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

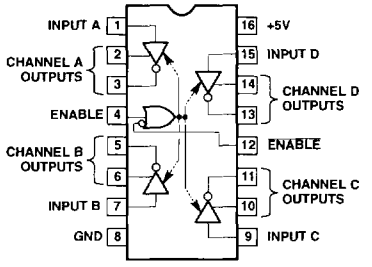
* MIL-STD 1835 or Appendix A of 1995 Military Data Handbook

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

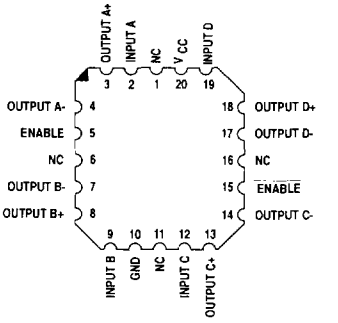
PIN CONFIGURATION

BEA, BFA Package



PIN CONFIGURATION LLCC

B2A PACKAGE



TOP VIEW

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} = MIN, I_{OH} = -20mA		2.5		V
V_{OL}	Output Low voltage	V_{CC} = MIN, I_{OL} = 20mA			0.5	V
V_{IH}	Input High voltage	V_{CC} = MIN		2.0		V
V_{IL}	Input Low voltage	V_{CC} = MAX			0.8	V
I_{IL}	Input Low current	V_{CC} = MAX, V_{IN} = 0.4V			-0.36	mA
I_{IH}	Input High current	V_{CC} = MAX, V_{IN} = 2.7V			20	µA
I_I	Input reverse current	V_{CC} = MAX, V_{IN} = 7.0V			0.1	mA
I_O	Off-state (high impedance) output current	V_{CC} = MAX	V_O = 2.5V		20	µA
			V_O = 0.5V		-20	µA
V_I	Input clamp voltage	V_{CC} = MIN, I_N = -18mA			-1.5	V
I_{SC}	Output short circuit current	V_{CC} = MAX, V_{CC} = MAX		-30	-150	mA
I_{CC}	Power supply current	V_{CC} = MAX, All outputs disabled			80	mA

AC ELECTRICAL CHARACTERISTICS

T_{amb} = +25°C

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

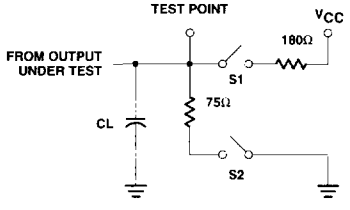
AC ELECTRICAL CHARACTERISTICS

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

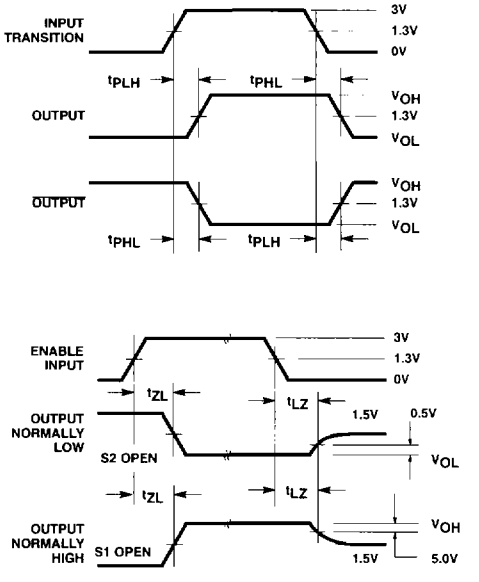
NOTE:
1. C_L = 30pF, V_{IN} = 1.3V to V_{OUT} 1.3V, V_{PULSE} = 0V to +3.0V.

EQUIVALENT AC TEST CIRCUIT



NOTES:
1 C_L includes probe and JIG capacitance.
2 S_1 and S_2 are closed except where otherwise indicated in AC waveforms.

AC WAVEFORMS



NOTE:
Pulse Generator for all Pulses: Rate ≤ 1.0MHz.
Z_0 = 50Ω t_r ≤ 15ns t_f ≤ 15ns