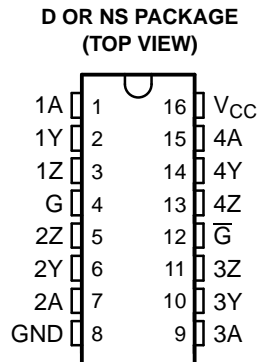


FEATURES

- Switching Rates up to 32 MHz
- Operate From a Single 3.3-V Supply
- Propagation Delay Time . . . 8 ns Typ
- Pulse Skew Time . . . 500 ps Typ
- High Output-Drive Current . . . ± 30 mA
- Controlled Rise and Fall Times . . . 3 ns Typ
- Differential Output Voltage With 100- Ω Load . . . 1.5 V Typ
- Ultra-Low Power Dissipation
 - dc, 0.3 mW Max
 - 32 MHz All Channels (No Load), 385 mW Typ
- Accept 5-V Logic Inputs With 3.3-V Supply
- Low-Voltage Pin-to-Pin Compatible Replacement for AM26C31, AM26LS31, MB571
- High Output Impedance in Power-Off Condition
- Driver Output Short-Protection Circuit
- Package Options Include Plastic Small-Outline (D, NS) Packages



DESCRIPTION/ORDERING INFORMATION

The AM26LV31C and AM26LV31I are BiCMOS quadruple differential line drivers with 3-state outputs. They are designed to be similar to TIA/EIA-422-B and ITU Recommendation V.11 drivers with reduced supply-voltage range.

The devices are optimized for balanced-bus transmission at switching rates up to 32 MHz. The outputs have very high current capability for driving balanced lines such as twisted-pair transmission lines and provide a high impedance in the power-off condition. The enable function is common to all four drivers and offers the choice of active-high or active-low enable inputs. The AM26LV31C and AM26LV31I are designed using Texas Instruments proprietary LinIMPACT-C60™ technology, facilitating ultra-low power consumption without sacrificing speed. These devices offer optimum performance when used with the AM26LV32 quadruple line receivers.

The AM26LV31C is characterized for operation from 0°C to 70°C. The AM26LV31I is characterized for operation from –45°C to 85°C

ORDERING INFORMATION

| T _A | PACKAGE ⁽¹⁾ | | ORDERABLE PART NUMBER | TOP-SIDE MARKING |
|----------------|------------------------|---------------|-----------------------|------------------|
| 0°C to 70°C | SOIC – D | Tape and reel | AM26LV31CD | AM26LV31C |
| | | | AM26LV31CDR | |
| | SOIC – NS | Tape and reel | AM26LV31CNS | 26LV31 |
| | | | AM26LV31CNSR | |
| –45°C to 85°C | SOIC – D | Tape and reel | AM26LV31ID | AM26LV31I |
| | | | AM26LV31IDR | |
| | SOIC – NS | Tape and reel | AM26LV31INS | 26LV31I |
| | | | AM26LV31INSR | |

(1) 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.

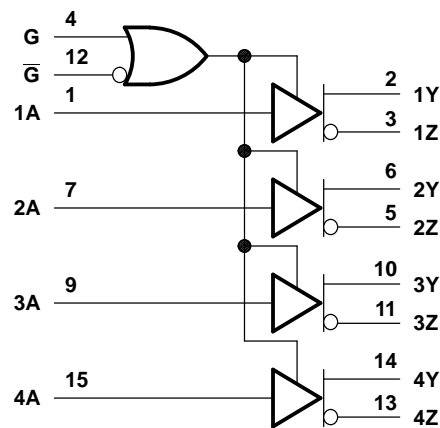
LinIMPACT-C60 is a trademark of Texas Instruments.

FUNCTION TABLE⁽¹⁾

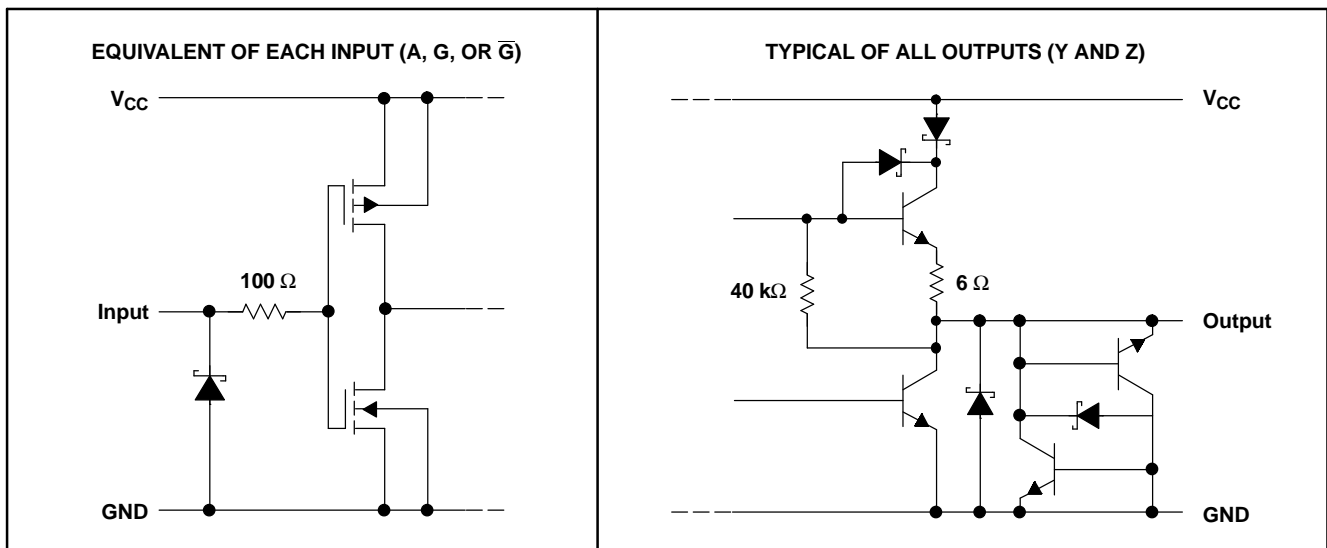
| INPUT A | ENABLES | | OUTPUTS | |
|------------|---------|-----------|---------|---|
| | G | \bar{G} | Y | Z |
| H | H | X | H | L |
| L | H | X | L | H |
| H | X | L | H | L |
| L | X | L | L | H |
| X | L | H | Z | Z |

(1) H = high level, L = low level, X = irrelevant,
 Z = high impedance (off)

LOGIC DIAGRAM (POSITIVE LOGIC)



SCHEMATIC (EACH DRIVER)



All resistor values are nominal.

Absolute Maximum Ratings⁽¹⁾

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

| | | MIN | MAX | UNIT |
|------------------|--|-------------------------------------|-----|------|
| V _{CC} | Supply voltage range ⁽²⁾ | -0.3 | 6 | V |
| V _I | Input voltage range | -0.3 | 6 | V |
| V _O | Output voltage range | -0.3 | 6 | V |
| θ _{JA} | Package thermal impedance ⁽³⁾ | D package | | 73 |
| | | NS package | | 64 |
| | Lead temperature | 1,6 mm (1/16 in) from case for 10 s | | 260 |
| T _{stg} | Storage temperature range | -65 | 150 | °C |

- (1) 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.
- (2) All voltage values are with respect to GND.
- (3) The package thermal impedance is calculated in accordance with JESD 51-7.

Recommended Operating Conditions

| | | MIN | NOM | MAX | UNIT |
|-----------------|--------------------------------|-----------|-----|-----|------|
| V _{CC} | Supply voltage | 3 | 3.3 | 3.6 | V |
| V _{IH} | High-level input voltage | 2 | | | V |
| V _{IL} | Low-level input voltage | | | 0.8 | V |
| I _{OH} | High-level output current | | | -30 | mA |
| I _{OL} | Low-level output current | | | 30 | mA |
| T _A | Operating free-air temperature | AM26LV31C | | 0 | 70 |
| | | AM26LV31I | | -45 | 85 |

Electrical Characteristics

over recommended operating supply-voltage and free-air temperature ranges (unless otherwise noted)

| PARAMETER | | TEST CONDITIONS | | MIN | TYP ⁽¹⁾ | MAX | UNIT |
|-------------------|--|--|------------------------------|------|--------------------|------|------|
| V _{IK} | Input clamp voltage | I _I = 18 mA | | | | -1.5 | V |
| V _{OH} | High-level output voltage | V _{IH} = 2 V, | I _{OH} = -12 mA | 1.85 | 2.3 | | V |
| V _{OL} | Low-level output voltage | V _{IL} = 0.8 V, | I _{OH} = 12 mA | | 0.8 | 1.05 | V |
| V _{OD} | Differential output voltage ⁽²⁾ | R _L = 100 Ω | | 0.95 | 1.5 | | V |
| V _{OC} | Common-mode output voltage | | | 1.3 | 1.55 | 1.8 | V |
| Δ V _{OC} | Change in magnitude of common-mode output voltage ⁽²⁾ | | | | | ±0.2 | V |
| I _O | Output current with power off | V _O = -0.25 V or 6 V, | V _{CC} = 0 | | | ±100 | μA |
| I _{OZ} | Off-state (high-impedance state) output current | V _O = -0.25 V or 6 V, | G = 0.8 V or \bar{G} = 2 V | | | ±100 | μA |
| I _H | High-level input current | V _{CC} = 0 or 3 V, | V _I = 5.5 V | | | 10 | μA |
| I _L | Low-level input current | V _{CC} = 3.6 V, | V _I = 0 | | | -10 | μA |
| I _{OS} | Short-circuit output current | V _{CC} = 3.6 V, | V _O = 0 | | | -200 | mA |
| I _{CC} | Supply current (all drivers) | V _I = V _{CC} or GND, | No load | | | 100 | μA |
| C _{pd} | Power-dissipation capacitance (all drivers) ⁽³⁾ | No load | | | 160 | | pF |

- (1) All typical values are at V_{CC} = 3.3 V, T_A = 25°C.
- (2) Δ|V_{OD}| and Δ|V_{OC}| are the changes in magnitude of V_{OD} and V_{OC}, respectively, that occur when the input is changed from a high level to a low level.
- (3) C_{pd} determines the no-load dynamic current consumption. I_S = C_{pd} × V_{CC} × f + I_{CC}

AM26LV31C, AM26LV31I LOW-VOLTAGE HIGH-SPEED QUADRUPLE DIFFERENTIAL LINE DRIVERS

SLLS201G–MAY 1995–REVISED MAY 2005

Switching Characteristics

$V_{CC} = 3.3\text{ V}$, $T_A = 25^\circ\text{C}$

| PARAMETER | | TEST CONDITIONS | MIN | TYP ⁽¹⁾ | MAX | UNIT |
|---------------|---|---|-----|--------------------|-----|------|
| t_{PLH} | Propagation delay time, low- to high-level output | See Figure 2 | 4 | 8 | 12 | ns |
| t_{PHL} | Propagation delay time, high- to low-level output | | 4 | 8 | 12 | ns |
| t_t | Transition time (t_r or t_f) | | | 3 | | ns |
| SR | Slew rate, single-ended output voltage | See Note ⁽²⁾ and Figure 2 | | 0.3 | 1 | V/ns |
| t_{PZH} | Output-enable time to high level | See Figure 3 | | 10 | 20 | ns |
| t_{PZL} | Output-enable time to low level | See Figure 4 | | 10 | 20 | ns |
| t_{PHZ} | Output-disable time from high level | See Figure 3 | | 10 | 20 | ns |
| t_{PLZ} | Output-disable time from low level | See Figure 4 | | 10 | 20 | ns |
| $t_{sk(p)}$ | Pulse skew | $f = 32\text{ MHz}$, See Note ⁽³⁾ | | 0.5 | 1.5 | ns |
| $t_{sk(o)}$ | Skew limit | $f = 32\text{ MHz}$ | | | 1.5 | ns |
| $t_{sk(lim)}$ | Skew limit (device to device) | $f = 32\text{ MHz}$, See Note ⁽⁴⁾ | | | 3 | ns |

(1) All typical values are at $V_{CC} = 3.3\text{ V}$, $T_A = 25^\circ\text{C}$.

(2) Slew rate is defined by:

$$SR = \frac{90\%(V_{OH} - V_{OL}) - 10\%(V_{OH} - V_{OL})}{t_r}, \text{ the differential slew rate of } V_{OD} \text{ is } 2 \times SR.$$

(3) Pulse skew is defined as the $|t_{PLH} - t_{PHL}|$ of each channel of the same device.

(4) Skew limit (device to device) is the maximum difference in propagation delay times between any two channels of any two devices.

PARAMETER MEASUREMENT INFORMATION

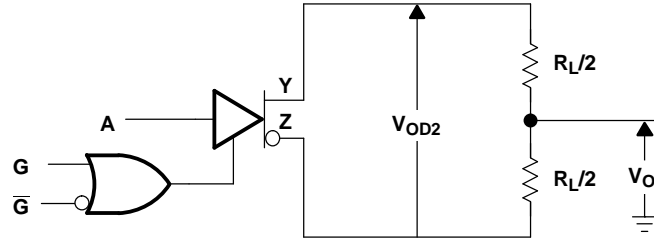
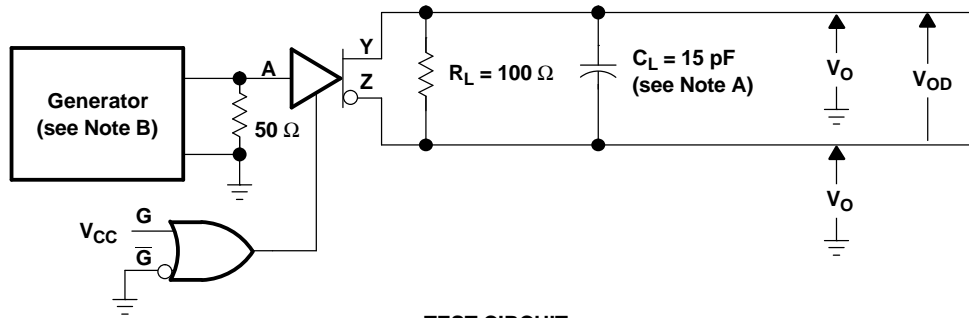
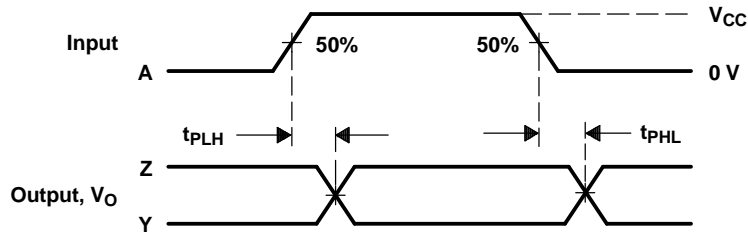


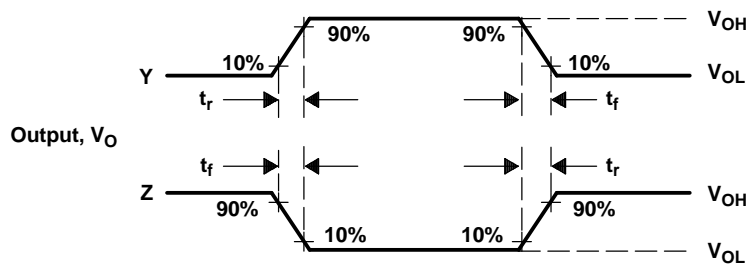
Figure 1. Differential and Common-Mode Output Voltages



TEST CIRCUIT



PROPAGATION DELAY TIMES

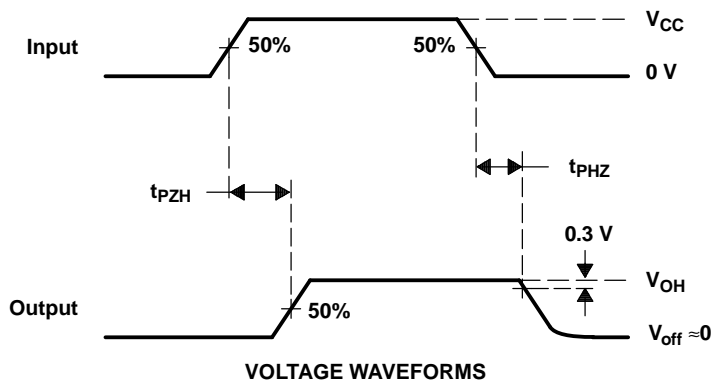
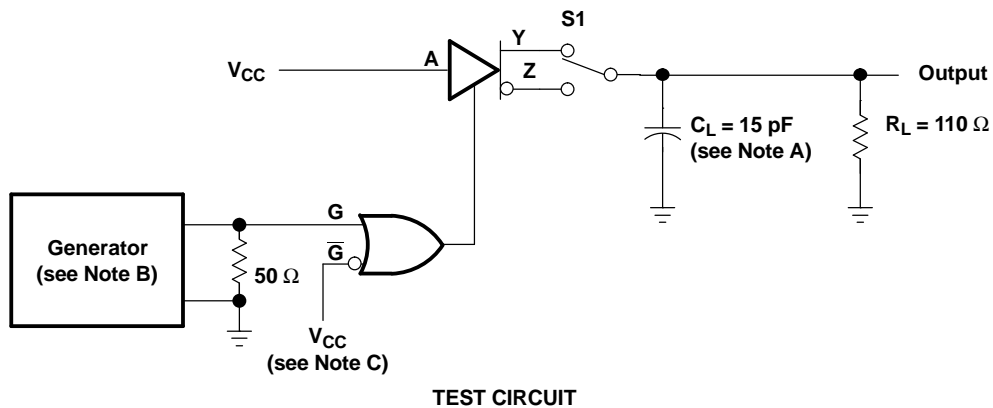


RISE AND FALL TIMES

- NOTES: A. C_L includes probe and jig capacitance.
B. The input pulse is supplied by a generator having the following characteristics: PRR = 32 MHz, $Z_O \approx 50 \Omega$, 50% duty cycle, t_r and $t_f \leq 2$ ns.

Figure 2. Test Circuit and Voltage Waveforms, t_{PHL} and t_{PLH}

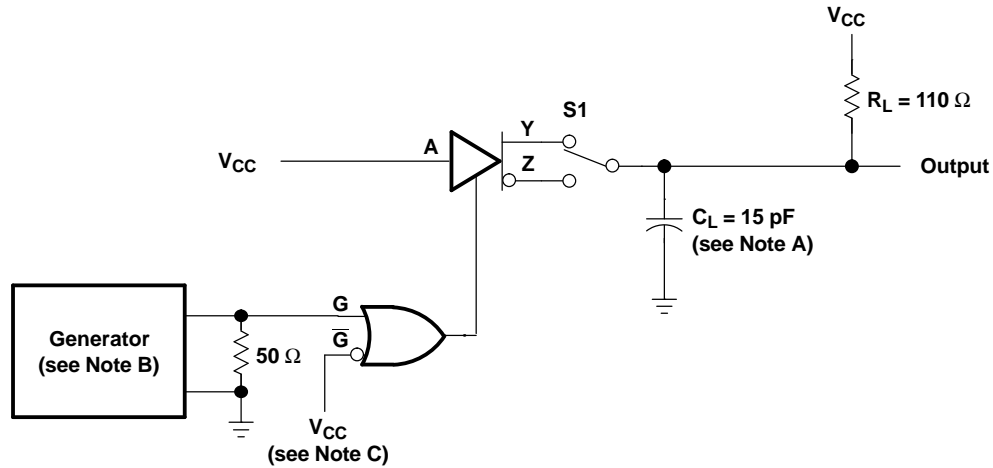
PARAMETER MEASUREMENT INFORMATION



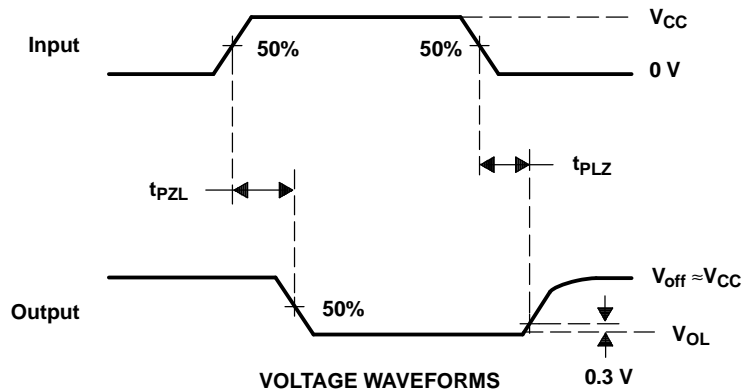
- NOTES: A. C_L includes probe and jig capacitance.
 B. The input pulse is supplied by a generator having the following characteristics: PRR = 1 MHz, $Z_O = 50 \Omega$, 50% duty cycle, t_r and t_f (10% to 90%) ≤ 2 ns.
 C. To test the active-low enable \overline{G} , ground G and apply an inverted waveform to \overline{G} .

Figure 3. Test Circuit and Voltage Waveforms, t_{PZH} and t_{PHZ}

PARAMETER MEASUREMENT INFORMATION



TEST CIRCUIT



VOLTAGE WAVEFORMS

- NOTES: A. C_L includes probe and jig capacitance.
 B. The input pulse is supplied by a generator having the following characteristics: PRR = 1 MHz, $Z_O = 50 \Omega$, 50% duty cycle, t_r and t_f (10% to 90%) ≤ 2 ns.
 C. To test the active-low enable \overline{G} , ground G and apply an inverted waveform to \overline{G} .

Figure 4. Test Circuit and Voltage Waveforms, t_{PZL} and t_{PLZ}

PACKAGING INFORMATION

| Orderable Device | Status ⁽¹⁾ | Package Type | Package Drawing | Pins | Package Qty | Eco Plan ⁽²⁾ | Lead/Ball Finish | MSL Peak Temp ⁽³⁾ |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|------------------------------|
| AM26LV31CD | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| AM26LV31CDE4 | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| AM26LV31CDG4 | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| AM26LV31CDR | ACTIVE | SOIC | D | 16 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| AM26LV31CDRE4 | ACTIVE | SOIC | D | 16 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| AM26LV31CDRG4 | ACTIVE | SOIC | D | 16 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| AM26LV31CNSLE | OBSOLETE | SO | NS | 16 | | TBD | Call TI | Call TI |
| AM26LV31CNSR | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| AM26LV31CNSRE4 | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| AM26LV31CNSRG4 | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| AM26LV31ID | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| AM26LV31IDE4 | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| AM26LV31IDG4 | ACTIVE | SOIC | D | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| AM26LV31IDR | ACTIVE | SOIC | D | 16 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| AM26LV31IDRE4 | ACTIVE | SOIC | D | 16 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| AM26LV31IDRG4 | ACTIVE | SOIC | D | 16 | 2500 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| AM26LV31INSR | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| AM26LV31INSRE4 | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |
| AM26LV31INSRG4 | ACTIVE | SO | NS | 16 | 2000 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-1-260C-UNLIM |

⁽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.

Important Information and Disclaimer:The information provided on this page represents TI's knowledge and belief as of the date that it is provided. TI bases its knowledge and belief on information provided by third parties, and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. TI has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. TI and TI suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

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 |
|--------------|--------------|-----------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| AM26LV31CDR | SOIC | D | 16 | 2500 | 330.0 | 16.4 | 6.5 | 10.3 | 2.1 | 8.0 | 16.0 | Q1 |
| AM26LV31CNSR | SO | NS | 16 | 2000 | 330.0 | 16.4 | 8.2 | 10.5 | 2.5 | 12.0 | 16.0 | Q1 |
| AM26LV31IDR | SOIC | D | 16 | 2500 | 330.0 | 16.4 | 6.5 | 10.3 | 2.1 | 8.0 | 16.0 | Q1 |
| AM26LV31INSR | SO | NS | 16 | 2000 | 330.0 | 16.4 | 8.2 | 10.5 | 2.5 | 12.0 | 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) |
|--------------|--------------|-----------------|------|------|-------------|------------|-------------|
| AM26LV31CDR | SOIC | D | 16 | 2500 | 333.2 | 345.9 | 28.6 |
| AM26LV31CNSR | SO | NS | 16 | 2000 | 346.0 | 346.0 | 33.0 |
| AM26LV31IDR | SOIC | D | 16 | 2500 | 333.2 | 345.9 | 28.6 |
| AM26LV31INSR | SO | NS | 16 | 2000 | 346.0 | 346.0 | 33.0 |

MECHANICAL DATA

NS (R-PDSO-G**)

PLASTIC SMALL-OUTLINE PACKAGE

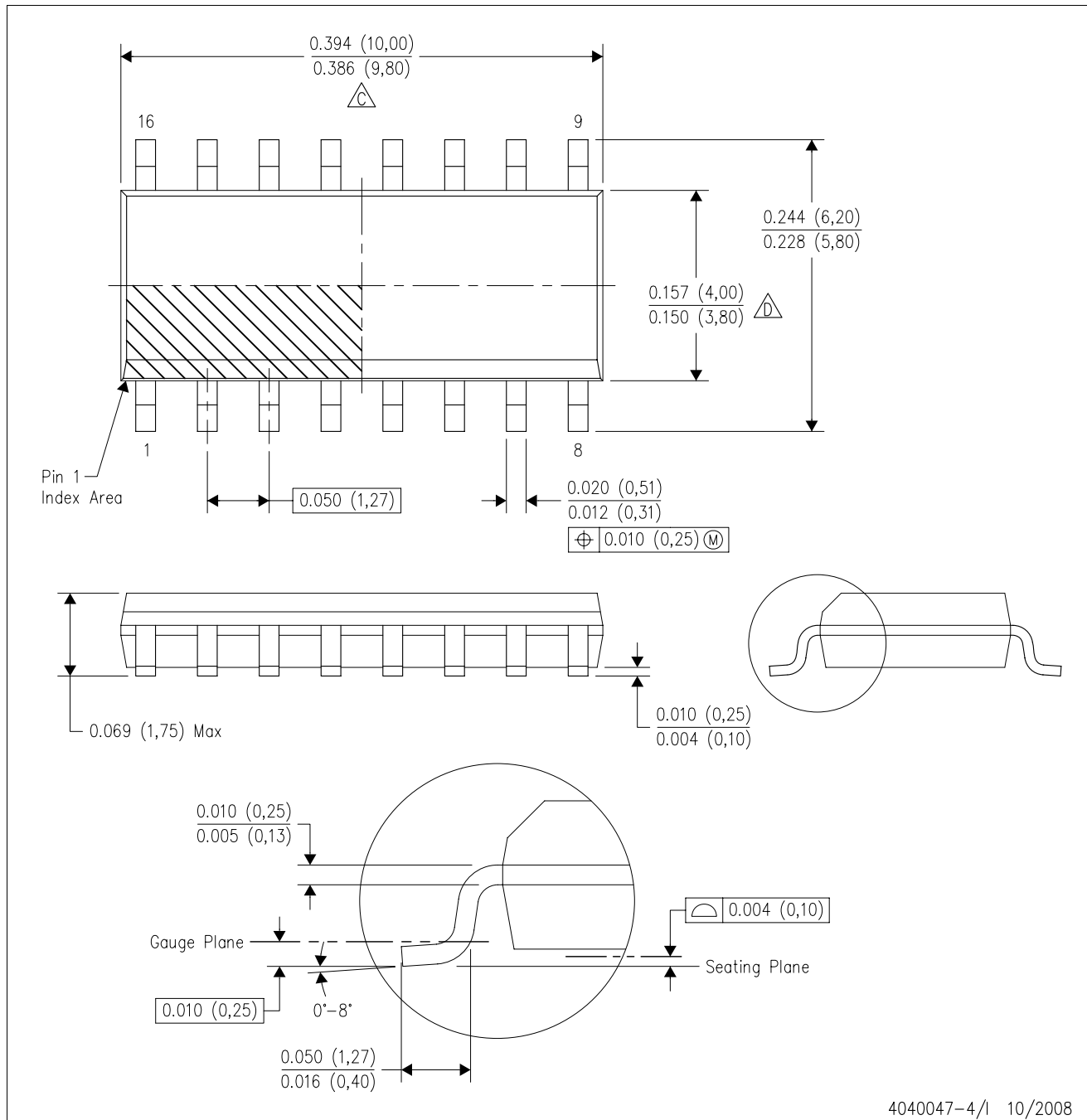
14-PINS SHOWN





- 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.

D (R-PDSO-G16)

PLASTIC SMALL-OUTLINE PACKAGE



4040047-4/1 10/2008

- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - 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 .006 (0,15) per end.
 -  D. Body width does not include interlead flash. Interlead flash shall not exceed .017 (0,43) per side.
 - E. Reference JEDEC MS-012 variation AC.

D(R-PDSO-G16)



4209373/A 03/08

- 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.

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

TI products are not authorized for use in safety-critical applications (such as life support) where a failure of the TI product would reasonably be expected to cause severe personal injury or death, unless officers of the parties have executed an agreement specifically governing such use. Buyers represent that they have all necessary expertise in the safety and regulatory ramifications of their applications, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of TI products in such safety-critical applications, notwithstanding any applications-related information or support that may be provided by TI. Further, Buyers must fully indemnify TI and its representatives against any damages arising out of the use of TI products in such safety-critical applications.

TI products are neither designed nor intended for use in military/aerospace applications or environments unless the TI products are specifically designated by TI as military-grade or "enhanced plastic." Only products designated by TI as military-grade meet military specifications. Buyers acknowledge and agree that any such use of TI products which TI has not designated as military-grade is solely at the Buyer's risk, and that they are solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI products are neither designed nor intended for use in automotive applications or environments unless the specific TI products are designated by TI as compliant with ISO/TS 16949 requirements. Buyers acknowledge and agree that, if they use any non-designated products in automotive applications, TI will not be responsible for any failure to meet such requirements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

Products

| | |
|-----------------------------|--|
| Amplifiers | amplifier.ti.com |
| Data Converters | dataconverter.ti.com |
| DSP | dsp.ti.com |
| Clocks and Timers | www.ti.com/clocks |
| Interface | interface.ti.com |
| Logic | logic.ti.com |
| Power Mgmt | power.ti.com |
| Microcontrollers | microcontroller.ti.com |
| RFID | www.ti-rfid.com |
| RF/IF and ZigBee® Solutions | www.ti.com/lprf |

Applications

| | |
|--------------------|--|
| Audio | www.ti.com/audio |
| Automotive | www.ti.com/automotive |
| Broadband | www.ti.com/broadband |
| Digital Control | www.ti.com/digitalcontrol |
| Medical | www.ti.com/medical |
| Military | www.ti.com/military |
| Optical Networking | www.ti.com/opticalnetwork |
| Security | www.ti.com/security |
| Telephony | www.ti.com/telephony |
| Video & Imaging | www.ti.com/video |
| Wireless | www.ti.com/wireless |

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2008, Texas Instruments Incorporated