MC10H424

Quad TTL to ECL Translator with ECL Strobe

ON Semiconductor®

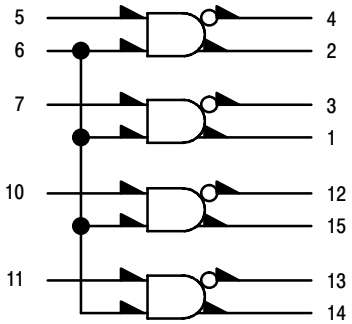
http://onsemi.com

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.

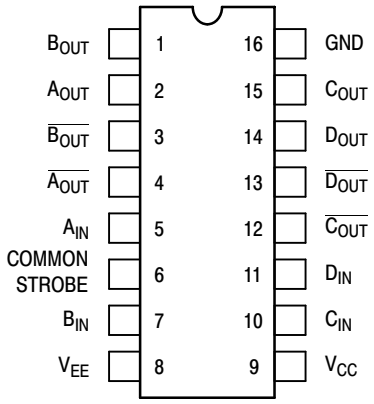
Features

- 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*



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

Figure 1. Logic Diagram

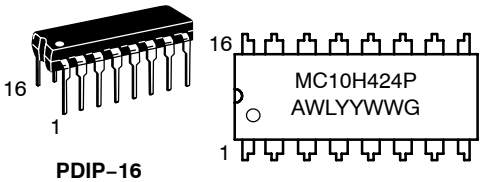


Pin assignment is for Dual−in−Line Package.

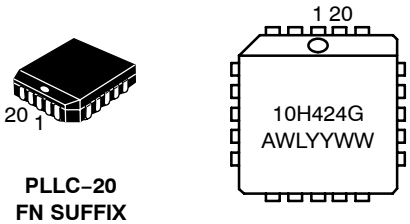
Figure 2. Pin Assignment

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

MARKING DIAGRAMS*



PDIP−16
P SUFFIX
CASE 648



PLLC−20
FN SUFFIX
CASE 775

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.

Table 1. MAXIMUM RATINGS

Symbol	Characteristic	Rating	Unit
V_{EE}	Power Supply (V_{CC} = 5.0 V)	−8.0 to 0	Vdc
V_{CC}	Power Supply (V_{EE} = − 5.2 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

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

Table 2. ELECTRICAL CHARACTERISTICS (V_{EE} = −5.2 V ± 5%, V_{CC} = 5.0 V ± 5.0%)

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

1. 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.

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 lfpm. 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.

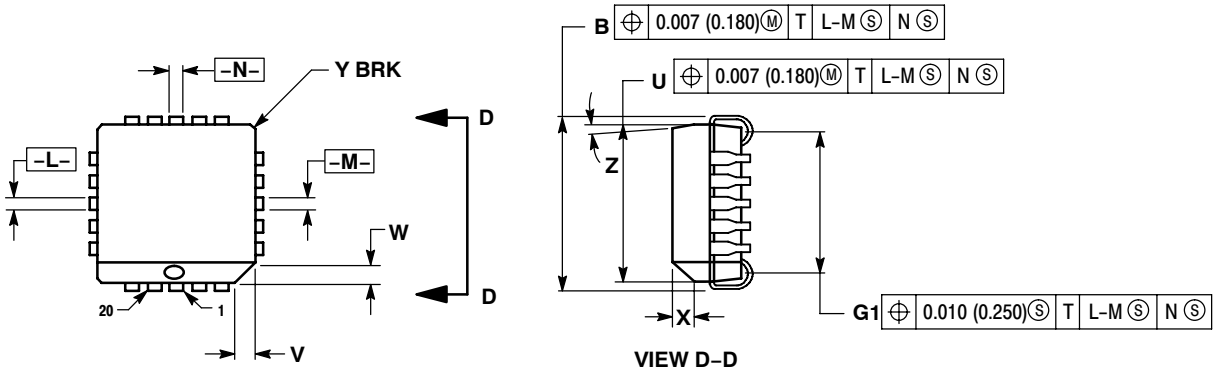
ORDERING INFORMATION

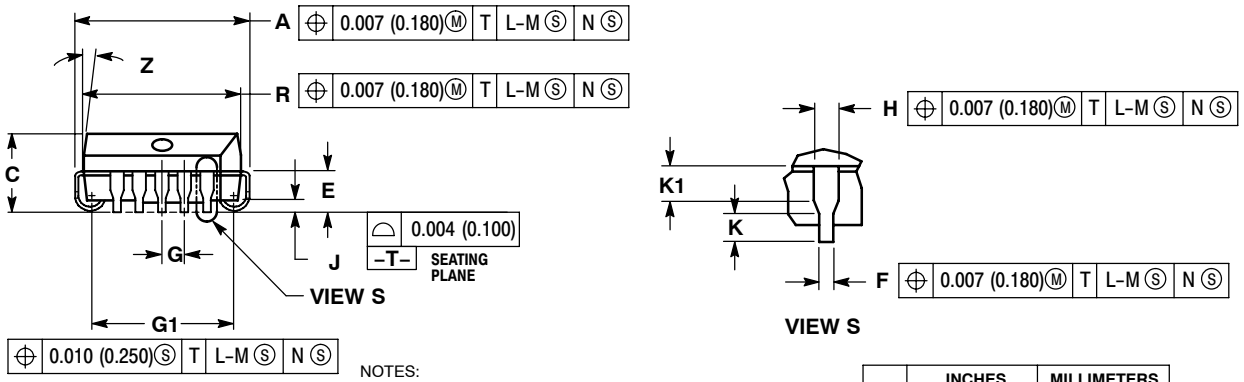
Device	Package	Shipping†
MC10H424FN	PLLC−20	46 Units / Rail
MC10H424FNG	PLLC−20 (Pb−Free)	46 Units / Rail
MC10H424FNR2	PLLC−20	500 / Tape & Reel
MC10H424FNR2G	PLLC−20 (Pb−Free)	500 / Tape & Reel
MC10H424L	CDIP−16	25 Unit / Rail
MC10H424P	PDIP−16	25 Unit / Rail
MC10H424PG	PDIP−16 (Pb−Free)	25 Unit / Rail

†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.

PACKAGE DIMENSIONS

20 LEAD PLLC
CASE 775−02
ISSUE E



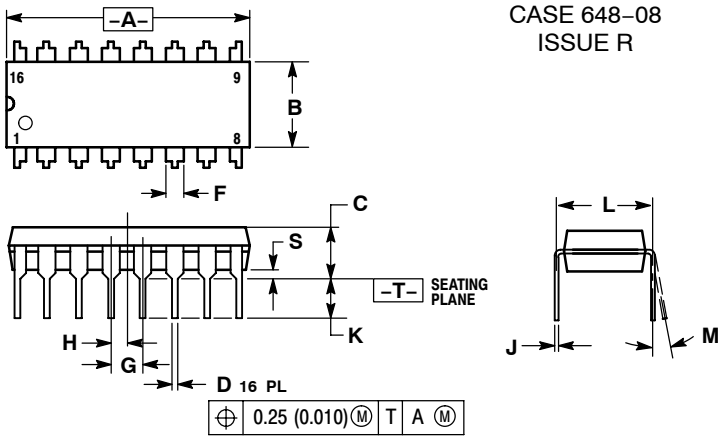


NOTES:
1. DIMENSIONS AND TOLERANCING PER ANSI Y14.5M, 1982.
2. DIMENSIONS IN INCHES.
3. DATUMS −L−, −M−, AND −N− DETERMINED WHERE TOP OF LEAD SHOULDER EXITS PLASTIC BODY AT MOLD PARTING LINE.
4. DIMENSION G1, TRUE POSITION TO BE MEASURED AT DATUM −T−, SEATING PLANE.
5. DIMENSIONS R AND U DO NOT INCLUDE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

PACKAGE DIMENSIONS

PDIP−16
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

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PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
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