Quad high-speed differential line receivers AM26LS32B

DESCRIPTION

The AM26LS32B is a quad line receiver designed to meet all of the requirements of RS-422 and RS-423, CCITT V.10 and V.11 and Federal Standards 1020 and 1030 for balanced and unbalanced digital data transmission.

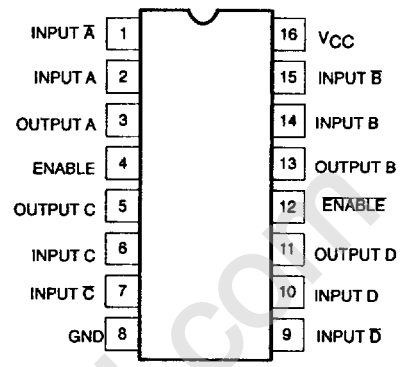
The AM26LS32B features an input sensitivity of +100mV over the common mode input voltage range of 0V to +5V and +200mV over the common mode input voltage range of -7V to +12V.

The AM26LS32B guarantees a minimum hysteresis and propagation delay skew resulting in a higher noise margin and better system performance.

The AM26LS32B provides an enable and disable function common to all four receivers. It features 3-state outputs with 24mA sink capability and incorporates a fail-safe input-output relationship which keeps the outputs high when the inputs are open.

PIN CONFIGURATION

D AND N PACKAGE



FEATURES

- ±100mV sensitivity over the input range of 0V to 5V
- +200mV sensitivity over the V_{CM} range
- Typical input voltage hysteresis of 120mV
- 3V maximum open circuit voltage
- Three state outputs disabled power up and power down
- All AC and DC parameters guaranteed over operating temp range
- Single +5V supply
- Advance low-power Schottky processing

ORDERING INFORMATION

DESCRIPTION	TEMPERATURE RANGE	ORDER CODE	DWG #
16-Pin Plastic Dual In-Line Package (DIP)	0 to +70°C	AM26LS32BCN	0406C
16-Pin Small Outline (SO) Package	0 to +70°C	AM26LS32BCD	0005D
16-Pin Plastic Dual In-Line Package (DIP)	-40 to +85°C	AM26LS32BIN	0406C
16-Pin Small Outline (SO) Package	-40 to +85°C	AM26LS32BID	0005D
16-Pin Plastic Dual In-Line Package (DIP)	-55 to +125°C	AM26LS32BMN	0406C

ABSOLUTE MAXIMUM RATINGS (Above which the useful life may be impaired.)

SYMBOL	PARAMETER	RATING	UNIT
V_{CC}	Power supply	7	V
V_{IN}	Enable voltage	7	V
	Output sink current	50	mA
	Common mode range	±25	V
V_{TH}	Differential input voltage	±30	V
T_{STG}	Storage temperature range	-55 to +150	°C
T_{SOLD}	Lead soldering temperature (10sec.)	300	°C
θ_{JA}	Thermal impedance		°C/W

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PACKAGE POWER DISSIPATION DERATING TABLE

PACKAGE	POWER DISSIPATION AT T_A = 25°C	DERATING FACTOR ABOVE T_A
N	1,275mW	10.2mW/°C
D	1,262mW	10.1mW/°C

DC ELECTRICAL CHARACTERISTICS

V_{CC} = 5.0V ±10% for Am26LS32BMX, V_{CC} = 5.0V ±5% for Am26LS32BCX over operating temperature range unless otherwise specified.

SYMBOL	PARAMETER	TEST CONDITIONS		LIMITS			UNIT
				MIN	TYP	MAX	
V_{TH}	Differential input voltage	$V_{OUT} = V_{OL}$ or V_{OH}	0V ≤ V_{CM} ≤ 5V	-100		+100	mV
			-7V ≤ V_{CM} ≤ +12V	-200		+200	
R_{IN}	Input resistance	-15V ≤ V_{CM} ≤ +15V (one input AC ground)		6.0			kΩ
I_{IN}	Input current (under test)	V_{IN} = +15V Other input -15V ≤ V_{IN} ≤ +15V				2.3	mA
I_{IN}	Input current (under test)	V_{IN} = -15V Other input +15V ≤ V_{IN} ≤ -15V		-2.8			mA
V_{OH}	Output HIGH voltage	V_{CC} = min., ΔV_{IN} = +1.0V V_{EN} = 0.8V	I_{OH} = -12mA	2.0			V
			I_{OH} = -1mA	2.4			
V_{OL}	Output LOW voltage	V_{CC} = min., ΔV_{IN} = -1.0V V_{EN} = 0.8V	I_{OH} = 16mA			0.4	V
			I_{OH} = 24mA			0.5	
V_{IL}	Enable LOW voltage	V_{CC} = max				0.8	V
V_{IH}	Enable HIGH voltage			2.0			V
V_I	Enable clamp voltage	V_{CC} = min, I_{IN} = -1.8mA		-1.5			V
I_O	Off state (high impedance) output current	V_{CC} = max	V_O = 2.4V			20	µA
			V_O = 0.4V			-20	
I_{IL}	Enable LOW current	V_{IN} = 0.4V				-0.36	mA
I_{IH}	Enable HIGH current	V_{IN} = 2.7V				20	µA
I_I	Enable input HIGH current	V_{IN} = 5.5V				100	µA
I_{SC}	Output short circuit current	V_{CC} = max, ΔV_{IN} = +1V, V_{OUT} = GND		-30		-120	mA
I_{CC}	Power supply current	V_{CC} = max, all V_{IN} = GND outputs disabled				70	mA
V_{HYST}	Input hysteresis	V_{CC} = 5.0V, V_{CM} = 0V		80		200	mV
V_{IOC}	Open circuit input voltage			1		3	V

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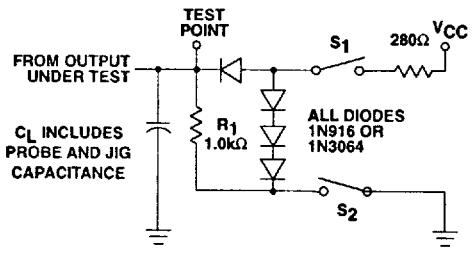
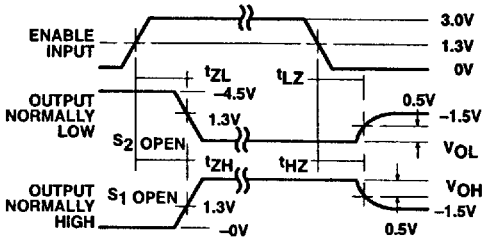
AC ELECTRICAL CHARACTERISTICS

SYMBOL	PARAMETER	TEST CONDITIONS	LIMITS				UNIT
			ROOM TEMPERATURE[2]		COMMERCIAL/ MILITARY[1]		
			TYP	MAX	TYP	MAX	
t_{PLH}	Propagation delay, input to output	C_L = 50pF (see test circuit)		21		26	ns
t_{PHL}				21		26	
t_{SKEW}	Propagation delay skew, t_{PLH} - t_{PHL}			3.0		4.0	
t_{ZL}	Output enable time, EN to OUTPUT			22		33	
t_{ZH}				16		22	
t_{LZ}	Output disable time, EN to OUTPUT	C_L = 5pF (see test circuit)		18		27	ns
t_{HZ}				18		27	

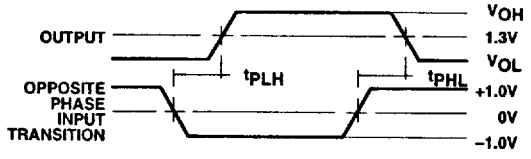
NOTES:
1. AC performance over the operating temperature range is guaranteed by testing defined in Group A, Subgroup 9.
2. V_{CC} = 5V



SWITCHING TEST CIRCUIT FOR THREE STATE OUTPUTS



ENABLE AND DISABLE TIMES (Notes 2 and 3)



PROPAGATION DELAY (Notes 1 and 3)

NOTE:
1. Diagram shown for Enable LOW.
2. S_1 and S_2 of Load Circuit are closed except where shown.
3. Pulse Generator for All Pulses: Rate ≤ 1.0MHz; Z_O = 50Ω; t_r ≤ 2.5ns; t_f ≤ 2.5ns.

Figure 1.