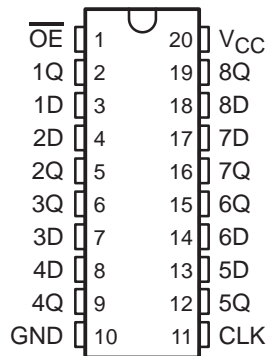


SN54HC374, SN74HC374 OCTAL EDGE-TRIGGERED D-TYPE FLIP-FLOPS WITH 3-STATE OUTPUTS

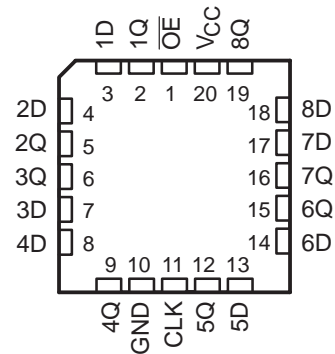
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- Wide Operating Voltage Range of 2 V to 6 V
- High-Current 3-State True Outputs Can Drive Up To 15 LSTTL Loads
- Eight D-Type Flip-Flops in a Single Package
- Full Parallel Access for Loading
- Low Power Consumption, 80- μ A Max I_{CC}
- Typical $t_{pd} = 14$ ns
- ± 6 -mA Output Drive at 5 V
- Low Input Current of 1 μ A Max

SN54HC374 . . . J OR W PACKAGE
SN74HC374 . . . DB, DW, N, NS, OR PW PACKAGE
(TOP VIEW)



SN54HC374 . . . FK PACKAGE
(TOP VIEW)



description/ordering information

These 8-bit flip-flops feature 3-state outputs designed specifically for driving highly capacitive or relatively low-impedance loads. They are particularly suitable for implementing buffer registers, I/O ports, bidirectional bus drivers, and working registers.

The eight flip-flops of the 'HC374 devices are edge-triggered D-type flip-flops. On the positive transition of the clock (CLK) input, the Q outputs are set to the logic levels that were set up at the data (D) inputs.

An output-enable (\overline{OE}) input places the eight outputs in either a normal logic state (high or low logic levels) or the high-impedance state. In the high-impedance state, the outputs neither load nor drive the bus lines significantly. The high-impedance state and increased drive provide the capability to drive bus lines without interface or pullup components.

ORDERING INFORMATION

| TA | PACKAGE† | | ORDERABLE PART NUMBER | TOP-SIDE MARKING | |
|----------------|--------------|--------------|-----------------------|------------------|-------|
| -40°C to 85°C | PDIP – N | Tube of 20 | SN74HC374N | SN74HC374N | |
| | SOIC – DW | Tube of 25 | SN74HC374DW | HC374 | |
| | | Reel of 2000 | SN74HC374DWR | | |
| | SOP – NS | Reel of 2000 | SN74HC374NSR | HC374 | |
| | | SSOP – DB | Reel of 2000 | SN74HC374DBR | HC374 |
| | | TSSOP – PW | Tube of 2000 | SN74HC374PWR | HC374 |
| Reel of 250 | SN74HC374PWT | | | | |
| -55°C to 125°C | CDIP – J | Tube of 20 | SNJ54HC374J | SNJ54HC374J | |
| | CFP – W | Tube of 85 | SNJ54HC374W | SNJ54HC374W | |
| | LCCC – FK | Tube of 55 | SNJ54HC374FK | SNJ54HC374FK | |

† Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at www.ti.com/sc/package.



Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

 **TEXAS
INSTRUMENTS**

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On products compliant to MIL-PRF-38535, all parameters are tested unless otherwise noted. On all other products, production processing does not necessarily include testing of all parameters.

SN54HC374, SN74HC374 OCTAL EDGE-TRIGGERED D-TYPE FLIP-FLOPS WITH 3-STATE OUTPUTS

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description/ordering information (continued)

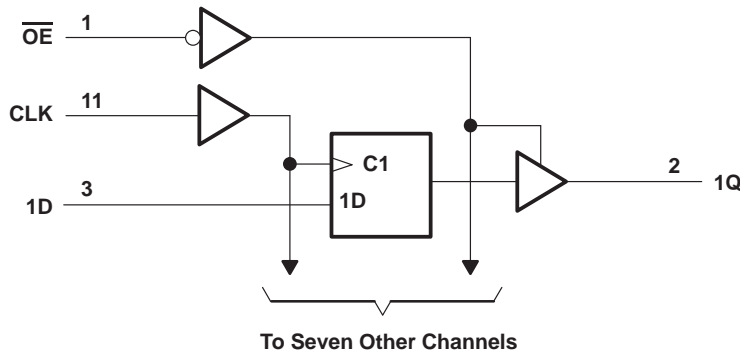
\overline{OE} does not affect the internal operations of the flip-flops. Old data can be retained or new data can be entered while the outputs are in the high-impedance state.

To ensure the high-impedance state during power up or power down, \overline{OE} should be tied to V_{CC} through a pullup resistor; the minimum value of the resistor is determined by the current-sinking capability of the driver.

FUNCTION TABLE
(each flip-flop)

| INPUTS | | | OUTPUT |
|-----------------|--------|---|--------|
| \overline{OE} | CLK | D | Q |
| L | ↑ | H | H |
| L | ↑ | L | L |
| L | H or L | X | Q_0 |
| H | X | X | Z |

logic diagram (positive logic)



absolute maximum ratings over operating free-air temperature range (unless otherwise noted)†

| | |
|---|----------------|
| Supply voltage range, V_{CC} | -0.5 V to 7 V |
| Input clamp current, I_{IK} ($V_I < 0$ or $V_I > V_{CC}$) (see Note 1) | ±20 mA |
| Output clamp current, I_{OK} ($V_O < 0$ or $V_O > V_{CC}$) (see Note 1) | ±20 mA |
| Continuous output current, I_O ($V_O = 0$ to V_{CC}) | ±35 mA |
| Continuous current through V_{CC} or GND | ±70 mA |
| Package thermal impedance, θ_{JA} (see Note 2): | |
| DB package | 70°C/W |
| DW package | 58°C/W |
| N package | 69°C/W |
| NS package | 60°C/W |
| PW package | 83°C/W |
| Storage temperature range, T_{stg} | -65°C to 150°C |

† Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

- NOTES: 1. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.
2. The package thermal impedance is calculated in accordance with JESD 51-7.

SN54HC374, SN74HC374 OCTAL EDGE-TRIGGERED D-TYPE FLIP-FLOPS WITH 3-STATE OUTPUTS

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recommended operating conditions (see Note 3)

| | | SN54HC374 | | | SN74HC374 | | | UNIT |
|-----------------|---------------------------------|-------------------------|-----|-----------------|-----------|-----------------|-----|------|
| | | MIN | NOM | MAX | MIN | NOM | MAX | |
| V _{CC} | Supply voltage | 2 | 5 | 6 | 2 | 5 | 6 | V |
| V _{IH} | High-level input voltage | V _{CC} = 2 V | | 1.5 | 1.5 | | V | |
| | | V _{CC} = 4.5 V | | 3.15 | 3.15 | | | |
| | | V _{CC} = 6 V | | 4.2 | 4.2 | | | |
| V _{IL} | Low-level input voltage | V _{CC} = 2 V | | | 0.5 | 0.5 | V | |
| | | V _{CC} = 4.5 V | | | 1.35 | 1.35 | | |
| | | V _{CC} = 6 V | | | 1.8 | 1.8 | | |
| V _I | Input voltage | 0 | | V _{CC} | 0 | V _{CC} | V | |
| V _O | Output voltage | 0 | | V _{CC} | 0 | V _{CC} | V | |
| Δt/Δv | Input transition rise/fall time | V _{CC} = 2 V | | | 1000 | 1000 | ns | |
| | | V _{CC} = 4.5 V | | | 500 | 500 | | |
| | | V _{CC} = 6 V | | | 400 | 400 | | |
| T _A | Operating free-air temperature | -55 | | 125 | -40 | 85 | °C | |

NOTE 3: All unused inputs of the device must be held at V_{CC} or GND to ensure proper device operation. Refer to the TI application report, *Implications of Slow or Floating CMOS Inputs*, literature number SCBA004.

electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

| PARAMETER | TEST CONDITIONS | | V _{CC} | T _A = 25°C | | SN54HC374 | | SN74HC374 | | UNIT |
|-----------------|---|---------------------------|-----------------|-----------------------|-------|-----------|-------|-----------|-----|------|
| | | | | MIN | TYP | MAX | MIN | MAX | MIN | |
| V _{OH} | V _I = V _{IH} or V _{IL} | I _{OH} = -20 μA | 2 V | 1.9 | 1.998 | 1.9 | 1.9 | V | | |
| | | | 4.5 V | 4.4 | 4.499 | 4.4 | 4.4 | | | |
| | | | 6 V | 5.9 | 5.999 | 5.9 | 5.9 | | | |
| | | I _{OH} = -6 mA | 4.5 V | 3.98 | 4.3 | 3.7 | 3.84 | | | |
| | | I _{OH} = -7.8 mA | 6 V | 5.48 | 5.8 | 5.2 | 5.34 | | | |
| V _{OL} | V _I = V _{IH} or V _{IL} | I _{OL} = 20 μA | 2 V | | 0.002 | 0.1 | 0.1 | 0.1 | V | |
| | | | 4.5 V | | 0.001 | 0.1 | 0.1 | 0.1 | | |
| | | | 6 V | | 0.001 | 0.1 | 0.1 | 0.1 | | |
| | | I _{OL} = 6 mA | 4.5 V | | 0.17 | 0.26 | 0.4 | 0.33 | | |
| | | I _{OL} = 7.8 mA | 6 V | | 0.15 | 0.26 | 0.4 | 0.33 | | |
| I _I | V _I = V _{CC} or 0 | | 6 V | | ±0.1 | ±100 | ±1000 | ±1000 | nA | |
| I _{OZ} | V _O = V _{CC} or 0 | | 6 V | | ±0.01 | ±0.5 | ±10 | ±5 | μA | |
| I _{CC} | V _I = V _{CC} or 0, I _O = 0 | | 6 V | | | 8 | 160 | 80 | μA | |
| C _i | | | 2 V to 6 V | | 3 | 10 | 10 | 10 | pF | |

SN54HC374, SN74HC374 OCTAL EDGE-TRIGGERED D-TYPE FLIP-FLOPS WITH 3-STATE OUTPUTS

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timing requirements over recommended operating free-air temperature range (unless otherwise noted)

| | V _{CC} | T _A = 25°C | | SN54HC374 | | SN74HC374 | | UNIT |
|--|-----------------|-----------------------|-----|-----------|-----|-----------|-----|------|
| | | MIN | MAX | MIN | MAX | MIN | MAX | |
| f _{clock} Clock frequency | 2 V | 6 | | 4 | | 5 | | MHz |
| | 4.5 V | 30 | | 20 | | 24 | | |
| | 6 V | 35 | | 24 | | 28 | | |
| t _w Pulse duration, CLK high or low | 2 V | 80 | | 120 | | 100 | | ns |
| | 4.5 V | 16 | | 24 | | 20 | | |
| | 6 V | 14 | | 20 | | 17 | | |
| t _{su} Setup time, data before CLK↑ | 2 V | 100 | | 150 | | 125 | | ns |
| | 4.5 V | 20 | | 30 | | 25 | | |
| | 6 V | 17 | | 25 | | 21 | | |
| t _h Hold time, data after CLK↑ | 2 V | 10 | | 13 | | 12 | | ns |
| | 4.5 V | 5 | | 5 | | 5 | | |
| | 6 V | 5 | | 5 | | 5 | | |

switching characteristics over recommended operating free-air temperature range, C_L = 50 pF (unless otherwise noted) (see Figure 1)

| PARAMETER | FROM (INPUT) | TO (OUTPUT) | V _{CC} | T _A = 25°C | | | SN54HC374 | | SN74HC374 | | UNIT |
|------------------|-----------------|-------------|-----------------|-----------------------|-----|-----|-----------|-----|-----------|-----|------|
| | | | | MIN | TYP | MAX | MIN | MAX | MIN | MAX | |
| f _{max} | | | 2 V | 6 | 12 | | 4 | | 5 | MHz | |
| | | | 4.5 V | 30 | 60 | | 20 | | 24 | | |
| | | | 6 V | 35 | 70 | | 24 | | 28 | | |
| t _{pd} | CLK | Any Q | 2 V | | 63 | 180 | | 270 | | 225 | ns |
| | | | 4.5 V | | 17 | 36 | | 54 | | 45 | |
| | | | 6 V | | 15 | 31 | | 46 | | 38 | |
| t _{en} | \overline{OE} | Any Q | 2 V | | 60 | 150 | | 225 | | 190 | ns |
| | | | 4.5 V | | 16 | 30 | | 45 | | 38 | |
| | | | 6 V | | 14 | 26 | | 38 | | 32 | |
| t _{dis} | \overline{OE} | Any Q | 2 V | | 36 | 150 | | 225 | | 190 | ns |
| | | | 4.5 V | | 17 | 30 | | 45 | | 38 | |
| | | | 6 V | | 16 | 26 | | 38 | | 32 | |
| t _t | | Any Q | 2 V | | 28 | 60 | | 90 | | 75 | ns |
| | | | 4.5 V | | 8 | 12 | | 18 | | 15 | |
| | | | 6 V | | 6 | 10 | | 15 | | 13 | |



SN54HC374, SN74HC374 OCTAL EDGE-TRIGGERED D-TYPE FLIP-FLOPS WITH 3-STATE OUTPUTS

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switching characteristics over recommended operating free-air temperature range, $C_L = 150 \text{ pF}$
(unless otherwise noted) (see Figure 1)

| PARAMETER | FROM (INPUT) | TO (OUTPUT) | V_{CC} | $T_A = 25^\circ\text{C}$ | | | SN54HC374 | | SN74HC374 | | UNIT |
|------------|------------------------|----------------|----------|--------------------------|-----|-----|-----------|-----|-----------|-----|------|
| | | | | MIN | TYP | MAX | MIN | MAX | MIN | MAX | |
| f_{\max} | | | 2 V | 6 | 12 | | | 5 | | MHz | |
| | | | 4.5 V | 30 | 60 | | | 24 | | | |
| | | | 6 V | 35 | 70 | | | 28 | | | |
| t_{pd} | CLK | Any Q | 2 V | | 80 | 230 | | 345 | | 290 | ns |
| | | | 4.5 V | | 22 | 46 | | 69 | | 58 | |
| | | | 6 V | | 19 | 39 | | 58 | | 49 | |
| t_{en} | $\overline{\text{OE}}$ | Any Q | 2 V | | 70 | 200 | | 300 | | 250 | ns |
| | | | 4.5 V | | 25 | 40 | | 60 | | 50 | |
| | | | 6 V | | 22 | 34 | | 51 | | 43 | |
| t_t | | Any Q | 2 V | | 45 | 210 | | 315 | | 265 | ns |
| | | | 4.5 V | | 17 | 42 | | 63 | | 53 | |
| | | | 6 V | | 13 | 36 | | 53 | | 45 | |

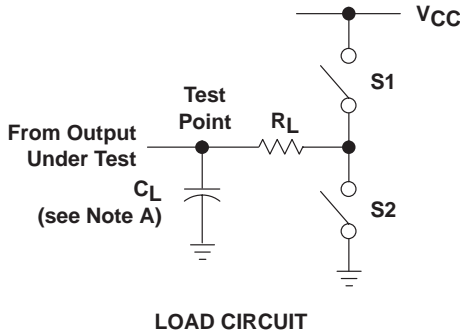
operating characteristics, $T_A = 25^\circ\text{C}$

| PARAMETER | TEST CONDITIONS | TYP | UNIT |
|--|-----------------|-----|------|
| C_{pd} Power dissipation capacitance per flip-flop | No load | 100 | pF |

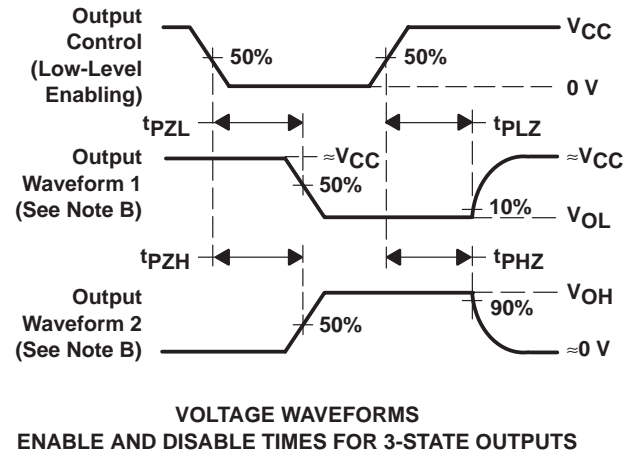
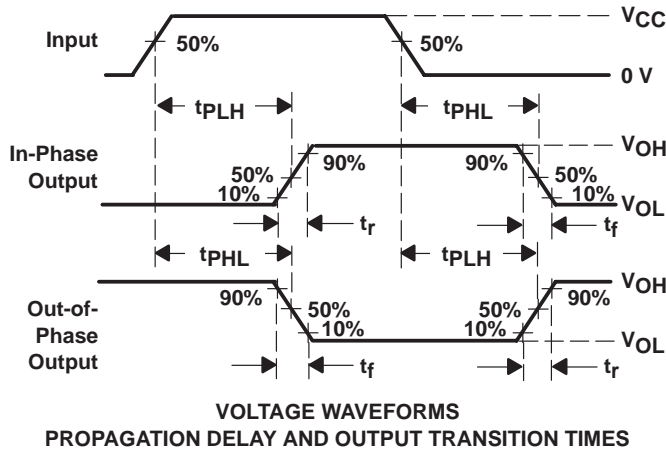
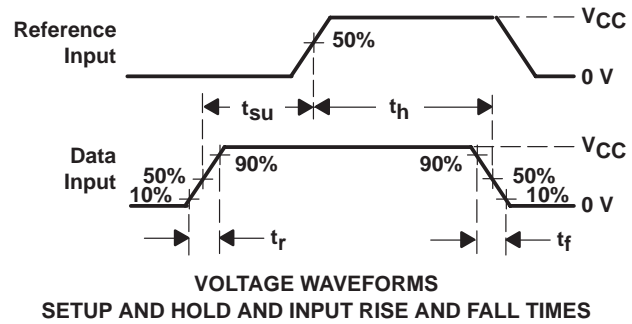
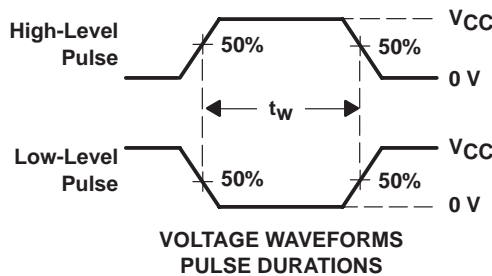
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PARAMETER MEASUREMENT INFORMATION



| PARAMETER | R_L | C_L | S1 | S2 |
|-------------------|--------------|-----------------|--------|--------|
| t_{en} | 1 k Ω | 50 pF or 150 pF | Open | Closed |
| | | | Closed | Open |
| t_{dis} | 1 k Ω | 50 pF | Open | Closed |
| | | | Closed | Open |
| t_{pd} or t_t | --- | 50 pF or 150 pF | Open | Open |



- NOTES: A. C_L includes probe and test-fixture capacitance.
 B. Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control. Waveform 2 is for an output with internal conditions such that the output is high except when disabled by the output control.
 C. Phase relationships between waveforms were chosen arbitrarily. All input pulses are supplied by generators having the following characteristics: $PRR \leq 1$ MHz, $Z_O = 50 \Omega$, $t_r = 6$ ns, $t_f = 6$ ns.
 D. For clock inputs, f_{max} is measured when the input duty cycle is 50%.
 E. The outputs are measured one at a time with one input transition per measurement.
 F. t_{PLZ} and t_{PHZ} are the same as t_{dis} .
 G. t_{PZL} and t_{PZH} are the same as t_{en} .
 H. t_{PLH} and t_{PHL} are the same as t_{pd} .

Figure 1. Load Circuit and Voltage Waveforms

PACKAGING INFORMATION

| Orderable Device | Status (1) | Package Type | Package Drawing | Pins | Package Qty | Eco Plan (2) | Lead/Ball Finish | MSL Peak Temp (3) | Op Temp (°C) | Top-Side Markings (4) | Samples |
|------------------|---------------|--------------|--------------------|------|-------------|----------------------------|------------------|----------------------|--------------|------------------------------------|-------------------------|
| 5962-8407101VRA | ACTIVE | CDIP | J | 20 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | 5962-8407101VR A SNV54HC374J | Samples |
| 5962-8407101VSA | ACTIVE | CFP | W | 20 | 1 | TBD | Call TI | N / A for Pkg Type | -55 to 125 | 5962-8407101VS A SNV54HC374W | Samples |
| 84071012A | ACTIVE | LCCC | FK | 20 | 1 | TBD | Call TI | Call TI | -55 to 125 | 84071012A SNJ54HC 374FK | Samples |
| 8407101RA | ACTIVE | CDIP | J | 20 | 1 | TBD | Call TI | Call TI | -55 to 125 | 8407101RA SNJ54HC374J | Samples |
| 8407101SA | ACTIVE | CFP | W | 20 | 1 | TBD | Call TI | Call TI | -55 to 125 | 8407101SA SNJ54HC374W | Samples |
| JM38510/65602BRA | ACTIVE | CDIP | J | 20 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | JM38510/ 65602BRA | Samples |
| M38510/65602BRA | ACTIVE | CDIP | J | 20 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | JM38510/ 65602BRA | Samples |
| SN54HC374J | ACTIVE | CDIP | J | 20 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | SN54HC374J | Samples |
| SN74HC374DBR | ACTIVE | SSOP | DB | 20 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | HC374 | Samples |
| SN74HC374DBRE4 | ACTIVE | SSOP | DB | 20 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | HC374 | Samples |
| SN74HC374DBRG4 | ACTIVE | SSOP | DB | 20 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | HC374 | Samples |
| SN74HC374DW | ACTIVE | SOIC | DW | 20 | 25 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | HC374 | Samples |
| SN74HC374DWE4 | ACTIVE | SOIC | DW | 20 | 25 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | HC374 | Samples |
| SN74HC374DWG4 | ACTIVE | SOIC | DW | 20 | 25 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | HC374 | Samples |
| SN74HC374DWR | ACTIVE | SOIC | DW | 20 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | HC374 | Samples |
| SN74HC374DWRE4 | ACTIVE | SOIC | DW | 20 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | HC374 | Samples |

| Orderable Device | Status (1) | Package Type | Package Drawing | Pins | Package Qty | Eco Plan (2) | Lead/Ball Finish | MSL Peak Temp (3) | Op Temp (°C) | Top-Side Markings (4) | Samples |
|------------------|---------------|--------------|-----------------|------|-------------|-------------------------|------------------|----------------------|--------------|-------------------------------|-------------------------|
| SN74HC374DWRG4 | ACTIVE | SOIC | DW | 20 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | HC374 | Samples |
| SN74HC374N | ACTIVE | PDIP | N | 20 | 20 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | -40 to 85 | SN74HC374N | Samples |
| SN74HC374N3 | OBSOLETE | PDIP | N | 20 | | TBD | Call TI | Call TI | -40 to 85 | | |
| SN74HC374NE4 | ACTIVE | PDIP | N | 20 | 20 | Pb-Free (RoHS) | CU NIPDAU | N / A for Pkg Type | -40 to 85 | SN74HC374N | Samples |
| SN74HC374NSR | ACTIVE | SO | NS | 20 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | HC374 | Samples |
| SN74HC374NSRG4 | ACTIVE | SO | NS | 20 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | HC374 | Samples |
| SN74HC374PWLE | OBSOLETE | TSSOP | PW | 20 | | TBD | Call TI | Call TI | -40 to 85 | | |
| SN74HC374PWR | ACTIVE | TSSOP | PW | 20 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | HC374 | Samples |
| SN74HC374PWRE4 | ACTIVE | TSSOP | PW | 20 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | HC374 | Samples |
| SN74HC374PWRG4 | ACTIVE | TSSOP | PW | 20 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | HC374 | Samples |
| SN74HC374PWT | ACTIVE | TSSOP | PW | 20 | 250 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | HC374 | Samples |
| SN74HC374PWTE4 | ACTIVE | TSSOP | PW | 20 | 250 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | HC374 | Samples |
| SN74HC374PWTG4 | ACTIVE | TSSOP | PW | 20 | 250 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM | -40 to 85 | HC374 | Samples |
| SNJ54HC374FK | ACTIVE | LCCC | FK | 20 | 1 | TBD | POST-PLATE | N / A for Pkg Type | -55 to 125 | 84071012A SNJ54HC 374FK | Samples |
| SNJ54HC374J | ACTIVE | CDIP | J | 20 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | 8407101RA SNJ54HC374J | Samples |
| SNJ54HC374W | ACTIVE | CFP | W | 20 | 1 | TBD | Call TI | N / A for Pkg Type | -55 to 125 | 8407101SA SNJ54HC374W | Samples |

(1) The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBSOLETE: TI has discontinued the production of the device.

⁽²⁾ Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

TBD: The Pb-Free/Green conversion plan has not been defined.

Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

⁽³⁾ MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

⁽⁴⁾ Only one of markings shown within the brackets will appear on the physical device.

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OTHER QUALIFIED VERSIONS OF SN54HC374, SN54HC374-SP, SN74HC374 :

- Catalog: [SN74HC374](#), [SN54HC374](#)
- Military: [SN54HC374](#)
- Space: [SN54HC374-SP](#)

NOTE: Qualified Version Definitions:

- Catalog - TI's standard catalog product
- Military - QML certified for Military and Defense Applications
- Space - Radiation tolerant, ceramic packaging and qualified for use in Space-based application

TAPE AND REEL INFORMATION

QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE


*All dimensions are nominal

| Device | Package Type | Package Drawing | Pins | SPQ | Reel Diameter (mm) | Reel Width W1 (mm) | A0 (mm) | B0 (mm) | K0 (mm) | P1 (mm) | W (mm) | Pin1 Quadrant |
|--------------|--------------|-----------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| SN74HC374DBR | SSOP | DB | 20 | 2000 | 330.0 | 16.4 | 8.2 | 7.5 | 2.5 | 12.0 | 16.0 | Q1 |
| SN74HC374DWR | SOIC | DW | 20 | 2000 | 330.0 | 24.4 | 10.8 | 13.3 | 2.7 | 12.0 | 24.0 | Q1 |
| SN74HC374DWR | SOIC | DW | 20 | 2000 | 330.0 | 24.4 | 10.8 | 13.0 | 2.7 | 12.0 | 24.0 | Q1 |
| SN74HC374NSR | SO | NS | 20 | 2000 | 330.0 | 24.4 | 8.2 | 13.0 | 2.5 | 12.0 | 24.0 | Q1 |
| SN74HC374PWR | TSSOP | PW | 20 | 2000 | 330.0 | 16.4 | 6.95 | 7.1 | 1.6 | 8.0 | 16.0 | Q1 |
| SN74HC374PWT | TSSOP | PW | 20 | 250 | 330.0 | 16.4 | 6.95 | 7.1 | 1.6 | 8.0 | 16.0 | Q1 |

TAPE AND REEL BOX DIMENSIONS


*All dimensions are nominal

| Device | Package Type | Package Drawing | Pins | SPQ | Length (mm) | Width (mm) | Height (mm) |
|--------------|--------------|-----------------|------|------|-------------|------------|-------------|
| SN74HC374DBR | SSOP | DB | 20 | 2000 | 367.0 | 367.0 | 38.0 |
| SN74HC374DWR | SOIC | DW | 20 | 2000 | 367.0 | 367.0 | 45.0 |
| SN74HC374DWR | SOIC | DW | 20 | 2000 | 367.0 | 367.0 | 45.0 |
| SN74HC374NSR | SO | NS | 20 | 2000 | 367.0 | 367.0 | 45.0 |
| SN74HC374PWR | TSSOP | PW | 20 | 2000 | 367.0 | 367.0 | 38.0 |
| SN74HC374PWT | TSSOP | PW | 20 | 250 | 367.0 | 367.0 | 38.0 |

J (R-GDIP-T**)

14 LEADS SHOWN

CERAMIC DUAL IN-LINE PACKAGE



| DIM \ PINS ** | 14 | 16 | 18 | 20 |
|---------------|------------------------|------------------------|------------------------|------------------------|
| A | 0.300 (7,62) BSC | 0.300 (7,62) BSC | 0.300 (7,62) BSC | 0.300 (7,62) BSC |
| B MAX | 0.785 (19,94) | .840 (21,34) | 0.960 (24,38) | 1.060 (26,92) |
| B MIN | — | — | — | — |
| C MAX | 0.300 (7,62) | 0.300 (7,62) | 0.310 (7,87) | 0.300 (7,62) |
| C MIN | 0.245 (6,22) | 0.245 (6,22) | 0.220 (5,59) | 0.245 (6,22) |



4040083/F 03/03

- NOTES:
- All linear dimensions are in inches (millimeters).
 - This drawing is subject to change without notice.
 - This package is hermetically sealed with a ceramic lid using glass frit.
 - Index point is provided on cap for terminal identification only on press ceramic glass frit seal only.
 - Falls within MIL STD 1835 GDIP1-T14, GDIP1-T16, GDIP1-T18 and GDIP1-T20.

W (R-GDFP-F20)

CERAMIC DUAL FLATPACK



- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - C. This package can be hermetically sealed with a ceramic lid using glass frit.
 - D. Index point is provided on cap for terminal identification only.
 - E. Falls within Mil-Std 1835 GDFP2-F20

FK (S-CQCC-N**)

LEADLESS CERAMIC CHIP CARRIER

28 TERMINAL SHOWN



| NO. OF TERMINALS ** | A | | B | |
|---------------------|------------------|------------------|------------------|------------------|
| | MIN | MAX | MIN | MAX |
| 20 | 0.342 (8,69) | 0.358 (9,09) | 0.307 (7,80) | 0.358 (9,09) |
| 28 | 0.442 (11,23) | 0.458 (11,63) | 0.406 (10,31) | 0.458 (11,63) |
| 44 | 0.640 (16,26) | 0.660 (16,76) | 0.495 (12,58) | 0.560 (14,22) |
| 52 | 0.740 (18,78) | 0.761 (19,32) | 0.495 (12,58) | 0.560 (14,22) |
| 68 | 0.938 (23,83) | 0.962 (24,43) | 0.850 (21,6) | 0.858 (21,8) |
| 84 | 1.141 (28,99) | 1.165 (29,59) | 1.047 (26,6) | 1.063 (27,0) |



4040140/D 01/11

- NOTES:
- All linear dimensions are in inches (millimeters).
 - This drawing is subject to change without notice.
 - This package can be hermetically sealed with a metal lid.
 - Falls within JEDEC MS-004

N (R-PDIP-T**)

PLASTIC DUAL-IN-LINE PACKAGE

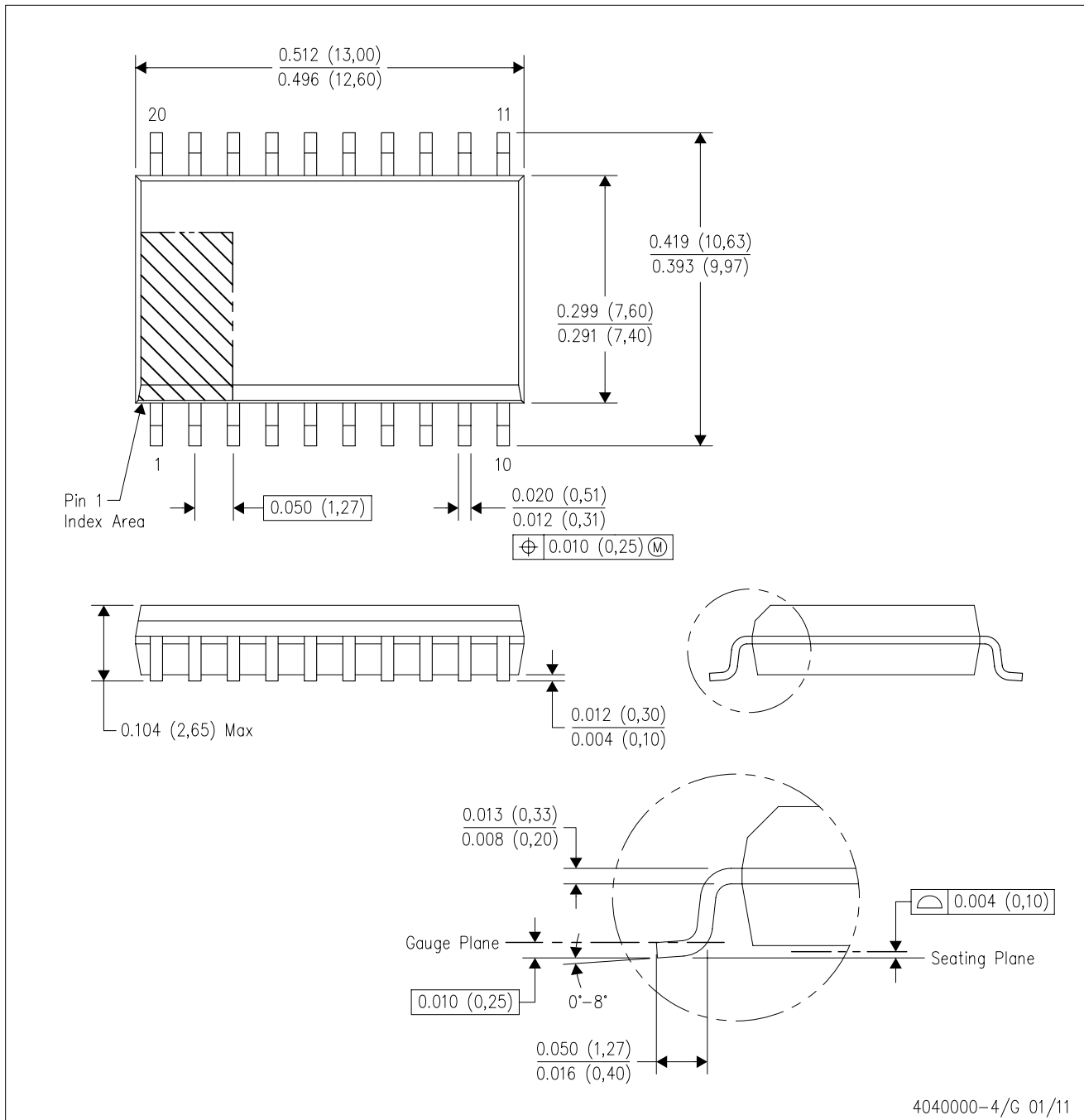
16 PINS SHOWN



- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - Falls within JEDEC MS-001, except 18 and 20 pin minimum body length (Dim A).
 - The 20 pin end lead shoulder width is a vendor option, either half or full width.

DW (R-PDSO-G20)

PLASTIC SMALL OUTLINE



- NOTES:
- All linear dimensions are in inches (millimeters). Dimensioning and tolerancing per ASME Y14.5M-1994.
 - This drawing is subject to change without notice.
 - Body dimensions do not include mold flash or protrusion not to exceed 0.006 (0,15).
 - Falls within JEDEC MS-013 variation AC.

DW (R-PDSO-G20)

PLASTIC SMALL OUTLINE

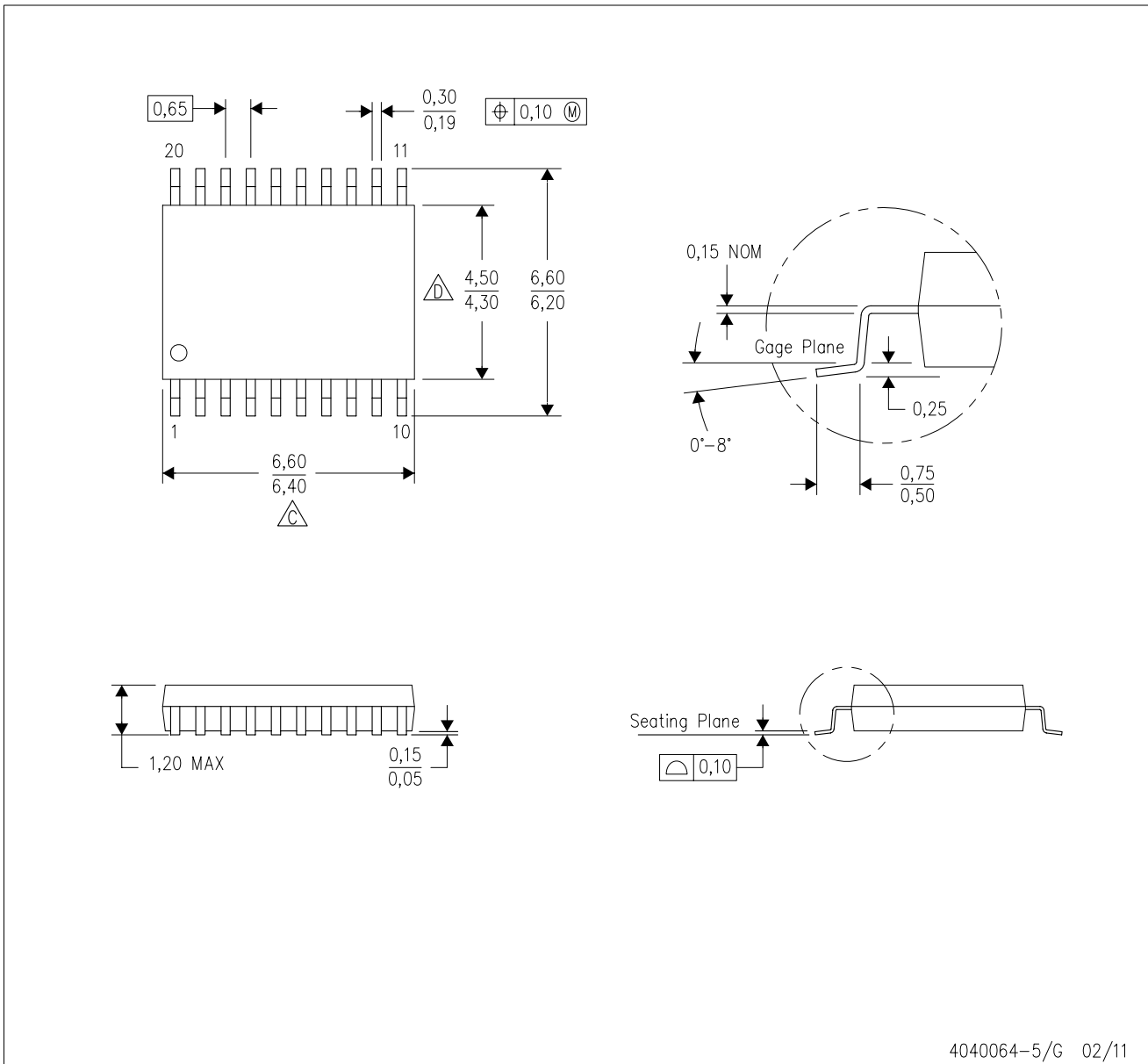


4209202-4/E 07/11

- NOTES:
- A. All linear dimensions are in millimeters.
 - B. This drawing is subject to change without notice.
 - C. Refer to IPC7351 for alternate board design.
 - D. Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC-7525
 - E. Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.

PW (R-PDSO-G20)

PLASTIC SMALL OUTLINE



4040064-5/G 02/11

- NOTES:
- A. All linear dimensions are in millimeters. Dimensioning and tolerancing per ASME Y14.5M-1994.
 - B. This drawing is subject to change without notice.
 -  C. Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0,15 each side.
 -  D. Body width does not include interlead flash. Interlead flash shall not exceed 0,25 each side.
 - E. Falls within JEDEC MO-153

PW (R-PDSO-G20)

PLASTIC SMALL OUTLINE



- NOTES:
- A. All linear dimensions are in millimeters.
 - B. This drawing is subject to change without notice.
 - C. Publication IPC-7351 is recommended for alternate design.
 - D. Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC-7525 for other stencil recommendations.
 - E. Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.

MECHANICAL DATA

NS (R-PDSO-G**)

PLASTIC SMALL-OUTLINE PACKAGE

14-PINS SHOWN



- NOTES:
- A. All linear dimensions are in millimeters.
 - B. This drawing is subject to change without notice.
 - C. Body dimensions do not include mold flash or protrusion, not to exceed 0,15.

DB (R-PDSO-G**)

PLASTIC SMALL-OUTLINE

28 PINS SHOWN



- NOTES: A. All linear dimensions are in millimeters.
 B. This drawing is subject to change without notice.
 C. Body dimensions do not include mold flash or protrusion not to exceed 0,15.
 D. Falls within JEDEC MO-150

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