MOTOROLA

Dual TTL-to-MECL Translator

Military 10H524

ELECTRICALLY TESTED PER:
5962-8756001

The 10H524 is a quad translator for interfacing data and control signals between a saturated logic section and the MECL section of digital systems.

This 10H part is a functional/pinout duplication of the standard MECL 10K family part, with 100% improvement in propagation delay, and no increase in power-supply current.

- Propagation Delay, 1.5 ns Typical
- Improved Noise Margin 150 mV (Over Operating Voltage and Temperature Range)
- Voltage Compensated
- MECL 10K-Compatible

AVAILABLE AS

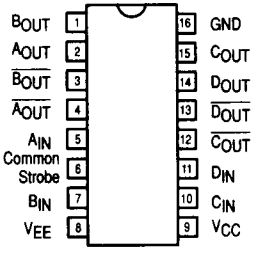
1) JAN: N/A
2) SMD: 5962-8756001
3) 883: 10H524/BXAJC
X = CASE OUTLINE AS FOLLOWS:

PACKAGE: CERDIP: E
CERFLAT: F
LCC: 2

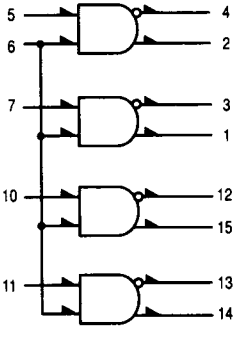
The letter "M" appears before the slash on LCC.

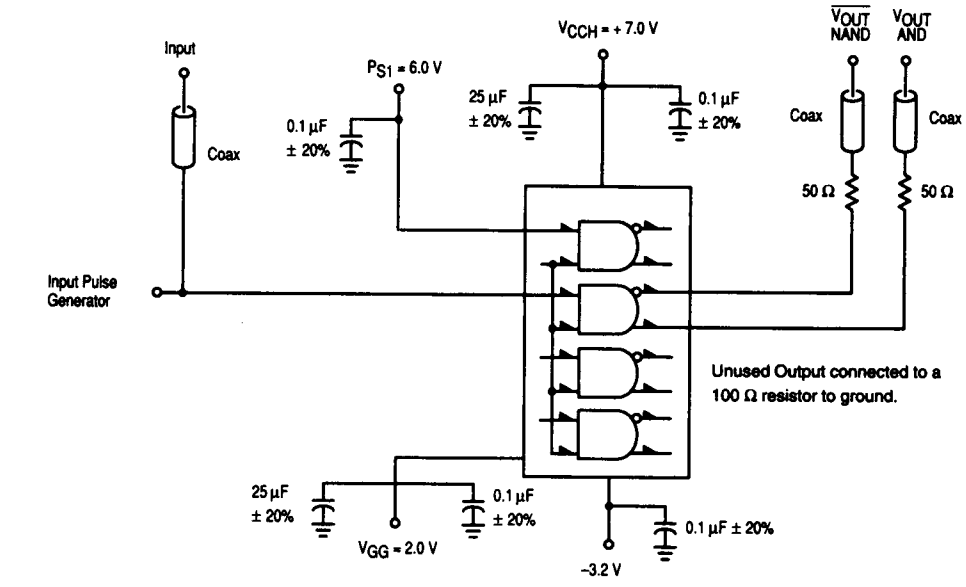
	PIN ASSIGNMENTS			
FUNCTION	**DIL**	**FLATS**	**LCC**	**BURN-IN (CONDITION C)**
B_{OUT}	1	5	2	51 Ω to V_{TT}
A_{OUT}	2	6	3	51 Ω to V_{TT}
$\overline{B_{OUT}}$	3	7	4	51 Ω to V_{TT}
$\overline{A_{OUT}}$	4	8	5	51 Ω to V_{TT}
A_{IN}	5	9	7	V_{CC}
Common Strobe	6	10	8	V_{CC}
B_{IN}	7	11	9	V_{CC}
V_{EE}	8	12	10	V_{EE}
V_{CC}	9	13	12	V_{CC}
C_{IN}	10	14	13	V_{CC}
D_{IN}	11	15	14	V_{CC}
$\overline{C_{OUT}}$	12	16	15	51 Ω to V_{TT}
$\overline{D_{OUT}}$	13	1	17	51 Ω to V_{TT}
D_{OUT}	14	2	18	51 Ω to V_{TT}
C_{OUT}	15	3	19	51 Ω to V_{TT}
GND	16	4	20	GND

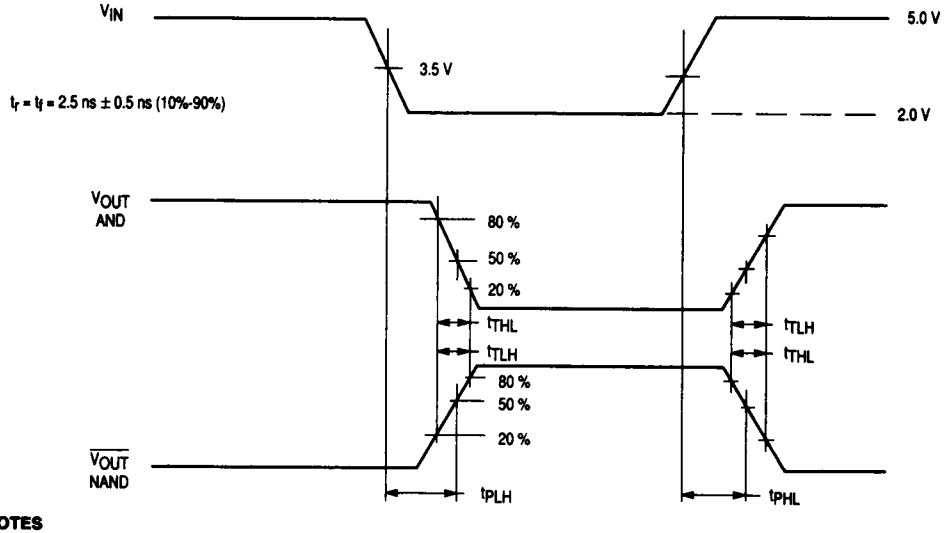
BURN - IN CONDITIONS:
V_{TT} = – 2.0 V MAX/ – 2.2 V MIN
V_{EE} = – 5.7 V MAX/ – 5.2 V MIN



POSITIVE LOGIC DIAGRAM







NOTES

1. 50 Ω termination to ground located in each scope channel input.
2. All input and output cables to the scope are equal lengths of 50 Ω coaxial cable. Wire length should be < 164 inch from TP_{IN} to input pin and TP_{OUT} to output pin.

Figure 1. Switching Test Circuit and Waveforms

10H524
QUIESCENT LIMIT TABLE*

Test Temperature	Test Voltage Values (Volts)												
	V_{IH1}	V_{IL1}	V_{RH}	V_R	V_F	P_{S1}	V_{EEL}	V_{EE1}	V_{EE2}	B_{VIN}	V_{CC}	V_{CCH}	V_{GG}
T_A=25 °C	+2.0	+0.8	+4.0	+2.4	+0.4	+6.0	–2.94	–5.46	–4.94	+5.5	+5.0	+7.0	+2.0
T_A=125 °C	+2.0	+0.8	+4.0	+2.4	+0.4	+6.0	–2.94	–5.46	–4.94	+5.5	+5.0	+7.0	+2.0
T_A=55 °C	+2.0	+0.8	+4.0	+2.4	+0.4	+6.0	–2.94	–5.46	–4.94	+5.5	+5.0	+7.0	+2.0

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 I_{D1} = – 10 mA, I_{D2} = – 20 mA Output Load = 100 Ω to GND								
		Subgroup 1		Subgroup 2		Subgroup 3											
		Min	Max	Min	Max	Min	Max		V_{IH1}	V_{IL1}	V_{IH2}	V_{IL2}	V_{EE1}	V_{EE2}	GND	V_{CC}	P. U. T.
V_{OH}	High Output Voltage	–1.01	–0.78	–0.86	–0.65	–1.06	–0.84	V			5 – 7	10, 11	8		16	9	1 – 4 12 – 15
V_{OL}	Low Output Voltage	–1.95	–1.58	–1.95	–1.565	–1.95	–1.61	V			5 – 7 10, 11	5, 7 10, 11	8		16	9	1 – 4 12 – 15
V_{OH1}	High Output Voltage	–1.01	–0.78	–0.86	–0.65	–1.06	–0.84	V	5 – 7 10, 11	5 – 7 10, 11	5 – 7 10, 11		8	8	16	9	1 – 4 12 – 15
V_{OL1}	Low Output Voltage	–1.95	–1.58	–1.95	–1.565	–1.95	–1.61	V	5 – 7 10, 11	5 – 7 10, 11	5 – 7 10, 11	7	8	8	16	9	1 – 4 12 – 15
I_{EE}	Power Supply Current	–66		–72		–72		mA					8		16	9	8
I_{F1}	Forward Current		–3.2		–3.2		–3.2	mA			6	5, 7 10, 11		8	16	9	5, 7 10, 11
I_{F2}	Forward Current		–12.8		–12.8		–12.8	mA			5, 7 10, 11			8	16	9	6

*** 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.

10H524
QUIESCENT LIMIT TABLE*

Test Temperature	Test Voltage Values (Volts)												
	V_{IH1}	V_{IL1}	V_{RH}	V_R	V_F	P_{S1}	V_{EEL}	V_{EE1}	V_{EE2}	B_{VIN}	V_{CC}	V_{CCH}	V_{GG}
T_A=25 °C	+2.0	+0.8	+4.0	+2.4	+0.4	+6.0	–2.94	–5.46	–4.94	+5.5	+5.0	+7.0	+2.0
T_A=125 °C	+2.0	+0.8	+4.0	+2.4	+0.4	+6.0	–2.94	–5.46	–4.94	+5.5	+5.0	+7.0	+2.0
T_A=55 °C	+2.0	+0.8	+4.0	+2.4	+0.4	+6.0	–2.94	–5.46	–4.94	+5.5	+5.0	+7.0	+2.0

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 I_{D1} = – 10 mA, I_{D2} = – 20 mA Output Load = 100 Ω to –2.0 V								
		Subgroup 1		Subgroup 2		Subgroup 3											
		Min	Max	Min	Max	Min	Max		V_F	V_R	V_{RH}	B_{VIN}	I_{D1}	I_{D2}	V_{EE1}	GND	V_{CC}
V_{ID}	Input Clamp Voltage		–1.5		–1.5		–1.5	V					5, 7 10, 11	6	8	16	5, 7 10, 11
I_{CCL}	Positive Power Supply Current Drain		25		25		25	mA	10					8		16	9
I_{CCH}	Positive Power Supply Current Drain		16		18		16	mA			5 - 7 10, 11				8	16	9
I_{IN}	Input Current		1.0		1.0		1.0	mA	6			5 - 7 10, 11			8	16	5, 7 10, 11
I_{R1}	Reverse Current		50		50		50	µA	6	5, 7 10, 11					8	16	5, 7 10, 11
I_{R2}	Reverse Current		200		200		200	µA	5, 7 10, 11	6					8	16	6

*** 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.

10H524
QUIESCENT LIMIT TABLE *

Test Temperature	Test Voltage Values (Volts)												
	V_{IH1}	V_{IL1}	V_{RH}	V_R	V_F	P_{S1}	V_{EEL}	V_{EE1}	V_{EE2}	B_{VIN}	V_{CC}	V_{CCH}	V_{GG}
T_A=25 °C	+2.0	+0.8	+4.0	+2.4	+0.4	+6.0	–2.94	–5.46	–4.94	+5.5	+5.0	+7.0	+2.0
T_A=125 °C	+2.0	+0.8	+4.0	+2.4	+0.4	+6.0	–2.94	–5.46	–4.94	+5.5	+5.0	+7.0	+2.0
T_A=55 °C	+2.0	+0.8	+4.0	+2.4	+0.4	+6.0	–2.94	–5.46	–4.94	+5.5	+5.0	+7.0	+2.0

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 I_{D1} = – 10 mA, I_{D2} = – 20 mA Output Load = 100 Ω to GND						
		Subgroup 9		Subgroup 10		Subgroup 11									
		Min	Max	Min	Max	Min	Max		V_{IN}	V_{OUT}	V_{CCH}	V_{EEL}	V_{GG}	P_{S1}	P.U.T
t_r	Rise Time	0.45	2.0	0.5	2.5	0.4	1.8	ns	5	4	9	8	16	6	1 – 3, 12 – 15
t_f	Fall Time	0.45	2.0	0.5	2.5	0.4	1.8	ns	5	4	9	8	16	6	1 – 3, 12 – 15
t_{PHL}	Propagation Delay Pin 6	0.55	2.5	0.85	3.6	0.5	2.0	ns	10	12	9	8	16	6	1 – 4, 13 – 15
t_{PLH}	Propagation Delay Pin 6	0.55	2.5	0.85	3.6	0.5	2.0	ns	10	12	9	8	16	6	1 – 4, 13 – 15
t_{PHL}	Propagation Delay Pins 5, 7, 10, 11	0.55	2.4	0.85	3.5	0.55	2.1	ns	10	12	9	8	16	6	1 – 4, 13 – 15
t_{PLH}	Propagation Delay Pins 5, 7, 10, 11	0.55	2.4	0.85	3.5	0.55	2.1	ns	10	12	9	8	16	6	1 – 4, 13 – 15

*** 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.