



# AM26C31

## QUADRUPLE DIFFERENTIAL LINE DRIVER

### FEATURES

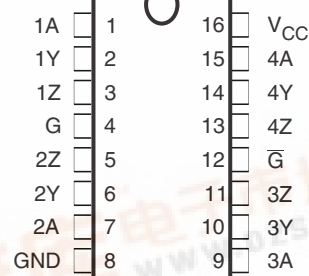
- Meets or Exceeds the Requirements of TIA/EIA-422-B and ITU Recommendation V.11
- Low Power,  $I_{CC} = 100 \mu A$  Typ
- Operates From a Single 5-V Supply
- High Speed,  $t_{PLH} = t_{PHL} = 7 \text{ ns}$  Typ
- Low Pulse Distortion,  $t_{sk(p)} = 0.5 \text{ ns}$  Typ
- High Output Impedance in Power-Off Conditions
- Improved Replacement for AM26LS31
- Available in Q-Temp Automotive
  - High-Reliability Automotive Applications
  - Configuration Control/Print Support
  - Qualification to Automotive Standards

### DESCRIPTION/ORDERING INFORMATION

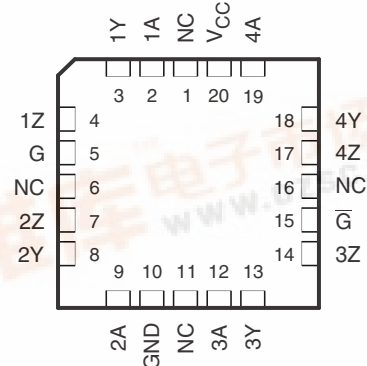
The AM26C31 is a differential line driver with complementary outputs, designed to meet the requirements of TIA/EIA-422-B and ITU (formerly CCITT). The 3-state outputs have high-current capability for driving balanced lines, such as twisted-pair or parallel-wire transmission lines, and they provide the high-impedance state in the power-off condition. The enable functions are common to all four drivers and offer the choice of an active-high (G) or active-low ( $\bar{G}$ ) enable input. BiCMOS circuitry reduces power consumption without sacrificing speed.

The AM26C31C is characterized for operation from 0°C to 70°C, the AM26C31I is characterized for operation from -40°C to 85°C, the AM26C31Q is characterized for operation over the automotive temperature range of -40°C to 125°C, and the AM26C31M is characterized for operation over the full military temperature range of -55°C to 125°C.

AM26C31M...J OR W PACKAGE  
 AM26C31Q...D PACKAGE  
 AM26C31C...D, DB, OR NS PACKAGE  
 AM26C31I...D, DB, N, NS, OR PW PACKAGE  
 (TOP VIEW)



AM26C31M...FK PACKAGE  
 (TOP VIEW)



NC - No internal connection



**ORDERING INFORMATION**

T <sub>A</sub>	PACKAGE <sup>(1)(2)</sup>		ORDERABLE PART NUMBER	TOP-SIDE MARKING
0°C to 70°C	PDIP (N)	Tube of 25	AM26C31CN	AM26C31CN
	SOIC (D)	Tube of 40	AM26C31CD	AM26C31C
		Reel of 2500	AM26C31CDR	
	SOP (NS)	Reel of 2000	AM26C31CNSR	26C31
	SSOP (DB)	Reel of 2000	AM26C31CDBR	26C31
–40°C to 85°C	PDIP (N)	Tube of 25	AM26C31IN	AM26C31IN
	SOIC (D)	Tube of 40	AM26C31ID	AM26C31I
		Reel of 2500	AM26C31IDR	
	SOP (NS)	Reel of 2000	AM26C31INSR	26C31I
	SSOP (DB)	Reel of 2000	AM26C31IDBR	26C31I
TSSOP (PW)	Tube of 90	AM26C31IPW	26C31I	
–40°C to 125°C	SOIC (D)	Tube of 40	AM26C31QD	AM26C31QD
		Reel of 2500	AM26C31QDR	
–55°C to 125°C	CDIP (J)	Tube of 25	AM26C31MJ	AM26C31MJ
	CFP (W)	Tube of 150	AM26C31MW	AM26C31MW
	LCCC (FK)	Tube of 55	AM26C31MFK	AM26C31MFK

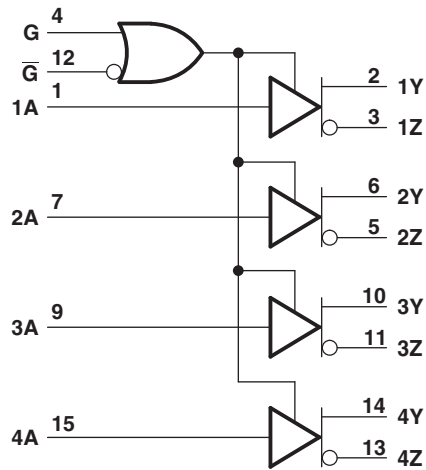
- (1) Package drawings, thermal data, and symbolization are available at [www.ti.com/packaging](http://www.ti.com/packaging).
- (2) For the most current package and ordering information, see the Package Option Addendum at the end of this document, or see the TI website at [www.ti.com](http://www.ti.com).

**FUNCTION TABLE  
(Each Driver)<sup>(1)</sup>**

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

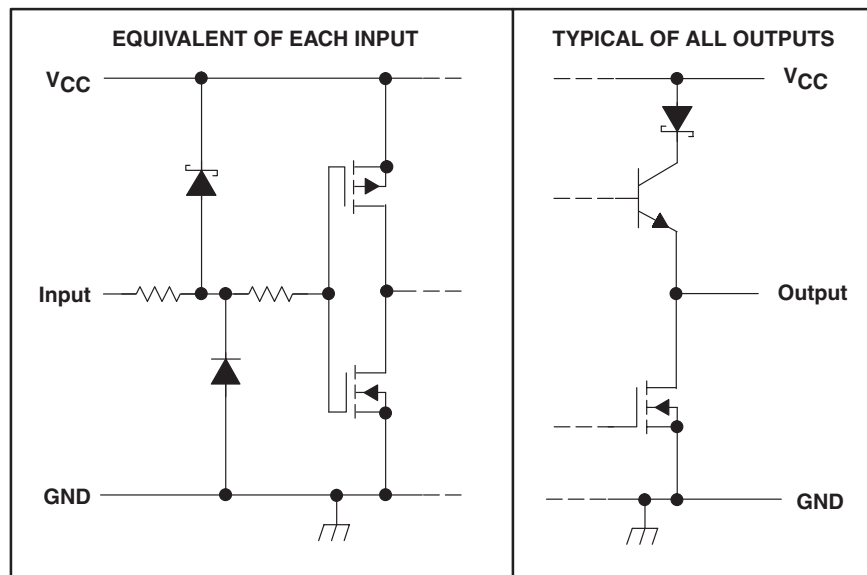
- (1) H = High level, L = Low level, X = Irrelevant, Z = High impedance (off)

**LOGIC DIAGRAM (POSITIVE LOGIC)**



Pin numbers shown are for the D, DB, J, N, NS, PW, and W packages.

**SCHEMATICS OF INPUTS AND OUTPUTS**



**ABSOLUTE MAXIMUM RATINGS<sup>(1)</sup>**

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

		MIN	MAX	UNIT	
V <sub>CC</sub>	Supply voltage range <sup>(2)</sup>	−0.5	7	V	
V <sub>I</sub>	Input voltage range	−0.5	V <sub>CC</sub> + 0.5	V	
V <sub>ID</sub>	Differential input voltage range	−14	14	V	
V <sub>O</sub>	Output voltage range	−0.5	7		
I <sub>IK</sub> I <sub>OK</sub>	Input or output clamp current		±20	mA	
I <sub>O</sub>	Output current		±150	mA	
	V <sub>CC</sub> current		200	mA	
	GND current	−200		mA	
θ <sub>JA</sub>	Package thermal impedance <sup>(3)(4)</sup>	D package		73	°C/W
		DB package		82	
		N package		67	
		NS package		64	
		PW package		108	
T <sub>J</sub>	Operating virtual junction temperature		150	°C	
T <sub>stg</sub>	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, except differential voltages, are with respect to the network ground terminal.
- (3) Maximum power dissipation is a function of T<sub>J(max)</sub>, θ<sub>JA</sub>, and T<sub>A</sub>. The maximum allowable power dissipation at any allowable ambient temperature is P<sub>D</sub> = (T<sub>J(max)</sub> − T<sub>A</sub>)/θ<sub>JA</sub>. Operating at the absolute maximum T<sub>J</sub> of 150°C can affect reliability.
- (4) The package thermal impedance is calculated in accordance with JESD 51-7.

**RECOMMENDED OPERATING CONDITIONS**

		MIN	NOM	MAX	UNIT
V <sub>CC</sub>	Supply voltage	4.5	5	5.5	V
V <sub>ID</sub>	Differential input voltage		±7		V
V <sub>IH</sub>	High-level input voltage	2			V
V <sub>IL</sub>	Low-level input voltage			0.8	V
I <sub>OH</sub>	High-level output current			−20	μA
I <sub>OL</sub>	Low-level output current			20	mA
T <sub>A</sub>	Operating free-air temperature	AM26C31C		70	°C
		AM26C311	−40	85	
		AM26C31Q	−40	125	
		AM26C31M	−55	125	

## ELECTRICAL CHARACTERISTICS

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

PARAMETER	TEST CONDITIONS	AM26C31C AM26C31I			UNIT
		MIN	TYP <sup>(1)</sup>	MAX	
V <sub>OH</sub>	High-level output voltage I <sub>O</sub> = -20 mA	2.4	3.4		V
V <sub>OL</sub>	Low-level output voltage I <sub>O</sub> = 20 mA		0.2	0.4	V
V <sub>OD</sub>	Differential output voltage magnitude R <sub>L</sub> = 100 Ω, See Figure 1	2	3.1		V
Δ V <sub>OD</sub>	Change in magnitude of differential output voltage <sup>(2)</sup> R <sub>L</sub> = 100 Ω, See Figure 1			±0.4	V
V <sub>OC</sub>	Common-mode output voltage R <sub>L</sub> = 100 Ω, See Figure 1			3	V
Δ V <sub>OC</sub>	Change in magnitude of common-mode output voltage <sup>(2)</sup> R <sub>L</sub> = 100 Ω, See Figure 1			±0.4	V
I <sub>I</sub>	Input current V <sub>I</sub> = V <sub>CC</sub> or GND			±1	μA
I <sub>O(off)</sub>	Driver output current with power off V <sub>CC</sub> = 0		V <sub>O</sub> = 6 V	100	μA
			V <sub>O</sub> = -0.25 V	-100	
I <sub>OS</sub>	Driver output short-circuit current V <sub>O</sub> = 0	-30		-150	mA
I <sub>OZ</sub>	High-impedance off-state output current V <sub>O</sub> = 2.5 V			20	μA
	V <sub>O</sub> = 0.5 V			-20	
I <sub>CC</sub>	Quiescent supply current I <sub>O</sub> = 0		V <sub>I</sub> = 0 or 5 V	100	μA
			V <sub>I</sub> = 2.4 V or 0.5 V <sup>(3)</sup>	1.5	
C <sub>i</sub>	Input capacitance			6	pF

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

(2) Δ|V<sub>OD</sub>| and Δ|V<sub>OC</sub>| are the changes in magnitude of V<sub>OD</sub> and V<sub>OC</sub>, respectively, that occur when the input is changed from a high level to a low level.

(3) This parameter is measured per input. All other inputs are at 0 or 5 V.

## SWITCHING CHARACTERISTICS

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

PARAMETER	TEST CONDITIONS	AM26C31C AM26C31I			UNIT
		MIN	TYP <sup>(1)</sup>	MAX	
t <sub>PLH</sub>	Propagation delay time, low-to-high-level output S1 is open, See Figure 2	3	7	12	ns
t <sub>PHL</sub>	Propagation delay time, high-to-low-level output	3	7	12	
t <sub>sk(p)</sub>	Pulse skew time ((t <sub>PLH</sub> - t <sub>PHL</sub> )) S1 is open, See Figure 2		0.5	4	ns
t <sub>r(OD)</sub> , t <sub>f(OD)</sub>	Differential output rise and fall times S1 is open, See Figure 3		5	10	ns
t <sub>PZH</sub>	Output enable time to high level S1 is closed, See Figure 4		10	19	ns
t <sub>PZL</sub>	Output enable time to low level		10	19	
t <sub>PHZ</sub>	Output disable time from high level S1 is closed, See Figure 4		7	16	ns
t <sub>PLZ</sub>	Output disable time from low level		7	16	
C <sub>pd</sub>	Power dissipation capacitance (each driver) <sup>(2)</sup> S1 is open, See Figure 2			170	pF

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

(2) C<sub>pd</sub> is used to estimate the switching losses according to P<sub>D</sub> = C<sub>pd</sub> × V<sub>CC</sub><sup>2</sup> × f, where f is the switching frequency.

### ELECTRICAL CHARACTERISTICS

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

PARAMETER	TEST CONDITIONS	AM26C31Q AM26C31M			UNIT	
		MIN	TYP <sup>(1)</sup>	MAX		
V <sub>OH</sub>	High-level output voltage	I <sub>O</sub> = -20 mA		2.2	3.4	V
V <sub>OL</sub>	Low-level output voltage	I <sub>O</sub> = 20 mA		0.2	0.4	V
V <sub>OD</sub>	Differential output voltage magnitude	R <sub>L</sub> = 100 Ω, See Figure 1		2	3.1	V
Δ V <sub>OD</sub>	Change in magnitude of differential output voltage <sup>(2)</sup>	R <sub>L</sub> = 100 Ω, See Figure 1		±0.4		V
V <sub>OC</sub>	Common-mode output voltage	R <sub>L</sub> = 100 Ω, See Figure 1		3		V
Δ V <sub>OC</sub>	Change in magnitude of common-mode output voltage <sup>(2)</sup>	R <sub>L</sub> = 100 Ω, See Figure 1		±0.4		V
I <sub>I</sub>	Input current	V <sub>I</sub> = V <sub>CC</sub> or GND		±1		μA
I <sub>O(off)</sub>	Driver output current with power off	V <sub>CC</sub> = 0	V <sub>O</sub> = 6 V	100		μA
			V <sub>O</sub> = -0.25 V	-100		
I <sub>OS</sub>	Driver output short-circuit current	V <sub>O</sub> = 0		-170		mA
I <sub>OZ</sub>	High-impedance off-state output current	V <sub>O</sub> = 2.5 V		20		μA
		V <sub>O</sub> = 0.5 V		-20		
I <sub>CC</sub>	Quiescent supply current	I <sub>O</sub> = 0	V <sub>I</sub> = 0 or 5 V	100		μA
			V <sub>I</sub> = 2.4 V or 0.5 V <sup>(3)</sup>	3.2		
C <sub>i</sub>	Input capacitance				6	pF

- (1) All typical values are at V<sub>CC</sub> = 5 V and T<sub>A</sub> = 25°C.
- (2) Δ|V<sub>OD</sub>| and Δ|V<sub>OC</sub>| are the changes in magnitude of V<sub>OD</sub> and V<sub>OC</sub>, respectively, that occur when the input is changed from a high level to a low level.
- (3) This parameter is measured per input. All other inputs are at 0 or 5 V.

### SWITCHING CHARACTERISTICS

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

PARAMETER	TEST CONDITIONS	AM26C31Q AM26C31M			UNIT	
		MIN	TYP <sup>(1)</sup>	MAX		
t <sub>PLH</sub>	Propagation delay time, low-to-high-level output	S1 is open, See Figure 2		7	12	ns
t <sub>PHL</sub>	Propagation delay time, high-to-low-level output			6.5	12	
t <sub>sk(p)</sub>	Pulse skew time ((t <sub>PLH</sub> - t <sub>PHL</sub> ))	S1 is open, See Figure 2		0.5	4	ns
t <sub>r(OD)</sub> , t <sub>f(OD)</sub>	Differential output rise and fall times	S1 is open, See Figure 3		5	12	ns
t <sub>PZH</sub>	Output enable time to high level	S1 is closed, See Figure 4		10	19	ns
t <sub>PZL</sub>	Output enable time to low level			10	19	
t <sub>PHZ</sub>	Output disable time from high level	S1 is closed, See Figure 4		7	16	ns
t <sub>PLZ</sub>	Output disable time from low level			7	16	
C <sub>pd</sub>	Power dissipation capacitance (each driver) <sup>(2)</sup>	S1 is open, See Figure 2		100		pF

- (1) All typical values are at V<sub>CC</sub> = 5 V and T<sub>A</sub> = 25°C.
- (2) C<sub>pd</sub> is used to estimate the switching losses according to P<sub>D</sub> = C<sub>pd</sub> × V<sub>CC</sub><sup>2</sup> × f, where f is the switching frequency.

PARAMETER MEASUREMENT INFORMATION

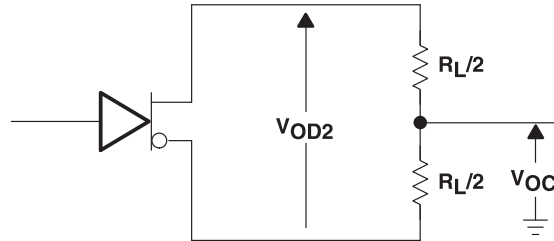
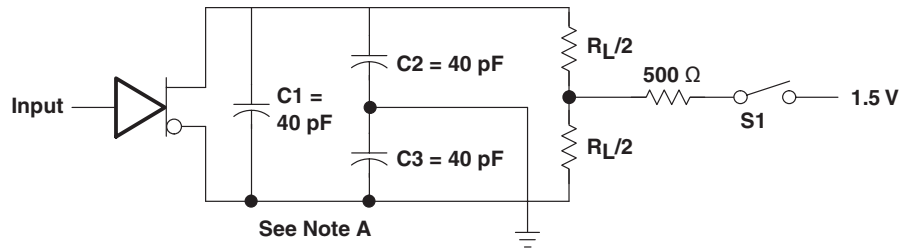
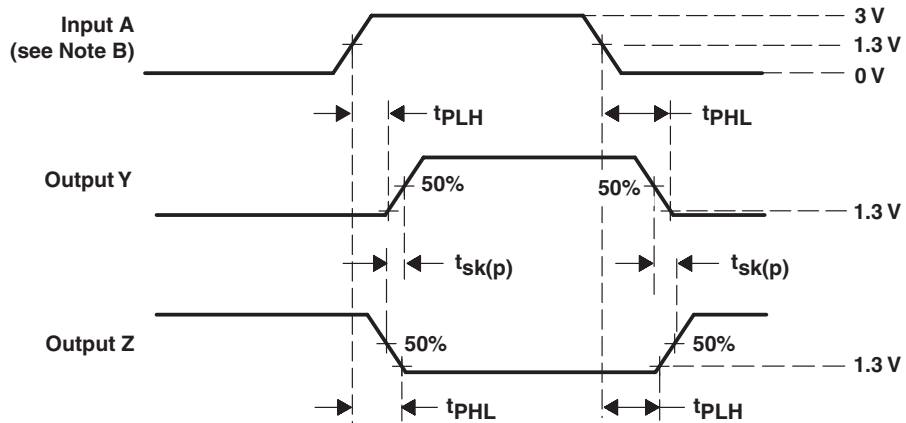


Figure 1. Differential and Common-Mode Output Voltages



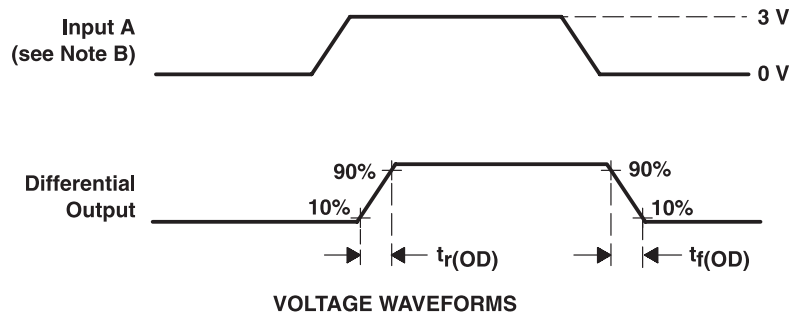
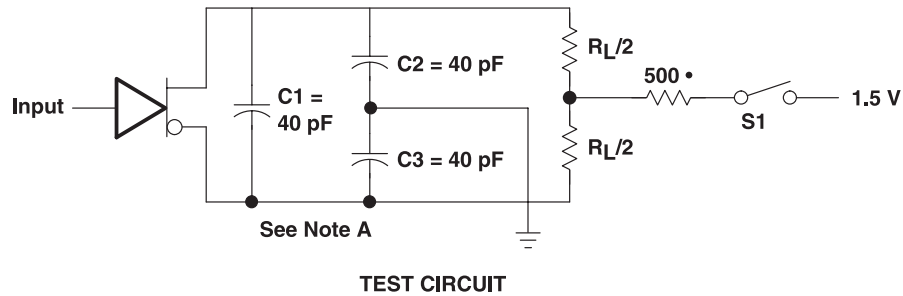
TEST CIRCUIT



- A. C1, C2, and C3 include probe and jig capacitance.
- B. All input pulses are supplied by generators having the following characteristics: PRR  $\leq$  1 MHz, duty cycle  $\leq$  50%, and  $t_r, t_f \leq$  6 ns.

Figure 2. Propagation Delay Time and Skew Waveforms and Test Circuit

PARAMETER MEASUREMENT INFORMATION (continued)

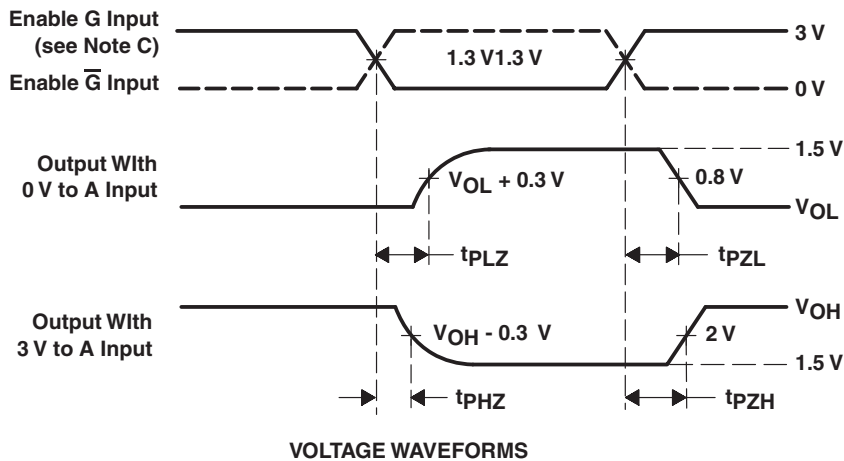
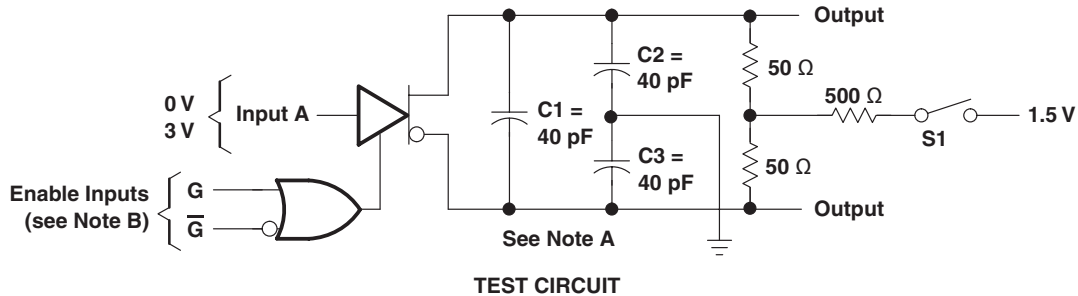


- A. C1, C2, and C3 include probe and jig capacitance.
- B. All input pulses are supplied by generators having the following characteristics: PRR ≤ 1 MHz, duty cycle ≤ 50%, and tr, tf ≤ 6 ns.

Figure 3. Differential-Output Rise- and Fall-Time Waveforms and Test Circuit



PARAMETER MEASUREMENT INFORMATION (continued)



- A. C1, C2, and C3 include probe and jig capacitance.
- B. All input pulses are supplied by generators having the following characteristics: PRR  $\leq$  1 MHz, duty cycle  $\leq$  50%, and  $t_r, t_f \leq$  6 ns.
- C. Each enable is tested separately.

**Figure 4. Output Enable- and Disable-Time Waveforms and Test Circuit**

**TYPICAL CHARACTERISTICS**  
**SUPPLY CURRENT**  
**vs**  
**SWITCHING FREQUENCY**

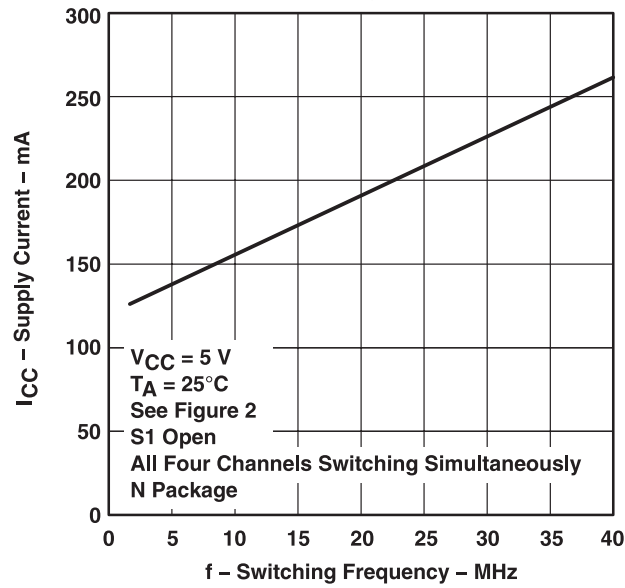


Figure 5.

**PACKAGING INFORMATION**

Orderable Device	Status <sup>(1)</sup>	Package Type	Package Drawing	Pins	Package Qty	Eco Plan <sup>(2)</sup>	Lead/Ball Finish	MSL Peak Temp <sup>(3)</sup>
AM26C31CD	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31CDBLE	OBSOLETE	SSOP	DB	16		TBD	Call TI	Call TI
AM26C31CDBR	ACTIVE	SSOP	DB	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31CDBRE4	ACTIVE	SSOP	DB	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31CDBRG4	ACTIVE	SSOP	DB	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31CDE4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31CDG4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31CDR	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31CDRE4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31CDRG4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31CN	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type
AM26C31CNE4	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type
AM26C31CNSR	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31CNSRE4	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31CNSRG4	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31ID	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31IDBLE	OBSOLETE	SSOP	DB	16		TBD	Call TI	Call TI
AM26C31IDBR	ACTIVE	SSOP	DB	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31IDBRE4	ACTIVE	SSOP	DB	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31IDBRG4	ACTIVE	SSOP	DB	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31IDE4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31IDG4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31IDR	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31IDRE4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31IDRG4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31IN	ACTIVE	PDIP	N	16	25	Pb-Free	CU NIPDAU	N / A for Pkg Type

Orderable Device	Status <sup>(1)</sup>	Package Type	Package Drawing	Pins	Package Qty	Eco Plan <sup>(2)</sup>	Lead/Ball Finish	MSL Peak Temp <sup>(3)</sup>
						(RoHS)		
AM26C31INE4	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type
AM26C31INSR	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31INSRG4	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31IPW	ACTIVE	TSSOP	PW	16	90	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31IPWE4	ACTIVE	TSSOP	PW	16	90	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31IPWG4	ACTIVE	TSSOP	PW	16	90	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31IPWR	ACTIVE	TSSOP	PW	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31IPWRG4	ACTIVE	TSSOP	PW	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31QD	ACTIVE	SOIC	D	16	40	TBD	CU NIPDAU	Level-1-220C-UNLIM
AM26C31QDG4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26C31QDR	ACTIVE	SOIC	D	16	2500	TBD	CU NIPDAU	Level-1-220C-UNLIM
AM26C31QDRG4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM

<sup>(1)</sup> 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.

<sup>(2)</sup> 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)

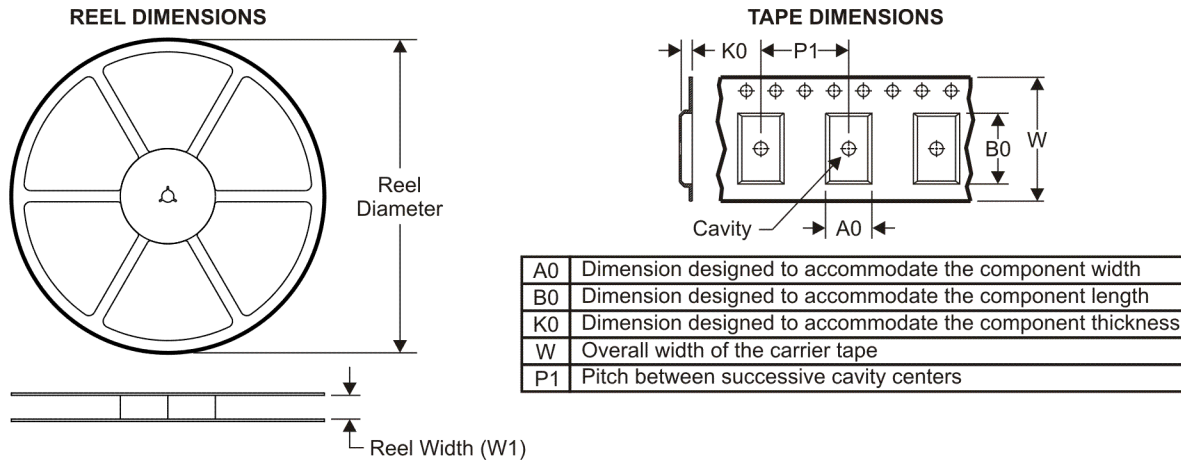
<sup>(3)</sup> MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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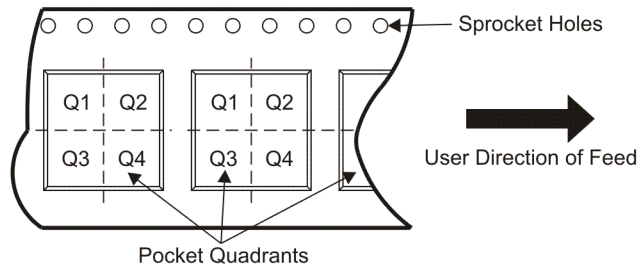
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**TAPE AND REEL INFORMATION**



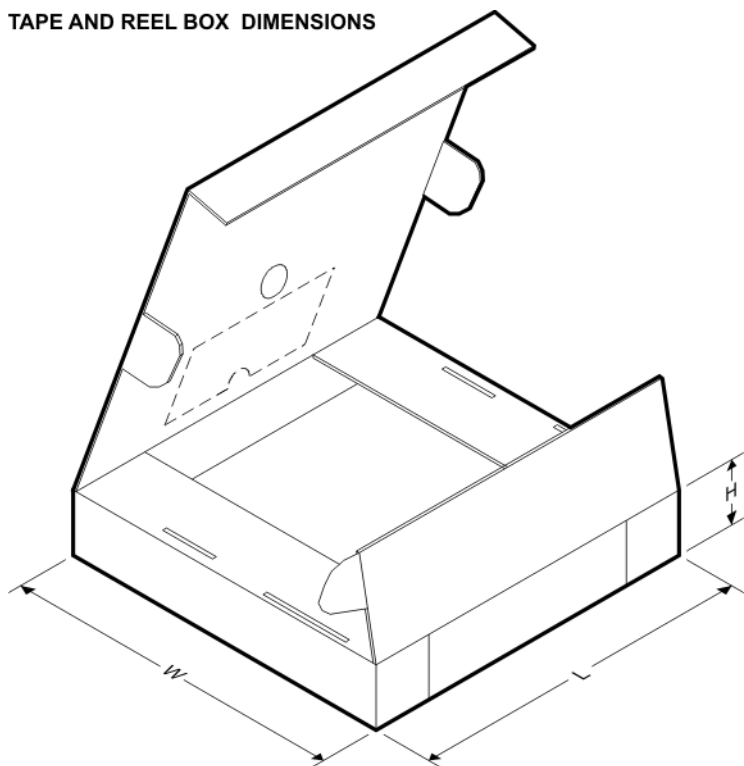
**QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE**



\*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
AM26C31CDBR	SSOP	DB	16	2000	330.0	16.4	8.2	6.6	2.5	12.0	16.0	Q1
AM26C31CDR	SOIC	D	16	2500	330.0	16.4	6.5	10.3	2.1	8.0	16.0	Q1
AM26C31CNSR	SO	NS	16	2000	330.0	16.4	8.2	10.5	2.5	12.0	16.0	Q1
AM26C31IDBR	SSOP	DB	16	2000	330.0	16.4	8.2	6.6	2.5	12.0	16.0	Q1
AM26C31IDR	SOIC	D	16	2500	330.0	16.4	6.5	10.3	2.1	8.0	16.0	Q1
AM26C31INSR	SO	NS	16	2000	330.0	16.4	8.2	10.5	2.5	12.0	16.0	Q1
AM26C31IPWR	TSSOP	PW	16	2000	330.0	12.4	7.0	5.6	1.6	8.0	12.0	Q1

## TAPE AND REEL BOX DIMENSIONS



\*All dimensions are nominal

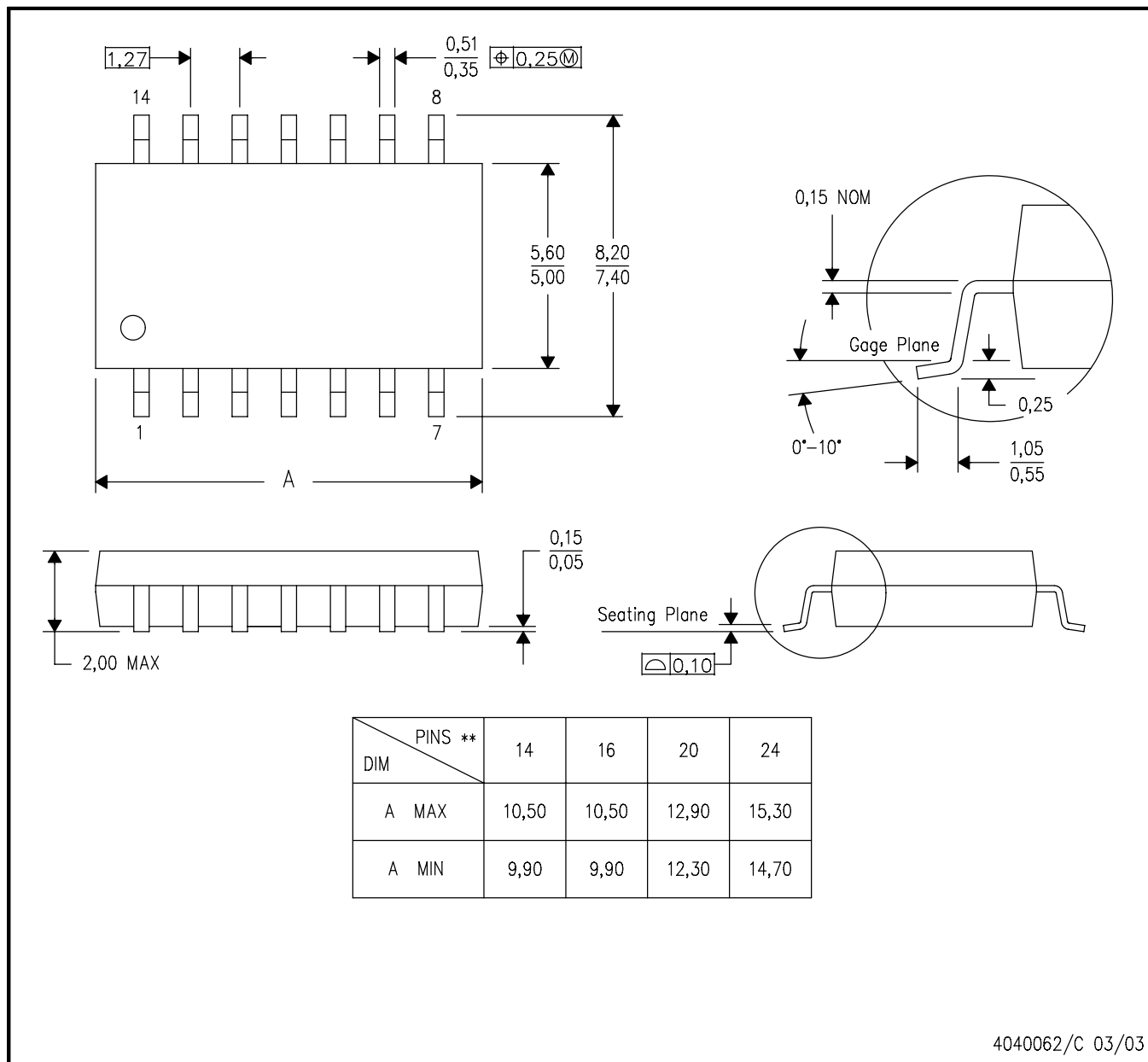
Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
AM26C31CDBR	SSOP	DB	16	2000	346.0	346.0	33.0
AM26C31CDR	SOIC	D	16	2500	333.2	345.9	28.6
AM26C31CNSR	SO	NS	16	2000	346.0	346.0	33.0
AM26C31IDBR	SSOP	DB	16	2000	346.0	346.0	33.0
AM26C31IDR	SOIC	D	16	2500	333.2	345.9	28.6
AM26C31INSR	SO	NS	16	2000	346.0	346.0	33.0
AM26C31IPWR	TSSOP	PW	16	2000	346.0	346.0	29.0

## MECHANICAL DATA

**NS (R-PDSO-G\*\*)**

**PLASTIC SMALL-OUTLINE PACKAGE**

**14-PINS SHOWN**



4040062/C 03/03

- 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.



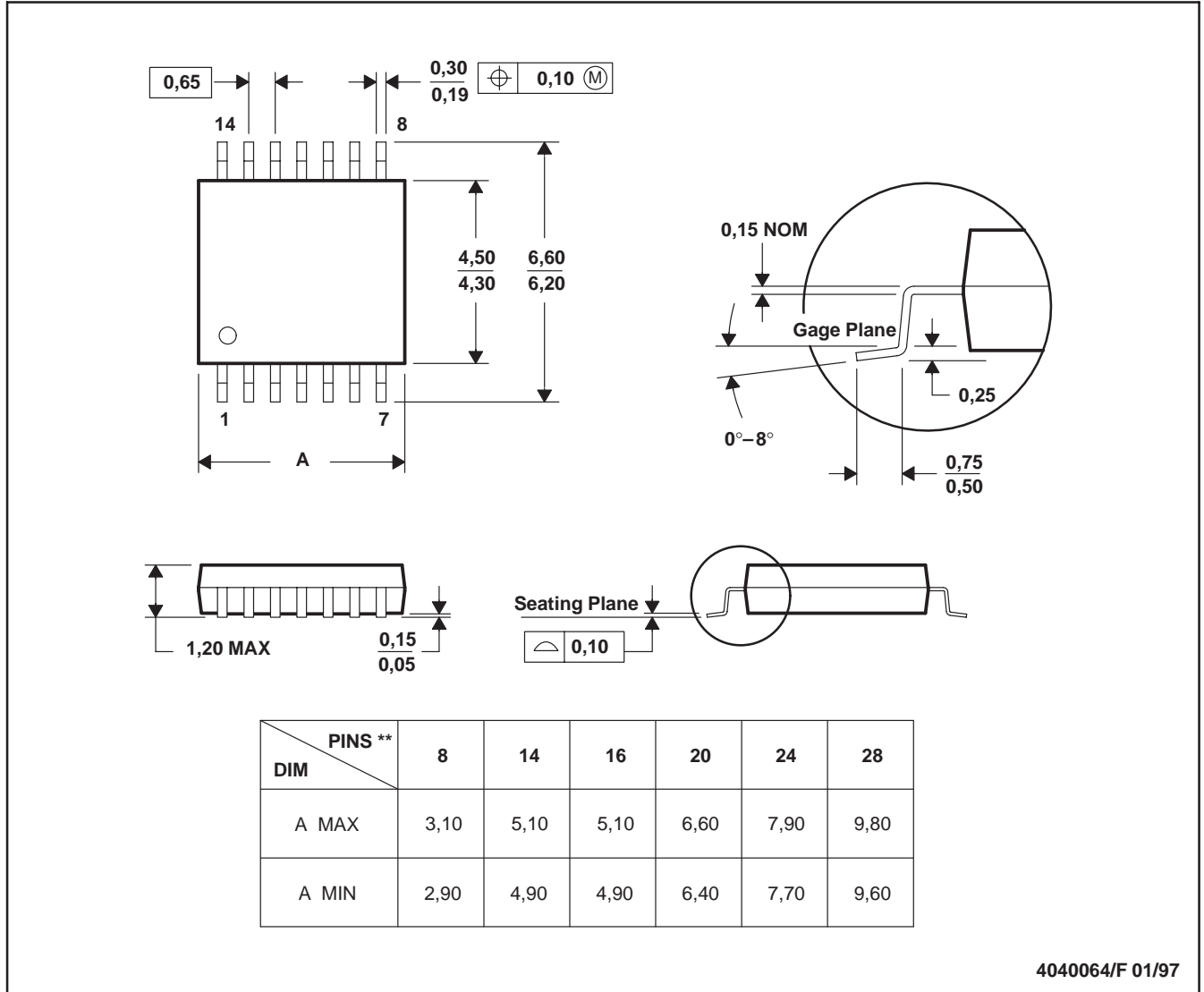
# MECHANICAL DATA

MTSS001C – JANUARY 1995 – REVISED FEBRUARY 1999

**PW (R-PDSO-G\*\*)**

**PLASTIC SMALL-OUTLINE PACKAGE**

14 PINS SHOWN



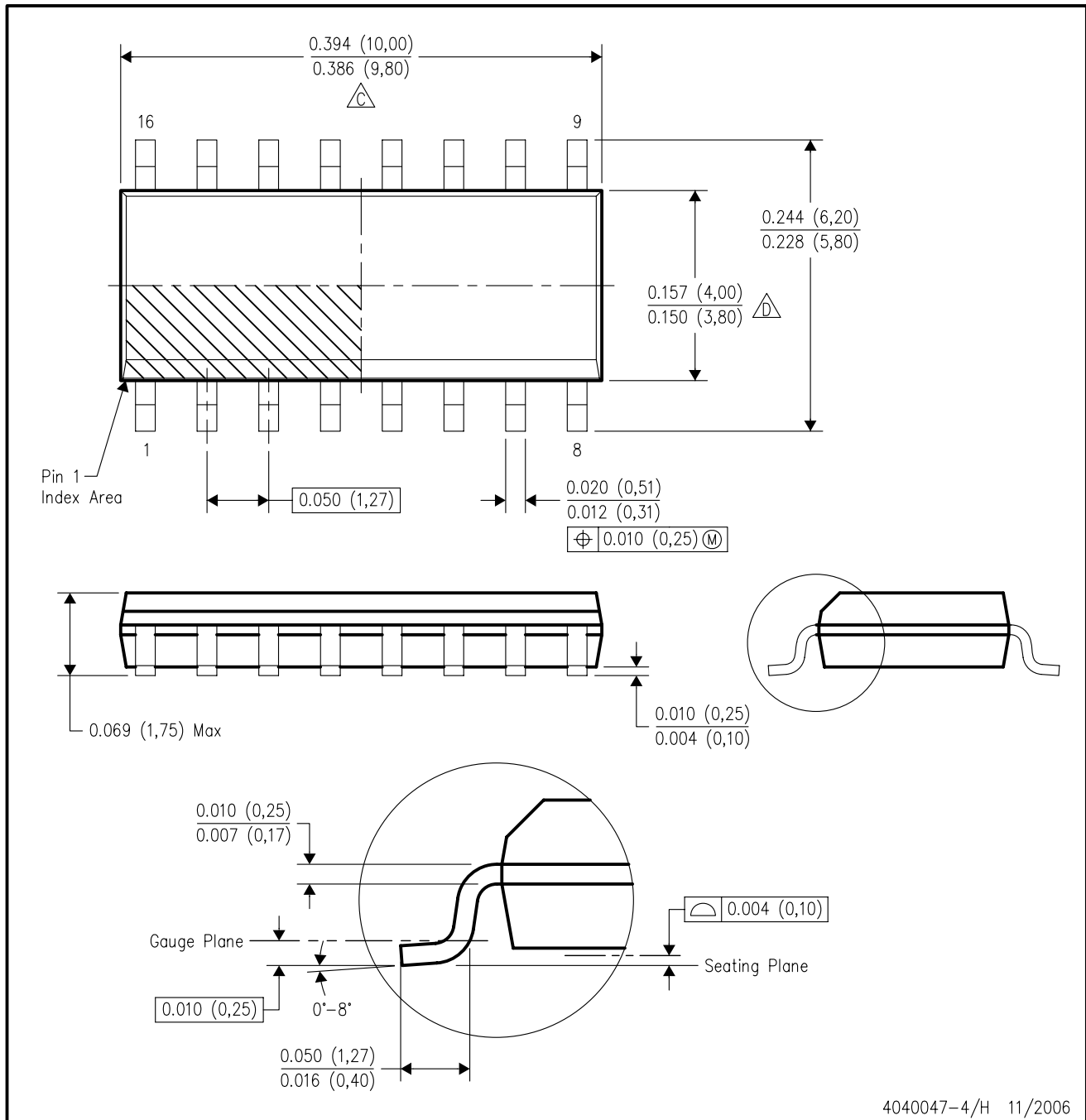
4040064/F 01/97

- 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-153

# MECHANICAL DATA

## D (R-PDSO-G16)

## PLASTIC SMALL-OUTLINE PACKAGE

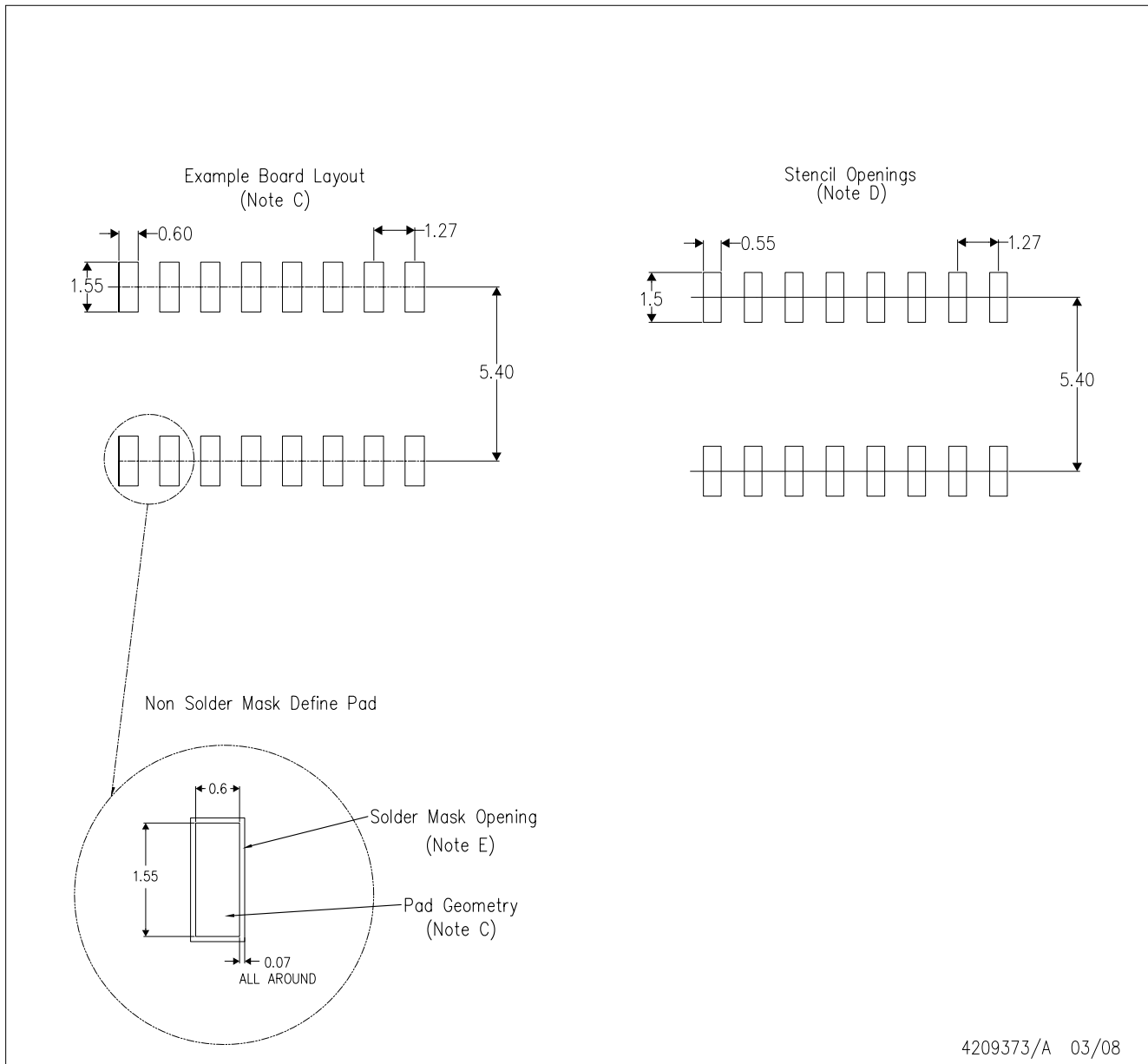


4040047-4/H 11/2006

- 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.

# LAND PATTERN

D(R-PDSO-G16)



- 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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