

Philips Components—Signetics

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ECL Products	

100126 Backplane Driver

FEATURES

- Typical propagation delay: 2.0ns
- Typical supply current ($-I_{EE}$): 78mA

DESCRIPTION

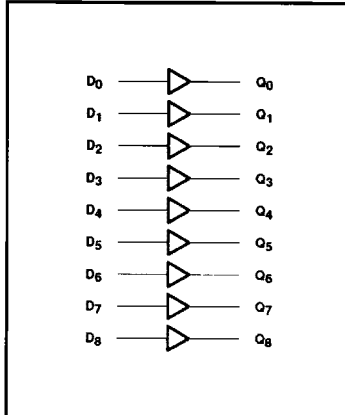
The 100126 contains nine independent, high-speed buffer gates each with a single input and a single output. The gates are non-inverting. These buffers are useful in bus-oriented systems where buffering is desired. The output transition times are slower to minimize noise when used in a backplane environment.

All unused inputs can be left open due to integrated pull-down resistors.

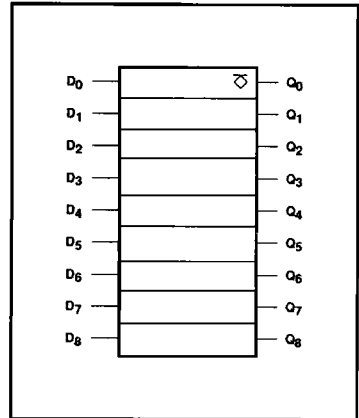
PIN DESCRIPTION

PINS	DESCRIPTION
$D_0 - D_8$	Data Inputs
$Q_0 - Q_8$	Data Outputs

LOGIC DIAGRAM



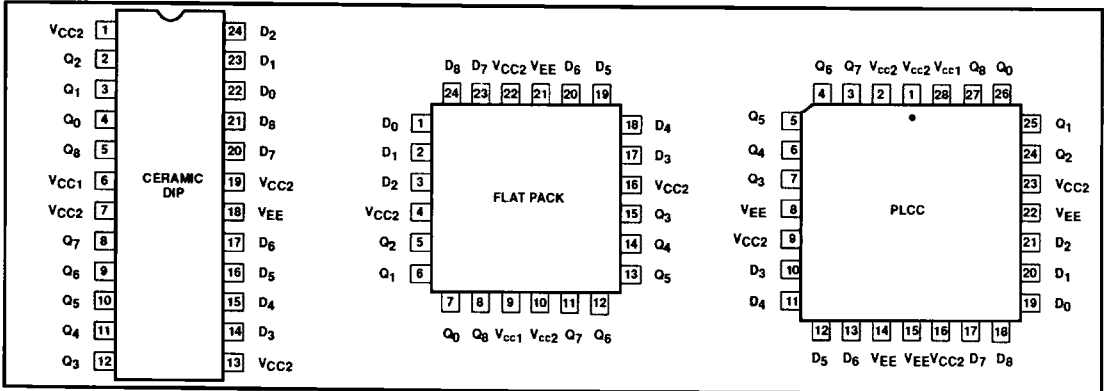
IEC/IEEE SYMBOL



ORDERING INFORMATION

DESCRIPTION	ORDER CODE
24-Pin Ceramic DIP their (400 mils wide)	100126F
24-Pin Ceramic Flat Pack	100126Y
28-Pin PLCC	100126A

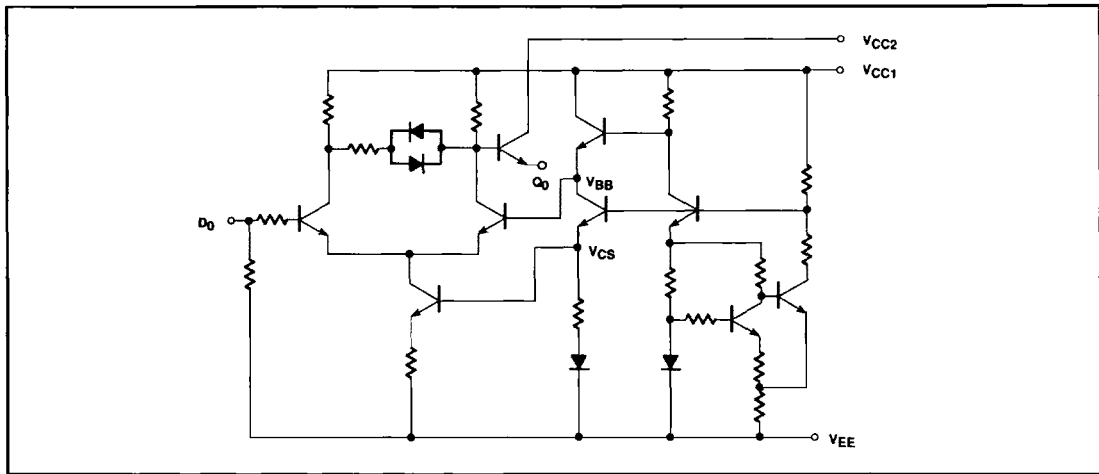
PIN CONFIGURATIONS



Backplane Driver

100126

SIMPLIFIED SCHEMATIC



ABSOLUTE MAXIMUM RATINGS $V_{CC1} = V_{CC2} = \text{ground}, T_A = 0^\circ\text{C to } +85^\circ\text{C}$ unless otherwise specified:

SYMBOL	PARAMETER	LIMITS	UNIT
V_{EE}	Supply voltage range	-7.0 to +0.5	V
V_{IN}	Input voltage (V_{IN} should never be more negative than V_{EE})	V_{EE} to +0.5	V
I_O	Output source current (continuous)	-55	mA
T_S	Storage temperature range	-65 to +150	$^\circ\text{C}$
T_J	Maximum junction temperature	+150	$^\circ\text{C}$

NOTE:

Operation beyond the limits set forth in this table may impair the useful life of the device.

DC OPERATING CONDITIONS

SYMBOL	PARAMETER	TEST CONDITIONS	LIMITS			UNIT
			MIN.	NOM.	MAX.	
V_{CC1}, V_{CC2}	Circuit ground		0	0	0	V
V_{EE}	Supply voltage		-4.8	-4.5	-4.2	V
V_{EE}	Supply voltage when operating with the 10K or the 10KH ECL family		-5.7			V
V_{IH}	High level input voltage	$V_{EE} = -4.2\text{V}$	-1150			mV
		$V_{EE} = -4.5\text{V}$	-1165		-880	
		$V_{EE} = -4.8\text{V}$	-1165			
V_{IL}	Low level input voltage	$V_{EE} = -4.2\text{V}$			-1475	mV
		$V_{EE} = -4.5\text{V}$	-1810		-1475	mV
		$V_{EE} = -4.8\text{V}$			-1490	mV
T_A	Operating ambient temperature range		0	+25	+85	$^\circ\text{C}$

NOTE:

When operating at other than the specified V_{EE} voltages (-4.2V, -4.5V, -4.8V), the DC and AC electrical characteristics will vary slightly from their specified values.

Backplane Driver

100126

DC ELECTRICAL CHARACTERISTICS $V_{CC1} = V_{CC2} = \text{ground}, V_{EE} = -4.8\text{V to } -4.2\text{V}, T_A = 0^\circ\text{C to } +85^\circ\text{C}$ unless otherwise specified^{1,3,4}

SYMBOL	PARAMETER	TEST CONDITIONS ²	LIMITS			UNIT	
			MIN.	TYP.	MAX.		
V _{OH}	High level output voltage	Inputs at V _{IHMAX} or V _{ILMIN} .	V _{EE} = -4.2V	-1020		-870	mV
			V _{EE} = -4.5V	-1025	-955	-880	mV
			V _{EE} = -4.8V	-1035		-880	mV
V _{OHT}	High level output threshold voltage	Outputs Loaded Apply V _{IHMIN} or V _{ILMAX} to one input at a time, other inputs at V _{IHMAX} or V _{ILMIN} .	V _{EE} = -4.2V	-1030			mV
			V _{EE} = -4.5V	-1035			mV
			V _{EE} = -4.8V	-1045			mV
V _{OLT}	Low level output threshold voltage	with 50Ω to -2.0V ±0.010V Apply V _{IHMIN} or V _{ILMAX} to one input at a time, other inputs at V _{IHMAX} or V _{ILMIN} .	V _{EE} = -4.2V			-1595	mV
			V _{EE} = -4.5V			-1610	mV
			V _{EE} = -4.8V			-1610	mV
V _{OL}	Low level output voltage	Inputs at V _{IHMAX} or V _{ILMIN} .	V _{EE} = -4.2V	-1810		-1605	mV
			V _{EE} = -4.5V	-1810	-1705	-1620	mV
			V _{EE} = -4.8V	-1830		-1620	mV
I _{IH}	High level input current	One input under test at V _{IHMAX} . Other inputs at V _{ILMIN} .				350	μA
I _{IL}	Low level input current	One input under test at V _{ILMIN} . Other inputs at V _{IHMAX} .	0.5				μA
-I _{EE}	V _{EE} supply current	All inputs at V _{IHMAX} .	46	78	96		mA

NOTES:

- The specified limits represent the worst case values for the parameter. Since these worst case values normally occur at the supply voltage and temperature extremes, additional noise immunity can be achieved by decreasing the allowable operating condition ranges.
- Conditions for testing shown in the tables are not necessarily worst case. For worst case testing guidelines, refer to DC Testing, Chapter 1, Section 3.
- The specified limits shown in the DC electrical characteristics table can be met only after thermal equilibrium has been established. Thermal equilibrium is established by applying power for at least 2 minutes, while maintaining transverse airflow of 2.5 meters/sec (500 linear feet/min) over the device, mounted either in a test socket or on a printed circuit board. Test voltage values are given in the DC operating conditions table.
- The device can function down to V_{EE} = -5.7V, allowing operation with either the 10K or the 10KH family. Correction factors can be used to calculate new DC limits for the extended V_{EE} range. For more information, see Chapters 5 and 10, Section 4.

AC ELECTRICAL CHARACTERISTICS

Ceramic DIP $V_{CC1} = V_{CC2} = \text{ground}, V_{EE} = -4.8\text{V to } -4.2\text{V}$

SYMBOL	PARAMETER	TEST CONDITION	LIMITS						UNIT
			T _A = 0°C		T _A = +25°C		T _A = +85°C		
			MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
t _{PLH} t _{PHL}	Propagation delay D _n to Q _n	Waveform 1	1.05	2.75	1.05	2.75	1.05	2.75	ns
t _{TLH} t _{THL}	Transition time Q _n		1.15	3.30	1.15	3.30	1.05	3.30	ns

NOTE:

For AC test setup information, see AC Testing, Chapter 2, Section 3.

Backplane Driver

100126

AC ELECTRICAL CHARACTERISTICS

Ceramic DIP $V_{CC1} = V_{CC2} = \text{ground}$, $V_{EE} = -5.2V \pm 5\%$

SYMBOL	PARAMETER	TEST CONDITION	LIMITS						UNIT
			$T_A = 0^\circ\text{C}$		$T_A = +25^\circ\text{C}$		$T_A = +85^\circ\text{C}$		
			MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
t_{PLH} t_{PHL}	Propagation delay D_n to Q_n	Waveform 1	1.05	2.75	1.05	2.75	1.05	2.75	ns
			1.05	2.75	1.05	2.75	1.05	2.75	ns
t_{TLH} t_{THL}	Transition time Q_n		1.15	3.30	1.15	3.30	1.05	3.30	ns
			1.15	3.30	1.15	3.30	1.05	3.30	ns

NOTE:

For AC test setup information, see AC Testing, Chapter 2, Section 3.

AC ELECTRICAL CHARACTERISTICS

Flat Pack and PLCC $V_{CC1} = V_{CC2} = \text{ground}$, $V_{EE} = -4.8V$ to $-4.2V$

SYMBOL	PARAMETER	TEST CONDITION	LIMITS						UNIT
			$T_A = 0^\circ\text{C}$		$T_A = +25^\circ\text{C}$		$T_A = +85^\circ\text{C}$		
			MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
t_{PLH} t_{PHL}	Propagation delay D_n to Q_n	Waveform 1	1.05	2.55	1.05	2.55	1.05	2.55	ns
			1.05	2.55	1.05	2.55	1.05	2.55	ns
t_{TLH} t_{THL}	Transition time Q_n		1.15	3.30	1.15	3.30	1.05	3.30	ns
			1.15	3.30	1.15	3.30	1.05	3.30	ns

NOTE:

For AC test setup information, see AC Testing, Chapter 2, Section 3.

AC ELECTRICAL CHARACTERISTICS

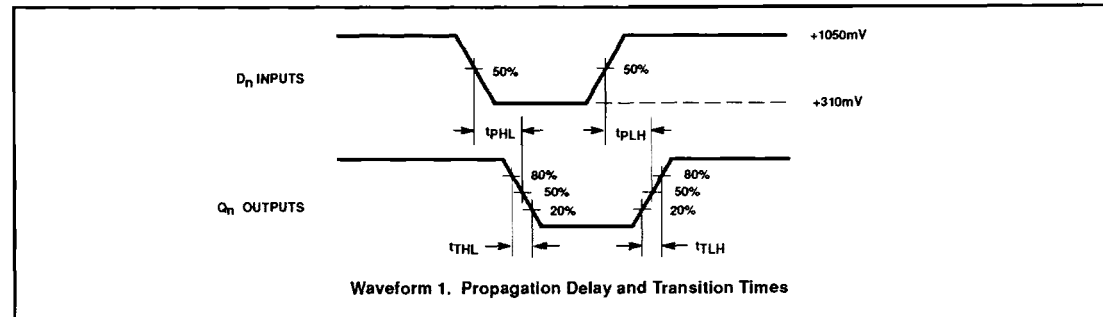
Flat Pack and PLCC $V_{CC1} = V_{CC2} = \text{ground}$, $V_{EE} = -5.2V \pm 5\%$

SYMBOL	PARAMETER	TEST CONDITION	LIMITS						UNIT
			$T_A = 0^\circ\text{C}$		$T_A = +25^\circ\text{C}$		$T_A = +85^\circ\text{C}$		
			MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
t_{PLH} t_{PHL}	Propagation delay D_n to Q_n	Waveform 1	1.05	2.55	1.05	2.55	1.05	2.55	ns
			1.05	2.55	1.05	2.55	1.05	2.55	ns
t_{TLH} t_{THL}	Transition time Q_n		1.15	3.30	1.15	3.30	1.05	3.30	ns
			1.15	3.30	1.15	3.30	1.05	3.30	ns

NOTE:

For AC test setup information, see AC Testing, Chapter 2, Section 3.

AC WAVEFORMS



NOTE:

All power and signal voltages shifted up 2.0V for AC bench test purposes.