

# MC10H424

## Quad TTL to ECL Translator with ECL Strobe

### Description

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

### Features

- Propagation Delay, 1.5 ns Typical
- Improved Noise Margin 150 mV (Over Operating Voltage and Temperature Range)
- Voltage Compensated
- MECL 10K™ Compatible
- Pb-Free Packages are Available\*

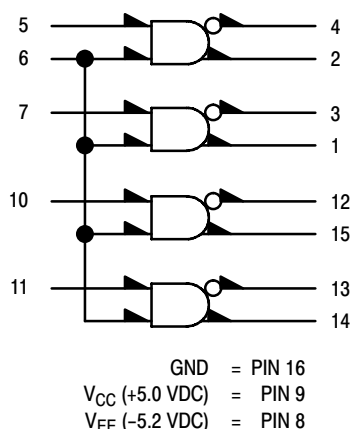
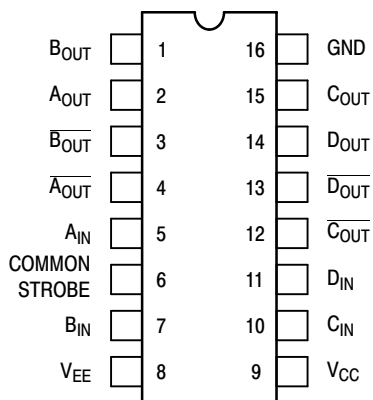


Figure 1. Logic Diagram



Pin assignment is for Dual-in-Line Package.

Figure 2. Pin Assignment

For PLCC pin assignment see TND309/D (<http://www.onsemi.com>), page 9, Pin Conversion Table.

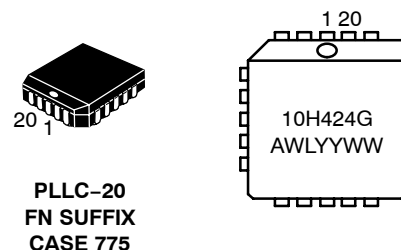
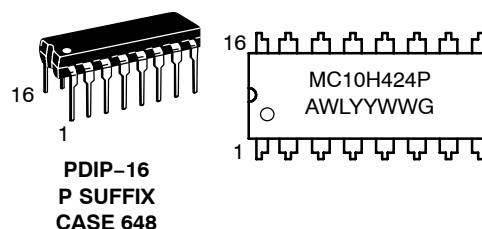
\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



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### MARKING DIAGRAMS\*



A = Assembly Location  
 WL, L = Wafer Lot  
 YY, Y = Year  
 WW, W = Work Week  
 G = Pb-Free Package

\*For additional marking information, refer to Application Note AND8002/D.

### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 3 of this data sheet.

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**Table 1. MAXIMUM RATINGS**

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

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

**Table 2. ELECTRICAL CHARACTERISTICS** ( $V_{EE} = -5.2\text{ V} \pm 5\%$ ,  $V_{CC} = 5.0\text{ V} \pm 5.0\%$ )

Symbol	Characteristic	0°		25°		75°		Unit
		Min	Max	Min	Max	Min	Max	
$I_E$	Negative Power Supply Drain Current	–	72	–	66	–	72	mAdc
$I_{CCH}$	Positive Power Supply Drain Current	–	16	–	16	–	18	mAdc
$I_{CCL}$		–	25	–	25	–	25	mAdc
$I_R$	Reverse Current Pin 5,7,10,11	–	50	–	50	–	50	μAdc
$I_F$	Forward Current Pin 5,7,10,11	–	-3.2	–	-3.2	–	-3.2	mAdc
$I_{inH}$	Input HIGH Current Pin 6	–	450	–	310	–	310	μAdc
$I_{inL}$	Input LOW Current Pin 6	0.5	–	0.5	–	0.3	–	μAdc
$V_{(BR)in}$	Input Breakdown Voltage	5.5	–	5.5	–	5.5	–	Vdc
$V_I$	Input Clamp Voltage	–	-1.5	–	-1.5	–	-1.5	Vdc
$V_{OH}$	High Output Voltage	-1.02	-0.84	-0.98	-0.81	-0.92	-0.735	Vdc
$V_{OL}$	Low Output Voltage	-1.95	-1.63	-1.95	-1.63	-1.95	-1.60	Vdc
$V_{IH}$	High Input Voltage Pin 5,7,10,11	2.0	–	2.0	–	+2.0	–	Vdc
$V_{IL}$	Low Input Voltage Pin 5,7,10,11	–	0.8	–	0.8	–	0.8	Vdc
$V_{IH}$	High Input Voltage Pin 6	-1.17	-0.84	-1.13	-0.81	-1.07	-0.735	Vdc
$V_{IL}$	Low Input Voltage Pin 6	-1.95	-1.48	-1.95	-1.48	-1.95	-1.45	Vdc

- 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 Ω resistor to -2.1 V.

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**Table 3. AC PARAMETERS**

Symbol	Characteristic	0°		25°		75°		Unit
		Min	Max	Min	Max	Min	Max	
$t_{pd}$	Propagation Delay Data Strobe	0.5 0.5	2.2 2.2	0.5 0.5	2.3 2.3	0.5 0.5	2.4 2.4	ns
$t_r$	Rise Time	0.5	2.0	0.5	2.0	0.5	2.2	ns
$t_f$	Fall Time	0.5	2.0	0.5	2.0	0.5	2.2	ns

NOTE: Device will meet the specifications after thermal equilibrium has been established when mounted in a test socket or printed circuit board with maintained transverse airflow greater than 500 lfm. Electrical parameters are guaranteed only over the declared operating temperature range. Functional operation of the device exceeding these conditions is not implied. Device specification limit values are applied individually under normal operating conditions and not valid simultaneously.

## 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.

## ORDERING INFORMATION

Device	Package	Shipping <sup>†</sup>
MC10H424FN	PLLC-20	46 Units / Rail
MC10H424FNG	PLLC-20 (Pb-Free)	46 Units / Rail
MC10H424FNR2	PLLC-20	500 / Tape & Reel
MC10H424FNR2G	PLLC-20 (Pb-Free)	500 / Tape & Reel
MC10H424L	CDIP-16	25 Unit / Rail
MC10H424P	PDIP-16	25 Unit / Rail
MC10H424PG	PDIP-16 (Pb-Free)	25 Unit / Rail

<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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## PACKAGE DIMENSIONS

20 LEAD PLLC  
CASE 775-02  
ISSUE E



### NOTES:

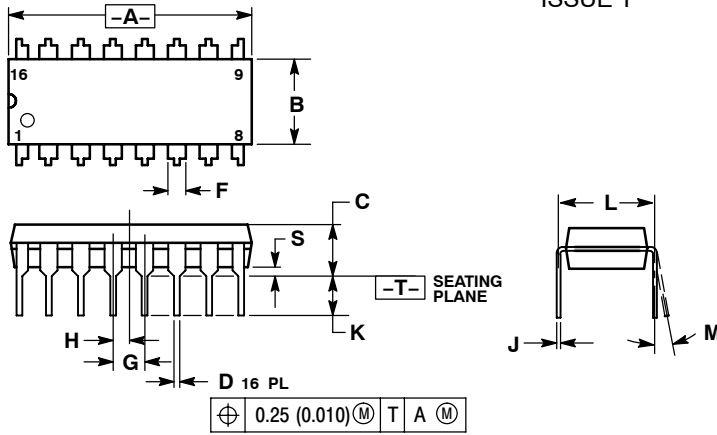
- DIMENSIONS AND TOLERANCING PER ANSI Y14.5M, 1982.
- DIMENSIONS IN INCHES.
- DATUMS -L-, -M-, AND -N- DETERMINED WHERE TOP OF LEAD SHOULDER EXITS PLASTIC BODY AT MOLD PARTING LINE.
- DIMENSION G1, TRUE POSITION TO BE MEASURED AT DATUM -T-, SEATING PLANE.
- DIMENSIONS R AND U DO NOT INCLUDE MOLD FLASH. ALLOWABLE MOLD FLASH IS 0.010 (0.250) PER SIDE.
- DIMENSIONS IN 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	---

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## PACKAGE DIMENSIONS

PDIP-16  
CASE 648-08  
ISSUE T




### 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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