

AM26LS32AC, AM26LS32AI, AM26LS33AC, AM26LS32AM, AM26LS33AM QUADRUPLE DIFFERENTIAL LINE RECEIVERS

SLLS115D – OCTOBER 1980 – REVISED MARCH 2002

- **AM26LS32A Devices Meet or Exceed the Requirements of ANSI TIA/EIA-422-B, TIA/EIA-423-B, and ITU Recommendations V.10 and V.11**
- **AM26LS32A Devices Have ± 7 -V Common-Mode Range With ± 200 -mV Sensitivity**
- **AM26LS33A Devices Have ± 15 -V Common-Mode Range With ± 500 -mV Sensitivity**
- **Input Hysteresis . . . 50 mV Typical**
- **Operate From a Single 5-V Supply**
- **Low-Power Schottky Circuitry**
- **3-State Outputs**
- **Complementary Output-Enable Inputs**
- **Input Impedance . . . 12 k Ω Min**
- **Designed to Be Interchangeable With Advanced Micro Devices AM26LS32™ and AM26LS33™**

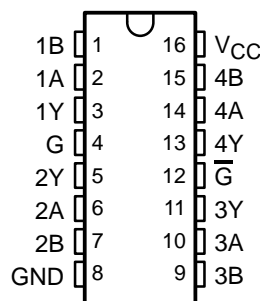
description

The AM26LS32A and AM26LS33A devices are quadruple differential line receivers for balanced and unbalanced digital data transmission. The enable function is common to all four receivers and offers a choice of active-high or active-low input. The 3-state outputs permit connection directly to a bus-organized system. Fail-safe design ensures that, if the inputs are open, the outputs always are high.

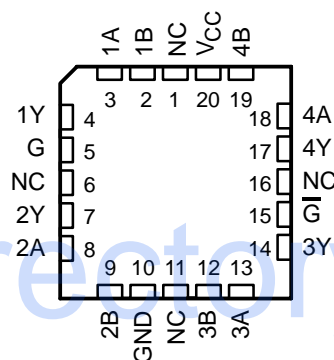
Compared to the AM26LS32 and the AM26LS33, the AM26LS32A and AM26LS33A incorporate an additional stage of amplification to improve sensitivity. The input impedance has been increased, resulting in less loading of the bus line. The additional stage has increased propagation delay; however, this does not affect interchangeability in most applications.

The AM26LS32AC and AM26LS33AC are characterized for operation from 0°C to 70°C. The AM26LS32AI is characterized for operation from -40°C to 85°C. The AM26LS32AM and AM26LS33AM are characterized for operation over the full military temperature range of -55°C to 125°C.

AM26LS32AC . . . D, N, OR NS PACKAGE
AM26LS32AI, AM26LS33AC . . . D OR N PACKAGE
AM26LS32AM, AM26LS33AM . . . J PACKAGE
(TOP VIEW)



AM26LS32AM, AM26LS33AM . . . FK PACKAGE
(TOP VIEW)



NC – No internal connection



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.

AM26LS32 and AM26LS33 are trademarks of Advanced Micro Devices, Inc.

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.



POST OFFICE BOX 655303 • DALLAS, TEXAS 75265

Copyright © 2002, Texas Instruments Incorporated

**AM26LS32AC, AM26LS32AI, AM26LS33AC,
AM26LS32AM, AM26LS33AM
QUADRUPLE DIFFERENTIAL LINE RECEIVERS**

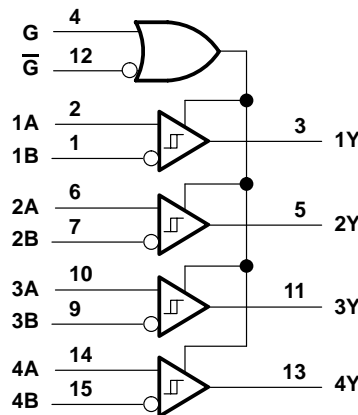
SLLS115D – OCTOBER 1980 – REVISED MARCH 2002

FUNCTION TABLE
(each receiver)

DIFFERENTIAL A – B	ENABLES		OUTPUT Y
	G	\overline{G}	
$V_{ID} \geq V_{IT+}$	H	X	H
	X	L	H
$V_{IT-} \leq V_{ID} \leq V_{IT+}$	H	X	?
	X	L	?
$V_{ID} \leq V_{IT-}$	H	X	L
	X	L	L
X	L	H	Z
Open	H	X	H
	X	L	H

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

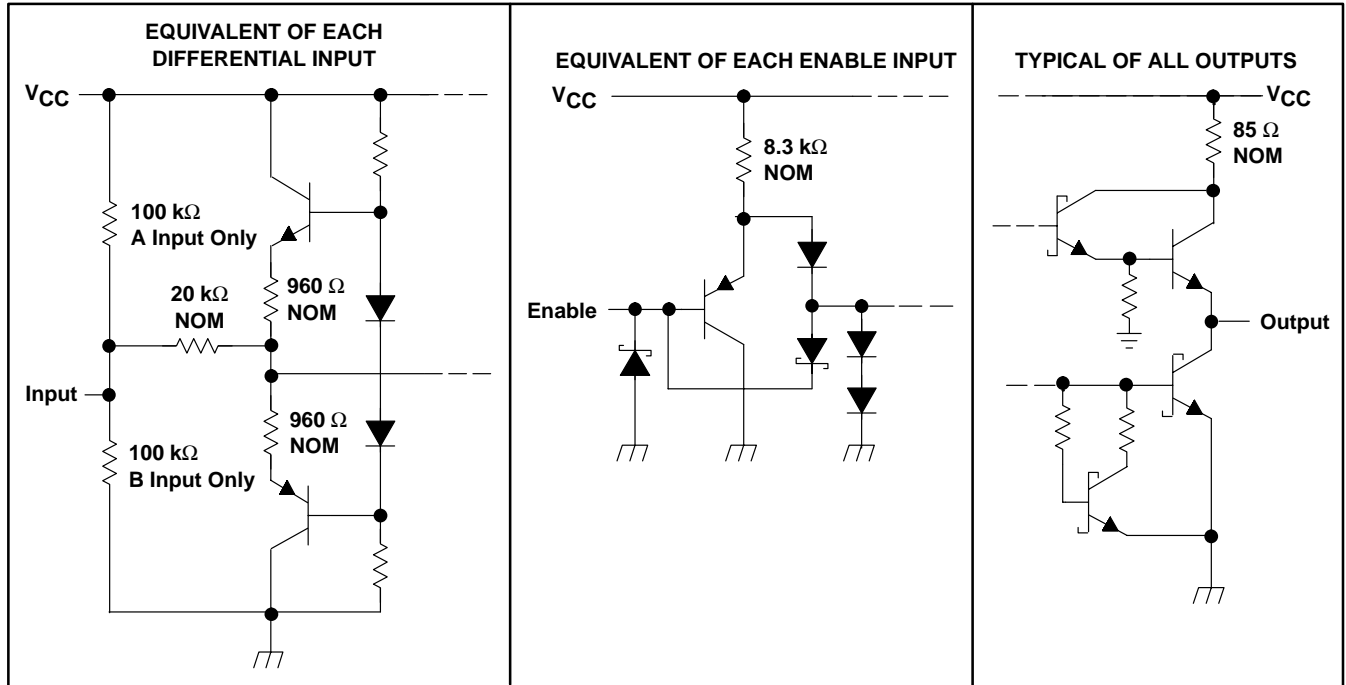
logic diagram (positive logic)



AM26LS32AC, AM26LS32AI, AM26LS33AC, AM26LS32AM, AM26LS33AM QUADRUPLE DIFFERENTIAL LINE RECEIVERS

SLLS115D – OCTOBER 1980 – REVISED MARCH 2002

schematics of inputs and outputs



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

Supply voltage, V_{CC} (see Note 1)	7 V
Input voltage, V_I : Any differential input	± 25 V
Other inputs	7 V
Differential input voltage, V_{ID} (see Note 2)	± 25 V
Continuous total power dissipation	See Dissipation Rating Table
Package thermal impedance, θ_{JA} (see Note 3): D package	73°C/W
N package	67°C/W
NS package	64°C/W
Case temperature for 60 seconds, T_C : FK package	260°C
Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds: D or N package	260°C
Lead temperature 1,6 mm (1/16 inch) from case for 60 seconds: J package	300°C
Storage temperature range, T_{stg}	-65°C to 150°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.

- NOTES: 1. All voltage values, except differential voltages, are with respect to the network ground terminal.
 2. Differential voltage values are at the noninverting (A) input terminals with respect to the inverting (B) input terminals.
 3. The package thermal impedance is calculated in accordance with JESD 51-7.

DISSIPATION RATING TABLE

PACKAGE	$T_A \leq 25^\circ\text{C}$ POWER RATING	DERATING FACTOR ABOVE $T_A = 25^\circ\text{C}$	$T_A = 70^\circ\text{C}$ POWER RATING	$T_A = 125^\circ\text{C}$ POWER RATING
FK	1375 mW	11.0 mW/°C	880 mW	275 mW
J	1375 mW	11.0 mW/°C	880 mW	275 mW

AM26LS32AC, AM26LS32AI, AM26LS33AC, AM26LS32AM, AM26LS33AM QUADRUPLE DIFFERENTIAL LINE RECEIVERS

SLLS115D – OCTOBER 1980 – REVISED MARCH 2002

recommended operating conditions

		MIN	NOM	MAX	UNIT		
V _{CC}	Supply voltage	AM26LS32AC, AM26LS32AI, AM26LS33AC		4.75	5	5.25	V
		AM26LS32AM, AM26LS33AM		4.5	5	5.5	
V _{IH}	High-level input voltage	2				V	
V _{IL}	Low-level input voltage				0.8	V	
V _{IC}	Common-mode input voltage	AM26LS32A		±7		V	
		AM26LS33A		±15			
I _{OH}	High-level output current				-440	μA	
I _{OL}	Low-level output current				8	mA	
T _A	Operating free-air temperature	AM26LS32AC, AM26LS33AC		0	70	°C	
		AM26LS32AI		-40	85		
		AM26LS32AM, AM26LS33AM		-55	125		

electrical characteristics over recommended ranges of V_{CC}, V_{IC}, and operating free-air temperature (unless otherwise noted)

PARAMETER	TEST CONDITIONS		MIN	TYP†	MAX	UNIT		
V _{IT+}	Positive-going input threshold voltage	V _O = V _{OHmin} , I _{OH} = -440 μA	AM26LS32A		0.2	V		
			AM26LS33A		0.5			
V _{IT-}	Negative-going input threshold voltage	V _O = 0.45 V, I _{OL} = 8 mA	AM26LS32A		-0.2‡	V		
			AM26LS33A		-0.5‡			
V _{hys}	Hysteresis voltage (V _{IT+} - V _{IT-})			50		mV		
V _{IK}	Enable-input clamp voltage	V _{CC} = MIN,	I _I = -18 mA		-1.5	V		
V _{OH}	High-level output voltage	V _{CC} = MIN, V _{ID} = 1 V, V _{I(G)} = 0.8 V, I _{OH} = -440 μA	AM26LS32AC AM26LS33AC		2.7	V		
			AM26LS32AM, AM26LS32AI, AM26LS33AM		2.5			
V _{OL}	Low-level output voltage	V _{CC} = MIN, V _{ID} = -1 V, V _{I(G)} = 0.8 V	I _{OL} = 4 mA		0.4	V		
			I _{OL} = 8 mA		0.45			
I _{OZ}	Off-state (high-impedance state) output current	V _{CC} = MAX	V _O = 2.4 V		20	μA		
			V _O = 0.4 V		-20			
I _I	Line input current	V _I = 15 V,	Other input at -10 V to 15 V		1.2	mA		
		V _I = -15 V,	Other input at -15 V to 10 V		-1.7			
I _{I(EN)}	Enable input current	V _I = 5.5 V		100	μA			
I _{IH}	High-level enable current	V _I = 2.7 V		20	μA			
I _{IL}	Low-level enable current	V _I = 0.4 V		-0.36	mA			
r _I	Input resistance	V _{IC} = -15 V to 15 V,	One input to ac ground		12	15	kΩ	
I _{OS}	Short-circuit output current§	V _{CC} = MAX		-15	-85	mA		
I _{CC}	Supply current	V _{CC} = MAX,		All outputs disabled		52	70	mA

† All typical values are at V_{CC} = 5 V, T_A = 25°C, and V_{IC} = 0.

‡ The algebraic convention, in which the less positive (more negative) limit is designated as minimum, is used in this data sheet for threshold levels only.

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



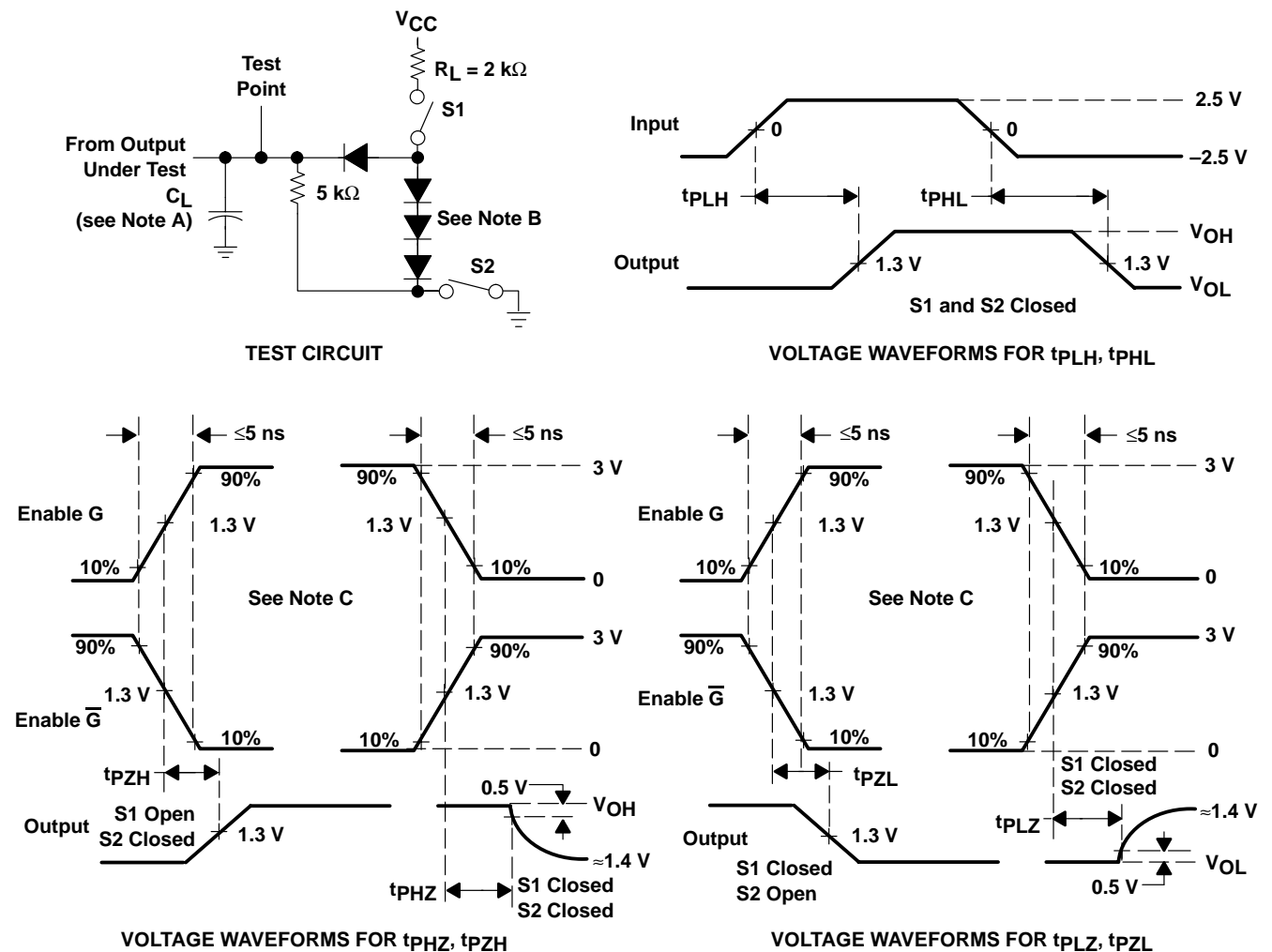
AM26LS32AC, AM26LS32AI, AM26LS33AC, AM26LS32AM, AM26LS33AM QUADRUPLE DIFFERENTIAL LINE RECEIVERS

SLLS115D – OCTOBER 1980 – REVISED MARCH 2002

switching characteristics, $V_{CC} = 5\text{ V}$, $T_A = 25^\circ\text{C}$

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_{PLH} Propagation delay time, low-to-high-level output	$C_L = 15\text{ pF}$, See Figure 1		20	35	ns
t_{PHL} Propagation delay time, high-to-low-level output			22	35	
t_{PZH} Output enable time to high level	$C_L = 15\text{ pF}$, See Figure 1		17	22	ns
t_{PZL} Output enable time to low level			20	25	
t_{PHZ} Output disable time from high level	$C_L = 5\text{ pF}$, See Figure 1		21	30	ns
t_{PLZ} Output disable time from low level			30	40	

PARAMETER MEASUREMENT INFORMATION



- NOTES: A. C_L includes probe and jig capacitance.
 B. All diodes are 1N3064 or equivalent.
 C. Enable G is tested with \bar{G} high; \bar{G} is tested with G low.

Figure 1

**AM26LS32AC, AM26LS32AI, AM26LS33AC,
AM26LS32AM, AM26LS33AM
QUADRUPLE DIFFERENTIAL LINE RECEIVERS**

SLLS115D – OCTOBER 1980 – REVISED MARCH 2002

TYPICAL CHARACTERISTICS

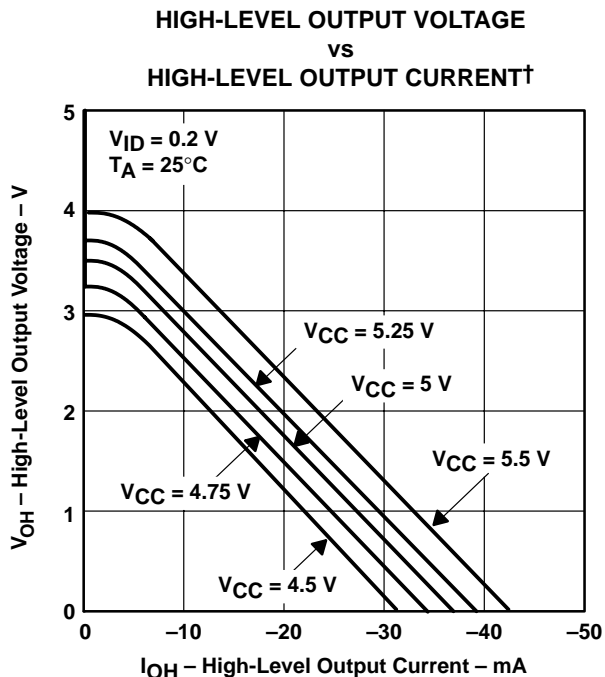


Figure 2

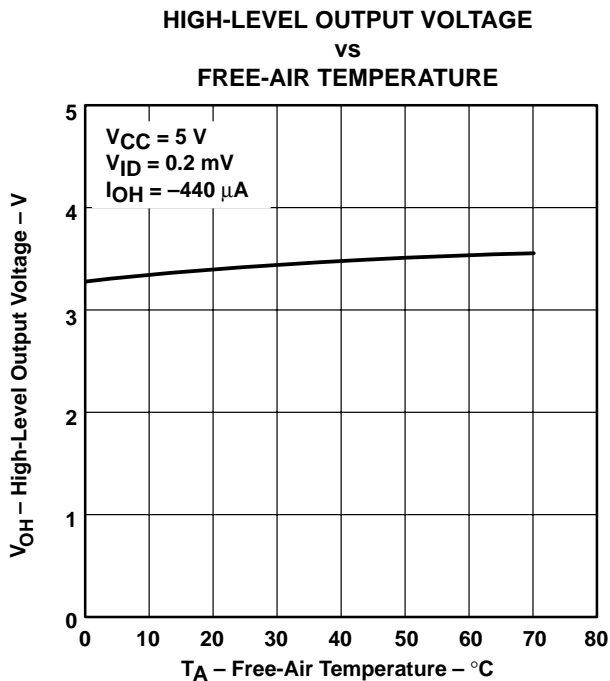


Figure 3

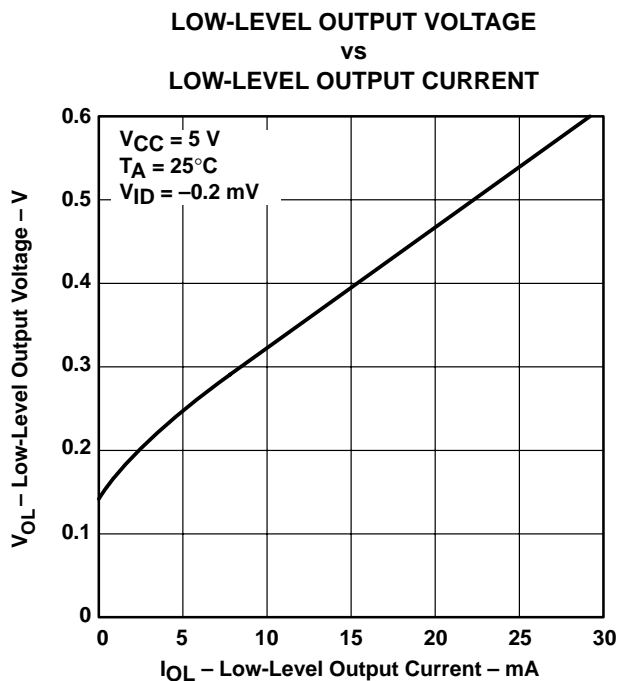


Figure 4

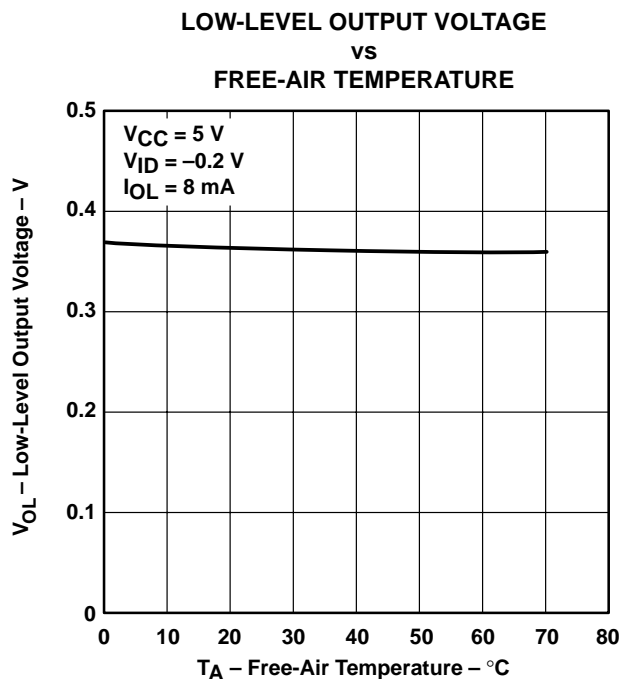


Figure 5



TYPICAL CHARACTERISTICS

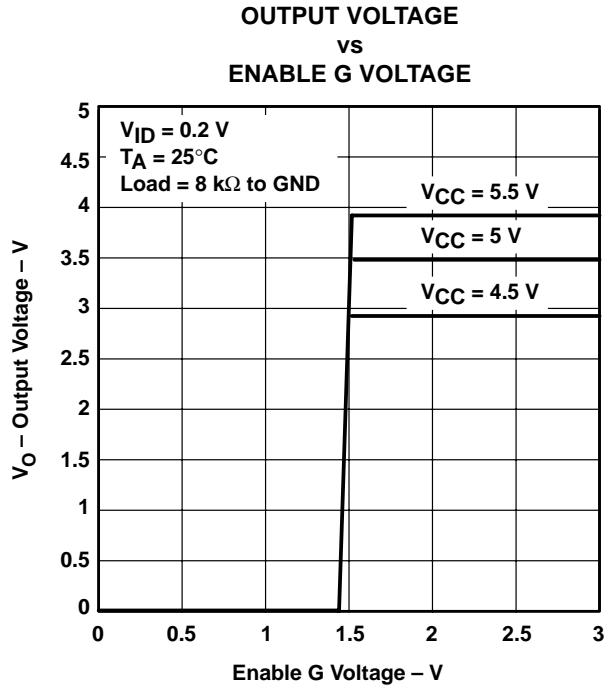


Figure 6

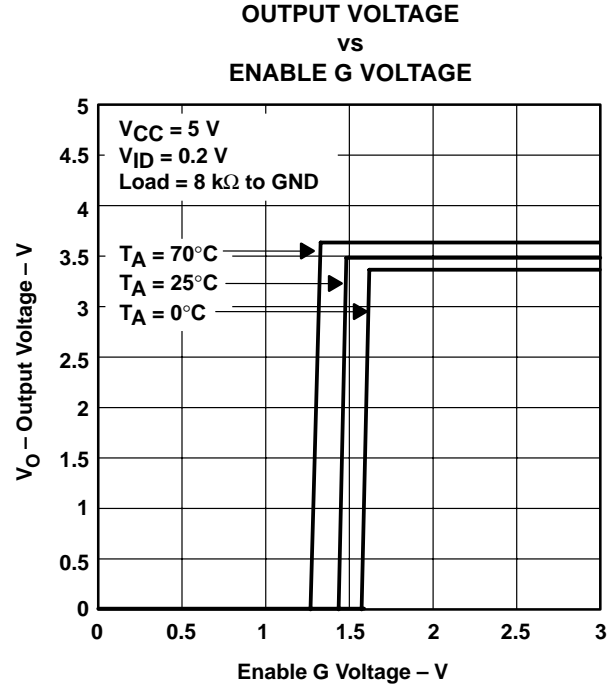


Figure 7

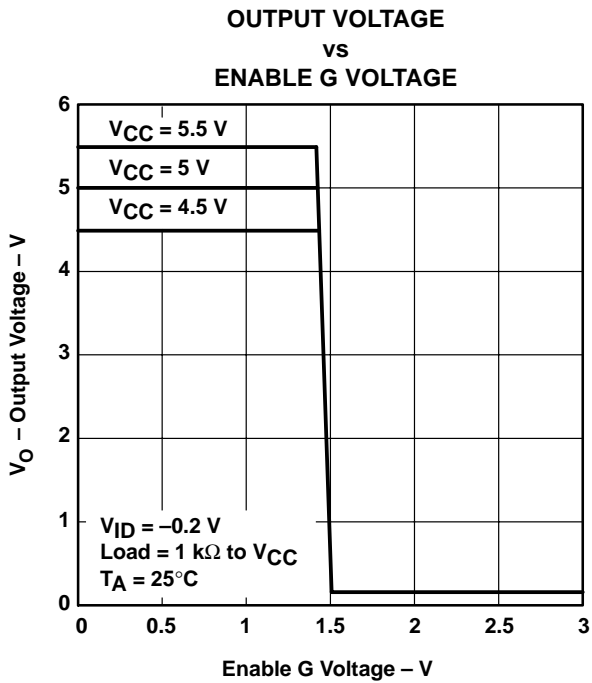


Figure 8

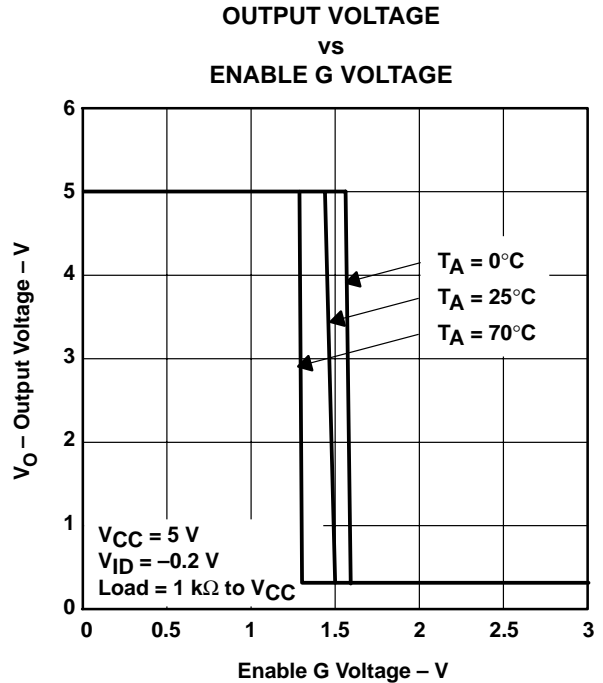


Figure 9

**AM26LS32AC, AM26LS32AI, AM26LS33AC,
AM26LS32AM, AM26LS33AM
QUADRUPLE DIFFERENTIAL LINE RECEIVERS**

SLLS115D – OCTOBER 1980 – REVISED MARCH 2002

TYPICAL CHARACTERISTICS

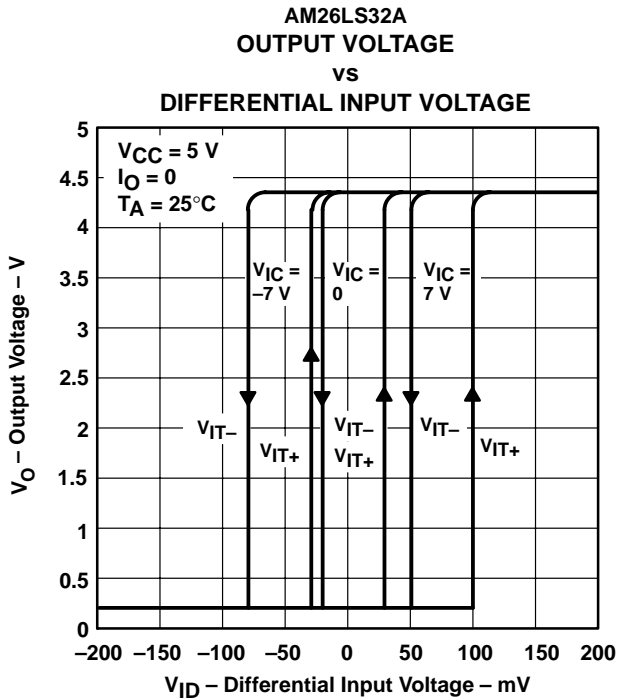


Figure 10

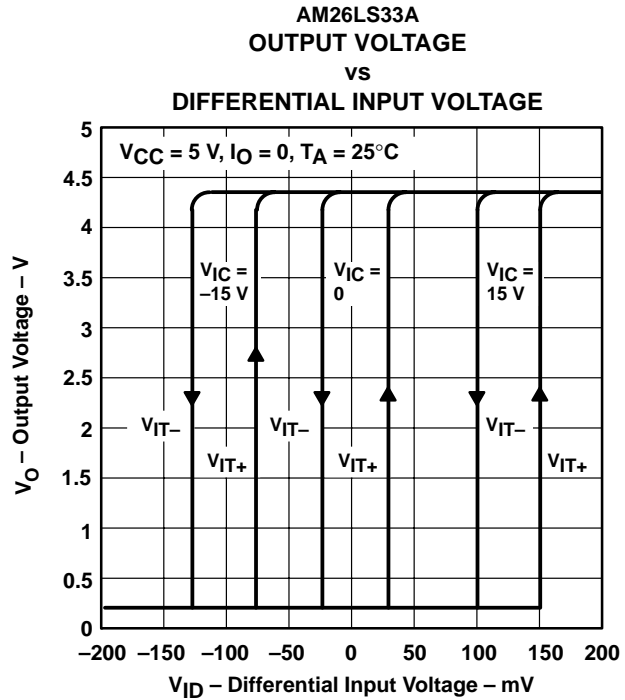


Figure 11

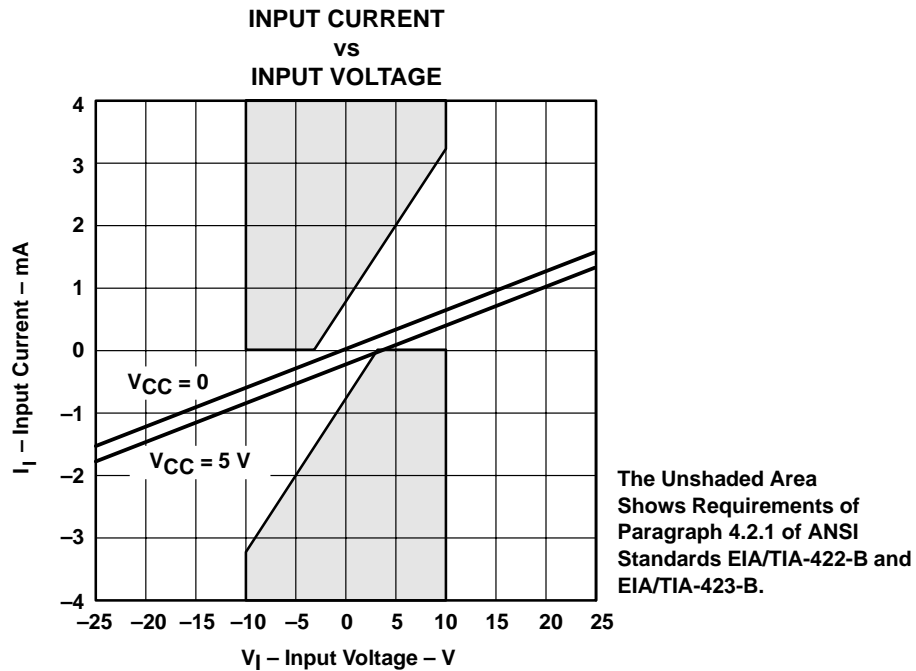
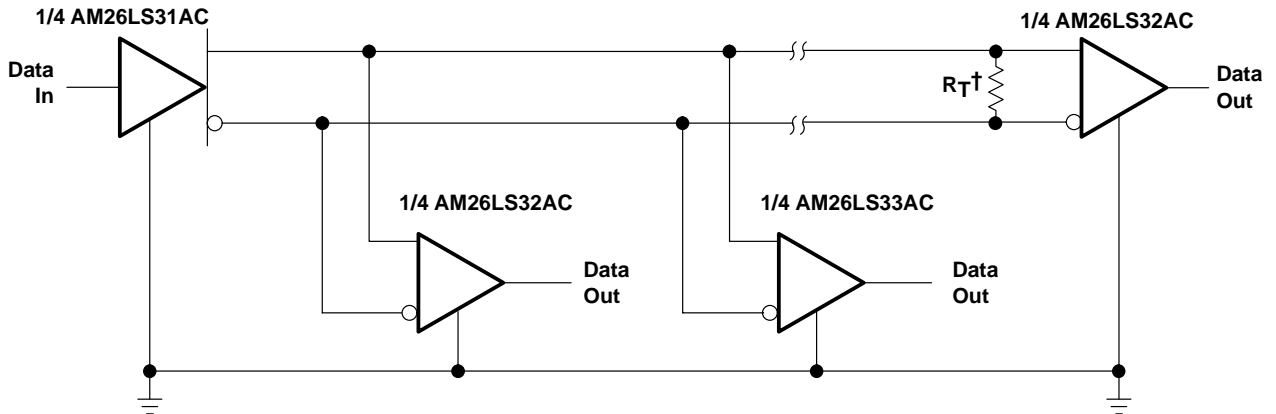


Figure 12



APPLICATION INFORMATION



† R_T equals the characteristic impedance of the line.

Figure 13. Circuit With Multiple Receivers

PACKAGING INFORMATION

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/Ball Finish	MSL Peak Temp ⁽³⁾
5962-7802003M2A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	Level-NC-NC-NC
5962-7802003MEA	ACTIVE	CDIP	J	16	1	TBD	A42 SNPB	Level-NC-NC-NC
5962-7802003MFA	ACTIVE	CFP	W	16	1	TBD	A42 SNPB	Level-NC-NC-NC
5962-7802004M2A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	Level-NC-NC-NC
5962-7802004MEA	ACTIVE	CDIP	J	16	1	TBD	A42 SNPB	Level-NC-NC-NC
5962-7802004MFA	ACTIVE	CFP	W	16	1	TBD	A42 SNPB	Level-NC-NC-NC
78020032A	OBSOLETE	LCCC	FK	20		TBD	Call TI	Call TI
7802003FA	OBSOLETE	CFP	W	16		TBD	Call TI	Call TI
AM26LS32ACD	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26LS32ACDE4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26LS32ACDR	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26LS32ACDRE4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26LS32ACN	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	Level-NC-NC-NC
AM26LS32ACNE4	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	Level-NC-NC-NC
AM26LS32ACNSR	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26LS32ACNSRG4	ACTIVE	SO	NS	16	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26LS32AID	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26LS32AIDE4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26LS32AIDR	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26LS32AIDRE4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26LS32AIN	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	Level-NC-NC-NC
AM26LS32AINE4	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	Level-NC-NC-NC
AM26LS32AMFKB	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	Level-NC-NC-NC
AM26LS32AMJ	ACTIVE	CDIP	J	16	1	TBD	A42 SNPB	Level-NC-NC-NC
AM26LS32AMJB	ACTIVE	CDIP	J	16	1	TBD	A42 SNPB	Level-NC-NC-NC
AM26LS32AMWB	ACTIVE	CFP	W	16	1	TBD	A42 SNPB	Level-NC-NC-NC
AM26LS33ACD	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26LS33ACDG4	ACTIVE	SOIC	D	16	40	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26LS33ACDR	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
AM26LS33ACDRG4	ACTIVE	SOIC	D	16	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/Ball Finish	MSL Peak Temp ⁽³⁾
						no Sb/Br)		
AM26LS33ACN	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	Level-NC-NC-NC
AM26LS33ACNE4	ACTIVE	PDIP	N	16	25	Pb-Free (RoHS)	CU NIPDAU	Level-NC-NC-NC
AM26LS33AMFKB	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	Level-NC-NC-NC
AM26LS33AMJ	ACTIVE	CDIP	J	16	1	TBD	A42 SNPB	Level-NC-NC-NC
AM26LS33AMJB	ACTIVE	CDIP	J	16	1	TBD	A42 SNPB	Level-NC-NC-NC
AM26LS33AMWB	ACTIVE	CFP	W	16	1	TBD	A42 SNPB	Level-NC-NC-NC

⁽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) 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.

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.

J (R-GDIP-T**)

14 LEADS SHOWN

CERAMIC DUAL IN-LINE PACKAGE



DIM \ PINS **	14	16	18	20
A	0.300 (7,62) BSC	0.300 (7,62) BSC	0.300 (7,62) BSC	0.300 (7,62) BSC
B MAX	0.785 (19,94)	.840 (21,34)	0.960 (24,38)	1.060 (26,92)
B MIN	—	—	—	—
C MAX	0.300 (7,62)	0.300 (7,62)	0.310 (7,87)	0.300 (7,62)
C MIN	0.245 (6,22)	0.245 (6,22)	0.220 (5,59)	0.245 (6,22)



4040083/F 03/03

- NOTES:
- All linear dimensions are in inches (millimeters).
 - This drawing is subject to change without notice.
 - This package is hermetically sealed with a ceramic lid using glass frit.
 - Index point is provided on cap for terminal identification only on press ceramic glass frit seal only.
 - Falls within MIL STD 1835 GDIP1-T14, GDIP1-T16, GDIP1-T18 and GDIP1-T20.

W (R-GDFP-F16)

CERAMIC DUAL FLATPACK



- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - C. This package can be hermetically sealed with a ceramic lid using glass frit.
 - D. Index point is provided on cap for terminal identification only.
 - E. Falls within MIL STD 1835 GDFP1-F16 and JEDEC MO-092AC

FK (S-CQCC-N**)

LEADLESS CERAMIC CHIP CARRIER

28 TERMINAL SHOWN



- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - C. This package can be hermetically sealed with a metal lid.
 - D. The terminals are gold plated.
 - E. Falls within JEDEC MS-004

N (R-PDIP-T**)

PLASTIC DUAL-IN-LINE PACKAGE

16 PINS SHOWN



- 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.

D (R-PDSO-G16)

PLASTIC SMALL-OUTLINE PACKAGE



- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - C. Body dimensions do not include mold flash or protrusion not to exceed 0.006 (0,15).
 - D. Falls within JEDEC MS-012 variation AC.

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.

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 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.

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.

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

Products		Applications	
Amplifiers	amplifier.ti.com	Audio	www.ti.com/audio
Data Converters	dataconverter.ti.com	Automotive	www.ti.com/automotive
DSP	dsp.ti.com	Broadband	www.ti.com/broadband
Interface	interface.ti.com	Digital Control	www.ti.com/digitalcontrol
Logic	logic.ti.com	Military	www.ti.com/military
Power Mgmt	power.ti.com	Optical Networking	www.ti.com/opticalnetwork
Microcontrollers	microcontroller.ti.com	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

TI Home > Semiconductors > Analog & Mixed-Signal > Interface > RS-422 >

View ROHS Compliant Devices

clear gif

AM26LS32A, Status: ACTIVE
Quadruple Differential Line Receiver

clear gif

clear gif

clear gif

<input type="checkbox"/> Features	<input type="checkbox"/> Samples	<input type="checkbox"/> Technical Documents
<input type="checkbox"/> Quality & Pb-Free Data	<input type="checkbox"/> Pricing/Packaging	<input type="checkbox"/> Applications Notes
<input type="checkbox"/> Related Products	<input type="checkbox"/> Inventory	<input type="checkbox"/> Simulation Models
<input type="checkbox"/> Tools & Software	<input type="checkbox"/> Symbols/Footprints	<input type="checkbox"/> Reference Designs

clear gif

Refine Your Selection

- Selection Guides
- Analog & Mixed-Signal

Support

- KnowledgeBase
- Contact Technical Support
- TI Cross Reference
- Training
- Part Marking Lookup

Datasheet

clear gif

Download Datasheet

Quadruple Differential Line Receivers (Rev. D) (am26ls32a.pdf, 549 KB)
13 Mar 2002 [Download](#)

	AM26LS32A
Receivers Per Package	4
Supply Voltage(s)(V)	5
ESD(kV)	2
Signaling Rate(Mbps)	10
ICC(Max)(mA)	70
Footprint	AM26LS32
Temp Range(C)	-55 to 125, -40 to 85, 0 to 70
Pin/Package	16CDIP,16CFP,16PDIP,16SO,16SOIC,20LCCC
Approx. 1KU Price (US\$)	.36
	Samples
	Inventory

Related Block Diagrams

- Military ElectroOptics
- Military Radar

clear gif

Product Information

Features Save this to your personal library

AM26LS32A Devices Meet or Exceed the Requirements of ANSI TIA/EIA-422-B, TIA/EIA-423-B, and ITU Recommendations V.10 and V.11
 AM26LS32A Devices Have ©7-V Common-Mode Range With ©200-mV Sensitivity
 AM26LS33A Devices Have ©15-V Common-Mode Range With ©500-mV Sensitivity
 Input Hysteresis . . . 50 mV Typical
 Operate From a Single 5-V Supply
 Low-Power Schottky Circuitry
 3-State Outputs
 Complementary Output-Enable Inputs
 Input Impedance . . . 12 k \cdot Min
 Designed to Be Interchangeable With Advanced Micro Devices AM26LS32™ and AM26LS33™

AM26LS32 and AM26LS33 are trademarks of Advanced Micro Devices, Inc.

Description

The AM26LS32A and AM26LS33A devices are quadruple differential line receivers for balanced and unbalanced digital data transmission. The enable function is common to all four receivers and offers a choice of active-high or active-low input. The 3-state outputs permit connection directly to a bus-organized system. Fail-safe design ensures that, if the inputs are open, the outputs always are high.

Compared to the AM26LS32 and the AM26LS33, the AM26LS32A and AM26LS33A incorporate an additional stage of amplification to improve sensitivity. The input impedance has been increased, resulting in less loading of the bus line. The additional stage has increased propagation delay; however, this does not affect interchangeability in most applications.

The AM26LS32AC and AM26LS33AC are characterized for operation from 0°C to 70°C. The AM26LS32AI

is characterized for operation from -40°C to 85°C. The AM26LS32AM and AM26LS33AM are characterized for operation over the full military temperature range of -55°C to 125°C.

Pricing/Packaging/CAD Design Tools/Samples										
				Price	Packaging			CAD Design Tools		Samples
Device	Status	Temp (°C)	DSCC #	Budget Price (\$US) QTY	Industry Standard (TI Pkg) Pins	Top Side Marking	Standard Pack Quantity	Symbols	Footprints	Samples
5962-7802003M2A	ACTIVE	-55 to 125		15.46 1KU	LCCC (FK) 20		1	<input type="checkbox"/>	<input type="checkbox"/>	Request Military Samples
5962-7802003MEA	ACTIVE	-55 to 125		4.29 1KU	CDIP (J) 16		1	<input type="checkbox"/>	<input type="checkbox"/>	Request Military Samples
5962-7802003MFA	ACTIVE	-55 to 125		10.01 1KU	CFP (W) 16		1	<input type="checkbox"/>		Request Military Samples
78020032A	OBSOLETE	-55 to 125			LCCC (FK) 20				<input type="checkbox"/>	Not Available
7802003FA	OBSOLETE	-55 to 125			CFP (W) 16					Not Available
AM26LS32ACD	ACTIVE	0 to 70		0.45 1KU	SOIC (D) 16	View	40	<input type="checkbox"/>	<input type="checkbox"/>	Purchase Samples
AM26LS32ACDE4	ACTIVE	0 to 70		0.45 1KU	SOIC (D) 16	View	40	<input type="checkbox"/>	<input type="checkbox"/>	Purchase Samples
AM26LS32ACDR	ACTIVE	0 to 70		0.45 1KU	SOIC (D) 16	View	2500	<input type="checkbox"/>	<input type="checkbox"/>	Contact TI Distributor or Sales Office
AM26LS32ACDRE4	ACTIVE	0 to 70		0.45 1KU	SOIC (D) 16	View	2500	<input type="checkbox"/>	<input type="checkbox"/>	Request Free Samples
AM26LS32ACN	ACTIVE	0 to 70		0.45 1KU	PDIP (N) 16	View	25	<input type="checkbox"/>	<input type="checkbox"/>	Contact TI Distributor or Sales Office
AM26LS32ACNE4	ACTIVE	0 to 70		0.45 1KU	PDIP (N) 16	View	25	<input type="checkbox"/>	<input type="checkbox"/>	Request Free Samples
AM26LS32ACNSR	ACTIVE	0 to 70		0.45 1KU	SO (NS) 16	View	2000	<input type="checkbox"/>	<input type="checkbox"/>	Contact TI Distributor or Sales Office
AM26LS32ACNSRG4	ACTIVE	0 to 70		0.50 1KU	SO (NS) 16	View	2000	<input type="checkbox"/>	<input type="checkbox"/>	Purchase Samples
AM26LS32AID	ACTIVE	-40 to 85		0.36 1KU	SOIC (D) 16	View	40	<input type="checkbox"/>	<input type="checkbox"/>	Purchase Samples
AM26LS32AIDE4	ACTIVE	-40 to 85		0.36 1KU	SOIC (D) 16	View	40	<input type="checkbox"/>	<input type="checkbox"/>	Purchase Samples
AM26LS32AIDR	ACTIVE	-40 to 85		0.36 1KU	SOIC (D) 16	View	2500	<input type="checkbox"/>	<input type="checkbox"/>	Contact TI Distributor or Sales Office
AM26LS32AIDRE4	ACTIVE	-40 to 85		0.36 1KU	SOIC (D) 16	View	2500	<input type="checkbox"/>	<input type="checkbox"/>	Request Free Samples
AM26LS32AIN	ACTIVE	-40 to 85		0.36 1KU	PDIP (N) 16	View	25	<input type="checkbox"/>	<input type="checkbox"/>	Contact TI Distributor or Sales Office
AM26LS32AINE4	ACTIVE	-40 to 85		0.36 1KU	PDIP (N) 16	View	25	<input type="checkbox"/>	<input type="checkbox"/>	Request Free Samples
AM26LS32AMFKB	ACTIVE	-55 to 125	5962-7802003M2A	15.46 1KU	LCCC (FK) 20		1	<input type="checkbox"/>	<input type="checkbox"/>	Request Military Samples
AM26LS32AMJ	ACTIVE	-55 to 125		2.86 1KU	CDIP (J) 16		1	<input type="checkbox"/>	<input type="checkbox"/>	Request Military Samples
AM26LS32AMJB	ACTIVE	-55 to 125	5962-7802003MEA	4.29 1KU	CDIP (J) 16		1	<input type="checkbox"/>	<input type="checkbox"/>	Request Military Samples
AM26LS32AMWB	ACTIVE	-55 to 125	5962-7802003MFA	10.01 1KU	CFP (W) 16		1	<input type="checkbox"/>		Request Military Samples

Inventory							
	TI Inventory Status			Reported Distributor Inventory			
5962-7802003M2A	As of 9:57 AM GMT, 29 Nov 2005			As of 9:57 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY Date	Lead Time	Region	Company	In Stock	Purchase
	8896*	>10k 23 Jan	8 Weeks	Americas	Avnet	723	<input type="text"/>
				Europe	Arrow Northern Europe	197	<input type="text"/>
					EBV Elektronik	14	<input type="text"/>
5962-7802003MEA	As of 9:57 AM GMT, 29 Nov 2005			As of 9:57 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY Date	Lead Time	Region	Company	In Stock	Purchase
	3770*	>10k 28 Dec	7 Weeks	Americas	Avnet	893	<input type="text"/>
5962-7802003MFA	As of 9:57 AM GMT, 29 Nov 2005			As of 9:57 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY Date	Lead Time	Region	Company	In Stock	Purchase
	58*	>10k 28 Dec	8 Weeks	None Reported View Distributors			
AM26LS32ACD	As of 9:57 AM GMT, 29 Nov 2005			As of 9:57 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY Date	Lead Time	Region	Company	In Stock	Purchase
	5000*	2720 29 Nov	4 Weeks	Americas	Newark InOne	806	<input type="text"/>
		3258 2 Dec		Europe	Abacus Polar	>1k	<input type="text"/>
		695 5 Dec			Arrow Northern Europe	>1k	<input type="text"/>
		>10k 23 Dec			Arrow Southern Europe	520	<input type="text"/>
					Avnet-SILICA	>1k	<input type="text"/>
					EBV Elektronik	>1k	<input type="text"/>
					Farnell InOne	>1k	<input type="text"/>
					Spoerle	>1k	<input type="text"/>
AM26LS32ACDE4	As of 9:57 AM GMT, 29 Nov 2005			As of 9:57 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY Date	Lead Time	Region	Company	In Stock	Purchase
	5000*	2720 29 Nov	4 Weeks	None Reported View Distributors			
		3258 2 Dec					
		695 5 Dec					
		>10k 23 Dec					
AM26LS32ACDR	As of 9:57 AM GMT, 29 Nov 2005			As of 9:57 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY Date	Lead Time	Region	Company	In Stock	Purchase
	0*	>10k 23 Dec	4 Weeks	Americas	DigiKey	>1k	<input type="text"/>
				Europe	Arrow Southern Europe	>1k	<input type="text"/>
					Avnet-SILICA	>1k	<input type="text"/>
AM26LS32ACDRE4	As of 9:57 AM GMT, 29 Nov 2005			As of 9:57 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY Date	Lead Time	Region	Company	In Stock	Purchase
	0*	>10k 23 Dec	4 Weeks	None Reported View Distributors			

View all Distributors

Choose a Region



AM26LS32ACN	As of 9:57 AM GMT, 29 Nov 2005			As of 9:57 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY Date	Lead Time	Region	Company	In Stock	Purchase
	1175*	>10k 26 Jan	8 Weeks	Americas	Avnet	>1k	<input type="text"/>
					DigiKey	>1k	<input type="text"/>
					Newark InOne	586	<input type="text"/>
				Europe	Abacus Polar	>1k	<input type="text"/>
					Arrow Northern Europe	>1k	<input type="text"/>
					Arrow Southern Europe	>1k	<input type="text"/>
					Avnet-SILICA	>1k	<input type="text"/>
					EBV Elektronik	>1k	<input type="text"/>
					Farnell InOne	748	<input type="text"/>
					Spoerle	>1k	<input type="text"/>
AM26LS32ACNE4	As of 9:57 AM GMT, 29 Nov 2005			As of 9:57 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY Date	Lead Time	Region	Company	In Stock	Purchase
	1175*	>10k 26 Jan	8 Weeks	None Reported View Distributors			
AM26LS32ACNSR	As of 9:57 AM GMT, 29 Nov 2005			As of 9:57 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY Date	Lead Time	Region	Company	In Stock	Purchase
	0*	>10k 16 Dec	4 Weeks	Americas	DigiKey	>1k	<input type="text"/>
				Europe	Avnet-SILICA	>1k	<input type="text"/>
AM26LS32ACNSRG4	As of 9:57 AM GMT, 29 Nov 2005			As of 9:57 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY Date	Lead Time	Region	Company	In Stock	Purchase
	0*	>10k 19 Dec	10 Weeks	None Reported View Distributors			
AM26LS32AID	As of 9:57 AM GMT, 29 Nov 2005			As of 9:57 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY Date	Lead Time	Region	Company	In Stock	Purchase
	7080*	>10k 20 Dec	10 Weeks	Americas	Newark InOne	600	<input type="text"/>
				Europe	Avnet-SILICA	440	<input type="text"/>
					EBV Elektronik	120	<input type="text"/>
					Spoerle	152	<input type="text"/>
AM26LS32AIDE4	As of 9:57 AM GMT, 29 Nov 2005			As of 9:57 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY Date	Lead Time	Region	Company	In Stock	Purchase
	7080*	>10k 20 Dec	10 Weeks	None Reported View Distributors			
AM26LS32AIDR	As of 9:57 AM GMT, 29 Nov 2005			As of 9:57 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY Date	Lead Time	Region	Company	In Stock	Purchase
	0*	>10k 22 Dec	10 Weeks	None Reported View Distributors			
AM26LS32AIDRE4	As of 9:57 AM GMT, 29 Nov 2005			As of 9:57 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY Date	Lead Time	Region	Company	In Stock	Purchase
	0*	>10k 22 Dec	10 Weeks	None Reported View Distributors			
AM26LS32AIN	As of 9:57 AM GMT, 29 Nov 2005			As of 9:57 AM GMT, 29 Nov 2005			

	In Stock	In Progress QTY Date	Lead Time	Region	Company	In Stock	Purchase
	1500*	>10k 23 Jan	10 Weeks	Americas	DigiKey	310	<input type="text"/>
					Newark InOne	712	<input type="text"/>
AM26LS32AINE4	As of 9:57 AM GMT, 29 Nov 2005			As of 9:57 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY Date	Lead Time	Region	Company	In Stock	Purchase
	1500*	>10k 23 Jan	10 Weeks	None Reported View Distributors			
AM26LS32AMFKB	As of 9:57 AM GMT, 29 Nov 2005			As of 9:57 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY Date	Lead Time	Region	Company	In Stock	Purchase
	8896*	>10k 23 Jan	8 Weeks	Europe	Avnet-SILICA	14	<input type="text"/>
AM26LS32AMJ	As of 9:57 AM GMT, 29 Nov 2005			As of 9:57 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY Date	Lead Time	Region	Company	In Stock	Purchase
	1655*	>10k 28 Dec	7 Weeks	Americas	Avnet	319	<input type="text"/>
				Europe	EBV Elektronik	70	<input type="text"/>
					Spoerle	100	<input type="text"/>
AM26LS32AMJB	As of 9:57 AM GMT, 29 Nov 2005			As of 9:57 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY Date	Lead Time	Region	Company	In Stock	Purchase
	3770*	>10k 28 Dec	7 Weeks	Europe	Arrow Southern Europe	11	<input type="text"/>
					EBV Elektronik	43	<input type="text"/>
AM26LS32AMWB	As of 9:57 AM GMT, 29 Nov 2005			As of 9:57 AM GMT, 29 Nov 2005			
	In Stock	In Progress QTY Date	Lead Time	Region	Company	In Stock	Purchase
	58*	>10k 28 Dec	8 Weeks	None Reported View Distributors			

* Our information is updated daily, so please check back with us soon if this does not meet your needs. You may also contact your [TI Authorized Distributor](#), including those [listed above](#), for real time stock information.

** Lead time information is not available at this time. However, our information is updated daily so please check back with us soon. Please contact your preferred [TI Authorized Distributor](#) for additional information.

Quality & Lead (Pb)-Free Data						
<input type="checkbox"/>	Product Content				MTBF/FIT Rate	
Device	Eco Plan*	Lead/Ball Finish	MSL Rating/Peak Reflow	Details	Details	
5962-7802003M2A	TBD	POST-PLATE	Level-NC-NC-NC	View	View	
5962-7802003MEA	TBD	A42 SNPB	Level-NC-NC-NC	View	View	
5962-7802003MFA	TBD	A42 SNPB	Level-NC-NC-NC	View	View	
AM26LS32ACD <input type="checkbox"/>	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	View	View	
AM26LS32ACDE4 <input type="checkbox"/>	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	View	View	
AM26LS32ACDR <input type="checkbox"/>	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	View	View	
AM26LS32ACDRE4 <input type="checkbox"/>	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	View	View	
AM26LS32ACN <input type="checkbox"/>	Pb-Free (RoHS)	CU NIPDAU	Level-NC-NC-NC	View	View	
AM26LS32ACNE4 <input type="checkbox"/>	Pb-Free (RoHS)	CU NIPDAU	Level-NC-NC-NC	View	View	
AM26LS32ACNSR <input type="checkbox"/>	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	View	View	
AM26LS32ACNSRG4 <input type="checkbox"/>	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	View	View	
AM26LS32AID <input type="checkbox"/>	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	View	View	
AM26LS32AIDE4 <input type="checkbox"/>	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	View	View	
AM26LS32AIDR <input type="checkbox"/>	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	View	View	
AM26LS32AIDRE4 <input type="checkbox"/>	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	View	View	
AM26LS32AIN <input type="checkbox"/>	Pb-Free (RoHS)	CU NIPDAU	Level-NC-NC-NC	View	View	
AM26LS32AINE4 <input type="checkbox"/>	Pb-Free (RoHS)	CU NIPDAU	Level-NC-NC-NC	View	View	
AM26LS32AMFKB	TBD	POST-PLATE	Level-NC-NC-NC	View	View	
AM26LS32AMJ	TBD	A42 SNPB	Level-NC-NC-NC	View	View	

AM26LS32AMJB	TBD	A42 SNPB	Level-NC-NC-NC	View	View
AM26LS32AMWB	TBD	A42 SNPB	Level-NC-NC-NC	View	View

* The planned eco-friendly classification: Pb-Free (RoHS) or Green (RoHS & no Sb/Br) - please click on the Product Content Details "View" link in the table above for the latest availability information and additional product content details.

If the information you are requesting is not available online at this time, contact one of our [Product Information Centers](#) regarding the availability of this information.

Technical Documents

Datasheets	Keep track of what's new
Quadruple Differential Line Receivers (Rev. D) (am26ls32a.pdf, 549 KB)	
13 Mar 2002 Download	
Application Notes	
View Application Notes for RS-422	
More Literature	
Standard Linear Products Cross-Reference (Rev. C) (slyt017c.pdf, 632 KB)	
05 Apr 2005 Download	

Related Products

Related Block Diagrams
Military ElectroOptics
Military Radar
All Block Diagrams



[Products](#) | [Applications](#) | [Design Support](#) | [Buy](#) | [Contact Us](#) | [TI Worldwide](#) | [my.TI Login](#) | [All Searches](#) | [Company Info](#) | [Press Releases](#) | [RSS](#) | [Site Map](#)

© Copyright 1995-2005 Texas Instruments Incorporated. All rights reserved. [Trademarks](#) | [Privacy Policy](#) | [Terms of Use](#)