

# Quad TTL-to-MECL Translator With TTL Strobe Input

The MC10H124 is a quad translator for interfacing data and control signals between a saturated logic section and the MECL section of digital systems. The 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

## MAXIMUM RATINGS

Characteristic	Symbol	Rating	Unit
Power Supply ( $V_{CC} = 5.0$ V)	$V_{EE}$	-8.0 to 0	Vdc
Power Supply ( $V_{EE} = -5.2$ V)	$V_{CC}$	0 to +7.0	Vdc
Input Voltage ( $V_{CC} = 5.0$ V) TTL	$V_I$	0 to $V_{CC}$	Vdc
Output Current — Continuous — Surge	$I_{out}$	50 100	mA
Operating Temperature Range	$T_A$	0 to +75	°C
Storage Temperature Range — Plastic — Ceramic	$T_{stg}$	-55 to +150 -55 to +165	°C

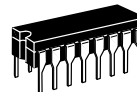
## ELECTRICAL CHARACTERISTICS ( $V_{EE} = -5.2$ V $\pm 5\%$ , $V_{CC} = 5.0$ V $\pm 5.0\%$ )

Characteristic	Symbol	0°		25°		75°		Unit
		Min	Max	Min	Max	Min	Max	
Negative Power Supply Drain Current	$I_E$	—	72	—	66	—	72	mA
Positive Power Supply Drain Current	$I_{CCH}$	—	16	—	16	—	18	mA
	$I_{CCL}$	—	25	—	25	—	25	mA
Reverse Current Pin 6 Pin 7	$I_R$	—	200	—	200	—	200	$\mu$ A
		—	50	—	50	—	50	
Forward Current Pin 6 Pin 7	$I_F$	—	-12.8	—	-12.8	—	-12.8	mA
		—	-3.2	—	-3.2	—	-3.2	
Input Breakdown Voltage	$V_{(BR)in}$	5.5	—	5.5	—	5.5	—	Vdc
Input Clamp Voltage	$V_I$	—	-1.5	—	-1.5	—	-1.5	Vdc
High Output Voltage	$V_{OH}$	-1.02	-0.84	-0.98	-0.81	-0.92	-0.735	Vdc
Low Output Voltage	$V_{OL}$	-1.95	-1.63	-1.95	-1.63	-1.95	-1.60	Vdc
High Input Voltage	$V_{IH}$	2.0	—	2.0	—	2.0	—	Vdc
Low Input Voltage	$V_{IL}$	—	0.8	—	0.8	—	0.8	Vdc

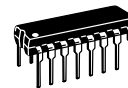
### NOTE:

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 lfm is maintained. Outputs are terminated through a 50-ohm resistor to -2.0 volts.

## MC10H124



**L SUFFIX**  
CERAMIC PACKAGE  
CASE 620-10

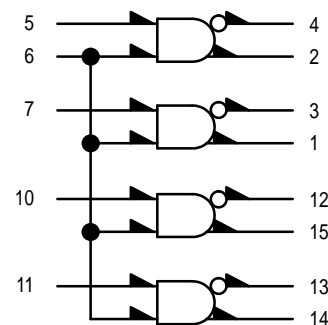


**P SUFFIX**  
PLASTIC PACKAGE  
CASE 648-08



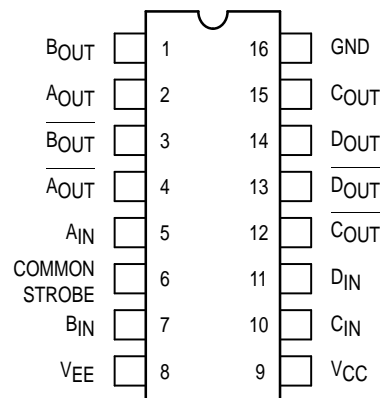
**FN SUFFIX**  
PLCC  
CASE 775-02

## LOGIC DIAGRAM



GND = PIN 16  
 $V_{CC}$  (+5.0 VDC) = PIN 9  
 $V_{EE}$  (-5.2 VDC) = PIN 8

## DIP PIN ASSIGNMENT



Pin assignment is for Dual-in-Line Package.  
For PLCC pin assignment, see the Pin Conversion  
Tables on page 6-36 of the Motorola MECL Data  
Book (DL122/D).



**ELECTRICAL CHARACTERISTICS** ( $V_{EE} = -5.2\text{ V} \pm 5\%$ ,  $V_{CC} = 5.0\text{ V} \pm 5.0\%$ )

Characteristic	Symbol	0°		25°		75°		Unit
		Min	Max	Min	Max	Min	Max	

**AC PARAMETERS**

Propagation Delay	$t_{pd}$	0.55	2.25	0.55	2.4	0.85	2.95	ns
Rise Time	$t_r$	0.5	1.5	0.5	1.6	0.5	1.7	ns
Fall Time	$t_f$	0.5	1.5	0.5	1.6	0.5	1.7	ns

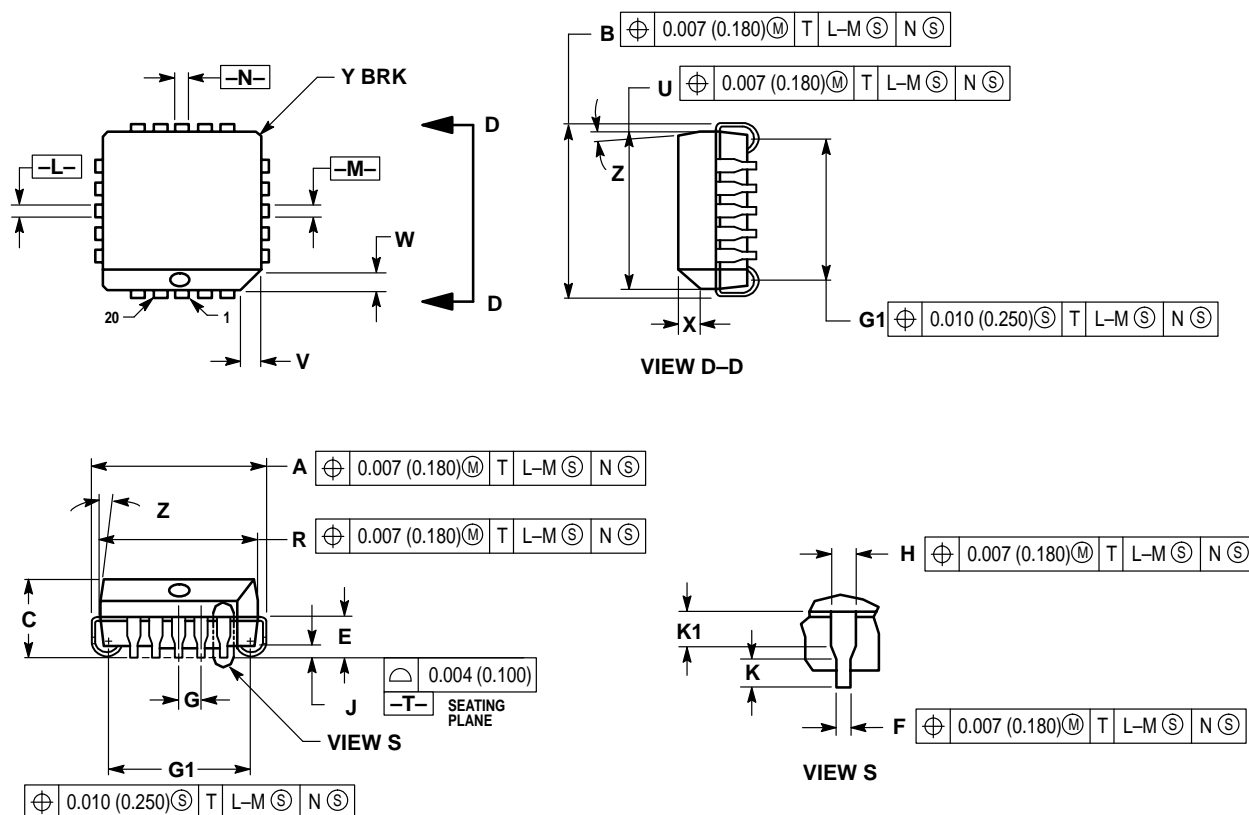
**APPLICATIONS INFORMATION**

The MC10H124 has TTL-compatible inputs and MECL complementary open-emitter outputs that allow use as an inverting/non-inverting translator or as a differential line driver. When the common strobe input is at the low-logic level, it forces all true outputs to a MECL low-logic state and all inverting outputs to a MECL high-logic state.

An advantage of this device is that TTL-level information can be transmitted differentially, via balanced twisted pair lines, to MECL equipment, where the signal can be received by the MC10H115 or MC10H116 differential line receivers. The power supply requirements are ground, +5.0 volts, and -5.2 volts.

## OUTLINE DIMENSIONS

FN SUFFIX  
PLASTIC PLCC PACKAGE  
CASE 775-02  
ISSUE C

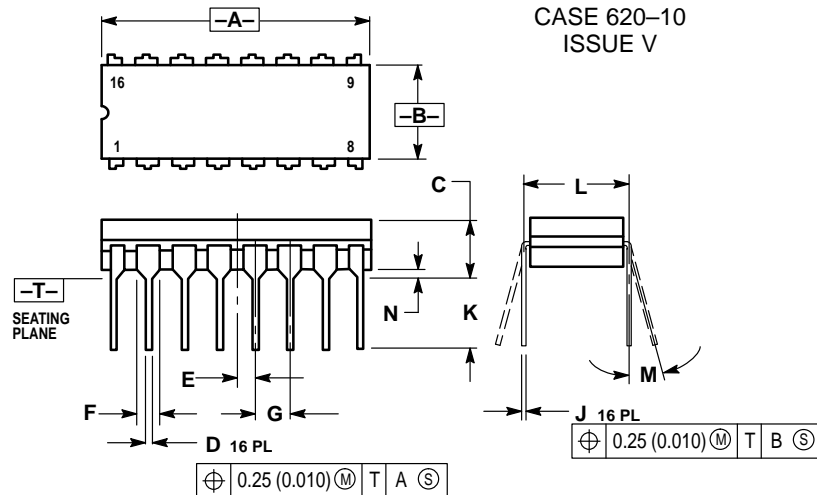


## NOTES:

- DATUMS -L-, -M-, AND -N- DETERMINED WHERE TOP OF LEAD SHOULDER EXITS PLASTIC BODY AT MOLD PARTING LINE.
- DIMENSION G1, TRUE POSITION TO BE MEASURED AT DATUM -T-, SEATING PLANE.
- DIMENSIONS R AND U DO NOT INCLUDE MOLD FLASH. ALLOWABLE MOLD FLASH IS 0.010 (0.250) PER SIDE.
- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
- CONTROLLING DIMENSION: INCH.
- THE PACKAGE TOP MAY BE SMALLER THAN THE PACKAGE BOTTOM BY UP TO 0.012 (0.300). DIMENSIONS R AND U ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY EXCLUSIVE OF MOLD FLASH, TIE BAR BURRS, GATE BURRS AND INTERLEAD FLASH, BUT INCLUDING ANY MISMATCH BETWEEN THE TOP AND BOTTOM OF THE PLASTIC BODY.
- DIMENSION H DOES NOT INCLUDE DAMBAR PROTRUSION OR INTRUSION. THE DAMBAR PROTRUSION(S) SHALL NOT CAUSE THE H DIMENSION TO BE GREATER THAN 0.037 (0.940). THE DAMBAR INTRUSION(S) SHALL NOT CAUSE THE H DIMENSION TO BE SMALLER THAN 0.025 (0.635).

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.385	0.395	9.78	10.03
B	0.385	0.395	9.78	10.03
C	0.165	0.180	4.20	4.57
E	0.090	0.110	2.29	2.79
F	0.013	0.019	0.33	0.48
G	0.050 BSC		1.27 BSC	
H	0.026	0.032	0.66	0.81
J	0.020	—	0.51	—
K	0.025	—	0.64	—
R	0.350	0.356	8.89	9.04
U	0.350	0.356	8.89	9.04
V	0.042	0.048	1.07	1.21
W	0.042	0.048	1.07	1.21
X	0.042	0.056	1.07	1.42
Y	—	0.020	—	0.50
Z	2°	10°	2°	10°
G1	0.310	0.330	7.88	8.38
K1	0.040	—	1.02	—

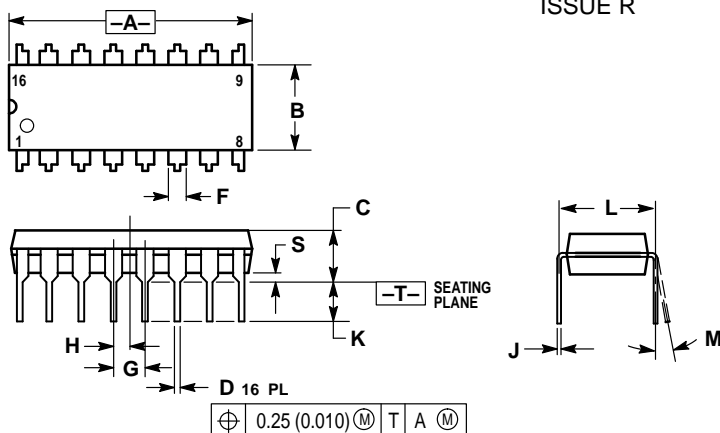
## OUTLINE DIMENSIONS

**L SUFFIX**  
 CERAMIC DIP PACKAGE  
 CASE 620-10  
 ISSUE V


## NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.
4. DIMENSION F MAY NARROW TO 0.76 (0.030) WHERE THE LEAD ENTERS THE CERAMIC BODY.


DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.750	0.785	19.05	19.93
B	0.240	0.295	6.10	7.49
C	—	0.200	—	5.08
D	0.015	0.020	0.39	0.50
E	0.050 BSC		1.27 BSC	
F	0.055	0.065	1.40	1.65
G	0.100 BSC		2.54 BSC	
H	0.008	0.015	0.21	0.38
K	0.125	0.170	3.18	4.31
L	0.300 BSC		7.62 BSC	
M	0°	15°	0°	15°
N	0.020	0.040	0.51	1.01

**P SUFFIX**  
 PLASTIC DIP PACKAGE  
 CASE 648-08  
 ISSUE R


## NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION L TO CENTER OF LEADS WHEN FORMED PARALLEL.
4. DIMENSION B DOES NOT INCLUDE MOLD FLASH.
5. ROUNDED CORNERS OPTIONAL.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.740	0.770	18.80	19.55
B	0.250	0.270	6.35	6.85
C	0.145	0.175	3.69	4.44
D	0.015	0.021	0.39	0.53
F	0.040	0.70	1.02	1.77
G	0.100 BSC		2.54 BSC	
H	0.050 BSC		1.27 BSC	
J	0.008	0.015	0.21	0.38
K	0.110	0.130	2.80	3.30
L	0.295	0.305	7.50	7.74
M	0°	10°	0°	10°
S	0.020	0.040	0.51	1.01

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