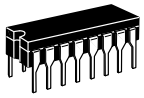
Quad TTL-to-ECL Translator with ECL Strobe

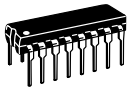
MC10H424

The MC10H424 is a Quad TTL–to–ECL translator with an ECL strobe. Power supply requirements are ground, +5.0 volts, and –5.2 volts.

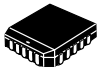
- Propagation Delay, 1.5 ns Typical
- Improved Noise Margin 150 mV (Over Operating Voltage and Temperature Range)
- Voltage Compensated
- MECL 10K — Compatible



L SUFFIX
CERAMIC PACKAGE
CASE 620–10

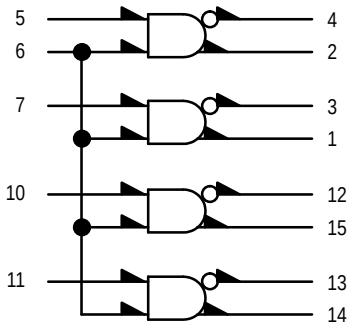


P SUFFIX
PLASTIC PACKAGE
CASE 648–08



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

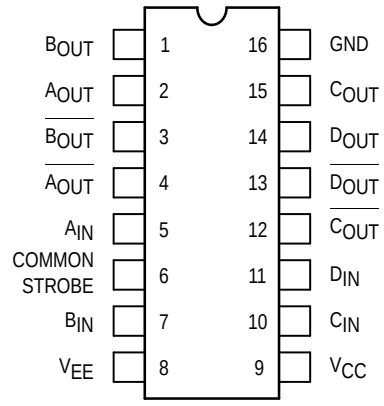
MAXIMUM RATINGS

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 (ECL)	V_I	0 to V_{EE}	Vdc
Input Voltage (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 ± 5%, V_{CC} = 5.0 V ± 5.0%)

Characteristic	Symbol	0°		25°		75°		Unit
		Min	Max	Min	Max	Min	Max	
Negative Power Supply Drain Current	I_E	—	72	—	66	—	72	mAdc
Positive Power Supply Drain Current	I_{CCH}	—	16	—	16	—	18	mAdc
	I_{CCL}	—	25	—	25	—	25	mAdc
Reverse Current Pin 5,7,10,11	I_R	—	50	—	50	—	50	µAdc
Forward Current Pin 5,7,10,11	I_F	—	–3.2	—	–3.2	—	–3.2	mAdc
Input HIGH Current Pin 6	I_{inH}	—	450	—	310	—	310	µAdc
Input LOW Current Pin 6	I_{inL}	0.5	—	0.5	—	0.3	—	µAdc
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 Pin 5,7,10,11	V_{IH}	2.0	—	2.0	—	+2.0	—	Vdc
Low Input Voltage Pin 5,7,10,11	V_{IL}	—	0.8	—	0.8	—	0.8	Vdc
High Input Voltage Pin 6	V_{IH}	–1.17	–0.84	–1.13	–0.81	–1.07	–0.735	Vdc
Low Input Voltage Pin 6	V_{IL}	–1.95	–1.48	–1.95	–1.48	–1.95	–1.45	Vdc

DIP PIN ASSIGNMENT



Pin assignment is for Dual–in–Line Package.
For PLCC pin assignment, see the Pin Conversion Tables on page 6–11 of the Motorola MECL Data Book (DL122/D).

MOTOROLA

AC PARAMETERS

Propagation Delay	t_{pd}							ns
Data		0.5	2.2	0.5	2.3	0.5	2.4	
Strobe		0.5	2.2	0.5	2.3	0.5	2.4	
Rise Time	t_r	0.5	2.0	0.5	2.0	0.5	2.2	ns
Fall Time	t_f	0.5	2.0	0.5	2.0	0.5	2.2	ns

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 lfpm is maintained. Outputs are terminated through a 50–ohm resistor to –2.1 volts.

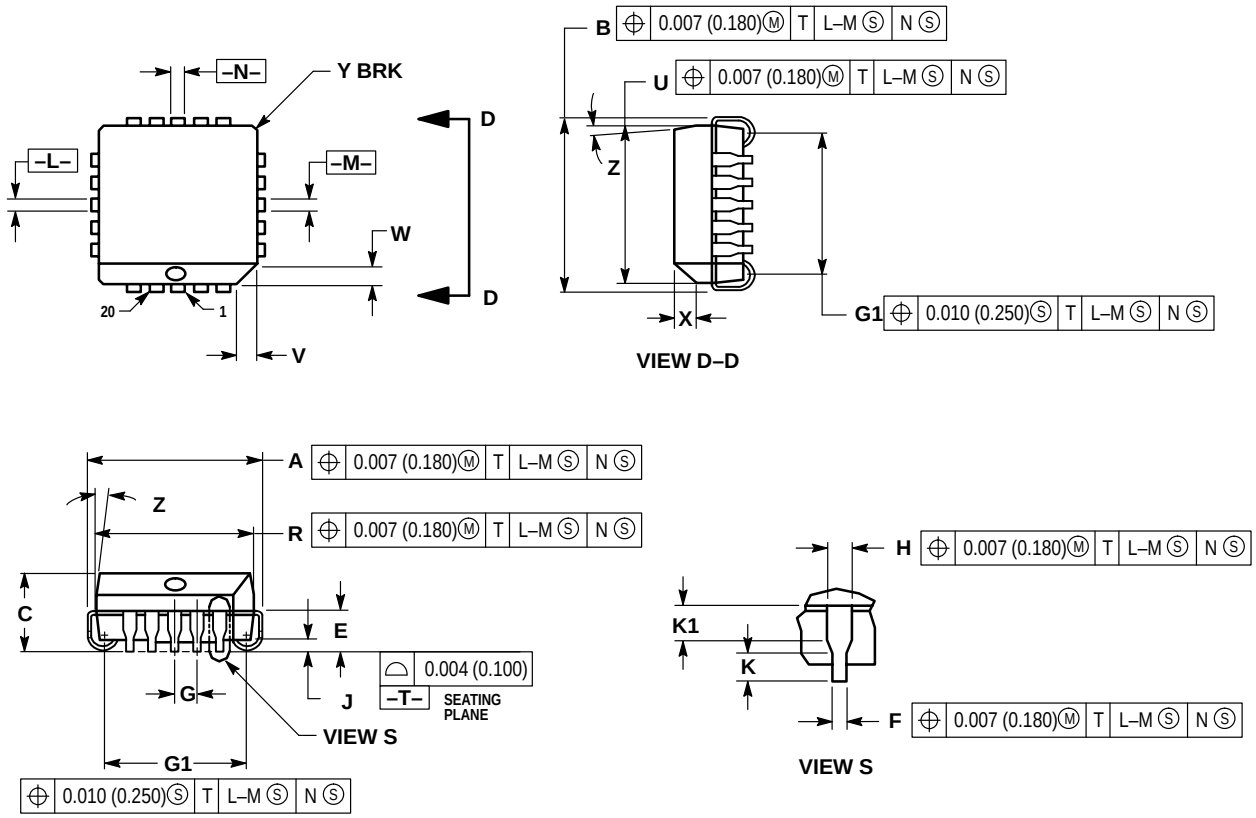
APPLICATIONS INFORMATION

The MC10H424 has TTL–compatible inputs, an ECL strobe 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.

OUTLINE DIMENSIONS

FN SUFFIX
PLASTIC PLCC PACKAGE
CASE 775–02
ISSUE C

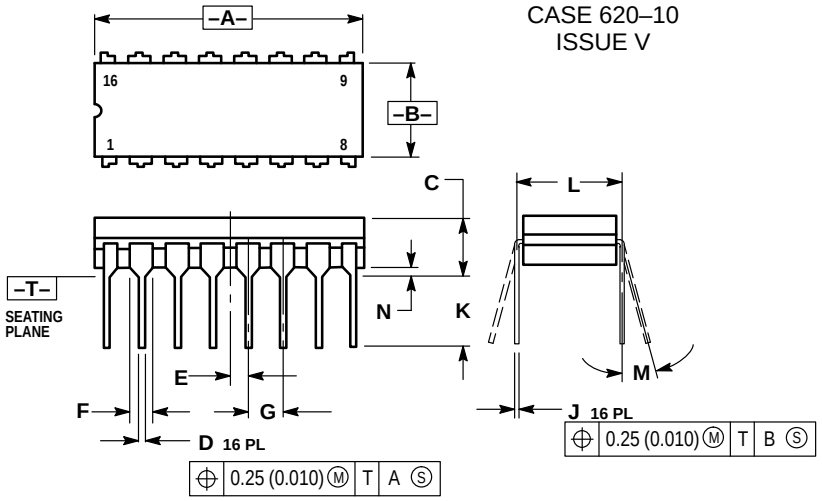


NOTES:
1. DATUMS –L–, –M–, AND –N– DETERMINED WHERE TOP OF LEAD SHOULDER EXITS PLASTIC BODY AT MOLD PARTING LINE.
2. DIMENSION G1, TRUE POSITION TO BE MEASURED AT DATUM –T–, SEATING PLANE.
3. DIMENSIONS R AND U DO NOT INCLUDE MOLD FLASH. ALLOWABLE MOLD FLASH IS 0.010 (0.250) PER SIDE.
4. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
5. CONTROLLING DIMENSION: INCH.
6. 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.
7. 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).

	INCHES		MILLIMETERS	
DIM	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

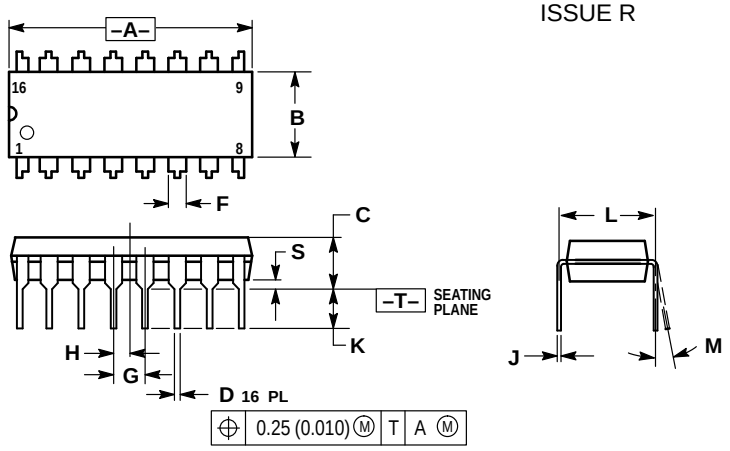
L SUFFIX
CERAMIC DIP PACKAGE
CASE 620–10
ISSUE V



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.

	INCHES		MILLIMETERS	
DIM	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.

	INCHES		MILLIMETERS	
DIM	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

How to reach us:
USA/EUROPE/Locations Not Listed: Motorola Literature Distribution;
P.O. Box 20912; Phoenix, Arizona 85036. 1–800–441–2447 or 602–303–5454

MFAX: RMFAX0@email.sps.mot.com – TOUCHTONE 602–244–6609
INTERNET: http://Design–NET.com

JAPAN: Nippon Motorola Ltd.; Tatsumi–SPD–JLDC, 6F Seibu–Butsuryu–Center, 3–14–2 Tatsumi Koto–Ku, Tokyo 135, Japan. 03–81–3521–8315

ASIA/PACIFIC: Motorola Semiconductors H.K. Ltd.; 8B Tai Ping Industrial Park, 51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852–26629298