100126

National Semiconductor
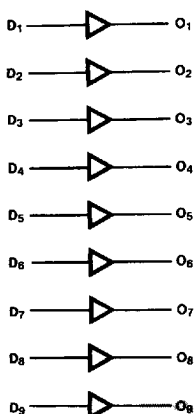
100126
9-Bit Backplane Driver

General Description

The 100126 contains nine independent, high-speed, buffer gates each with a single input and a single output. The gates are non-inverting. These buffers are useful in bus-oriented systems where minimal output loading or bus isolation is desired. The output transition times are longer to minimize noise when used as a backplane driver. All inputs have 50 kΩ pull-down resistors.

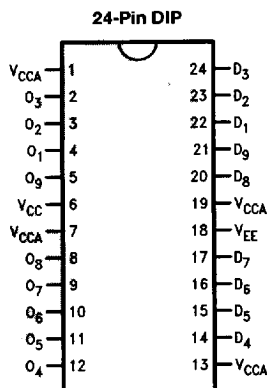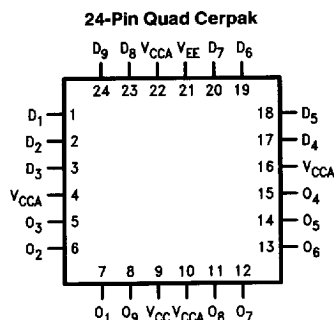## Ordering Code: See Section 6

Logic Symbol

TL/F/9850-3

Pin Names	Description
D_1-D_9	Data Inputs
O_1-O_9	Data Outputs

Connection Diagrams

24-Pin DIP

TL/F/9850-1

24-Pin Quad Cerpak

TL/F/9850-2

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Absolute Maximum Ratings

Above which the useful life may be impaired. (Note 1)

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications.

Storage Temperature	$-65°C$ to $+150°C$
Maximum Junction Temperature (T_J)	$+150°C$

Case Temperature under Bias (T_C)	$0°C$ to $+85°C$
V_{EE} Pin Potential to Ground Pin	$-7.0V$ to $+0.5V$
Input Voltage (DC)	V_{EE} to $+0.5V$
Output Current (DC Output HIGH)	-50 mA
Operating Range (Note 2)	$-5.7V$ to $-4.2V$

DC Electrical Characteristics

$V_{EE} = -4.5V$, $V_{CC} = V_{CCA} = GND$, $T_C = 0°C$ to $+85°C$ (Note 3)

Symbol	Parameter	Min	Typ	Max	Units	Conditions (Note 4)	
V_{OH}	Output HIGH Voltage	-1025	-955	-880	mV	$V_{IN} = V_{IH\,(Max)}$ or $V_{IL\,(Min)}$	Loading with 50Ω to $-2.0V$
V_{OL}	Output LOW Voltage	-1810	-1705	-1620			
V_{OHC}	Output HIGH Voltage	-1035			mV	$V_{IN} = V_{IH\,(Min)}$ or $V_{IL\,(Max)}$	Loading with 50Ω to $-2.0V$
V_{OLC}	Output LOW Voltage			-1610			
V_{IH}	Input HIGH Voltage	-1165		-880	mV	Guaranteed HIGH Signal for All Inputs	
V_{IL}	Input LOW Voltage	-1810		-1475	mV	Guaranteed LOW Signal for All Inputs	
I_{IL}	Input LOW Current	0.50			μA	$V_{IN} = V_{IL\,(Min)}$	

DC Electrical Characteristics

$V_{EE} = -4.2V$, $V_{CC} = V_{CCA} = GND$, $T_C = 0°C$ to $+85°C$ (Note 3)

Symbol	Parameter	Min	Typ	Max	Units	Conditions (Note 4)	
V_{OH}	Output HIGH Voltage	-1020		-870	mV	$V_{IN} = V_{IH\,(Max)}$ or $V_{IL\,(Min)}$	Loading with 50Ω to $-2.0V$
V_{OL}	Output LOW Voltage	-1810		-1605			
V_{OHC}	Output HIGH Voltage	-1030			mV	$V_{IN} = V_{IH\,(Min)}$ or $V_{IL\,(Max)}$	Loading with 50Ω to $-2.0V$
V_{OLC}	Output LOW Voltage			-1595			
V_{IH}	Input HIGH Voltage	-1150		-870	mV	Guaranteed HIGH Signal for All Inputs	
V_{IL}	Input LOW Voltage	-1810		-1475	mV	Guaranteed LOW Signal for All Inputs	
I_{IL}	Input LOW Current	0.50			μA	$V_{IN} = V_{IL\,(Min)}$	

DC Electrical Characteristics

$V_{EE} = -4.8V$, $V_{CC} = V_{CCA} = GND$, $T_C = 0°C$ to $+85°C$ (Note 3)

Symbol	Parameter	Min	Typ	Max	Units	Conditions (Note 4)	
V_{OH}	Output HIGH Voltage	-1035		-880	mV	$V_{IN} = V_{IH\,(Max)}$ or $V_{IL\,(Min)}$	Loading with 50Ω to $-2.0V$
V_{OL}	Output LOW Voltage	-1830		-1620			
V_{OHC}	Output HIGH Voltage	-1045			mV	$V_{IN} = V_{IH\,(Min)}$ or $V_{IL\,(Max)}$	Loading with 50Ω to $-2.0V$
V_{OLC}	Output LOW Voltage			-1610			
V_{IH}	Input HIGH Voltage	-1165		-880	mV	Guaranteed HIGH Signal for All Inputs	
V_{IL}	Input LOW Voltage	-1830		-1490	mV	Guaranteed LOW Signal for All Inputs	
I_{IL}	Input LOW Current	0.50			μA	$V_{IN} = V_{IL\,(Min)}$	

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Note 1: Absolute maximum ratings are those values beyond which the device may be damaged or have its useful life impaired. Functional operation under these conditions is not implied.

Note 2: Parametric values specified at $-4.2V$ to $-4.8V$.

Note 3: The specified limits represent the "worst case" value for the parameter. Since these "worst case" values normally occur at the temperature extremes, additional noise immunity and guard banding can be achieved by decreasing the allowable system operating ranges.

Note 4: Conditions for testing shown in the tables are chosen to guarantee operation under "worst case" conditions.

DC Electrical Characteristics

$V_{EE} = -4.2V$ to $-4.8V$ unless otherwise specified, $V_{CC} = V_{CCA} = GND$, $T_C = 0°C$ to $+85°C$

Symbol	Parameter	Min	Typ	Max	Units	Conditions
I_{IH}	Input HIGH Current			350	μA	$V_{IN} = V_{IH}$ (Max)
I_{EE}	Power Supply Current	-96	-70	-46	mA	Inputs Open

DIP AC Electrical Characteristics

$V_{EE} = -4.2V$ to $-4.8V$, $V_{CC} = V_{CCA} = GND$

Symbol	Parameter	$T_C = 0°C$		$T_C = +25°C$		$T_C = +85°C$		Units	Conditions
		Min	Max	Min	Max	Min	Max		
t_{PLH} t_{PHL}	Propagation Delay Data to Output	1.05	2.75	1.05	2.75	1.05	2.75	ns	Figures 1 and 2
t_{TLH} t_{THL}	Transition Time 20% to 80%, 80% to 20%	1.15	3.40	1.15	3.40	1.05	3.40	ns	

Cerpak AC Electrical Characteristics

$V_{EE} = -4.2V$ to $-4.8V$, $V_{CC} = V_{CCA} = GND$

Symbol	Parameter	$T_C = 0°C$		$T_C = +25°C$		$T_C = +85°C$		Units	Conditions
		Min	Max	Min	Max	Min	Max		
t_{PLH} t_{PHL}	Propagation Delay Data to Output	1.05	2.55	1.05	2.55	1.05	2.55	ns	Figures 1 and 2
t_{TLH} t_{THL}	Transition Time 20% to 80%, 80% to 20%	1.15	3.30	1.15	3.30	1.05	3.30	ns	

TL/F/9850–5

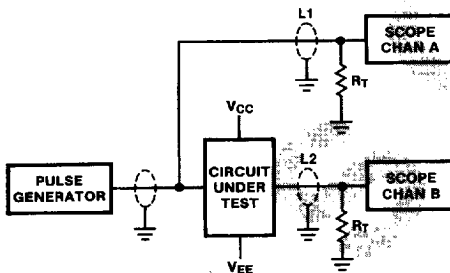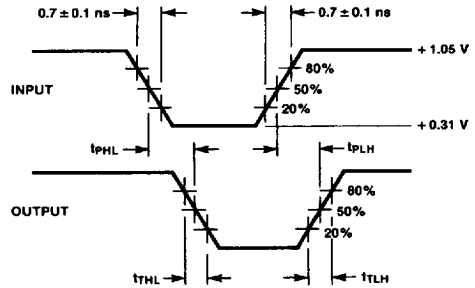**FIGURE 1. AC Test Circuit**

TL/F/9850–6

FIGURE 2. Propagation Delay and Transition Times

Notes:

V_{CC}, $V_{CCA} = +2V$, $V_{EE} = -2.5V$

L1 and L2 = equal length 50Ω impedance lines

R_T = 50Ω terminator internal to scope

Decoupling 0.1 μF from GND to V_{CC} and V_{EE}

All unused outputs are loaded with 50Ω to GND

C_L = Fixture and stray capacitance ≤ 3 pF

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