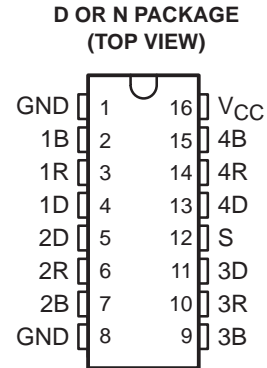"AM26S10CDF4"

- **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)**

GND	1	16	V_{CC}
1B	2	15	4B
1R	3	14	4R
1D	4	13	4D
2D	5	12	S
2R	6	11	3D
2B	7	10	3R
GND	8	9	3B

description

The AM26S10C is a quadruple 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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TEXAS INSTRUMENTS

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AM26S10C
QUADRUPLE BUS TRANSCEIVERS

logic symbol[†]

AM26S10C
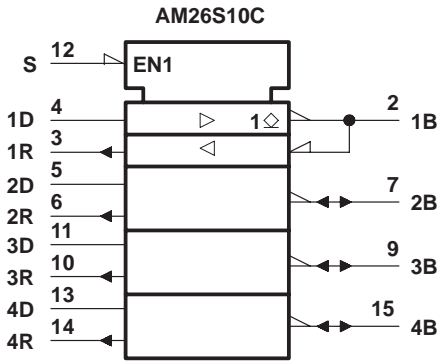
[†] These symbols are in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

logic diagram (positive logic)

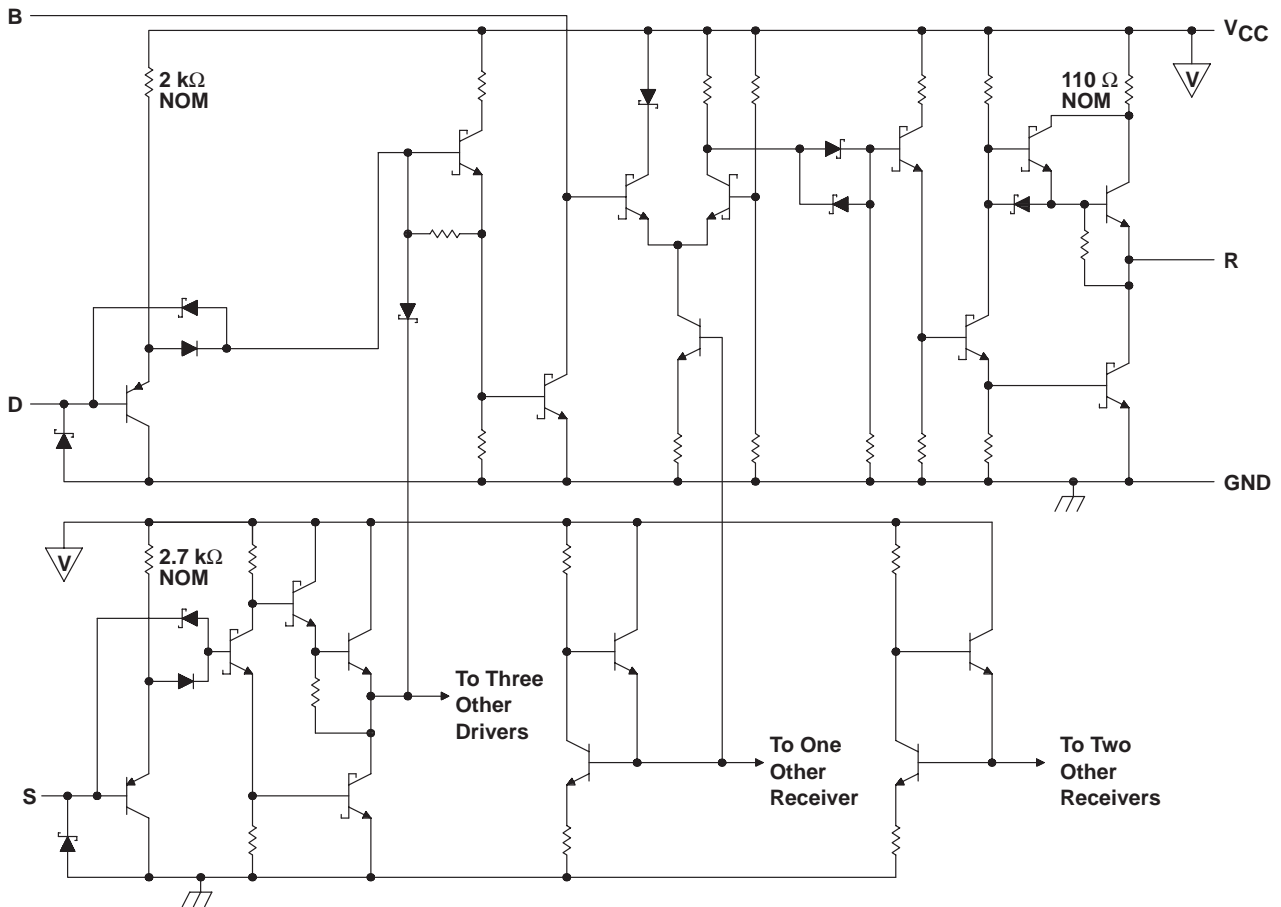**AM26S10C**
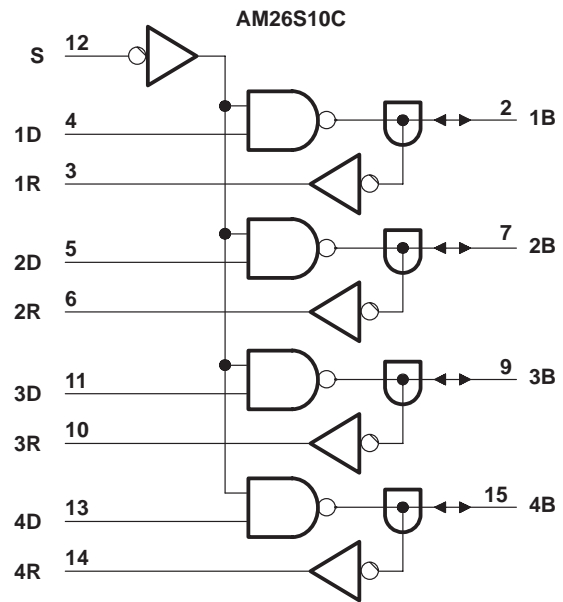
schematic (each transceiver)

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	$T_A \leq 25°C$ POWER RATING	DERATING FACTOR ABOVE $T_A = 25°C$	$T_A = 70°C$ 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_{CC}		4.75	5	5.25	V
High-levael input voltage, V_{IH}	D or S	2			V
	B	2.25			
Low-level input voltage, V_{IL}	D or S			0.8	V
	B			1.75	
Receiver high-level output current, I_{OH}				−1	mA
Low-level output current, I_{OL}	Driver			100	mA
	Receiver			20	
Operating free-air temperature, T_A		0		70	°C

AM26S10C
QUADRUPLE BUS TRANSCEIVERS

SLLS116C – JANUARY 1977 – REVISED MARCH 1997

electrical characteristics over recommended operating free-air temperature range

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

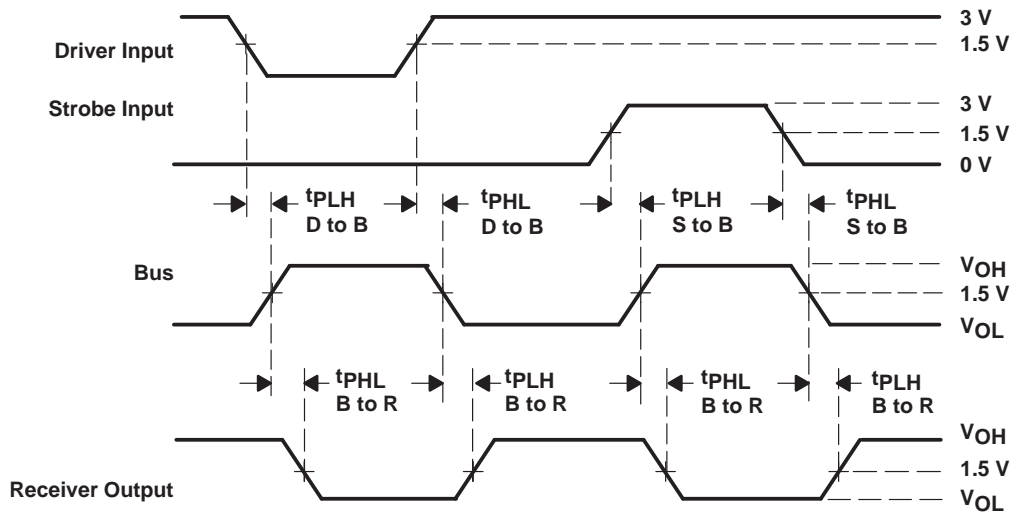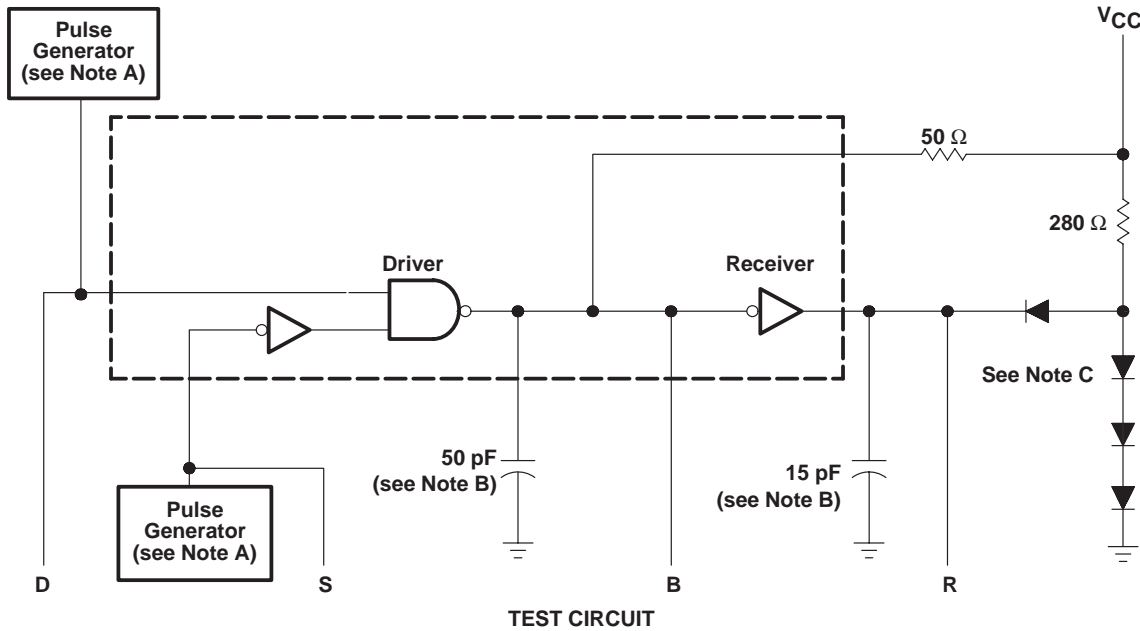† All typical values are at T_A = 25°C and V_{CC} = 5 V.
‡ Not more than one output should be shorted to ground at a time, and duration of the short circuit should not exceed one second.

switching characteristics, V_{CC} = 5 V, T_A = 25°C

	PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	AM26S10C			UNIT
					MIN	TYP	MAX	
t_{PLH}	Propagation delay time, low-to-high-level output	D	B			10	15	ns
t_{PHL}	Propagation delay time, high-to-low-level output					10	15	
t_{PLH}	Propagation delay time, low-to-high-level output	S	B			14	18	ns
t_{PHL}	Propagation delay time, high-to-low-level output					13	18	
t_{PLH}	Propagation delay time, low-to-high-level output	B	R	See Figure 1		10	15	ns
t_{PHL}	Propagation delay time, high-to-low-level output					10	15	
t_{TLH}	Transition time, low-to-high-level output		B		4	10		ns
t_{THL}	Transition time, high-to-low-level output				2	4		

"AM26S10CDF4"

PARAMETER MEASUREMENT INFORMATION

TEST CIRCUIT

VOLTAGE WAVEFORMS

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

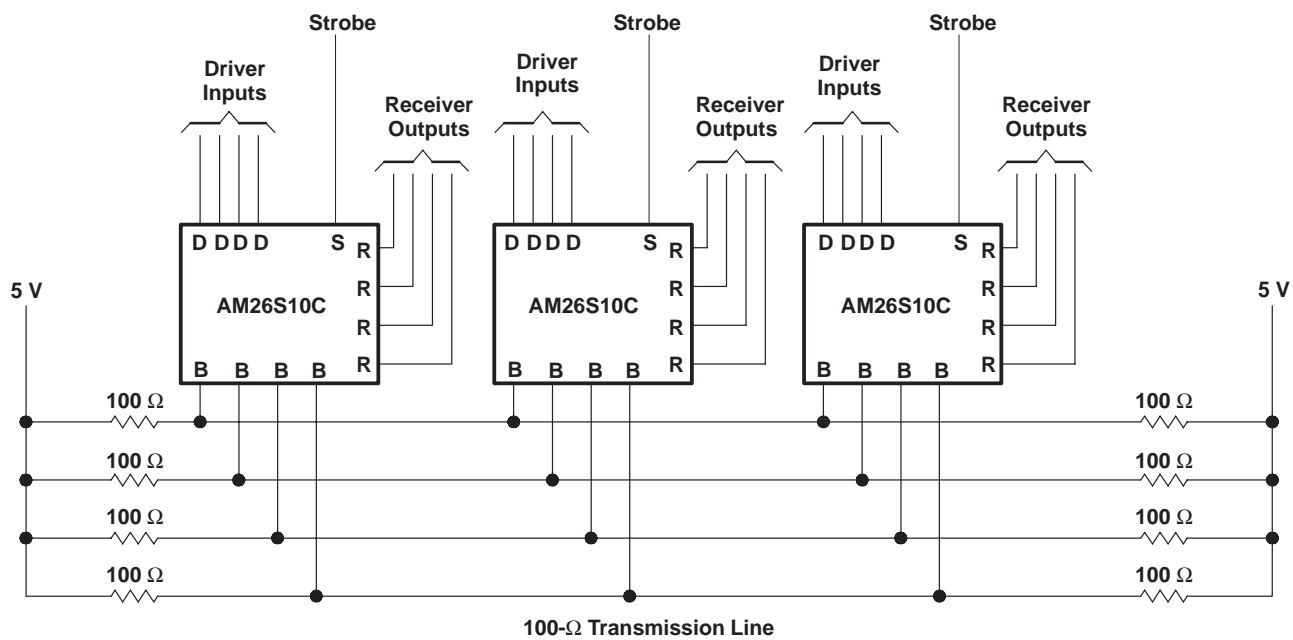## APPLICATION INFORMATION

Figure 2. Party-Line System

PACKAGING INFORMATION

Orderable Device	Status [1]	Package Type	Package Drawing	Pins	Package Qty	Eco Plan [2]	Lead/Ball Finish	MSL Peak Temp [3]
AM26S10CD	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26S10CDE4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26S10CDG4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26S10CDR	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26S10CDRE4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26S10CDRG4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26S10CN	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type
AM26S10CNE4	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type

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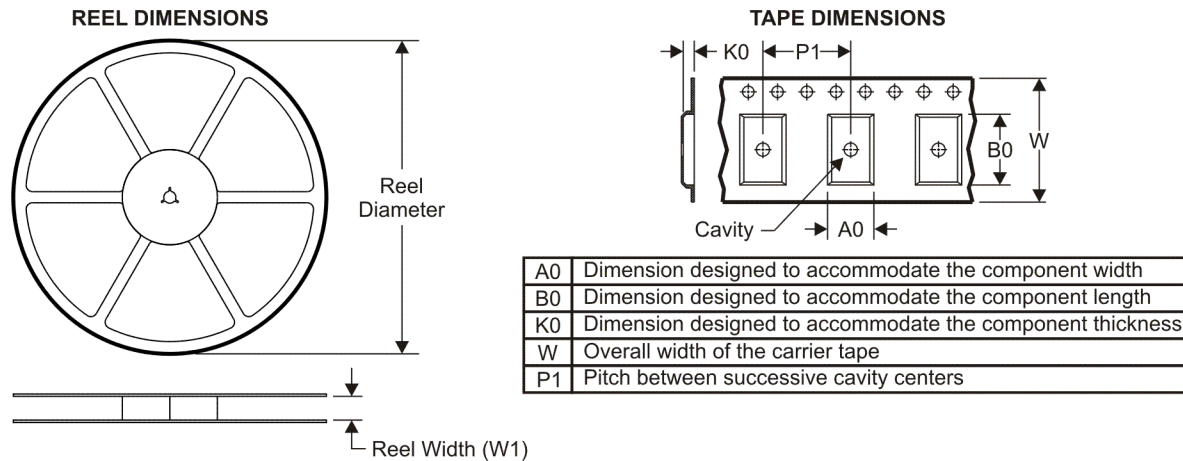**Green (RoHS & no Sb/Br):** TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

[3] MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.
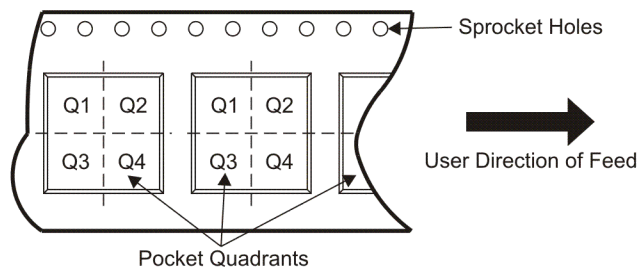
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TAPE AND REEL INFORMATION

REEL DIMENSIONS

TAPE DIMENSIONS

A0	Dimension designed to accommodate the component width
B0	Dimension designed to accommodate the component length
K0	Dimension designed to accommodate the component thickness
W	Overall width of the carrier tape
P1	Pitch between successive cavity centers

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
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

"AM26S10CDE4"

N (R−PDIP−T**)   PLASTIC DUAL−IN−LINE PACKAGE
16 PINS SHOWN
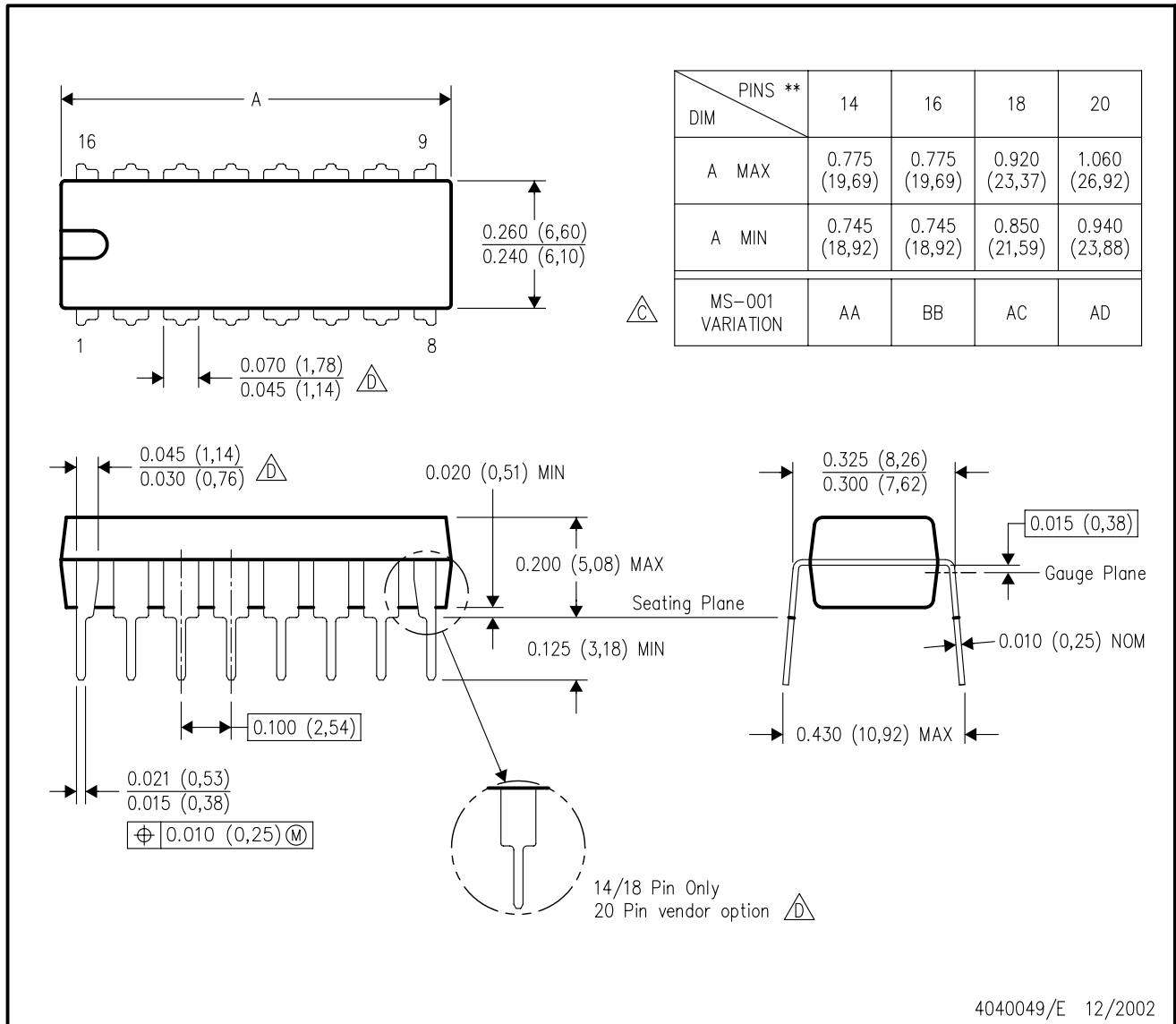
DIM \ PINS **	14	16	18	20
A MAX	0.775 (19,69)	0.775 (19,69)	0.920 (23,37)	1.060 (26,92)
A MIN	0.745 (18,92)	0.745 (18,92)	0.850 (21,59)	0.940 (23,88)
⚠C MS−001 VARIATION	AA	BB	AC	AD

0.260 (6,60) / 0.240 (6,10)

0.070 (1,78) / 0.045 (1,14) ⚠D

0.045 (1,14) / 0.030 (0,76) ⚠D

0.020 (0,51) MIN

0.200 (5,08) MAX

Seating Plane

0.125 (3,18) MIN

0.100 (2,54)

0.021 (0,53) / 0.015 (0,38)

⊕ 0.010 (0,25) Ⓜ

14/18 Pin Only
20 Pin vendor option ⚠D

0.325 (8,26) / 0.300 (7,62)

0.015 (0,38)

Gauge Plane
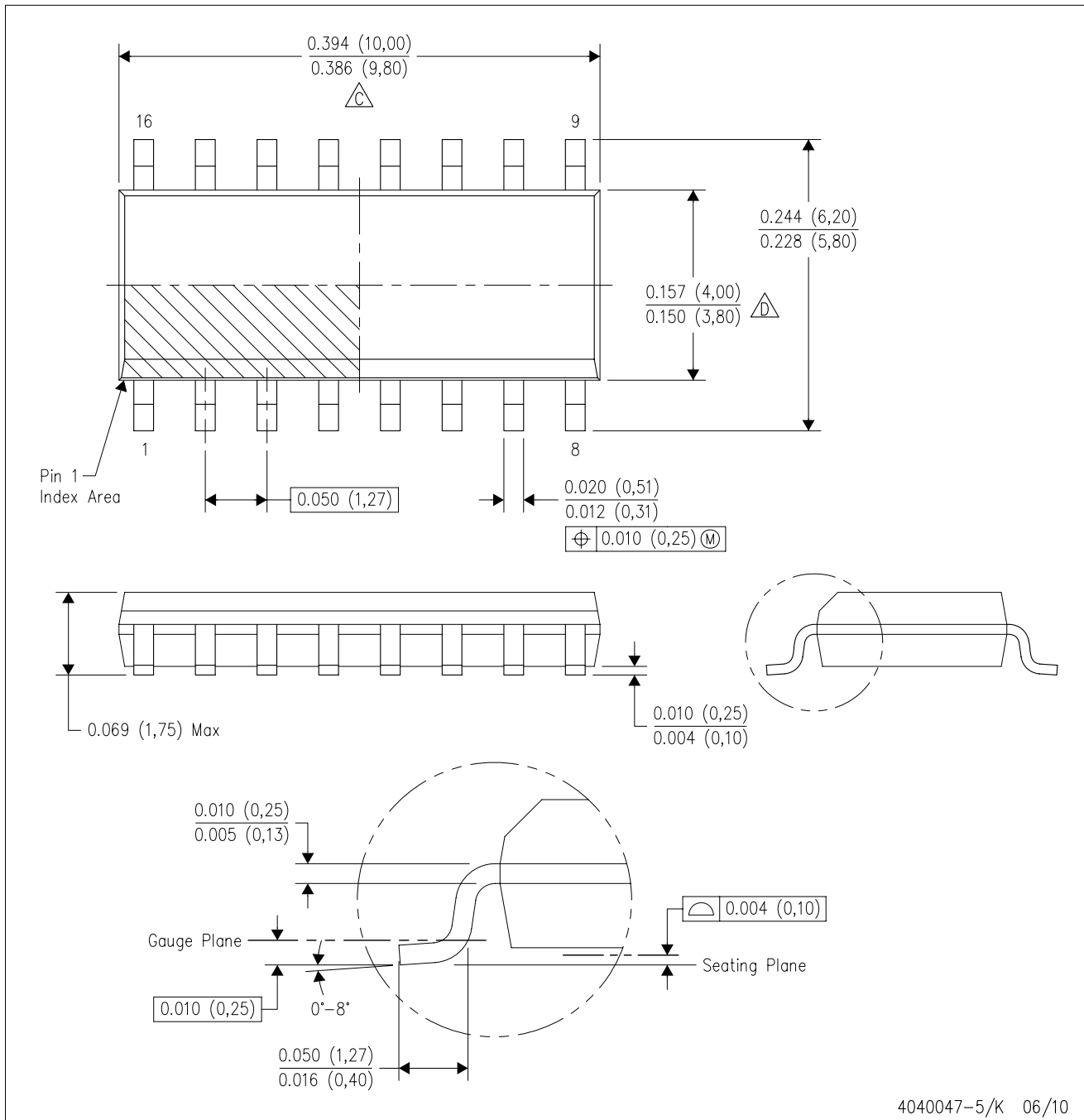
0.010 (0,25) NOM

0.430 (10,92) MAX

4040049/E 12/2002

NOTES: A.   All linear dimensions are in inches (millimeters).
         B.   This drawing is subject to change without notice.
      ⚠C   Falls within JEDEC MS−001, except 18 and 20 pin minimum body length (Dim A).
      ⚠D   The 20 pin end lead shoulder width is a vendor option, either half or full width.
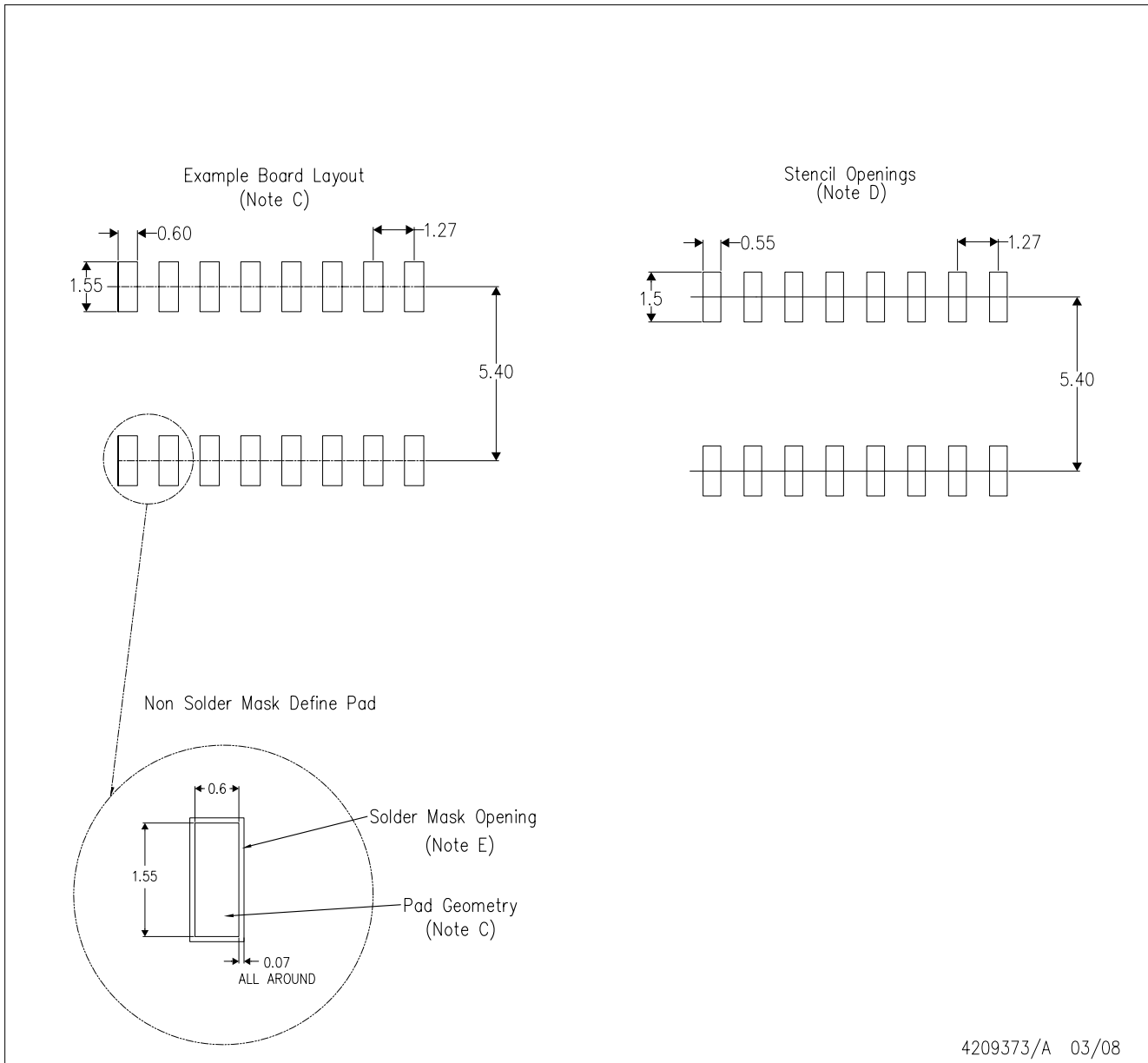
D (R−PDSO−G16)   PLASTIC SMALL−OUTLINE PACKAGE

0.394 (10,00)
0.386 (9,80)
⟋C⟍

16   9

0.244 (6,20)
0.228 (5,80)

0.157 (4,00)
0.150 (3,80)   ⟋D⟍

1   8

Pin 1
Index Area

0.050 (1,27)

0.020 (0,51)
0.012 (0,31)

⊕ 0.010 (0,25) Ⓜ

0.069 (1,75) Max

0.010 (0,25)
0.004 (0,10)

0.010 (0,25)
0.005 (0,13)

0.004 (0,10)

Gauge Plane

Seating Plane

0.010 (0,25)   0°−8°

0.050 (1,27)
0.016 (0,40)

4040047−5/K   06/10

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.

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LAND PATTERN

"AM26S10CDE4"

D(R−PDSO−G16)

Example Board Layout
(Note C)

Stencil Openings
(Note D)

0.60

1.27

1.55

5.40

0.55

1.27

1,5

5.40

Non Solder Mask Define Pad

0.6

Solder Mask Opening
(Note E)

1.55

Pad Geometry
(Note C)

0.07
ALL AROUND

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.

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		Wireless	www.ti.com/wireless-apps