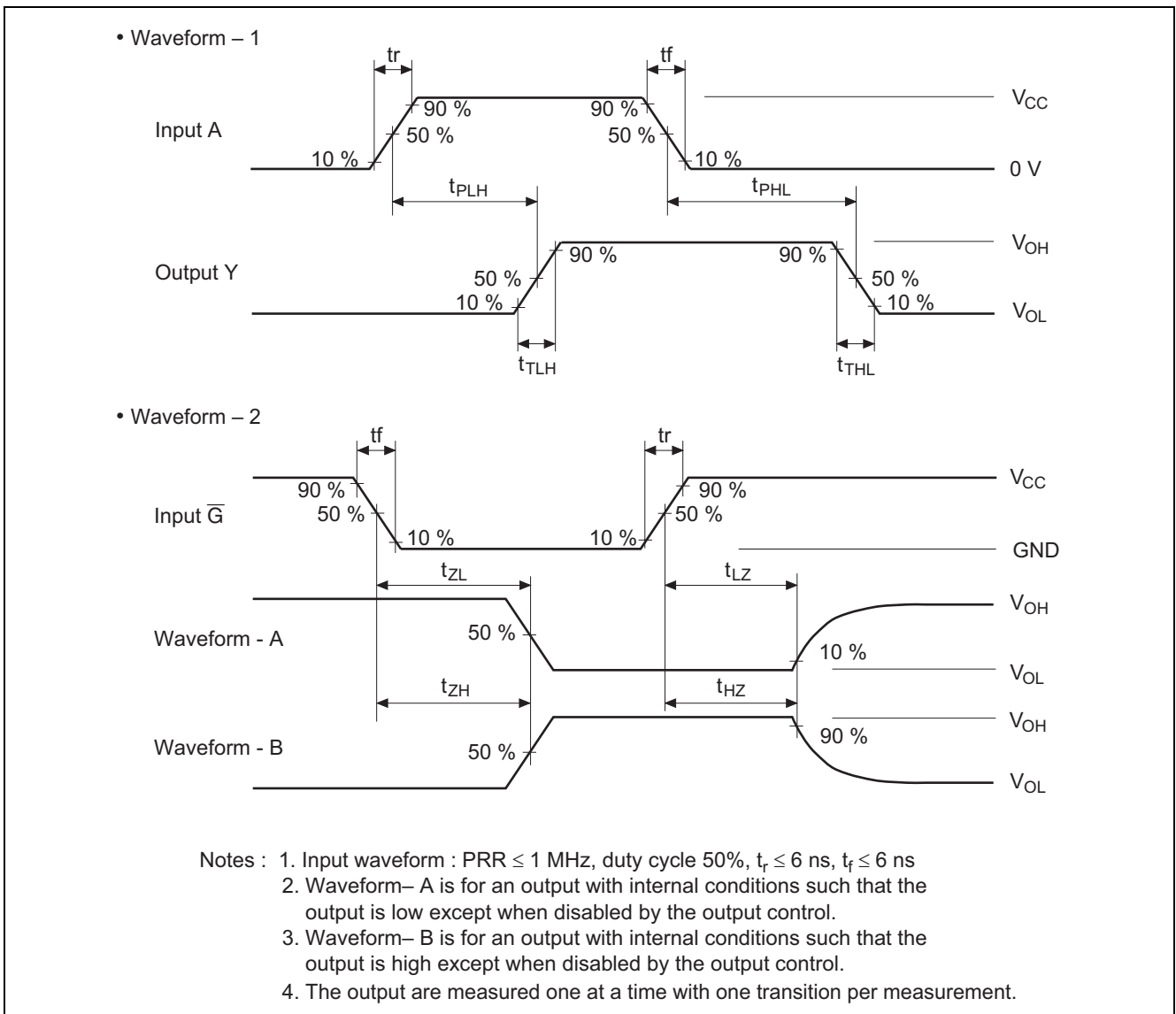
(C_L = 50 pF, Input t_r = t_f = 6 ns)

| 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 _{PLH} | 2.0 | — | — | 120 | — | 150 | ns | | |
| | t _{PHL} | 4.5 | — | 9 | 24 | — | 30 | | | |
| | | 6.0 | — | — | 20 | — | 26 | | | |
| Output enable time | t _{ZH} | 2.0 | — | — | 220 | — | 275 | ns | | |
| | t _{ZL} | 4.5 | — | 13 | 44 | — | 55 | | | |
| | | 6.0 | — | — | 37 | — | 47 | | | |
| Output disable time | t _{HZ} | 2.0 | — | — | 220 | — | 275 | ns | | |
| | t _{LZ} | 4.5 | — | 15 | 44 | — | 55 | | | |
| | | 6.0 | — | — | 37 | — | 47 | | | |
| Output rise/fall time | t _{TLH} | 2.0 | — | — | 60 | — | 75 | ns | | |
| | t _{THL} | 4.5 | — | 4 | 12 | — | 15 | | | |
| | | 6.0 | — | — | 10 | — | 13 | | | |
| Input capacitance | C _{in} | — | — | 5 | 10 | — | 10 | pF | | |

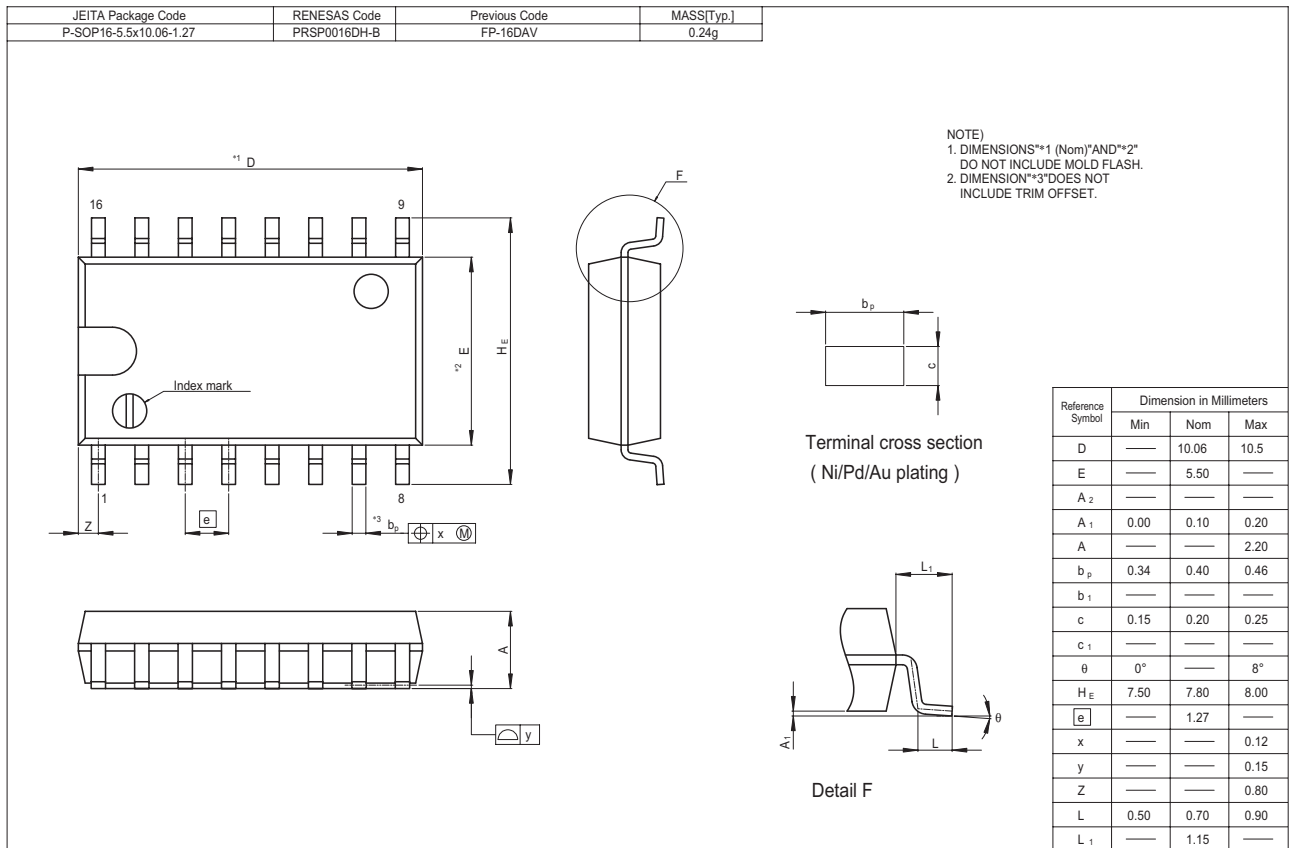
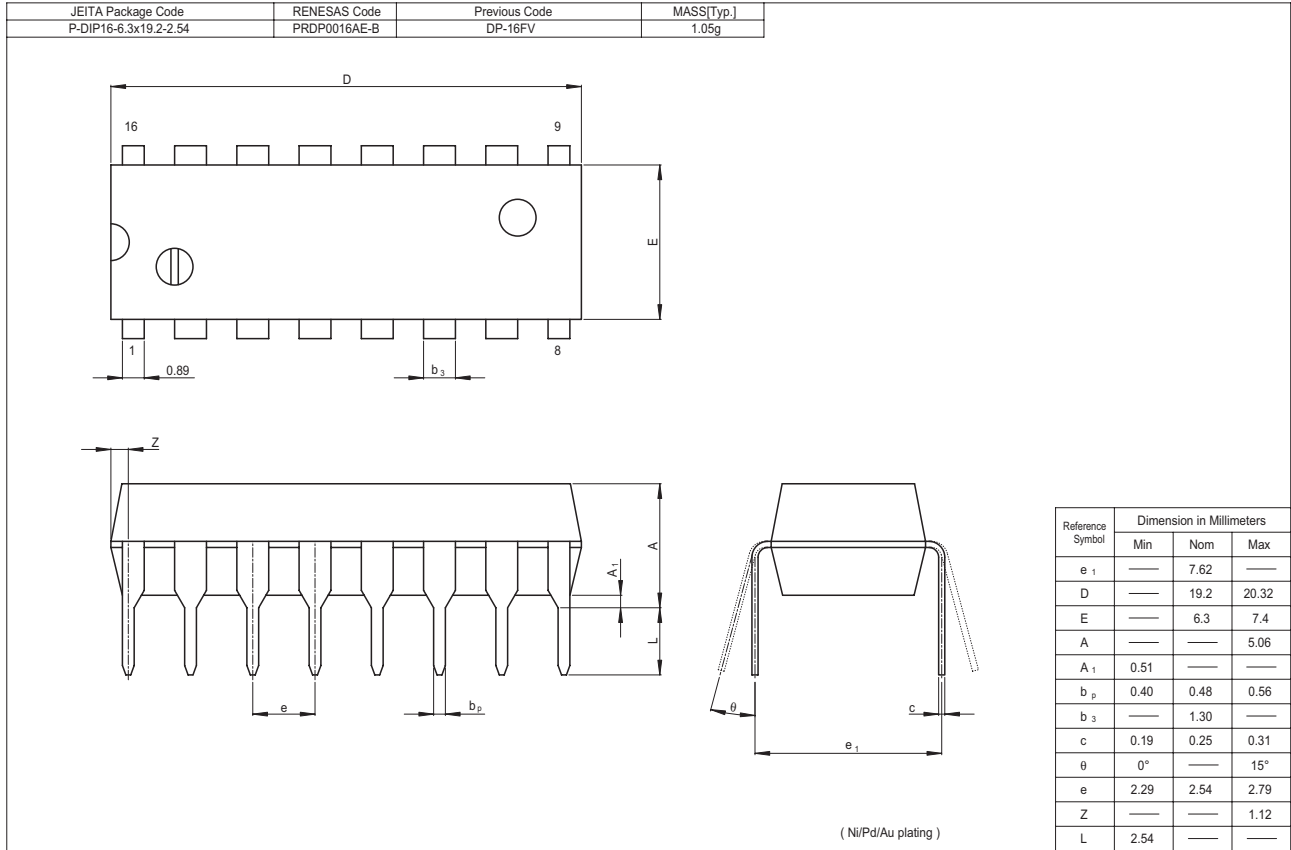
Test Circuit



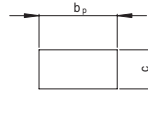
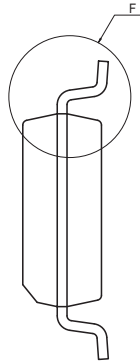
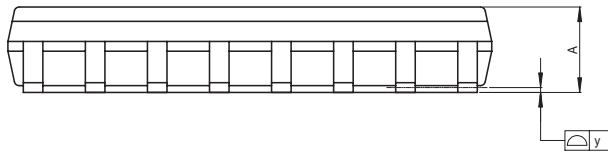
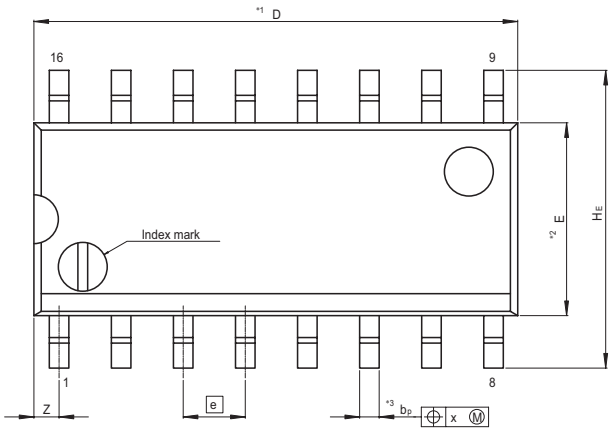
Waveforms



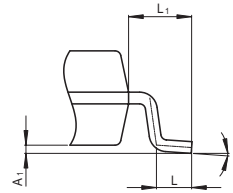
Package Dimensions



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



Terminal cross section
(Ni/Pd/Au plating)



Detail F

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

| Reference Symbol | Dimension in Millimeters | | |
|------------------|--------------------------|------|-------|
| | Min | Nom | Max |
| D | — | 9.90 | 10.30 |
| E | — | 3.95 | — |
| A ₂ | — | — | — |
| A ₁ | 0.10 | 0.14 | 0.25 |
| A | — | — | 1.75 |
| b _p | 0.34 | 0.40 | 0.46 |
| b ₁ | — | — | — |
| c | 0.15 | 0.20 | 0.25 |
| c ₁ | — | — | — |
| θ | 0° | — | 8° |
| H _E | 5.80 | 6.10 | 6.20 |
| e | — | 1.27 | — |
| x | — | — | 0.25 |
| y | — | — | 0.15 |
| Z | — | — | 0.635 |
| L | 0.40 | 0.60 | 1.27 |
| L ₁ | — | 1.08 | — |

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