



Binary to 1-8 Decoder (Low)

ELECTRICALLY TESTED PER:
5962-8756701

The 10H561 provides parallel decoding of a three bit binary word to one of eight lines. The 10H561 is useful in high-speed multiplexer/demultiplexer applications.

The 10H561 is designed to decode a three bit input word to one of eight output lines. The 10H561 output will be low when selected while all other outputs are high. The enable inputs, when either or both are high, force all outputs high.

The 10H561 is a true parallel decoder. This eliminates unequal parallel path delay times found in other decoder designs. These devices are ideally suited for multiplexer/demultiplexer applications.

- Propagation Delay, 1.5 ns Typical
- 470 mW Max/Pkg (No Load)
- Improved Noise Margin 150 mV (Over Operating Voltage and Temperature Range)
- Voltage Compensated
- MECL 10K-Compatible

PIN ASSIGNMENTS

FUNCTION	DIL	FLATS	LCC	BURN-IN (CONDITION C)
V _{CC1}	1	5	2	GND
$\bar{E}_0$	2	6	3	GND
Q ₃	3	7	4	V _{TT}
Q ₂	4	8	5	V _{TT}
Q ₁	5	9	7	V _{TT}
Q ₀	6	10	8	V _{TT}
A	7	11	9	OPEN
V _{EE}	8	12	10	V _{EE}
B	9	13	12	OPEN
Q ₇	10	14	13	V _{TT}
Q ₆	11	15	14	V _{TT}
Q ₅	12	16	15	V _{TT}
Q ₄	13	1	17	V _{TT}
C	14	2	18	GND
$\bar{E}_1$	15	3	19	GND
V _{CC2}	16	4	20	GND

BURN - IN CONDITIONS:

V_{TT} = -2.0 V MAX/ -2.2 V MIN

V_{EE} = -5.7 V MAX/ -5.2 V MIN

Military 10H561

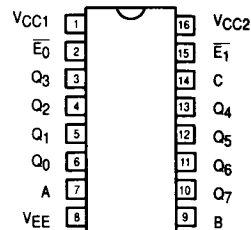


AVAILABLE AS

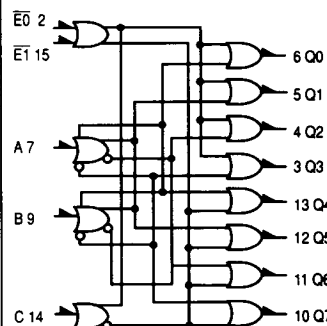
- 1) JAN: N/A
 - 2) SMD: 5962-8756701
 - 3) 883: 10H561/BXAJC
- X = CASE OUTLINE AS FOLLOWS:**

PACKAGE: CERDIP: E
CERFLAT: F
LCC: 2

**The letter "M" appears before
the slash on LCC.**



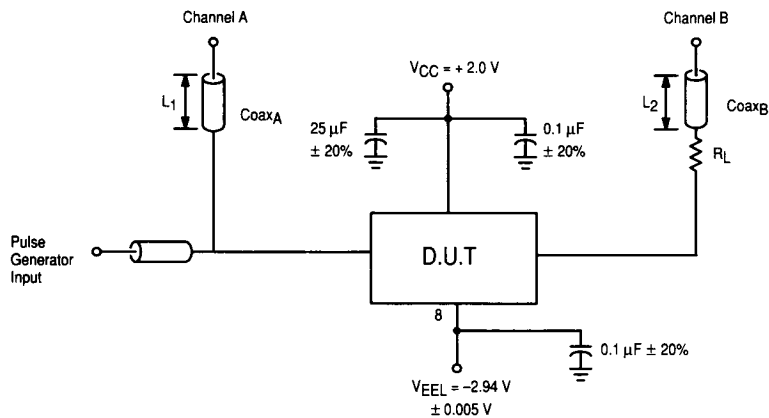
POSITIVE LOGIC DIAGRAM



10H561
TRUTH TABLE

Enable Inputs		Inputs			Outputs							
$\overline{E_1}$	$\overline{E_0}$	C	B	A	Q ₀	Q ₁	Q ₂	Q ₃	Q ₄	Q ₅	Q ₆	Q ₇
L	L	L	L	L	L	H	H	H	H	H	H	H
L	L	L	L	H	H	L	H	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	L	H	H	H	H	H	H	L	H
L	L	H	H	H	H	H	H	H	H	H	H	L
H	Ø	Ø	Ø	Ø	H	H	H	H	H	H	H	H
Ø	H	Ø	Ø	Ø	H	H	H	H	H	H	H	H

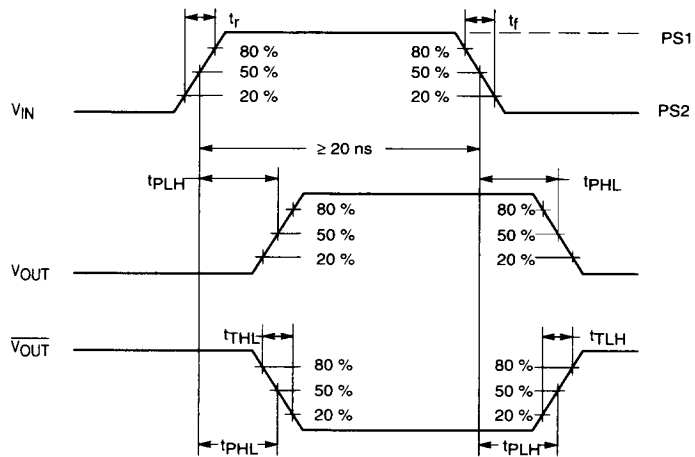
Ø = Don't Care



NOTES

1. All other outputs loaded 100 Ω to ground.
2. 2:1 divider may be used.
3. $L_1 = L_2$: Matched for equal time delay.
4. $R_L = 50 \Omega$.

Figure 1. Switching Test Circuit

**NOTES**

1. $V_{IN} = 20$ ns.
2. $f_{IN} = 1.0$ MHz.
3. $t_r = t_f = 1.0$ ns ± 0.1 ns (20% - 80%).

Figure 2. Switching Test Circuit Waveforms

10H561 QUIESCENT LIMIT TABLE*

* ELECTRICAL CHARACTERISTICS

Each MECL 10H series circuit 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 linear fpm is maintained. Outputs are terminated through a 100 Ω resistor to - 2.0 volts.

Test Temperature	Test Voltage Values (Volts)									
	V _{IH1}	V _{IL1}	V _{IH2}	V _{IL2}	PS ₁	PS ₂	VEE1	VEE2	VEEL	
T _A = 25 °C	-0.78	-1.95	-1.10	-1.480	+1.11	+0.31	-5.46	-4.94	-2.94	
T _A = 125 °C	-0.65	-1.95	-0.96	-1.465	+1.24	+0.36	-5.46	-4.94	-2.94	
T _A = -55 °C	-0.84	-1.95	-1.16	-1.510	+1.01	+0.28	-5.46	-4.94	-2.94	

Symbol	Parameter	Limits						Units	TEST VOLTAGE APPLIED TO PINS BELOW									
		+ 25 °C		+ 125 °C		- 55 °C			Pinouts referenced are for DIL package, check Pin Assignments V _{CC} = 0 V, Output Load = 100 Ω to - 2.0 V									
		Subgroup 1		Subgroup 2		Subgroup 3												
	Functional Parameters:	Min	Max	Min	Max	Min	Max		V _{IH1}	V _{IL1}	V _{IH2}	V _{IL2}	V _{EE1}	V _{EE2}	V _{CC}	P.U.T.		
V _{OH}	High Output Voltage	-1.01	-0.78	-0.86	-0.65	-1.06	-0.84	V	2, 7, 9				8		1, 16	3 - 6, 10 - 13		
V _{OL}	Low Output Voltage	-1.95	-1.58	-1.95	-1.535	-1.95	-1.61	V	7, 9, 14				8		1, 16	3 - 6, 10 - 13		
V _{OH1}	High Output Voltage	-1.01	-0.78	-0.86	-0.65	-1.06	-0.84	V	7, 9, 14		2, 7, 9 14, 15	7, 9, 14	8	8	1, 16	3 - 6, 10 - 13		
V _{OL1}	Low Output Voltage	-1.95	-1.58	-1.95	-1.535	-1.95	-1.61	V	7, 9, 14		7, 9, 14		8	8	1, 16	3 - 6, 10 - 13		
I _{EE}	Power Supply Current	-76		-84		-84		mA	2, 7, 9, 14, 15				8		1, 16	8		
I _{IH}	Input Current High		275		465		465	μA	2, 7, 9, 14, 15				8		1, 16	2, 7, 9, 14, 15		
I _{IL}	Input Current Low	0.5		0.3		0.5		μA		2, 7, 9, 14, 15			8		1, 16	2, 7, 9, 14, 15		

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QUIESCENT LIMIT TABLE *

* ELECTRICAL CHARACTERISTICS

Each MECL 10H series circuit 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 linear fpm is maintained. Outputs are terminated through a 100 Ω resistor to -2.0 volts.

Test Temperature	Test Voltage Values (Volts)									
	V _{IH1}	V _{IH2}	V _{IL2}	PS ₁	PS ₂	VEE ₁	VEE ₂	VEEL		
T _A = 25 °C	-0.78	-1.95	-1.10	-1.480	+1.11	+0.31	-5.46	-4.94	-2.94	
T _A = 125 °C	-0.65	-1.95	-0.96	-1.465	+1.24	+0.36	-5.46	-4.94	-2.94	
T _A = -55 °C	-0.84	-1.95	-1.16	-1.510	+1.01	+0.28	-5.46	-4.94	-2.94	

Symbol	Parameter	Limits						Units	TEST VOLTAGE APPLIED TO PINS BELOW								
	Functional Parameters:	+ 25 °C		+ 125 °C				- 55 °C		Pinouts referenced are for DIL package, check Pin Assignments VCC = 2.0 V, Output Load = 100 Ω to GND							
		Subgroup 9		Subgroup 10		Subgroup 11											
		Min	Max	Min	Max	Min	Max										
tTLH	Rise Time	0.55	1.5	0.6	1.6	0.55	1.5	ns	7,9 14,15	2,7,9,14	3-6,10-13	1,16	8	7,9 14	3-6 10-13		
tTHL	Fall Time	0.55	1.5	0.6	1.6	0.55	1.5	ns	7,9 14,15	2,7,9,14	3-6,10-13	1,16	8	7,9 14	3-6 10-13		
tPLH1	Propagation Delay Data	0.85	2.1	1.05	2.3	0.8	1.9	ns	7,9 14,15	2,7,9,14	3-6,10-13	1,16	8	7,9 14	3-6 10-13		
tPHL1	Propagation Delay Data	0.65	2.2	0.7	2.3	0.6	2.2	ns	7,9 14,15	2,7,9,14	3-6,10-13	1,16	8	7,9 14	3-6 10-13		
tPLH	Rise Time for Pins Enable	1.25	2.3	1.4	2.6	1.15	2.2	ns	7,9 14,15	2,7,9,14	3-6,10-13	1,16	8	7,9 14	3-6 10-13		
tPHL	Rise Time for Pins Enable	0.8	2.3	0.9	2.4	0.8	2.3	ns	7,9 14,15	2,7,9,14	3-6,10-13	1,16	8	7,9 14	3-6 10-13		
tPLH2	Propagation Delay Data	0.75	2.1	0.85	2.3	0.7	2.0	ns	7,9 14,15	2,7,9,14	3-6,10-13	1,16	8	7,9 14	3-6 10-13		
tPHL2	Propagation Delay Data	0.8	2.2	1.0	2.4	0.75	2.2	ns	7,9 14,15	2,7,9,14	3-6,10-13	1,16	8	7,9 14	3-6 10-13		