



# Dual MECL-to-TTL Translator

**ELECTRICALLY TESTED PER:  
5962-8750801**

The 10H525 is a quad translator for interfacing data and control signals between the MECL section and saturated logic 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, 2.5 ns Typical
- Improved Noise Margin 150 mV (Over Operating Voltage and Temperature Range)
- Voltage Compensated
- MECL 10K-Compatible

FUNCTION	PIN ASSIGNMENTS			BURN-IN (CONDITION C)
	DIL	FLATS	LCC	
V <sub>BB</sub>	1	5	2	V <sub>BB</sub>
$\overline{A}$ IN	2	6	3	2 K $\Omega$ to V <sub>EE</sub>
A <sub>IN</sub>	3	7	4	V <sub>BB</sub>
A <sub>OUT</sub>	4	8	5	360 $\Omega$ to V <sub>CC</sub>
B <sub>OUT</sub>	5	9	7	2 K $\Omega$ to V <sub>EE</sub>
$\overline{B}$ IN	6	10	8	V <sub>BB</sub>
B <sub>IN</sub>	7	11	9	V <sub>CC</sub>
V <sub>EE</sub>	8	12	10	V <sub>EE</sub>
V <sub>CC</sub>	9	13	12	V <sub>CC</sub>
$\overline{C}$ IN	10	14	13	V <sub>BB</sub>
C <sub>IN</sub>	11	15	14	2 K $\Omega$ to V <sub>EE</sub>
C <sub>OUT</sub>	12	16	15	360 $\Omega$ to V <sub>CC</sub>
D <sub>OUT</sub>	13	1	17	360 $\Omega$ to V <sub>CC</sub>
$\overline{D}$ IN	14	2	18	V <sub>BB</sub>
D <sub>IN</sub>	15	3	19	2 K $\Omega$ to GND
GND	16	4	20	GND

**BURN - IN CONDITIONS:**  
**V<sub>TT</sub> = - 2.0 V MAX/ - 2.2 V MIN**  
**V<sub>EE</sub> = - 5.7 V MAX/ - 5.2 V MIN**

## Military 10H525

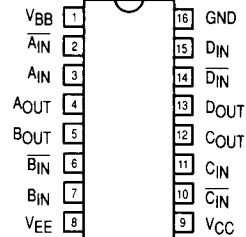


### AVAILABLE AS

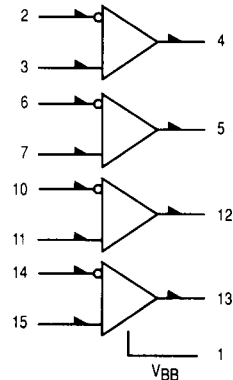
- 1) JAN: N/A
  - 2) SMD: 5962-8750801
  - 3) 883: 10H525/BXAJC
- X = CASE OUTLINE AS FOLLOWS:

PACKAGE: CERDIP: E  
 CERFLAT: F  
 LCC: 2

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



### LOGIC DIAGRAM

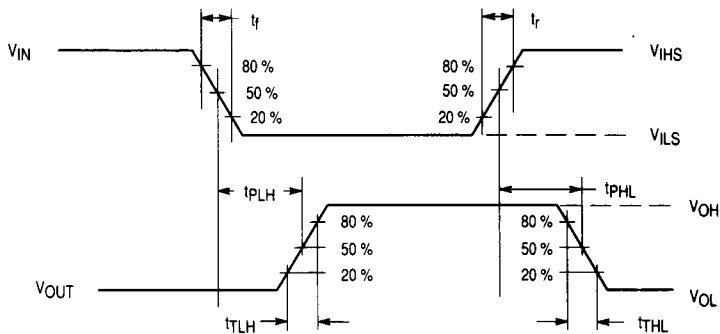
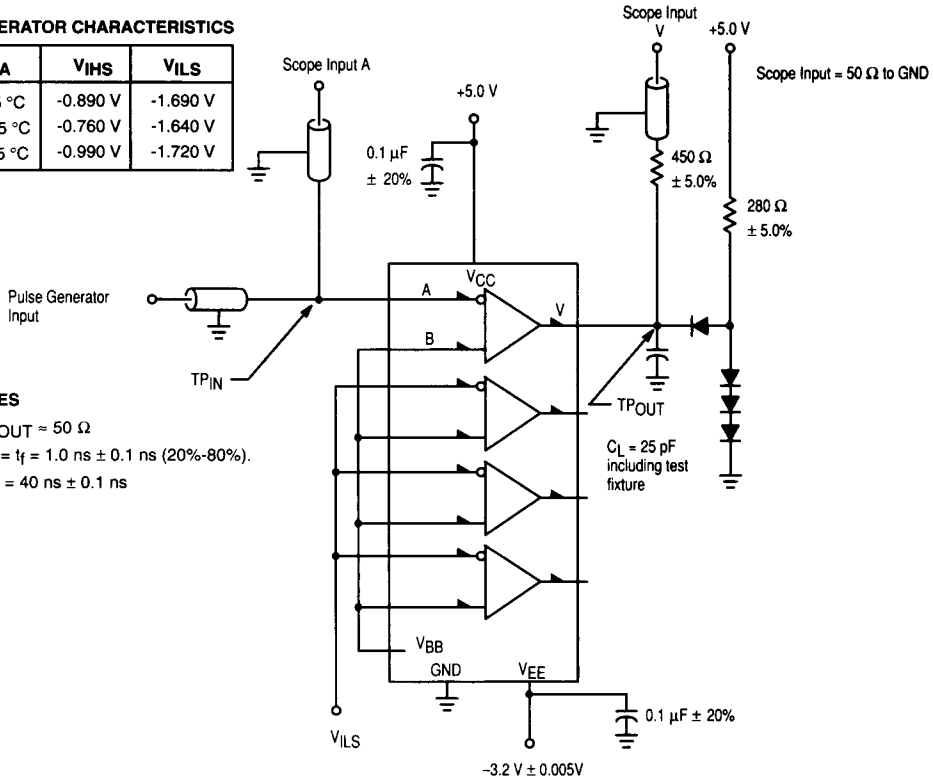


**GENERATOR CHARACTERISTICS**

T <sub>A</sub>	V <sub>IHS</sub>	V <sub>I LS</sub>
25 °C	-0.890 V	-1.690 V
125 °C	-0.760 V	-1.640 V
-55 °C	-0.990 V	-1.720 V

**NOTES**

1. Z<sub>OUT</sub> ≈ 50 Ω
2. t<sub>r</sub> = t<sub>f</sub> = 1.0 ns ± 0.1 ns (20%-80%).
3. t<sub>p</sub> = 40 ns ± 0.1 ns



**NOTES**

1. Perform test in accordance with test table; each output is tested separately.
2. All input and output cables are equal lengths of 50 Ω coaxial cable. Wire length should be < 0.250 inch (6.35 mm) from TP<sub>IN</sub> to input pin and TP<sub>OUT</sub> to output pin.Ω
3. All diodes are 1N3064 or equivalent.Ω

**Figure 1. Switching Test Circuit and Waveforms**

# 10H525 QUIESCENT LIMIT TABLE \*

Test Temperature	Test Voltage Values (Volts)														Test Current (milliamps)				
	V <sub>IH</sub>	V <sub>IL</sub>	V <sub>IHA</sub>	V <sub>ILA</sub>	P <sub>S1</sub>	P <sub>S2</sub>	V <sub>EE</sub>	V <sub>EE1</sub>	V <sub>EE2</sub>	V <sub>IHH</sub>	V <sub>ILH</sub>	V <sub>IHL</sub>	V <sub>ILL</sub>	V <sub>CC</sub>		V <sub>BB</sub>	V <sub>IHS</sub>	V <sub>ILS</sub>	I <sub>OH</sub>
T <sub>A</sub> = 25 °C	-0.78	-1.95	-1.11	-1.48	-0.89	-1.69	-5.2	-5.46	-4.94	+0.22	-0.95	-1.78	-2.95	+5.0	Pin 1	-0.89	-1.69	-2.0	+20
T <sub>A</sub> = 125 °C	-0.65	-1.95	-0.96	-1.465	-0.76	-1.64	-5.2	-5.46	-4.94	+0.35	-0.95	-1.65	-2.95	+5.0	Pin 1	-0.76	-1.64	-2.0	+20
T <sub>A</sub> = -55 °C	-0.84	-1.95	-1.16	-1.51	-0.99	-1.72	-5.2	-5.46	-4.94	+0.16	-0.95	-1.84	-2.95	+5.0	Pin 1	-0.99	-1.72	-2.0	+20

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 GND = (Pin 16), Output Load = 100 Ω to GND									
		Subgroup 1 Min	Subgroup 1 Max	Subgroup 2 Min	Subgroup 2 Max	Subgroup 3 Min	Subgroup 3 Max		V <sub>IH</sub>	V <sub>IHH</sub>	V <sub>IHL</sub>	V <sub>IL</sub>	V <sub>OLL</sub>	V <sub>ILH</sub>	V <sub>EE1/2</sub>	V <sub>OH</sub>	P. U. T.	
VOH	High Output Voltage	2.5		2.5		2.5		V	3.7 11, 15	3.7 11, 15	3.7 11, 15	2, 3, 6 7, 10 11, 14, 15	2, 6, 10, 11, 14	8	4.5 12, 13	4, 5, 12, 13		
VOL	Low Output Voltage	0.5		0.5		0.5		V	2, 3, 6 7, 11 15	2, 6 10, 14	2, 3, 6 3, 7, 11, 15	4.5 12, 13	3, 7 11, 15	8	4, 5, 12, 13			
VOLS	Output Voltage	0.5		0.5		0.5		V				4.5 12, 13		2, 3, 6 7, 8, 10, 11, 14, 15	4	4, 5, 12, 13		

**\* 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.

# 10H525 QUIESCENT LIMIT TABLE\*

Test Temperature	Test Voltage Values (Volts)														Test Current (milliAmps)			
	V <sub>IH</sub>	V <sub>IL</sub>	V <sub>IHA</sub>	V <sub>ILA</sub>	V <sub>S1</sub>	PS <sub>2</sub>	VEE	VEE1	VEE2	V <sub>IHH</sub>	V <sub>IHL</sub>	V <sub>IHL</sub>	V <sub>IHL</sub>	V <sub>ILL</sub>		V <sub>CC</sub>	V <sub>BB</sub>	V <sub>IHS</sub>
T <sub>A</sub> = 25 °C	-0.78	-1.95	-1.11	-1.48	-0.89	-1.69	-5.2	-5.46	-4.94	+0.22	-0.95	-1.78	-2.95	+5.0	Pin 1	-0.89	-1.69	-2.0
T <sub>A</sub> = 125 °C	-0.65	-1.95	-0.96	-1.465	-0.76	-1.64	-5.2	-5.46	-4.94	+0.35	-0.95	-1.65	-2.95	+5.0	Pin 1	-0.76	-1.64	-2.0
T <sub>A</sub> = -55 °C	-0.84	-1.95	-1.16	-1.51	-0.99	-1.72	-5.2	-5.46	-4.94	+0.16	-0.95	-1.84	-2.95	+5.0	Pin 1	-0.99	-1.72	-2.0

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 GND = (Pin 16), Output Load = 100 Ω to GND													
		Subgroup 1		Subgroup 2		Subgroup 3			V <sub>IH</sub>	V <sub>IHA</sub>	V <sub>IL</sub>	V <sub>IHL</sub>	V <sub>ILL</sub>	V <sub>CC</sub>	V <sub>BB</sub>	V <sub>IHS</sub>	V <sub>ILS</sub>	I <sub>OH</sub>	P. U. T.			
VOH1	High Output Voltage	2.5		2.5		2.5	V			2.6	2.6	1.3, 7	1.3, 7			8	4.5	4.5, 12, 13				
VOL1	Low Output Voltage	0.5		0.5		0.5	V			2.6	2.6	1.3, 7	1.3, 7			8	4.5	4.5, 12, 13				
VBB	Reference Voltage	-1.37	-1.25	-1.31	-1.19	-1.41	-1.27	V				1.3, 7	1.3, 7	8				1				
I <sub>EE</sub>	Power Supply Current	-40		-44		-44	mA					1.3, 7	2.6	2.6	10, 14	8		8				
I <sub>CC1</sub>	Positive Power	40		40		40	mA					1.3, 7	2.6	2.6	10, 14	8		9				
I <sub>CC2</sub>	Supply Drain Current	63		63		63	mA			2.6	10, 14	1.3, 7	1.3, 7	8				9				
I <sub>CB0</sub>	Input Leakage Current	-1.0		-1.0		-1.5	μA					1.2, 3	6, 7, 10, 11, 14, 15	2, 3, 6	7, 8, 10, 11, 15			2, 3, 6, 7, 10, 11, 14, 15				
I <sub>OS</sub>	Short Circuit Current	-150	-60	-150	-60	-150	-60	mA		2.6	10, 14	1.3, 7	1.3, 7	8				4, 5, 12, 13				
I <sub>INH</sub>	Input Current	145		225		225	μA			2, 3, 6	7, 10, 11, 14, 15	1.2, 3	6, 7, 10, 11, 14, 15	8				2, 3, 6, 7, 10, 11, 14, 15				

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	V <sub>IH</sub>	V <sub>IL</sub>	V <sub>IHA</sub>	V <sub>ILA</sub>	PS1	PS2	V <sub>EE</sub>	V <sub>EE1</sub>	V <sub>EE2</sub>	V <sub>IHH</sub>	V <sub>IHL</sub>	V <sub>IHL</sub>	V <sub>IHL</sub>	V <sub>ILL</sub>	V <sub>CC</sub>	V <sub>BB</sub>		V <sub>IHS</sub>
T <sub>A</sub> = 25 °C	-0.78	-1.95	-1.11	-1.48	-0.89	-1.69	-5.2	-5.46	-4.94	+0.22	-0.95	-1.78	-2.95	+5.0	Pin 1	-0.89	-1.69	-2.0
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T <sub>A</sub> = -55 °C	-0.84	-1.95	-1.16	-1.51	-0.99	-1.72	-5.2	-5.46	-4.94	+0.16	-0.95	-1.84	-2.95	+5.0	Pin 1	-0.99	-1.72	-2.0

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 GND = (Pin 16), Output Load = (See Figure 1).							
		Subgroup 9	Subgroup 10	Subgroup 9	Subgroup 10	Subgroup 11	V <sub>IN</sub>		V <sub>out</sub>	V <sub>BB</sub>	V <sub>EE2</sub>	V <sub>ILS</sub>	PS2	P.U.T.		
t <sub>TLH</sub>	Rise Time	0.3	1.3	0.3	2.0	0.3	1.4	ns	2, 6, 10, 14	4, 5, 12, 13	1, 3, 7, 11, 15	8	2, 6, 10, 14	10	4, 5, 12, 13	
t <sub>THL</sub>	Fall Time	0.3	1.3	0.3	2.0	0.3	1.4	ns	2, 6, 10, 14	4, 5, 12, 13	1, 3, 7, 11, 15	8	2, 6, 10, 14	10	4, 5, 12, 13	
t <sub>PHL/PLH</sub>	Propagation Delay	0.85	3.2	0.9	3.5	0.8	2.9	ns	2, 6, 10, 14	4, 5, 12, 13	1, 3, 7, 11, 15	8	2, 6, 10, 14	10	4, 5, 12, 13	

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