

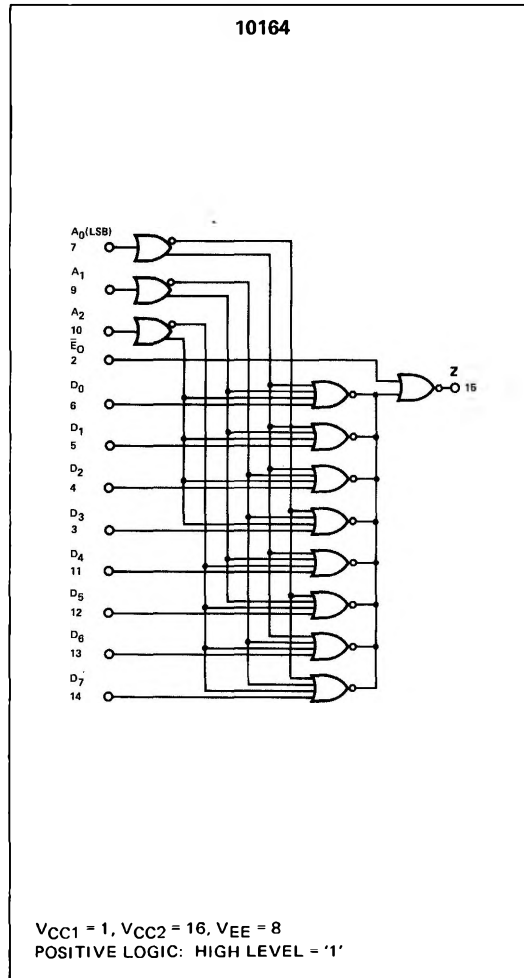
10164F: -30 to +85°C, CERDIP

DIGITAL 10,000 SERIES ECL

DESCRIPTION

The 10164 is a high speed, low power 8 to 1 multiplexer/data selector which routes data present at one-of-eight inputs to the output. The data is routed according to the three bit code present on the address inputs. An enable input is provided for easy bit expansion. The 10164 has high Z input pulldown resistors and open emitter outputs.

LOGIC DIAGRAM



FEATURES

- FAST PROPAGATION DELAY
 - = 3.5 ns TYP DATA TO OUTPUT
 - = 5.0 ns TYP ADDRESS TO OUTPUT
 - = 2.0 ns TYP ENABLE TO OUTPUT
- OUTPUT ENABLE TO PERMIT OUTPUT BUSSING
- LOW POWER DISSIPATION = 290 mW/PACKAGE TYP (NO LOAD)
- HIGH FANOUT CAPABILITY – CAN DRIVE A 50 Ω LINE
- HIGH IMMUNITY FROM POWER SUPPLY VARIATIONS: VEE = -5.2 V ±5% RECOMMENDED
- MEETS ECL 10,000 SERIES STANDARD INTERFACE SPECIFICATIONS

APPLICATIONS

- 8 to 1 Multiplexer
- 8 to 1 Data Selector
- Parallel to Serial Conversion
- Barrel Shift Logic

TRUTH TABLE

ENABLE	ADDRESS INPUTS			Z
	A2	A1	A0	
L	L	L	L	D0
L	L	L	H	D1
L	L	H	L	D2
L	L	H	H	D3
L	H	L	L	D4
L	H	L	H	D5
L	H	H	L	D6
L	H	H	H	D7
H	φ	φ	φ	L

φ = Don't Care.

TEMPERATURE RANGE

- -30 to +85°C Operating Ambient

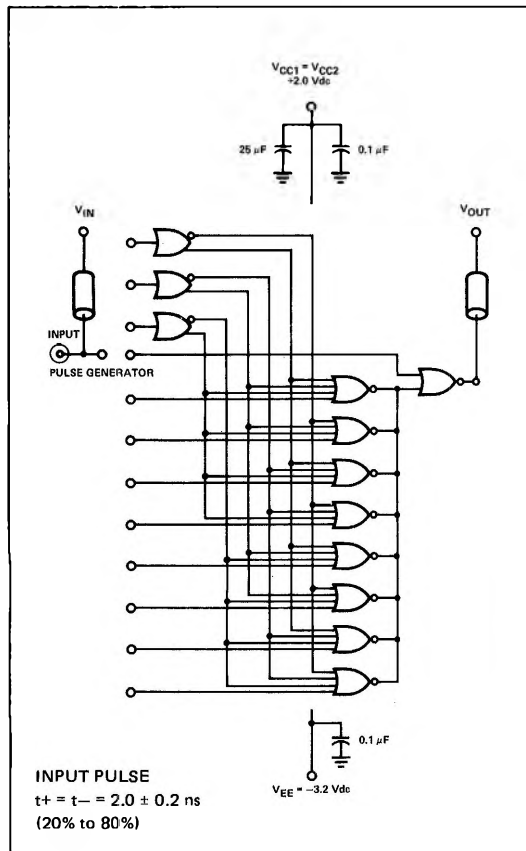
PACKAGE TYPE

- F: 16-Pin CERDIP

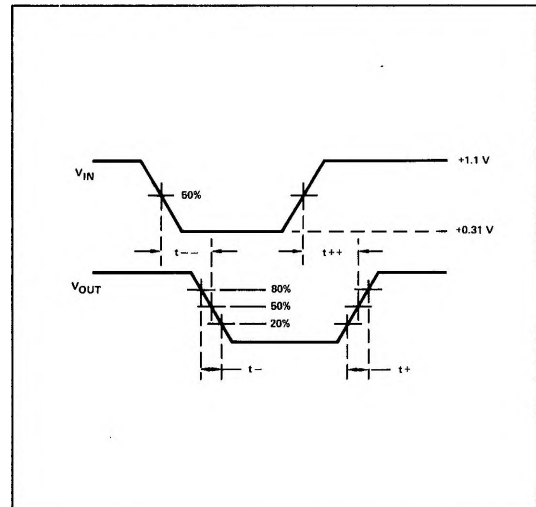
ELECTRICAL CHARACTERISTICS
(at Listed Voltages and Ambient Temperatures).

Characteristic	Symbol	Pin Under Test	10164 Test Limits										TEST VOLTAGE APPLIED TO PINS LISTED BELOW:					Unit	V _{IH} max	V _{IL} min	V _{IHA} min	V _{IHA} max	V _{EE}	V _{CC} Gnd
			-30°C			+25°C			+85°C			(Volts)												
			Min	Max	Typ	Min	Max	Min	Max	Min	Max	V _{IH} max	V _{IL} min	V _{IHA} min	V _{IHA} max	V _{EE}								
			10164 Test Limits										TEST VOLTAGE APPLIED TO PINS LISTED BELOW:											
Power Supply Drain Current	I _E	8	-	-	-	56	75	-	-	mAdc	-	-	-	-	8	1.16								
Input Current	I _{inH}	4	-	-	-	220	-	-	-	μAdc	4	-	-	-	8	1.16								
	I _{inL}	4	-	-	0.6	-	-	-	-	μAdc	-	4	-	-	8	1.16								
Logic "1" Output Voltage	V _{OH}	15	-1.050	-0.890	-0.980	-	-0.810	-0.890	-0.700	Vdc	4.9	-	-	-	8	1.16								
Logic "0" Output Voltage	V _{OL}	15	-1.880	-1.875	-1.860	-	-1.860	-1.825	-1.615	Vdc	9	-	-	-	8	1.16								
Logic "1" Threshold Voltage	V _{OHA}	15	-1.080	-	-0.980	-	-	-0.910	-	Vdc	4.9	-	-	2	8	1.16								
Logic "0" Threshold Voltage	V _{OLA}	15	-	-1.655	-	-	-1.630	-	-1.695	Vdc	9	-	-	2	8	1.16								
Switching Times* (50 Ω load)											+1.11 V		Pulse In	Pulse Out	-8.2 V	+2.0 V								
Propagation Delay	t _{4+ 15+}	15	-	-	-	3.5	-	-	-	ns	9	-	4	15	8	1.16								
	t _{4- 15-}	15	-	-	-	3.5	-	-	-	ns	9	-	4	15	8	1.16								
	t _{7+ 15+}	15	-	-	-	5.0	-	-	-	ns	5	-	7	15	8	1.16								
	t _{7- 15-}	15	-	-	-	5.0	-	-	-	ns	5	-	7	15	8	1.16								
	t _{2+ 15+}	15	-	-	-	2.0	-	-	-	ns	7.5	-	2	15	8	1.16								
	t _{2- 15-}	15	-	-	-	2.0	-	-	-	ns	7.5	-	2	15	8	1.16								
Rise Time (20% to 80%)	t _r	15	-	-	-	2.0	-	-	-	ns	9	-	4	15	8	1.16								
Fall Time (20% to 80%)	t _f	15	-	-	-	2.0	-	-	-	ns	9	-	4	15	8	1.16								

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 5 mV with an air flow of 200 linear fpm. Outputs are terminated through a 50-ohm resistor to -2.0 volts.
- 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 channel input.
- Test procedures are shown for only one input or for one 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.