

10161F: -30 to +85°C, CERDIP

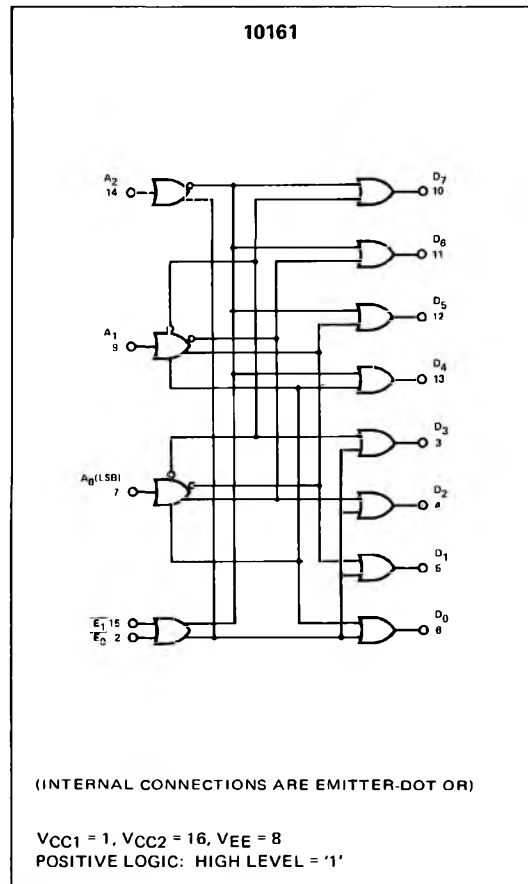
DIGITAL 10,000 SERIES ECL

DESCRIPTION

The 10161 is a binary coded 3 line to 8 line decoder. Outputs are normally high with the selected output going low. Two enable inputs make it ideally suited for demultiplexer applications. One of the two enable inputs can be used as the data enable input. Either enable input when high, forces all outputs high.

The 10161 is a true parallel decoder using internal emitter dotting techniques. Hence it eliminates unequal delay times found in other decoders. The 10161 is a low power, high speed device with high Z input pulldown resistors and open emitter outputs.

LOGIC DIAGRAM



FEATURES

- FAST PROPAGATION DELAY
= 4.0 ns TYP ADDRESS TO OUTPUT
= 4.5 ns TYP ENABLE TO OUTPUT
- LOW POWER DISSIPATION = 295 mW/PACKAGE TYP (NO LOAD)
- HIGH FANOUT CAPABILITY – CAN DRIVE EIGHT 50 Ω LINES
- TRUE PARALLEL DECODER – ELIMINATES UNEQUAL DELAY TIMES
- HIGH IMMUNITY FROM POWER SUPPLY VARIATIONS: VEE = -5.2 V ±5% RECOMMENDED
- HIGH Z INPUTS – INTERNAL 50 kΩ PULLDOWNS
- OPEN EMITTER OUTPUTS
- MEETS ECL 10,000 SERIES STANDARD INTERFACE SPECIFICATIONS

APPLICATIONS

- 1 of 8 Decoder
- 1 line to 8 line Demultiplexer

TRUTH TABLE

ENABLE INPUTS		INPUTS			OUTPUTS							
E1	E0	A2	A1	A0	D0	D1	D2	D3	D4	D5	D6	D7
L	L	L	L	L	L	H	H	H	H	H	H	H
L	L	L	L	H	L	H	L	H	H	H	H	H
L	L	L	H	L	H	H	L	H	H	H	H	H
L	L	L	H	H	H	H	H	L	H	H	H	H
L	L	H	L	L	H	H	H	H	L	H	H	H
L	L	H	L	H	H	H	H	H	H	L	H	H
L	L	H	H	H	H	H	H	H	H	H	L	H
H	L	φ	φ	φ	H	H	H	H	H	H	H	L
L	H	φ	φ	φ	H	H	H	H	H	H	H	H
H	H	φ	φ	φ	H	H	H	H	H	H	H	H

φ = Don't Care.

TEMPERATURE RANGE

- -30 to +85°C Operating Ambient

PACKAGE TYPE

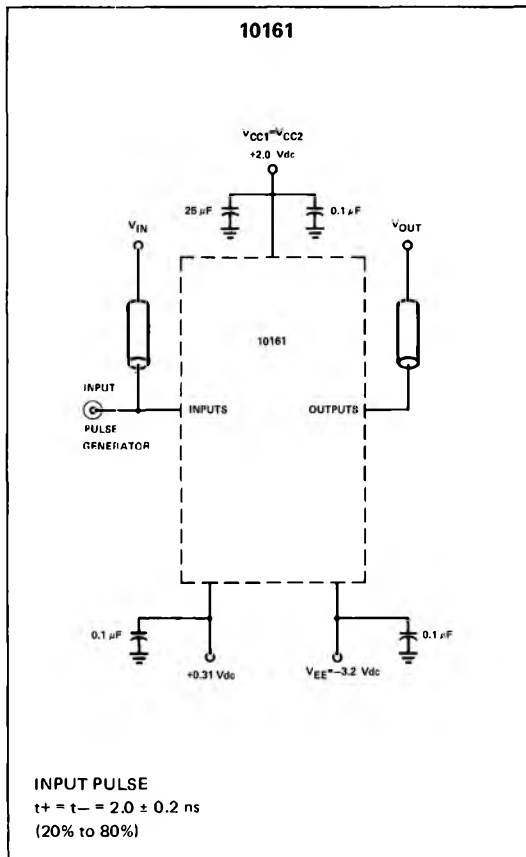
- F: 16-Pin CERDIP

ELECTRICAL CHARACTERISTICS
(at Listed Voltages and Ambient Temperatures).

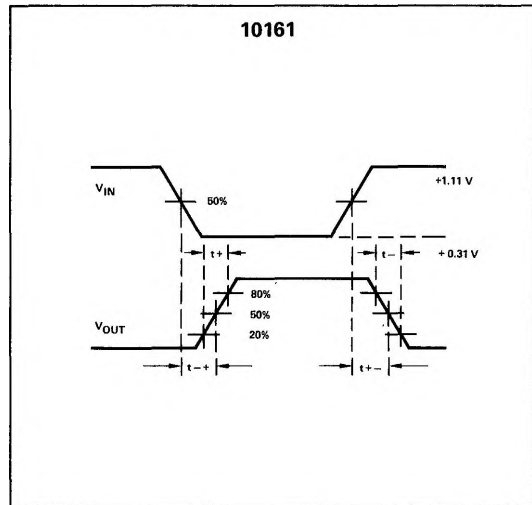
Characteristic	Symbol	Pin Under Test	10161 Test Limits										Unit	TEST VOLTAGE VALUES (Volts)					(V _{CC}) Gnd
			-30°C		+25°C			+85°C		V _{IH} max	V _{IL} min	V _{IHA} min		V _{VLA} max	V _{EE}				
			Min	Max	Min	Typ	Max	Min	Max										
Power Supply Drain Current	I _E	8	—	—	—	57	72	—	—	—	mAcc	2,7,8,14,15	—	—	—	8	1,16		
Input Current	I _{inH}	14	—	—	—	—	266	—	—	—	μArc	14	—	—	—	8	1,16		
	I _{inL}	14	—	—	0.5	—	—	—	—	—	μArc	—	14	—	—	8	1,16		
Logic "1" Output Voltage	V _{OH}	13	-1.060	-0.890	-0.890	—	-0.810	-0.890	-0.700	Vdc	2	—	—	—	—	8	1,16		
Output Voltage		13	-1.060	-0.890	-0.890	—	-0.810	-0.890	-0.700	Vdc	15	—	—	—	—	8	1,16		
Logic "0" Output Voltage	V _{OL}	13	-1.890	-1.875	-1.850	—	-1.850	-1.825	-1.815	Vdc	14	—	—	—	—	8	1,16		
Logic "1" Threshold Voltage	V _{OHA}	13	-1.080	—	0.980	—	—	-0.910	—	Vdc	—	—	2	—	—	8	1,16		
Threshold Voltage		13	-1.080	—	-0.980	—	—	-0.910	—	Vdc	—	—	15	—	—	8	1,16		
Logic "0" Threshold Voltage	V _{OLA}	13	—	-1.665	—	—	-1.630	—	-1.695	Vdc	—	—	14	—	—	8	1,16		
Switching Times* (50-ohm load)												Pulse In	Pulse Out	-3.2 V	+2.0 V				
Propagation Delay	t ₁₄₊₁₃₋ t ₁₄₋₁₃₊	13 13	—	—	—	4.0	—	—	—	ns	—	—	14	13	8	1,16			
Rise Time (20% to 80%)	t ₁₃₊	13	—	—	—	2.0	—	—	—	—	—	—	—	—	—	—	—		
Fall Time (20% to 80%)	t ₁₃₋	13	—	—	—	2.0	—	—	—	—	—	—	—	—	—	—	—		

*Unused outputs connected to a 50 ohm resistor to ground.

SWITCHING TIME TEST CIRCUIT



PROPAGATION DELAY WAVEFORMS @ 25°C



NOTES:

- Each ECL 10,000 series device has been designed to meet the DC specifications shown in the test table, after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board and transverse air flow greater than 500 fpm is maintained. Voltage levels will shift approximately 6 mV with an air flow of 200 linear fpm. Outputs are terminated through a 50-ohm resistor to ground.
- For AC tests, all input and output cables to the scope are equal lengths of 50-ohm coaxial cable. Wire length should be < 1/4 inch from TP_{in} to input pin and TP_{out} to output pin. A 50-ohm termination to ground is located in each scope input. Unused outputs are connected to a 50-ohm resistor to ground.
- Test procedures are shown for only one input or set of input conditions. Other inputs are tested in the same manner.
- All voltage measurements are referenced to the ground terminal. Terminals not specifically referenced are left electrically open.