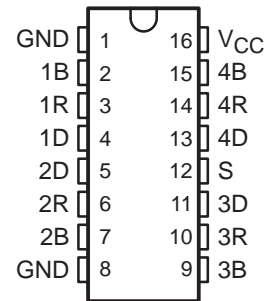


- Schottky Circuitry for High Speed, Typical Propagation Delay Time . . . 12 ns
- Drivers Feature Open-Collector Outputs for Party-Line (Data Bus) Operation
- Driver Outputs Can Sink 100 mA at 0.8 V Maximum
- pnp Inputs for Minimal Input Loading
- Designed to Be Interchangeable With Advanced Micro Devices AM26S10

D OR N PACKAGE  
(TOP VIEW)



## description

The AM26S10C is a quadruplex bus transceiver utilizing Schottky-diode-clamped transistors for high speed. The drivers feature open-collector outputs capable of sinking 100 mA at 0.8 V maximum. The driver and strobe inputs use pnp transistors to reduce the input loading.

The driver of the AM26S10C is inverting and has two ground connections for improved ground current-handling capability. For proper operation, the ground pins should be tied together.

The AM26S10C is characterized for operation over the temperature range of 0°C to 70°C.

## Function Tables

AM26S10C  
(transmitting)

| INPUTS |   | OUTPUTS |   |
|--------|---|---------|---|
| S      | D | B       | R |
| L      | H | L       | H |
| L      | L | H       | L |

AM26S10C  
(receiving)

| INPUTS |   |   | OUTPUT |
|--------|---|---|--------|
| S      | B | D | R      |
| H      | H | X | L      |
| H      | L | X | H      |

H = high level, L = low level, X = irrelevant



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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**

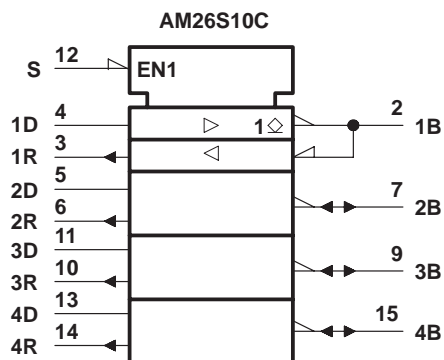
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# AM26S10C QUADRUPLE BUS TRANSCEIVERS

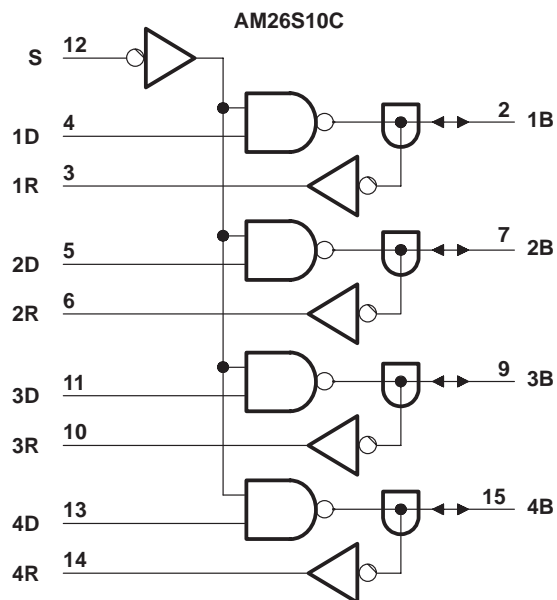
SLLS116C – JANUARY 1977 – REVISED MARCH 1997

## logic symbol†

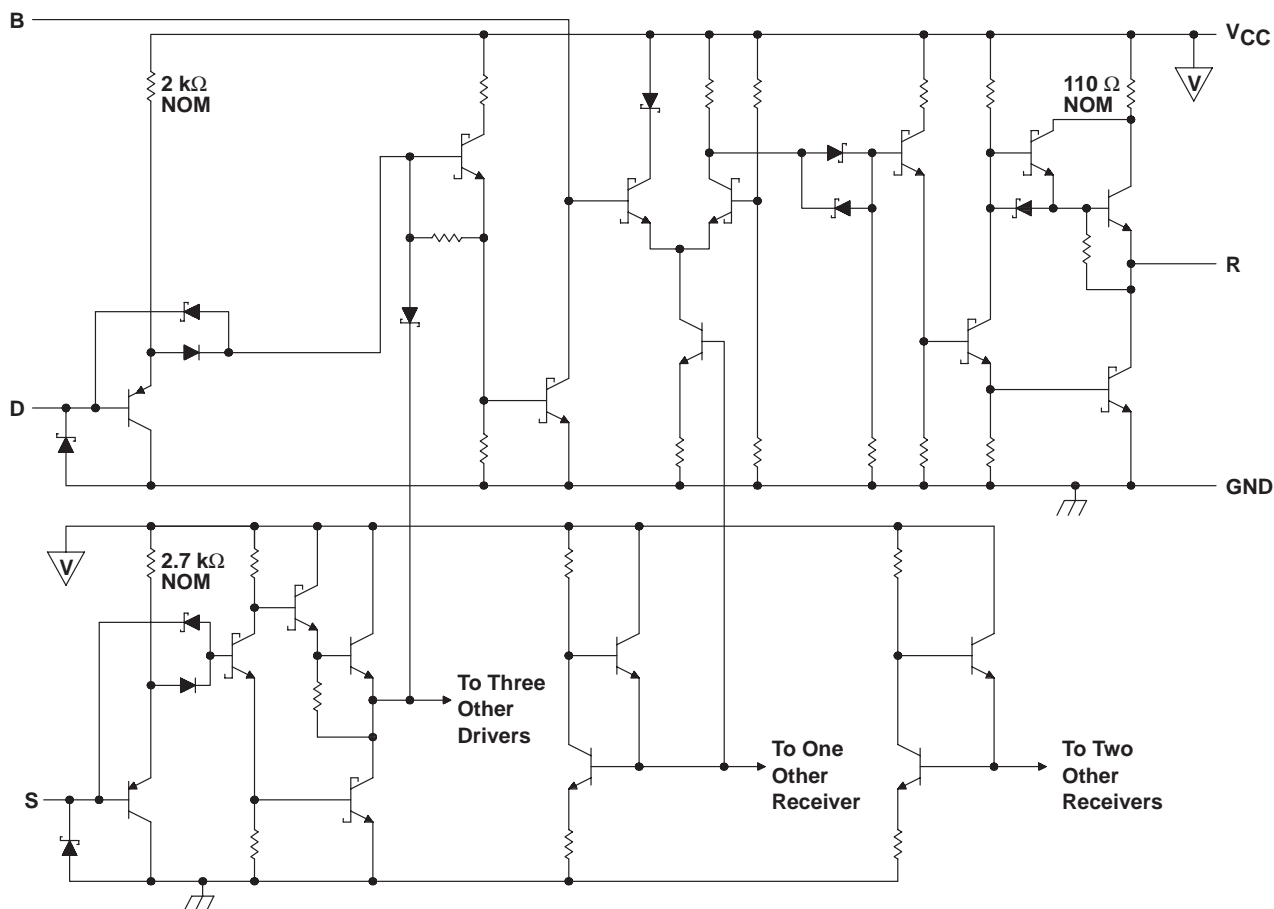


† These symbols are in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

## logic diagram (positive logic)



## schematic (each transceiver)



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

|                                                              |                              |
|--------------------------------------------------------------|------------------------------|
| Supply voltage, $V_{CC}$ (see Note 1)                        | –0.5 V to 7 V                |
| Driver or strobe input voltage range, $V_I$                  | –0.5 V to 5.5 V              |
| Bus voltage range, driver output off, $V_O$                  | –0.5 V to 5.25 V             |
| Driver or strobe input current range, $I_I$                  | –30 mA to 5 mA               |
| Driver output current, $I_O$                                 | 200 mA                       |
| Receiver output current, $I_O$                               | 30 mA                        |
| Continuous total power dissipation                           | See Dissipation Rating Table |
| Operating free-air temperature range, $T_A$                  | 0°C to 70°C                  |
| Storage temperature range, $T_{stg}$                         | –65°C to 150°C               |
| Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds | 260°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.

NOTE 1: All voltage values are with respect to network ground terminals connected together.

**DISSIPATION RATING TABLE**

| PACKAGE | $T_A \leq 25^\circ\text{C}$<br>POWER RATING | DERATING FACTOR<br>ABOVE $T_A = 25^\circ\text{C}$ | $T_A = 70^\circ\text{C}$<br>POWER RATING |
|---------|---------------------------------------------|---------------------------------------------------|------------------------------------------|
| D       | 950 mW                                      | 7.6 mW/°C                                         | 608 mW                                   |
| N       | 1150 mW                                     | 9.2 mW/°C                                         | 736 mW                                   |

**recommended operating conditions**

|                                                     |          | MIN  | NOM | MAX  | UNIT |
|-----------------------------------------------------|----------|------|-----|------|------|
| Supply voltage, V <sub>CC</sub>                     |          | 4.75 | 5   | 5.25 | V    |
| High-level input voltage, V <sub>IH</sub>           | D or S   | 2    |     |      | V    |
|                                                     | B        | 2.25 |     |      |      |
| Low-level input voltage, V <sub>IL</sub>            | D or S   | 0.8  |     |      | V    |
|                                                     | B        | 1.75 |     |      |      |
| Receiver high-level output current, I <sub>OH</sub> |          | −1   |     |      | mA   |
| Low-level output current, I <sub>OL</sub>           | Driver   | 100  |     |      | mA   |
|                                                     | Receiver | 20   |     |      |      |
| Operating free-air temperature, T <sub>A</sub>      |          | 0    |     | 70   | °C   |

# AM26S10C

## QUADRUPLE BUS TRANSCEIVERS

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### electrical characteristics over recommended operating free-air temperature range

| PARAMETER           |                                        |                          | TEST CONDITIONS                                                          |                                                                          |                         | MIN | TYP† | MAX   | UNIT |
|---------------------|----------------------------------------|--------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------|-------------------------|-----|------|-------|------|
| V <sub>IK</sub>     | Input clamp voltage                    | D or S                   | V <sub>CC</sub> = 4.75 V, I <sub>I</sub> = −18 mA                        |                                                                          |                         |     |      | −1.2  | V    |
| V <sub>OH</sub>     | High-level output voltage              | R                        | V <sub>CC</sub> = 4.75 V, V <sub>IH</sub> = 2 V, I <sub>OH</sub> = −1 mA |                                                                          |                         | 2.7 | 3.4  |       | V    |
| V <sub>OH</sub>     | Low-level output voltage               | R                        | V <sub>CC</sub> = 4.75 V, V <sub>IH</sub> = 2 V, V <sub>IL</sub> = 0.8 V |                                                                          | I <sub>OL</sub> = 20 mA |     |      | 0.5   | V    |
|                     |                                        | I <sub>OL</sub> = 40 mA  |                                                                          |                                                                          |                         |     | 0.33 | 0.5   |      |
|                     |                                        | I <sub>OL</sub> = 70 mA  |                                                                          |                                                                          |                         |     | 0.42 | 0.7   |      |
|                     |                                        | I <sub>OL</sub> = 100 mA |                                                                          |                                                                          |                         |     | 0.51 | 0.8   |      |
| I <sub>O(off)</sub> | Off-stage output current               | B                        | V <sub>IH</sub> = 2 V, V <sub>IL</sub> = 0.8 V                           | V <sub>CC</sub> = 5.25 V, V <sub>O</sub> = 0.8 V                         |                         |     |      | −50   | μA   |
|                     |                                        |                          |                                                                          | V <sub>CC</sub> = 5.25 V, V <sub>O</sub> = 4.5 V                         |                         |     |      | 100   |      |
|                     |                                        |                          |                                                                          | V <sub>CC</sub> = 0, V <sub>O</sub> = 4.5 V                              |                         |     |      | 100   |      |
| I <sub>IH</sub>     | High-level input current               | D                        | V <sub>CC</sub> = 5.25 V, V <sub>I</sub> = 2.7 V                         |                                                                          |                         |     |      | 30    | μA   |
|                     |                                        | S                        |                                                                          |                                                                          |                         |     |      | 20    |      |
| I <sub>I</sub>      | Input current at maximum input voltage | D or S                   | V <sub>CC</sub> = 5.25 V, V <sub>I</sub> = 5.5 V                         |                                                                          |                         |     |      | 100   | μA   |
| I <sub>IL</sub>     | Low-level input current                | D                        | V <sub>CC</sub> = 5.25 V, V <sub>I</sub> = 0.4 V                         |                                                                          |                         |     |      | −0.54 | mA   |
|                     |                                        | S                        |                                                                          |                                                                          |                         |     |      | −0.36 |      |
| I <sub>OS</sub>     | Short-circuit output current‡          | R                        | V <sub>CC</sub> = 5.25 V                                                 |                                                                          |                         | −18 |      | −60   | mA   |
| I <sub>CC</sub>     | Supply current                         |                          |                                                                          | V <sub>CC</sub> = 5.25 V, Strobe at 0 V, No load, All driver outputs low |                         | 45  |      | 70    | mA   |
|                     |                                        |                          |                                                                          |                                                                          |                         |     |      | 80    |      |

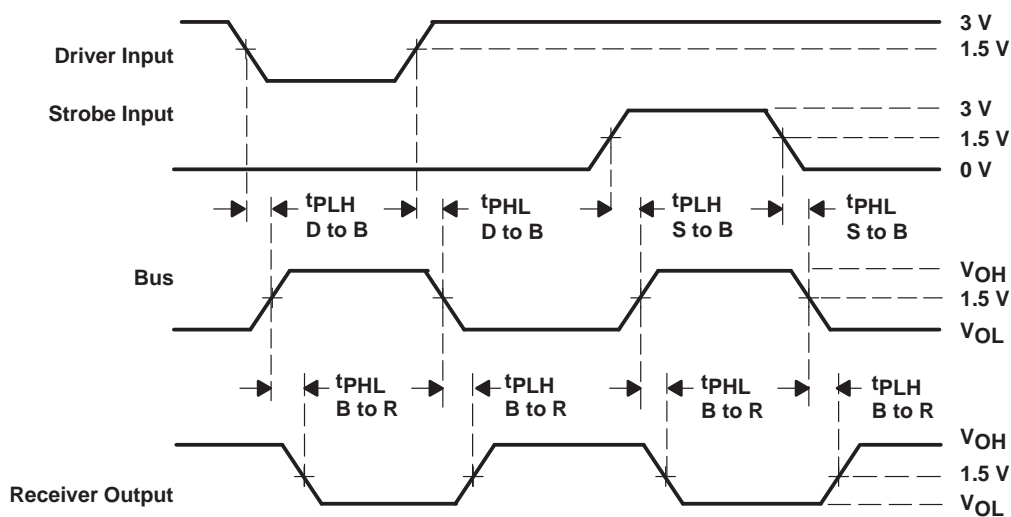
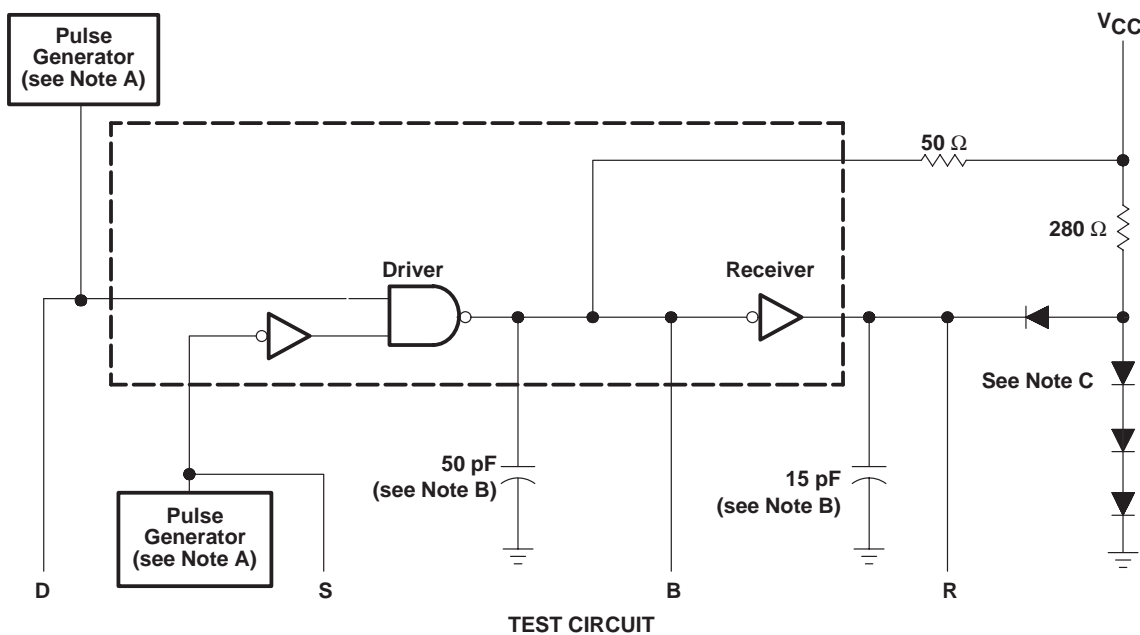
† All typical values are at T<sub>A</sub> = 25°C and V<sub>CC</sub> = 5 V.

‡ Not more than one output should be shorted to ground at a time, and duration of the short circuit should not exceed one second.

### switching characteristics, V<sub>CC</sub> = 5 V, T<sub>A</sub> = 25°C

| PARAMETER                                             | FROM<br>(INPUT) | TO<br>(OUTPUT) | TEST<br>CONDITIONS | AM26S10C |     |     | UNIT |
|-------------------------------------------------------|-----------------|----------------|--------------------|----------|-----|-----|------|
|                                                       |                 |                |                    | MIN      | TYP | MAX |      |
| tPLH Propagation delay time, low-to-high-level output | D               | B              | See Figure 1       | 10 15    |     | ns  |      |
| tPHL Propagation delay time, high-to-low-level output |                 |                |                    | 10 15    |     |     |      |
| tPLH Propagation delay time, low-to-high-level output | S               | B              |                    | 14 18    |     | ns  |      |
| tPHL Propagation delay time, high-to-low-level output |                 |                |                    | 13 18    |     |     |      |
| tPLH Propagation delay time, low-to-high-level output | B               | R              |                    | 10 15    |     | ns  |      |
| tPHL Propagation delay time, high-to-low-level output |                 |                |                    | 10 15    |     |     |      |
| tTLH Transition time,<br>low-to-high-level output     |                 | B              |                    | 4 10     |     | ns  |      |
| tTHL Transition time,<br>high-to-low-level output     |                 |                |                    | 2 4      |     |     |      |

## PARAMETER MEASUREMENT INFORMATION



- NOTES: A. The pulse generators have the following characteristics:  $Z_O = 50 \Omega$ ,  $t_r = 10 \pm 5$  ns.  
B. Includes probe and jig capacitance.  
C. All diodes are 1N916 or equivalent.

Figure 1. Test Circuit and Voltage Waveforms

AM26S10C  
QUADRUPLE BUS TRANSCEIVERS

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APPLICATION INFORMATION

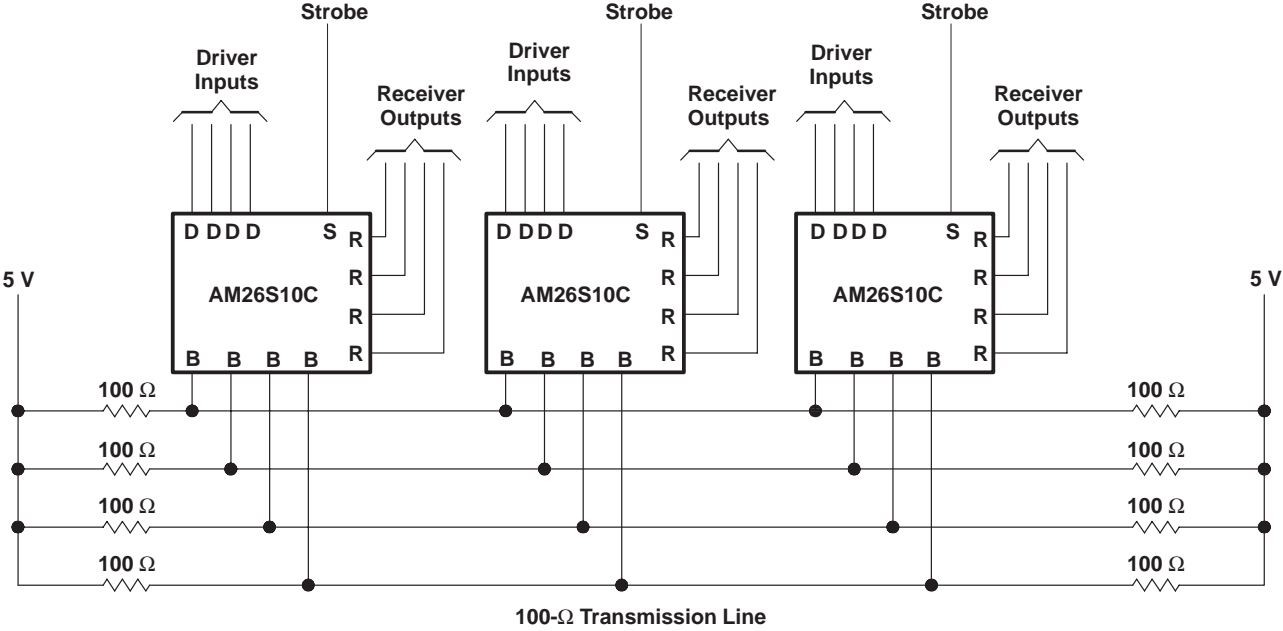


Figure 2. Party-Line System

## PACKAGING INFORMATION

| Orderable Device | Status<br>(1) | Package Type | Package<br>Drawing | Pins | Package<br>Qty | Eco Plan<br>(2) | Lead finish/<br>Ball material<br>(6) | MSL Peak Temp<br>(3) | Op Temp (°C) | Device Marking<br>(4/5) | Samples                 |
|------------------|---------------|--------------|--------------------|------|----------------|-----------------|--------------------------------------|----------------------|--------------|-------------------------|-------------------------|
| AM26S10CD        | ACTIVE        | SOIC         | D                  | 16   | 40             | RoHS & Green    | NIPDAU                               | Level-1-260C-UNLIM   | 0 to 70      | AM26S10C                | <a href="#">Samples</a> |
| AM26S10CDR       | ACTIVE        | SOIC         | D                  | 16   | 2500           | RoHS & Green    | NIPDAU                               | Level-1-260C-UNLIM   | 0 to 70      | AM26S10C                | <a href="#">Samples</a> |
| AM26S10CDRG4     | ACTIVE        | SOIC         | D                  | 16   | 2500           | RoHS & Green    | NIPDAU                               | Level-1-260C-UNLIM   | 0 to 70      | AM26S10C                | <a href="#">Samples</a> |
| AM26S10CN        | ACTIVE        | PDIP         | N                  | 16   | 25             | RoHS & Green    | NIPDAU                               | N / A for Pkg Type   | 0 to 70      | AM26S10CN               | <a href="#">Samples</a> |
| AM26S10CNE4      | ACTIVE        | PDIP         | N                  | 16   | 25             | RoHS & Green    | NIPDAU                               | N / A for Pkg Type   | 0 to 70      | AM26S10CN               | <a href="#">Samples</a> |

(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) **RoHS:** TI defines "RoHS" to mean semiconductor products that are compliant with the current EU RoHS requirements for all 10 RoHS substances, including the requirement that RoHS substance do not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, "RoHS" products are suitable for use in specified lead-free processes. TI may reference these types of products as "Pb-Free".

**RoHS Exempt:** TI defines "RoHS Exempt" to mean products that contain lead but are compliant with EU RoHS pursuant to a specific EU RoHS exemption.

**Green:** TI defines "Green" to mean the content of Chlorine (Cl) and Bromine (Br) based flame retardants meet JS709B low halogen requirements of <=1000ppm threshold. Antimony trioxide based flame retardants must also meet the <=1000ppm threshold requirement.

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

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

(6) Lead finish/Ball material - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead finish/Ball material values may wrap to two lines if the finish value exceeds the maximum column width.

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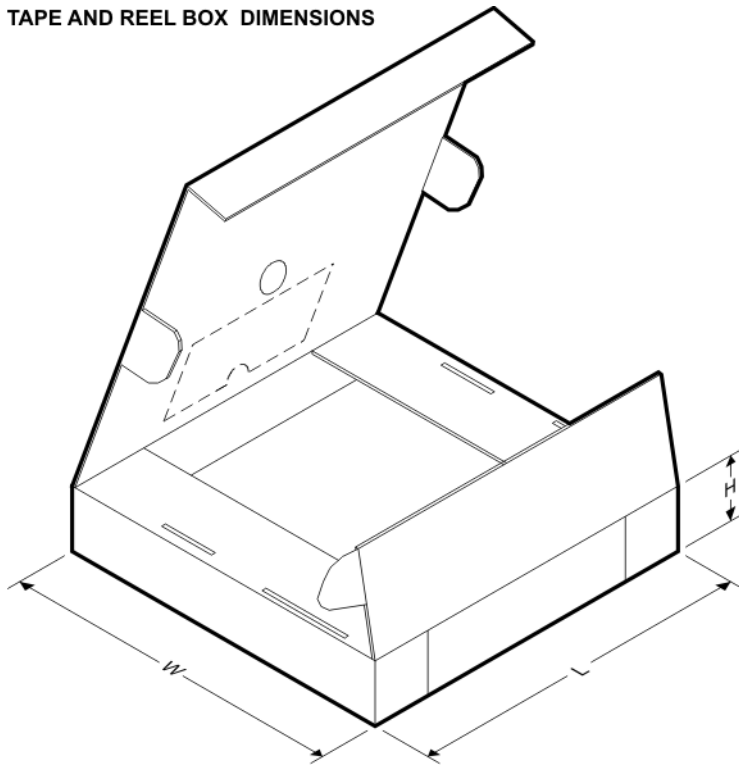
**TAPE AND REEL INFORMATION**



\*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 |
|------------|--------------|-----------------|------|------|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| AM26S10CDR | SOIC         | D               | 16   | 2500 | 330.0              | 16.4               | 6.5     | 10.3    | 2.1     | 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) |
|------------|--------------|-----------------|------|------|-------------|------------|-------------|
| AM26S10CDR | SOIC         | D               | 16   | 2500 | 333.2       | 345.9      | 28.6        |

D (R-PDSO-G16)

PLASTIC SMALL OUTLINE



## NOTES:

- A. All linear dimensions are in inches (millimeters).
- B. This drawing is subject to change without notice.
- $\triangle C$  Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.006 (0,15) each side.
- $\triangle D$  Body width does not include interlead flash. Interlead flash shall not exceed 0.017 (0,43) each side.
- E. Reference JEDEC MS-012 variation AC.

D (R-PDSO-G16)

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 designs.
  - 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.

## N (R-PDIP-T\*\*)

16 PINS SHOWN

## PLASTIC DUAL-IN-LINE PACKAGE



| PINS **             | 14               | 16               | 18               | 20               |
|---------------------|------------------|------------------|------------------|------------------|
| DIM                 |                  |                  |                  |                  |
| A MAX               | 0.775<br>(19,69) | 0.775<br>(19,69) | 0.920<br>(23,37) | 1.060<br>(26,92) |
| A MIN               | 0.745<br>(18,92) | 0.745<br>(18,92) | 0.850<br>(21,59) | 0.940<br>(23,88) |
| MS-001<br>VARIATION | AA               | BB               | AC               | AD               |



4040049/E 12/2002

- 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.

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