

Signetics**54F30244**

T.52.17

Line Driver**Octal High Current Buffer/Line &
Backplane Driver, NINV (30 Ω O.C.)****Military Logic Products****Product Specification****DESCRIPTION**

This device is a high current Open-Collector Octal Buffer composed of eight non-inverting drivers.

This device has non-inverting paths with two Output Enables ($\overline{OE}_0$, $\overline{OE}_1$) each controlling four outputs.

The driver is designed to deal with the low impedance transmission line effects found on printed circuit boards when fast edge rates are used.

The 130mA IOL provides ample power to achieve TTL switching on the incident wave voltage.

FEATURES

- Ideal for driving transmission lines or backplanes. 130mA I_{OL} . Ideal for low-impedance applications with impedance as low as 30 Ω .
- High-impedance NPN base inputs for reduced loading (20 μ A in High and Low states)
- Ideal for applications which require high output drive and minimal bus loading
- "Flow through" pinout
- Open-Collector outputs sink 130mA
- Multiple side pins are used for V_{CC} and GND to reduce lead inductance (improves speed and noise immunity)
- 24-pin Slim DIP package

ORDERING INFORMATION

DESCRIPTION	ORDER CODE
24-Pin Ceramic DIP	54F30244/BLA
24-Pin Ceramic Flatpack	54F30244/BKA
28-Pin Ceramic LLOC	54F30244/B3A

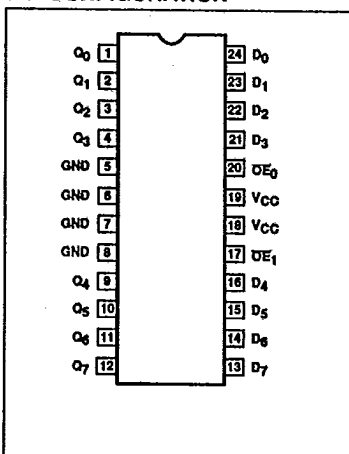
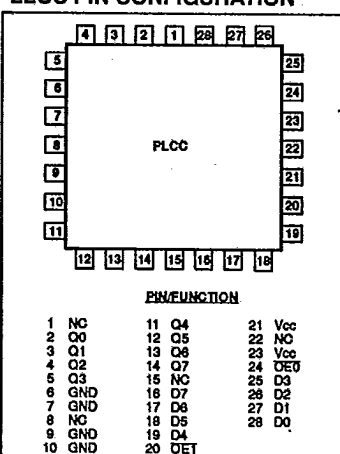
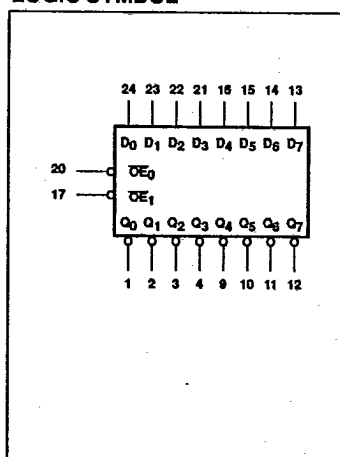
FUNCTION TABLE

INPUTS		OUTPUTS
$\overline{OE}_R$	D_R	Q_R
L	L	L
L	H	H
H	X	OFF

INPUT AND OUTPUT LOADING AND FAN-OUT TABLE

PINS	DESCRIPTION	54F(U.L.) HIGH/LOW	LOAD VALUE HIGH/LOW
$D_0 - D_7$	Data Inputs	1.0/0.033	20 μ A/20 μ A
$\overline{OE}_0$, $\overline{OE}_1$	Output Enable Inputs, (Active Low)	1.0/0.033	20 μ A/20 μ A
$Q_0 - Q_7$	Data Outputs	OC*/216.7	OC*/130mA

NOTE: One (1.0) FAST Unit Load (U.L.) is defined as: 20 μ A in the High state and 0.6mA in the Low state. OC* = Open Collector

PIN CONFIGURATION**LLCC PIN CONFIGURATION****LOGIC SYMBOL**

June 18, 1990

410

853-1198 99822

Line Driver

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ABSOLUTE MAXIMUM RATINGS (Operation beyond the limits set forth in this table may impair the useful life of the device. Unless otherwise noted these limits are over the operating free-air temperature range.)

SYMBOL	PARAMETER	RATING	UNIT
V_{CC}	Supply voltage range	-0.5 to +7.0	V
V_I	Input voltage range	-0.5 to +7.0	V
I_I	Input current range	-30 to +5.0	mA
V_O	Voltage applied to output in High output state	-0.5 to + V_{CC}	V
I_O	Current applied to output in Low output state	250	mA
T_{Sta}	Storage temperature range	-65 to +150	°C

RECOMMENDED OPERATING CONDITIONS

SYMBOL	PARAMETER	LIMITS			UNIT
		Min	Nom	Max	
V_{CC}	Supply voltage	4.5	5.0	5.5	V
V_H	High-level input voltage	2.0			V
V_L	Low-level input voltage			0.8	V
I_{IK}	Input clamp current			-18	mA
V_{OH}	High-level output voltage			4.5	V
I_{OL}	Low-level output current			130	mA
T_A	Operating free-air temperature range	-55		+125	°C

DC ELECTRICAL CHARACTERISTICS (Over recommended operating free-air temperature range unless otherwise noted.)

SYMBOL	PARAMETER	TEST CONDITIONS ¹	LIMITS			UNIT
			Min	Typ ²	Max	
I_{OH}	High-level output current	$V_{CC} = \text{Min}, V_{IL} = \text{Max}, V_{IH} = \text{Min}, V_{OH} = \text{Max}$			250	μA
V_{OL}	Low-level output voltage	$V_{CC} = \text{Min}, V_{IL} = \text{Max}, I_{OL} = 100\text{mA}$		.35	.50	V
		$V_{IH} = \text{Min}, I_{OL1} = 130\text{mA}^3$		.35	.55	V
V_K	Input clamp voltage	$V_{CC} = \text{Min}, I_I = I_{IK}$		-0.73	-1.2	V
I_{IH2}	Input current at maximum input voltage	$V_{CC} = 0.0, V_I = 7.0\text{V}$			100	μA
I_{IH1}	High-level input current	$V_{CC} = \text{Max}, V_I = 2.7\text{V}$			20	μA
I_{IL}	Low-level input current	$V_{CC} = \text{Max}, V_I = 0.5\text{V}$			-20	μA
I_{CC}	Supply current (total)	$V_{CC} = \text{Max}$		19	27	mA
				70	100	mA

NOTES:

- For conditions shown as Min or Max, use the appropriate value specified under recommended operating conditions for the applicable type and function table for operating mode.
- All typical values are at $V_{CC} = 5\text{V}, T_A = 25^\circ\text{C}$.
- I_{OL1} is the current necessary to guarantee the High and Low transition in a 30Ω transmission line on the incident wave.

Line Driver

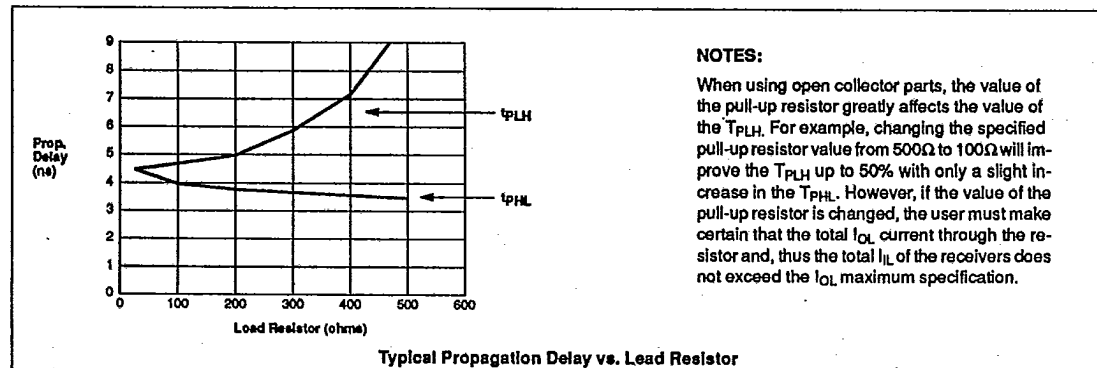
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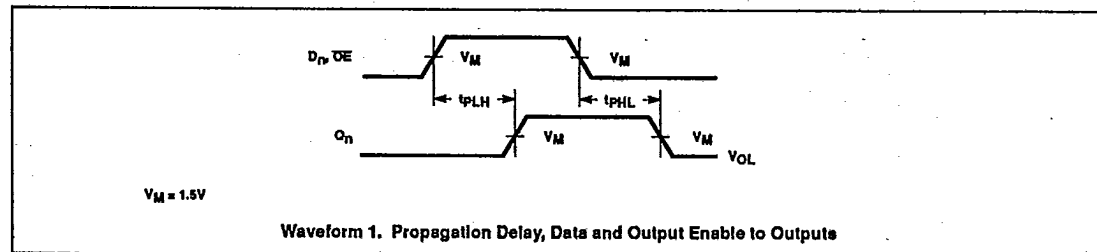
AC ELECTRICAL CHARACTERISTICS (When measured in accordance with the procedures outlined in Signetics LOGIC App Note 202, "Testing and Specifying FAST Logic.")

SYMBOL	PARAMETER	TEST CONDITIONS	LIMITS					UNIT
			T _A = +25°C V _{CC} = +5.0V C _L = 50pF, R _L = 500Ω			T _A = -55°C to +125°C V _{CC} = +5.0V ± 10% C _L = 50pF, R _L = 500Ω		
			Min	Typ	Max	Min	Max	
t _{PLH} t _{PHL}	Propagation delay D _n to Q _n	Waveform 1	4.0 3.0	10.5 5.5	14.5 9.0	4.0 3.0	15.0 9.5	ns ns
t _{PLH} t _{PHL}	Propagation delay OE to Q _n	Waveform 1	4.0 3.5	9.5 6.0	14.0 9.0	4.0 3.5	14.5 10.5	ns ns

AC CHARACTERISTICS



AC WAVEFORMS

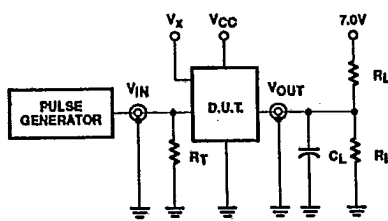


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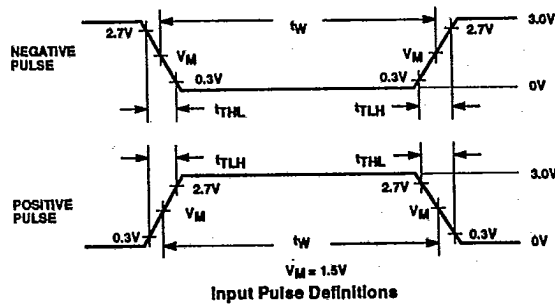
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TEST CIRCUIT AND WAVEFORMS



Test Circuit for 3-State Outputs and Open Collector Outputs



DEFINITIONS:

- R_L = Load Resistor; see AC Characteristics for value.
 C_L = Load capacitance includes jig and probe capacitance; see AC Characteristics for value.
 R_T = Termination resistance should be equal to Z_{OUT} of pulse generators.
 V_X = Unlocked pins must be held at: $\leq 0.8V$, $\geq 2.7V$ or open per Function Table.

INPUT PULSE CHARACTERISTICS

Family	Rep. Rate	t_W	t_{RLH}	t_{RHL}
54F	1MHz	500ns	$\leq 2.5ns$	$\leq 2.5ns$