

AM26C31

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SLLS103N – DECEMBER 1990 – REVISED OCTOBER 2011

QUADRUPLE DIFFERENTIAL LINE DRIVER

Check for Samples: AM26C31

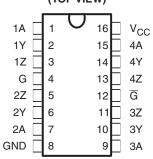
FEATURES

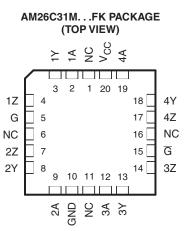
- Meets or Exceeds the Requirements of TIA/EIA-422-B and ITU Recommendation V.11
- Low Power, $I_{CC} = 100 \ \mu A Typ$
- Operates From a Single 5-V Supply
- High Speed, t_{PLH} = t_{PHL} = 7 ns Typ
- Low Pulse Distortion, t_{sk(p)} = 0.5 ns Typ
- High Output Impedance in Power-Off Conditions
- Improved 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 (\overline{G}) enable input. BiCMOS circuitry reduces power consumption without sacrificing speed.

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





NC – No internal connection

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.

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.

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ISTRUMENTS

EXAS

ORDERING INFORMATION									
T _A	P/	ACKAGE ^{(1) (2)}	ORDERABLE PART NUMBER	TOP-SIDE MARKING					
	PDIP (N)	Tube of 25	AM26C31CN	AM26C31CN					
		Tube of 40	AM26C31CD	414060040					
0°C to 70°C	SOIC (D)	Reel of 2500	AM26C31CDR	- AM26C31C					
	SOP (NS)	Reel of 2000	AM26C31CNSR	26C31					
	SSOP (DB)	Reel of 2000	AM26C31CDBR	26C31					
	PDIP (N)	Tube of 25	AM26C31IN	AM26C31IN					
		Tube of 40	AM26C31ID	414000041					
40°C to 05°C	SOIC (D)	Reel of 2500	AM26C31IDR	- AM26C31I					
–40°C to 85°C	SOP (NS)	Reel of 2000	AM26C31INSR	26C31I					
	SSOP (DB)	Reel of 2000	AM26C31IDBR	26C31I					
	TSSOP (PW)	Tube of 90	AM26C31IPW	26C31I					
40°C to 405°C		Tube of 40	AM26C31QD	AM00004.0D					
–40°C to 125°C	SOIC (D)	Reel of 2500	AM26C31QDR	AM26C31QD					
	CDIP (J)	Tube of 25	AM26C31MJ	AM26C31MJ					
–55°C to 125°C	CFP (W)	Tube of 150	AM26C31MW	AM26C31MW					
	LCCC (FK)	Tube of 55	AM26C31MFK	AM26C31MFK					

 Package drawings, thermal data, and symbolization are available at www.ti.com/packaging.
 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.

INPUT	ENA	BLES	OUTPUTS							
A	G	G	Y	Z						
Н	Н	Х	Н	L						
L	н	Х	L	н						
н	х	L	Н	L						
L	х	L	L	н						
Х	L	Н	Z	Z						

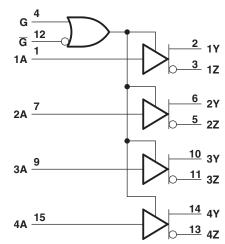
Table 1. FUNCTION TABLE (Each Driver)⁽¹⁾

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



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LOGIC DIAGRAM (POSITIVE LOGIC)



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

EQUIVALENT OF EACH INPUT TYPICAL OF ALL OUTPUTS VCC VCC Input VCC GND Input Input

SCHEMATICS OF INPUTS AND OUTPUTS



ABSOLUTE MAXIMUM RATINGS⁽¹⁾

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

			MIN	MAX	UNIT
V _{CC}	Supply voltage range ⁽²⁾		-0.5	7	V
VI	Input voltage range		-0.5	V _{CC} + 0.5	V
V _{ID}	Differential input voltage range		-14	14	V
Vo	Output voltage range		-0.5	7	
I _{IK} I _{OK}	Input or output clamp current			±20	mA
I _O	Output current			±150	mA
	V _{CC} current			200	mA
	GND current		-200		mA
		D package		73	
		DB package		82	
θ_{JA}	Package thermal impedance ^{(3) (4)}	N package		67	°C/W
		NS package		64	
		PW package		108	
TJ	Operating virtual junction temperature			150	°C
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, except differential voltages, are with respect to the network ground terminal.

Maximum power dissipation is a function of $T_{J(max)}$, θ_{JA} , and T_A . The maximum allowable power dissipation at any allowable ambient temperature is $P_D = (T_{J(max)} - T_A)/\theta_{JA}$. Operating at the absolute maximum T_J of 150°C can affect reliability. The package thermal impedance is calculated in accordance with JESD 51-7. (3)

(4)

RECOMMENDED OPERATING CONDITIONS

			MIN	NOM	MAX	UNIT
V _{CC}	Supply voltage		4.5	5	5.5	V
V _{ID}	Differential input voltage			±7		V
VIH	High-level input voltage		2			V
VIL	Low-level input voltage				0.8	V
I _{OH}	High-level output current				-20	mA
I _{OL}	Low-level output current				20	mA
		AM26C31C	0		70	
-	T _A Operating free-air temperature	AM26C31I	-40		85	°C
A		AM26C31Q	-40		125	
		AM26C31M	-55		125	

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ELECTRICAL CHARACTERISTICS

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

	PARAMETER	TEST C	CONDITIONS		M26C310 M26C31		UNIT
				MIN	TYP ⁽¹⁾	MAX	
V _{OH}	High-level output voltage	I _O = -20 mA		2.4	3.4		V
V _{OL}	Low-level output voltage	I _O = 20 mA			0.2	0.4	V
V _{OD}	Differential output voltage magnitude	$R_L = 100 \Omega$,	See Figure 1	2	3.1		V
$\Delta V_{OD} $	Change in magnitude of differential output voltage ⁽²⁾	$R_L = 100 \Omega$,	See Figure 1			±0.4	V
V _{OC}	Common-mode output voltage	$R_L = 100 \Omega$,	See Figure 1			3	V
$\Delta V_{OC} $	Change in magnitude of common-mode output voltage ⁽²⁾	$R_L = 100 \Omega$,	See Figure 1			±0.4	V
I _I	Input current	$V_I = V_{CC}$ or GN	D			±1	μA
	Diverse devide service with a service of "		V _O = 6 V			100	
I _{O(off)}	Driver output current with power off	$V_{CC} = 0$	V _O = -0.25 V			-100	μA
l _{os}	Driver output short-circuit current	$V_{O} = 0$		-30		-150	mA
	Liber have a design of the sector of some of	V _O = 2.5 V				20	
I _{OZ}	High-impedance off-state output current	V _O = 0.5 V				-20	μA
			V _I = 0 or 5 V			100	μA
I _{CC}	Quiescent supply current	I _O = 0	$V_1 = 2.4 \text{ V or } 0.5 V^{(3)}$		1.5	3	mA
Ci	Input capacitance				6		pF

(1) All typical values are at $V_{CC} = 5 \text{ V}$ and $T_A = 25^{\circ}\text{C}$. (2) $\Delta |V_{OD}|$ and $\Delta |V_{OC}|$ 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.

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

SWITCHING CHARACTERISTICS

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

	PARAMETER	TEST		AM26C31C AM26C31I			
				MIN	TYP ⁽¹⁾	MAX	
t _{PLH}	Propagation delay time, low-to-high-level output	C1 is onen		3	7	12	20
t _{PHL}	Propagation delay time, high-to-low-level output	S1 is open,	See Figure 2	3	7	12	ns
t _{sk(p)}	Pulse skew time (t _{PLH} – t _{PHL})	S1 is open,	See Figure 2		0.5	4	ns
$t_{r(OD)}, t_{f(OD)}$	Differential output rise and fall times	S1 is open,	See Figure 3		5	10	ns
t _{PZH}	Output enable time to high level	C1 is alread	See Figure 4		10	19	20
t _{PZL}	Output enable time to low level	S1 is closed,	See Figure 4		10	19	ns
t _{PHZ}	Output disable time from high level				7	16	
t _{PLZ}	Output disable time from low level	S1 is closed,	See Figure 4		7	16	ns
C _{pd}	Power dissipation capacitance (each driver) ⁽²⁾	S1 is open,	See Figure 2		170		pF

(1) All typical values are at $V_{CC} = 5 \text{ V}$ and $T_A = 25^{\circ}\text{C}$. (2) C_{pd} is used to estimate the switching losses according to $P_D = C_{pd} \times V_{CC}^2 \times f$, 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		M26C310 M26C31N		UNIT
				MIN	TYP ⁽¹⁾	MAX	
V _{OH}	High-level output voltage	I _O = -20 mA		2.2	3.4		V
V _{OL}	Low-level output voltage	I _O = 20 mA			0.2	0.4	V
V _{OD}	Differential output voltage magnitude	$R_L = 100 \Omega$,	See Figure 1	2	3.1		V
$\Delta V_{OD} $	Change in magnitude of differential output voltage ⁽²⁾	$R_L = 100 \Omega$,	See Figure 1			±0.4	V
V _{OC}	Common-mode output voltage	$R_L = 100 \Omega$,	See Figure 1			3	V
Δ V _{OC}	Change in magnitude of common-mode output voltage ⁽²⁾	$R_L = 100 \Omega$,	See Figure 1			±0.4	V
I _I	Input current	$V_I = V_{CC}$ or GN	D			±1	μA
	Dei ann an taoite ann an taoite		V _O = 6 V			100	
I _{O(off)}	Driver output current with power off	$V_{CC} = 0$	V _O = -0.25 V			-100	μA
los	Driver output short-circuit current	$V_0 = 0$				-170	mA
	ll'al investore d'altre estruture et	V _O = 2.5 V				20	
I _{OZ}	High-impedance off-state output current	$V_{O} = 0.5 V$				-20	μA
			$V_{I} = 0 \text{ or } 5 \text{ V}$			100	μA
I _{CC}	Quiescent supply current	I _O = 0	$V_{I} = 2.4 \text{ V or } 0.5 V^{(3)}$			3.2	mA
Ci	Input capacitance				6		pF

(1) All typical values are at $V_{CC} = 5 \text{ V}$ and $T_A = 25^{\circ}\text{C}$. (2) $\Delta |V_{OD}|$ and $\Delta |V_{OC}|$ 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) 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	TEST CONDITIONS			AM26C31Q AM26C31M		
				MIN	TYP ⁽¹⁾	MAX		
t _{PLH}	Propagation delay time, low-to-high-level output	S1 is open	Soo Figuro 2		7	12	20	
t _{PHL}	Propagation delay time, high-to-low-level output	S1 is open, See Figure 2			6.5	12	ns	
t _{sk(p)}	Pulse skew time (t _{PLH} – t _{PHL})	S1 is open,	See Figure 2		0.5	4	ns	
$t_{r(OD)}, t_{f(OD)}$	Differential output rise and fall times	S1 is open,	See Figure 3		5	12	ns	
t _{PZH}	Output enable time to high level	S1 is closed,	See Figure 4		10	19	20	
t _{PZL}	Output enable time to low level	ST IS Closed,	See Figure 4		10	19	ns	
t _{PHZ}	Output disable time from high level	C1 is alread	See Figure 4		7	16	~~~	
t _{PLZ}	Output disable time from low level	S1 is closed,	See Figure 4		7	16	ns	
C _{pd}	Power dissipation capacitance (each driver) ⁽²⁾	S1 is open,	See Figure 2		100		pF	

(1) All typical values are at $V_{CC} = 5 \text{ V}$ and $T_A = 25^{\circ}\text{C}$. (2) C_{pd} is used to estimate the switching losses according to $P_D = C_{pd} \times V_{CC}^2 \times f$, where f is the switching frequency.



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PARAMETER MEASUREMENT INFORMATION

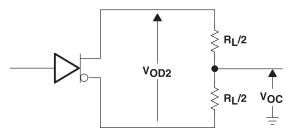
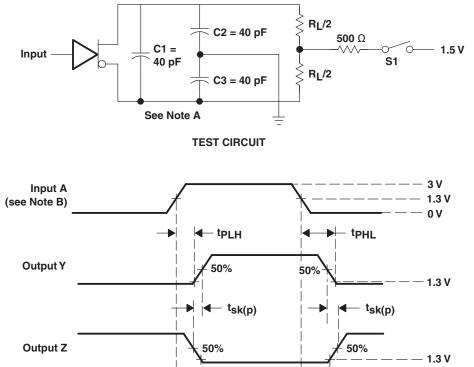
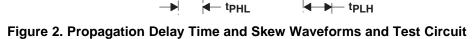


Figure 1. Differential and Common-Mode Output Voltages

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





tPLH

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

TEXAS INSTRUMENTS

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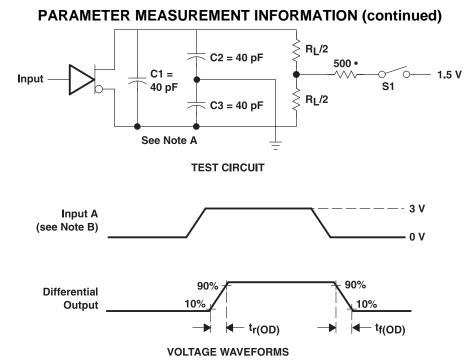


Figure 3. Differential-Output Rise- and Fall-Time Waveforms and Test Circuit

- 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.
- C. Each enable is tested separately.

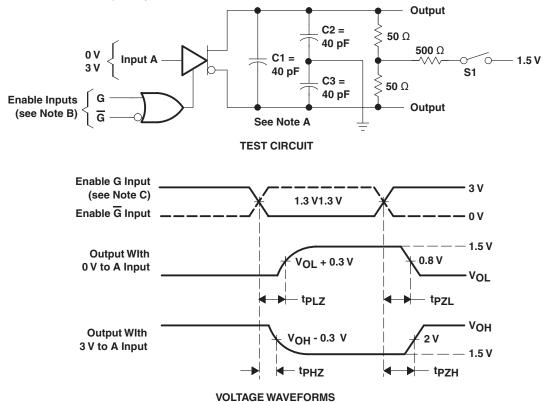


Figure 4. Output Enable- and Disable-Time Waveforms and Test Circuit

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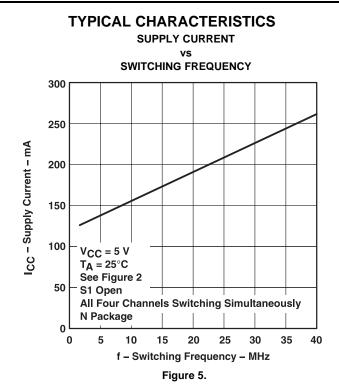


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EXAS

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REVISION HISTORY

Cł	hanges from Revision M (June 2008) to Revision N P	Page	e
•	Changed units to mA from μA to fix units typo	4	4



5-May-2012

PACKAGING INFORMATION

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/ Ball Finish	MSL Peak Temp ⁽³⁾	Samples (Requires Login)
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	Ν	16	25	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type	
AM26C31CNE4	ACTIVE	PDIP	Ν	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	



5-May-2012

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/ Ball Finish	MSL Peak Temp ⁽³⁾	Samples (Requires Login)
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 (RoHS)	CU NIPDAU	N / A for Pkg Type	
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	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
AM26C31QDG4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	
AM26C31QDR	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	



5-May-2012

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/ Ball Finish	MSL Peak Temp ⁽³⁾	Samples (Requires Login)
AM26C31QDRG4	ACTIVE	SOIC	D	16	2500	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.

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OTHER QUALIFIED VERSIONS OF AM26C31 :

Enhanced Product: AM26C31-EP

Military: AM26C31M

NOTE: Qualified Version Definitions:

• Enhanced Product - Supports Defense, Aerospace and Medical Applications

PACKAGE OPTION ADDENDUM



www.ti.com

5-May-2012

• Military - QML certified for Military and Defense Applications

PACKAGE MATERIALS INFORMATION

www.ti.com

TAPE AND REEL INFORMATION

REEL DIMENSIONS

TEXAS INSTRUMENTS





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

TAPE AND REEL INFORMATION

*All dimensions are nominal

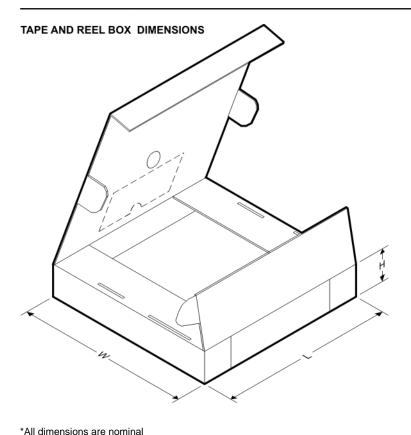
Device	Package Type	Package Drawing		SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
AM26C31CDBR	SSOP	DB	16	2000	330.0	16.4	8.2	6.6	2.5	12.0	16.0	Q1
AM26C31CDR	SOIC	D	16	2500	330.0	16.4	6.5	10.3	2.1	8.0	16.0	Q1
AM26C31CNSR	SO	NS	16	2000	330.0	16.4	8.2	10.5	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	6.9	5.6	1.6	8.0	12.0	Q1
AM26C31QDR	SOIC	D	16	2500	330.0	16.4	6.5	10.3	2.1	8.0	16.0	Q1

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PACKAGE MATERIALS INFORMATION

14-Oct-2011



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
AM26C31QDR	SOIC	D	16	2500	346.0	346.0	33.0

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.
- 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.
- 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.



4211283-4/D 06/11

D (R-PDSO-G16) PLASTIC SMALL OUTLINE Stencil Openings (Note D) Example Board Layout (Note C) -16x0,55 - 14x1,27 -14x1,27 16x1,95 4,80 4,80 Example Non Soldermask Defined Pad Example Pad Geometry (See Note C) 0,60 Example 2,00 Solder Mask Opening

(See Note E)

NOTES: A. All linear dimensions are in millimeters.

B. This drawing is subject to change without notice.

← 0,07 All Around

- 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.



PW (R-PDSO-G16)

PLASTIC SMALL OUTLINE



NOTES:

A. All linear dimensions are in millimeters. Dimensioning and tolerancing per ASME Y14.5M-1994. β . This drawing is subject to change without notice.

Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0,15 each side.

Body width does not include interlead flash. Interlead flash shall not exceed 0,25 each side.

E. Falls within JEDEC MO-153



LAND PATTERN DATA



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.



MECHANICAL DATA

PLASTIC SMALL-OUTLINE PACKAGE

0,51 0,35 ⊕0,25⊛ 1,27 8 14 0,15 NOM 5,60 8,20 5,00 7,40 \bigcirc Gage Plane ₽ 0,25 7 1 1,05 0,55 0-10 Δ 0,15 0,05 Seating Plane — 2,00 MAX 0,10PINS ** 14 16 20 24 DIM 10,50 10,50 12,90 15,30 A MAX A MIN 9,90 9,90 12,30 14,70 4040062/C 03/03

NOTES: A. All linear dimensions are in millimeters.

NS (R-PDSO-G**)

14-PINS SHOWN

- 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

MSSO002E - JANUARY 1995 - REVISED DECEMBER 2001

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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