

Quad high-speed differential line receivers

AM26LS32/ AM26LS33

DESCRIPTION

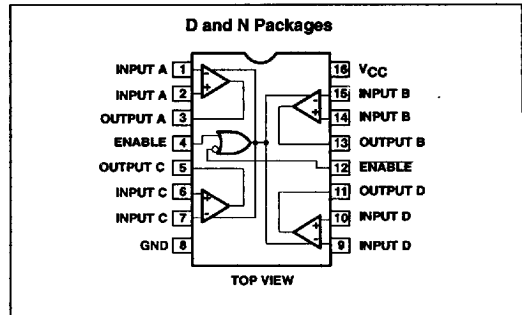
The AM26LS32 and AM26LS33 are quad line receivers designed to meet all of the requirements of RS-422 and RS-423 and Federal Standards 1020 and 1030 for balanced and unbalanced digital data transmission.

The AM26LS32 features an input sensitivity of $\pm 200\text{mV}$ over the common mode input range of $\pm 7\text{V}$.

The AM26LS33 features an input sensitivity of $\pm 500\text{mV}$ over the common mode input voltage range of $\pm 15\text{V}$.

The AM26LS32 and AM26LS33 provide an enable and disable function common to all four receivers. Both parts feature 3-State outputs with 8mA sink capability and incorporate a fail-safe input-output relationship which forces the outputs high when the inputs are open.

PIN CONFIGURATION



FEATURES

- Input voltage range of 15V (differential or common mode) on AM26LS33; 7V (differential or common mode) on AM26LS32
- $\pm 0.2\text{V}$ sensitivity over the input voltage range on AM26LS32
- $\pm 0.5\text{V}$ sensitivity on AM26LS33
- 6k Ω minimum input impedance
- The AM26LS32 meets all the requirements of RS-422 and RS-423

- Operation from single +5V supply
- Fail safe input-output relationship. Output always high when inputs are open
- 3-State drive, with choice of complementary output enables, for receiving directly onto a data bus
- 3-State outputs disabled during power up and power down

ORDERING INFORMATION

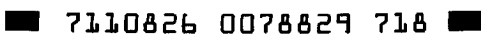
DESCRIPTION	TEMPERATURE RANGE	ORDER CODE	DWG #
16-Pin Plastic Dual In-Line Package (DIP)	0°C to +70°C	AM26LS32CN	0406C
16-Pin Small Outline (SO) Package	0°C to +70°C	AM26LS32CD	0005D
16-Pin Plastic Dual In-Line Package (DIP)	-40°C to +85°C	AM26LS32IN	0406C
16-Pin Small Outline (SO) Package	-40°C to +85°C	AM26LS32ID	0005D
16-Pin Plastic Dual In-Line Package (DIP)	-55°C to +125°C	AM26LS32MN	0406C
16-Pin Plastic Dual In-Line Package (DIP)	0°C to +70°C	AM26LS33CN	0406C
16-Pin Small Outline (SO) Package	0°C to +70°C	AM26LS33CD	0005D
16-Pin Plastic Dual In-Line Package (DIP)	-40°C to +85°C	AM26LS33IN	0406C
16-Pin Small Outline (SO) Package	-40°C to +85°C	AM26LS33ID	0005D
16-Pin Plastic Dual In-Line Package (DIP)	-55°C to +125°C	AM26LS33MN	0406C

ABSOLUTE MAXIMUM RATINGS

SYMBOL	PARAMETER	RATING	UNIT
V _{CC}	Power supply	7	V
V _{IN}	Power supply	7	V
	Output sink current	50	mA
	Common mode range	± 25	V
V _{TH}	Differential input voltage	± 25	V
T _{STG}	Storage temperature range	-65 to +150	°C

DISSIPATION OPERATING TABLE

PACKAGE	POWER DISSIPATION	DERATING FACTOR	ABOVE T _A
N	1,275mW	10.2mW/°C	25°C
D	1,262W	10.1mW/°C	25°C



Quad high-speed differential line receivers

AM26LS32/
AM26LS33

DC AND AC ELECTRICAL CHARACTERISTICS

$V_{CC} = 5.0V \pm 10\%$ for AM26LS32/33MX, $V_{CC} = 5.0V \pm 5\%$ for AM26LS32/33CX and AM26LS32/33IX over operating temperature range unless otherwise specified.

SYMBOL	PARAMETER	TEST CONDITIONS	LIMITS			UNIT	
			AM26LS32/33				
			Min	Typ ¹	Max		
V_{TH}	Differential input voltage	$V_{OUT} = V_{OL}$ or V_{OH} AM26LS32, $-7V \leq V_{CM} \leq +7V$	-0.2		0.2	V	
		AM26LS33, $-15V \leq V_{CM} \leq +15V$	-0.5		0.5		
R_{IN}	Input resistance	$-15V \leq V_{CM} \leq +15V$ (One input AC ground)	6.0	9.8		k Ω	
I_{IN}	Input current (under test)	$V_{IN} = +15V$ Other input $-15V \leq V_{IN} \leq +15V$			2.3	mA	
I_{IN}	Input current (under test)	$V_{IN} = -15V$ Other input $+15V \leq V_{IN} \leq -15V$			-2.8	mA	
V_{OH}	Output HIGH voltage	$V_{CC} = \text{Min.}$, $I_{OH} = -440\mu A$ $\Delta V_{IN} = +1.0V$ $V_{ENABLE} = 0.8V$	Com'I	2.7	3.4	V	
			Mil	2.5	3.4		
V_{OL}	Output LOW voltage	$V_{CC} = \text{Min.}$, $V_{ENABLE} = 0.8V$ $\Delta V_{IN} = +1.0V$	$I_{OL} = 4.0mA$		0.3	0.4	V
			$I_{OL} = 8.0mA$			0.45	
V_{IL}	Enable LOW voltage				0.8	V	
V_{IH}	Enable HIGH voltage		2.0			V	
V_I	Enable clamp voltage	$V_{CC} = \text{Min.}$, $I_{IN} = -18mA$			-1.5	V	
I_O	Off state (high impedance) output current	$V_{CC} = \text{Max.}$	$V_O = 2.4V$		20	μA	
			$V_O = 0.4V$		-20		
I_{IL}	Enable LOW current	$V_{IN} = 0.4V$		-0.2	-0.36	mA	
I_{IH}	Enable HIGH current	$V_{IN} = 2.7V$		0.5	20	μA	
I_I	Enable input HIGH current	$V_{IN} = 5.5V$		1	100	μA	
I_{SC}	Output short circuit current	$V_{CC} = \text{Max.}$, $\Delta V_{IN} = +1V$, $V_{OUT} = 0V$	-15	-60	-85	mA	
I_{CC}	Power supply current	$V_{CC} = \text{Max.}$; All $V_{IN} = \text{GND}$ outputs disabled		52	70	mA	
V_{HYST}	Input hysteresis	$T_A = 25^\circ C$, $V_{CC} = 5.0V$, $V_{CM} = 0V$	AM26LS32	120		mV	
			AM26LS33	120			
t_{PLH}	Input to output	$T_A = 25^\circ C$, $V_{CC} = 5.0V$ $C_L = 15pF$ (see test condition)		10	25	ns	
t_{PHL}	Input to output	$T_A = 25^\circ C$, $V_{CC} = 5.0V$ $C_L = 15pF$ (see test condition)		10	25	ns	
t_{LZ}	Enable to output	$T_A = 25^\circ C$, $V_{CC} = 5.0V$ $C_L = 5pF$ (see test condition)		15	30	ns	
t_{HZ}	Enable to output	$T_A = 25^\circ C$, $V_{CC} = 5.0V$ $C_L = 5pF$ (see test condition)		12	22	ns	
t_{ZL}	Enable to output	$T_A = 25^\circ C$, $V_{CC} = 5.0V$ $C_L = 15pF$ (see test condition)		8	22	ns	
t_{ZH}	Enable to output	$T_A = 25^\circ C$, $V_{CC} = 5.0V$ $C_L = 15pF$		9	22	ns	

NOTE:

1. All typical values are $T_A = 25^\circ C$, $V_{CC} = 5.0V$.

■ 7110826 0078830 43T ■

Quad high-speed differential line receivers

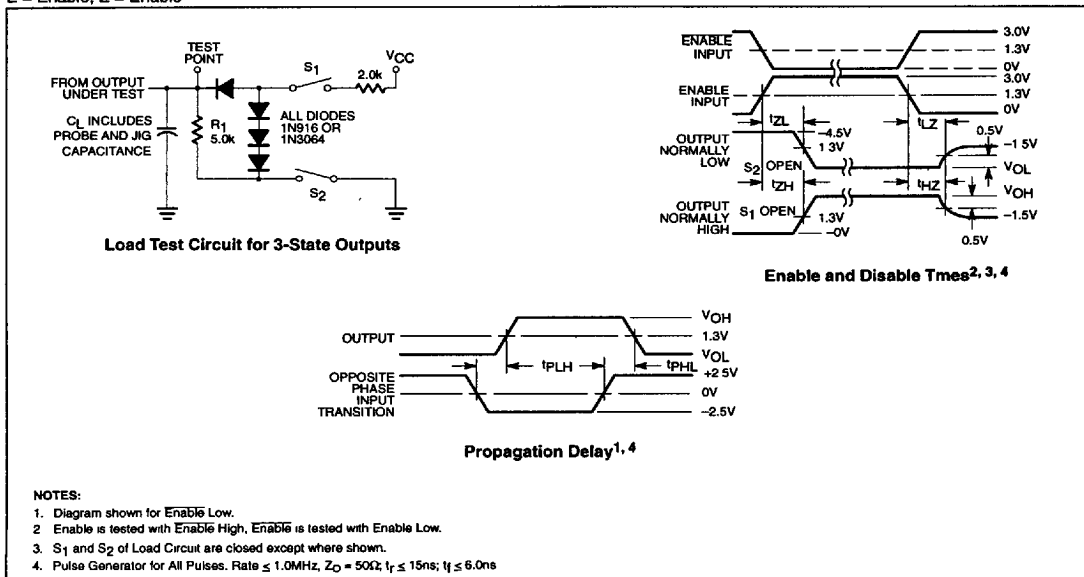
**AM26LS32/
AM26LS33**

FUNCTION TABLE (EACH RECEIVER)

DIFFERENTIAL INPUT	ENABLES		OUTPUT
	E	\bar{E}	
$V_{ID} \geq V_{TH}$	H X	X L	H H
$V_{TL} \leq V_{ID} \leq V_{TH}$	H X	X L	? ?
$V_{ID} \leq V_{TL}$	X H	L X	L X
X	L	H	Z

NOTES:

H = High level, L = Low level, X = Irrelevant
Z = High impedance (off), ? = Indeterminate
E = Enable, \bar{E} = Enable



7110826 0078831 376