

Quad high-speed differential line driver

AM26LS31

DESCRIPTION

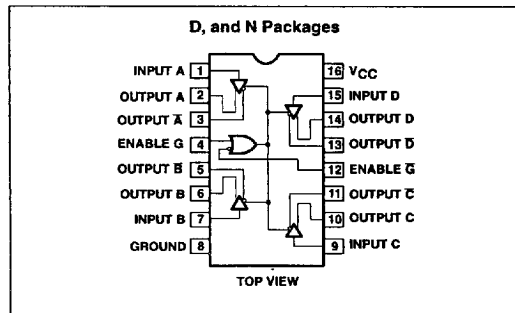
The AM26LS31 is a quad differential line driver, designed for digital data transmission over balanced lines. The AM26LS31 meets all the requirements of EIA standard RS-422 and Federal standard 1020. It is designed to provide unipolar differential drive to twisted-pair or parallel-wire transmission lines. The circuit provides an enable and disable function common to all four drivers. The AM26LS31 features 3-State outputs and logical OR-ed complementary enable inputs. The inputs are all LS compatible and are all one unit load.

The AM26LS31 is constructed using advanced Low Power Schottky processing.

FEATURES

- Output skew of 2.0ns typical
- Input to output delay: 12ns
- Operation from single +5V
- 16-pin DIP and SO packages
- Four line drivers in one package
- Output short-circuit protection
- Complementary outputs
- Meets EIA standard RS-422
- High output drive capability for 100Ω terminated transmission lines
- Available in military and commercial temperature range
- Advanced low power Schottky processing
- Outputs won't load line when $V_{CC} = 0V$

PIN CONFIGURATION



APPLICATIONS

- Data communications equipment
- Computer peripherals
- Workstations
- Automatic test equipment

FUNCTION TABLE (Each Driver)

INPUT	ENABLES		OUTPUTS	
A	G	$\bar{G}$	A	$\bar{A}$
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

NOTES:

H = High level

L = Low level

X = Irrelevant

Z = High-impedance (OFF)

ORDERING INFORMATION

DESCRIPTION	TEMPERATURE RANGE	ORDER CODE	DWG #
16-Pin Plastic Dual In-Line Package (DIP)	0°C to +70°C	AM26LS31CN	0406C
16-Pin Small Outline (SO) Package	0°C to +70°C	AM26LS31CD	0005D
16-Pin Plastic Dual In-Line Package (DIP)	-40°C to +85°C	AM26LS31IN	0406C
16-Pin Small Outline (SO) Package	-40°C to +85°C	AM26LS31ID	0005D
16-Pin Plastic Dual In-Line Package (DIP)	-55°C to +125°C	AM26LS31MN	0406C

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DC AND AC ELECTRICAL CHARACTERISTICS

$V_{CC} = 5V \pm 10\%$, $T_A = -55$ to $+125^\circ\text{C}$ for AM26LS31MN; $V_{CC} = 5V \pm 5\%$, $T_A = -40$ to $+85^\circ\text{C}$ for AM26LS31IN and AM26LS31ID; $V_{CC} = 5V \pm 5\%$, $T_A = 0$ to $+70^\circ\text{C}$ for AM26LS31CN and AM26LS31CD, unless otherwise specified.

SYMBOL	PARAMETER	TEST CONDITIONS	LIMITS			UNIT
			Min	Typ ¹	Max	
V_{OH}	Output High voltage	$V_{CC} = \text{Min.}$, $I_{OH} = -20\text{mA}$	2.5	3.0		V
V_{OL}	Output Low voltage	$V_{CC} = \text{Min.}$, $I_{OL} = 20\text{mA}$		0.3	0.5	V
V_{IH}	Input High voltage	$V_{CC} = \text{Min.}$	2.0			V
V_{IL}	Input Low voltage	$V_{CC} = \text{Max.}$			0.8	V
I_{IL}	Input Low current	$V_{CC} = \text{Max.}$, $V_{IN} = 0.4V$		-0.26	-0.36	mA
I_{IH}	Input High current	$V_{CC} = \text{Max.}$, $V_{IN} = 2.7V$		0.001	20	μA
I_I	Input reverse current	$V_{CC} = \text{Max.}$, $V_{IN} = 7.0V$		0.001	0.1	mA
I_O	OFF-state (high-impedance) output current	$V_{CC} = \text{Max.}$, $V_O = 5.5V$ $V_O = 0.5V$		0.6 -0.050	20 -20	μA μA
V_I	Input clamp voltage	$V_{CC} = \text{Min.}$, $I_{IN} = -18\text{mA}$		-0.8	-1.5	V
I_{SC}	Output short-circuit current	$V_{CC} = \text{Max.}$	-30		-150	mA
I_{CC}	Power supply current	$V_{CC} = \text{Max.}$; all outputs disabled		40	80	mA
t_{PLH}	Input to output	$T_A = 25^\circ\text{C}$, load ²		9	20	ns
t_{PHL}	Input to output	$T_A = 25^\circ\text{C}$, load ²		9	20	ns
SKEW	Output to output	$T_A = 25^\circ\text{C}$, load ²		2	6	ns
t_{LZ}	Enable to output	$T_A = 25^\circ\text{C}$, $C_L = 10\text{pF}$		17	35	ns
t_{HZ}	Enable to output	$T_A = 25^\circ\text{C}$, $C_L = 10\text{pF}$		12	30	ns
t_{ZL}	Enable to output	$T_A = 25^\circ\text{C}$, load ²		14	45	ns
t_{ZH}	Enable to output	$T_A = 25^\circ\text{C}$, load ²		12	40	ns

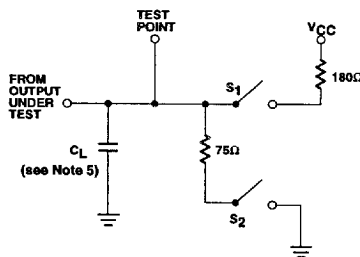
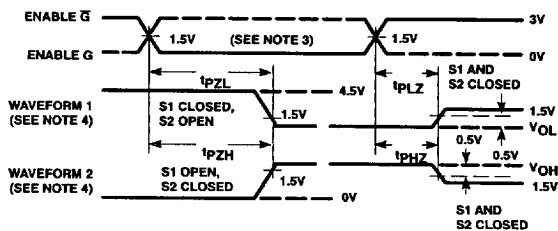
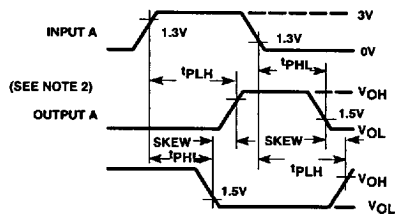
NOTES:

1. All typical values are $T_A = +25^\circ\text{C}$; $V_{CC} = 5.0V$.
2. $C_L = 30\text{pF}$; $V_{IN} = 1.3V$ to $V_{OUT} = 1.3V$; $V_{PULSE} = 0V$ to $3.0V$.

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TIMING DIAGRAMS



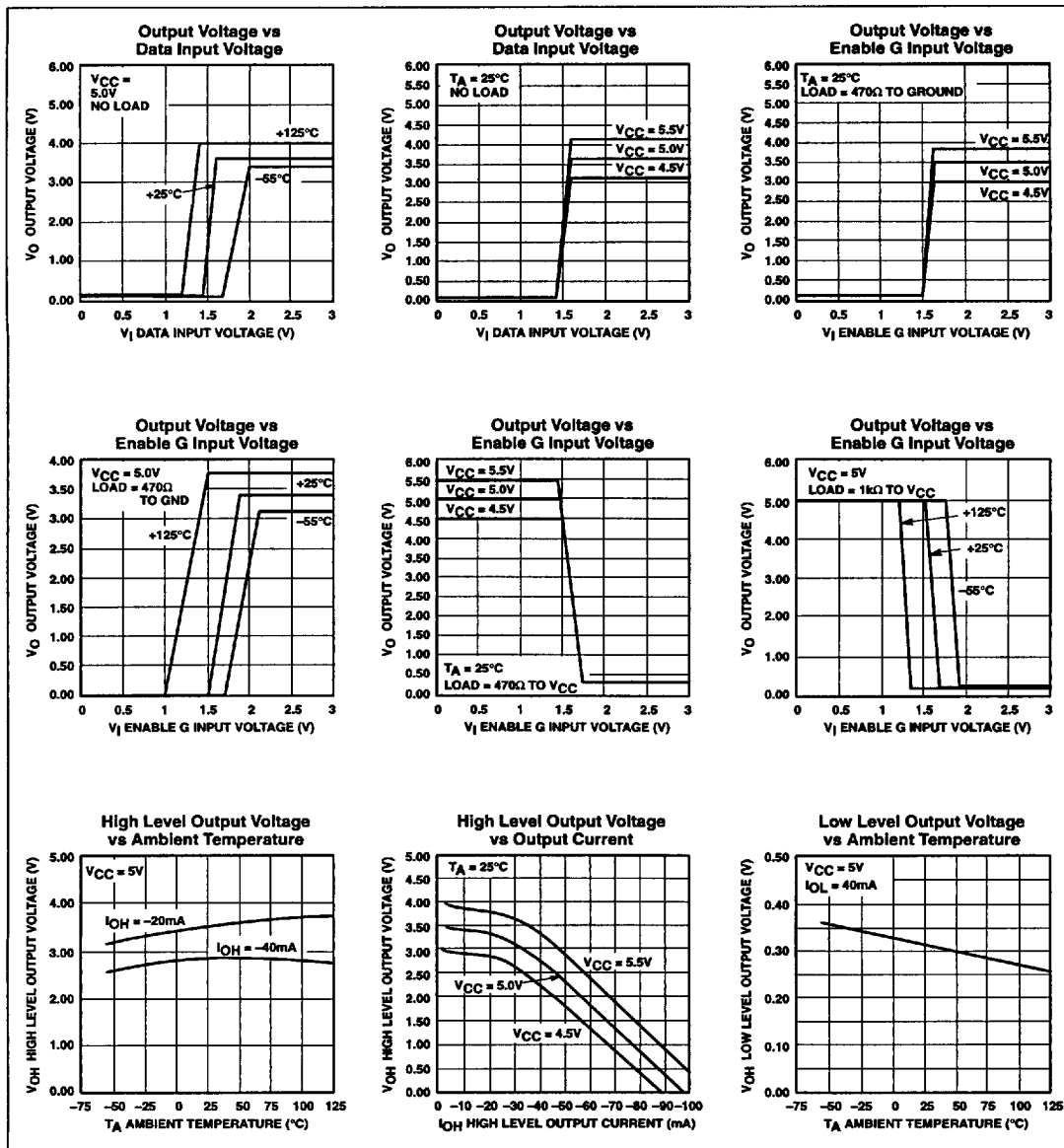
NOTES:

1. All pauses are supplied by generators having the following characteristics: $PRR \leq 1\text{MHz}$, $Z_{OUT} = 50\Omega$, $1R \leq 15\text{ns}$, $1F \leq 6\text{ns}$
2. When measuring propagation delay times and skew, switches S1 and S2 are open.
3. Each enable is tested separately.
4. Waveform 1 is for an output with internal condition such that the output is low except when disabled by the output control. Waveform 2 is for an output with internal condition such that the output is high except when disabled by the output control.
5. C_L includes probe and jig capacitance.

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TYPICAL PERFORMANCE CHARACTERISTICS



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TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

