

Quad high speed differential line driver

26LS31

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 $V_{CC} = 0V$

DESCRIPTION

The 26LS31 is a quad differential line driver, designed for digital data transmission over

balanced lines. The 26LS31 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 26LS31 features 3-state outputs and logical ORed complementary enable inputs. The inputs are all LS compatible and are all one unit load.

The 26LS31 is constructed using advanced Low Power Schottky processing.

ORDERING INFORMATION

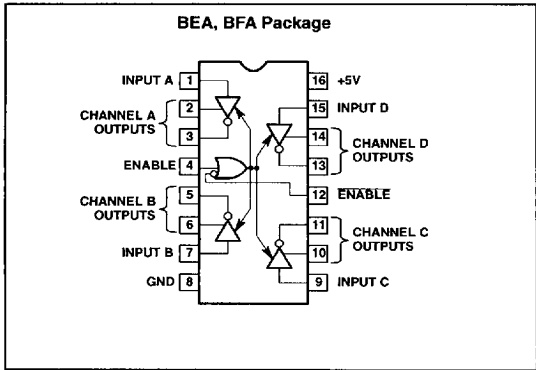
DESCRIPTION	ORDER CODE	PACKAGE DESIGNATOR*
16-Pin Ceramic DIP	26LS31/BEA	GDIP1-T16
16-Pin Ceramic Flat Pack	26LS31/BFA	GDFP2-F16
20-Pin Ceramic CLCC	26LS31/B2A	CQCC2-N20

* MIL-STD 1835 or Appendix A of 1995 Military Data Handbook

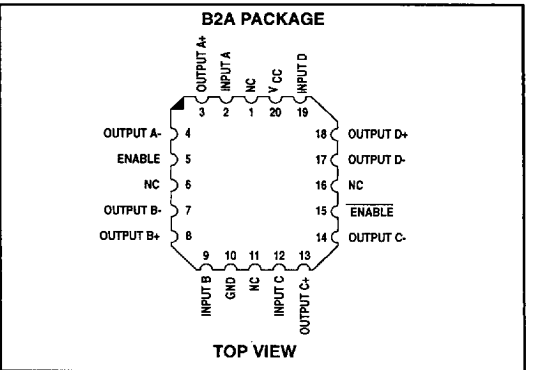
ABSOLUTE MAXIMUM RATINGS

SYMBOL	PARAMETER	LIMITS		UNIT
		MIN	MAX	
T_{STG}	Storage temperature range	-65	+150	°C
V_{CC}	Supply voltage		7.0	V
V_I	Input voltage		7.0	V
V_O	Output voltage		5.5	V

PIN CONFIGURATION



PIN CONFIGURATION LLCC



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RECOMMENDED OPERATING CONDITIONS

SYMBOL	PARAMETER	LIMITS		UNIT
		MIN	MAX	
T_{amb}	Operating temperature range	-55	+125	°C
V_{CC}	Supply voltage	4.5	5.5	V
V_{IH}	Input High threshold voltage	2.0		V
V_{IK}	Input Low threshold voltage		0.8	V

DC ELECTRICAL CHARACTERISTICS

(Over recommended operating temperature and supply voltage range unless otherwise specified.)

SYMBOL	PARAMETER	CONDITIONS	LIMITS		UNITS
			MIN	MAX	
V_{OH}	Output High voltage	$V_{CC} = \text{MIN}, I_{OH} = -20\text{mA}$	2.5		V
V_{OL}	Output Low voltage	$V_{CC} = \text{MIN}, I_{OL} = 20\text{mA}$		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	$V_{CC} = \text{MAX}, V_{IN} = 0.4\text{V}$		-0.36	mA
I_{IH}	Input High current	$V_{CC} = \text{MAX}, V_{IN} = 2.7\text{V}$		20	μA
I_I	Input reverse current	$V_{CC} = \text{MAX}, V_{IN} = 7.0\text{V}$		0.1	mA
I_O	Off-state (high impedance) output current	$V_{CC} = \text{MAX}, V_O = 2.5\text{V}$		20	μA
		$V_O = 0.5\text{V}$		-20	μA
V_I	Input clamp voltage	$V_{CC} = \text{MIN}, I_I = -18\text{mA}$		-1.5	V
I_{SC}	Output short circuit current	$V_{CC} = \text{MAX}, V_{CC} = \text{MAX}$	-30	-150	mA
I_{CC}	Power supply current	$V_{CC} = \text{MAX}, \text{All outputs disabled}$		80	mA

AC ELECTRICAL CHARACTERISTICS

 $T_{amb} = +25^\circ\text{C}$

SYMBOL	PARAMETER	CONDITIONS	LIMITS		UNIT
			MIN	MAX	
t_{PLH}	Propagation delay input to output	$V_{CC} = 5.0\text{V}$		20	ns
t_{PHL}		Load = 1		20	ns
SKEW	Output to output	$V_{CC} = 5.0\text{V}, \text{Load} = 1$		6.0	ns
t_{LZ}	Propagation delay enable to output	$V_{CC} = 5.0\text{V}$		35	ns
t_{HZ}		$C_L = 10\text{pF}$		30	ns
t_{ZL}	Propagation delay enable to output	$V_{CC} = 5.0\text{V}$		45	ns
t_{ZH}		Load = 1		40	ns

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AC ELECTRICAL CHARACTERISTICS

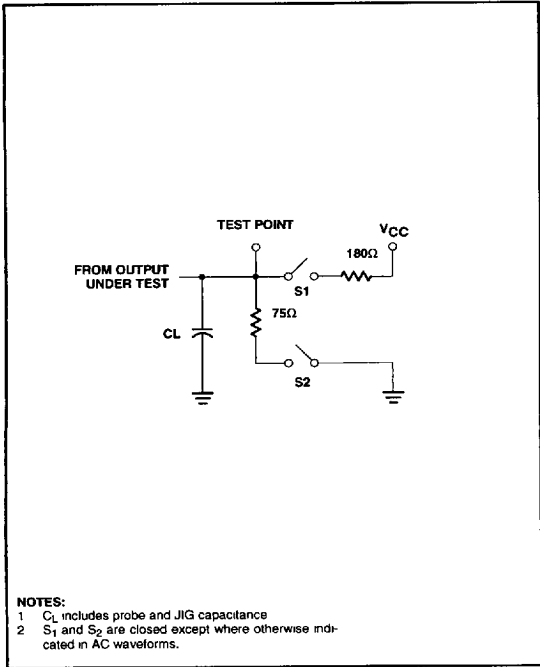
T_{amb} = -55°C and +125°C

SYMBOL	PARAMETER	CONDITIONS	LIMITS		UNIT
			MIN	MAX	
t _{PLH}	Propagation delay input to output	V _{CC} = 5.0V		30	ns
t _{PHL}		Load = 1		30	ns
SKEW	Output to output	V _{CC} = 5.0V, Load = 1		9.0	ns
t _{LZ}	Propagation delay enable to output	V _{CC} = 5.0V		53	ns
t _{HZ}		C _L = 10pF		45	ns
t _{ZL}	Propagation delay enable to output	V _{CC} = 5.0V		68	ns
t _{ZH}		Load = 1		60	ns

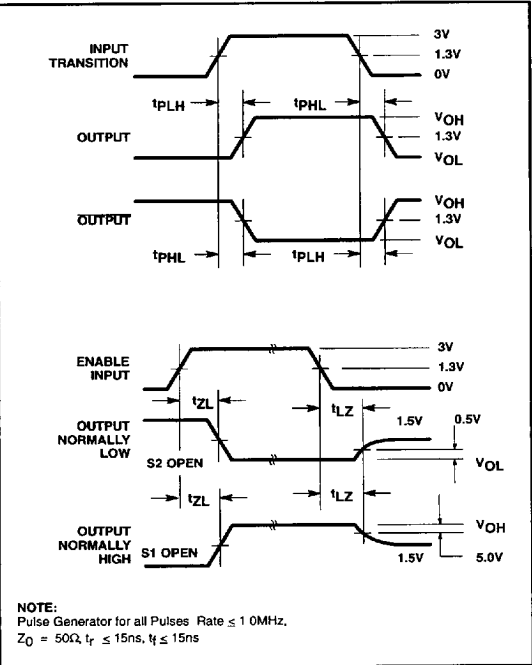
NOTE:

1. C_L = 30pF, V_{IN} = 1.3V to V_{OUT} 1.3V, V_{PULSE} = 0V to +3.0V.

EQUIVALENT AC TEST CIRCUIT



AC WAVEFORMS



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