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ON Semiconductor
MC10H330FN

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Datasheet of MC10H330FN - IC DRIVER/RCVR QUAD BUS 28-PLCC
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MC10H330

Quad Bus Driver/Receiver with 2-to-1 Output Multiplexers

ON Semiconductor®

http://onsemi.com

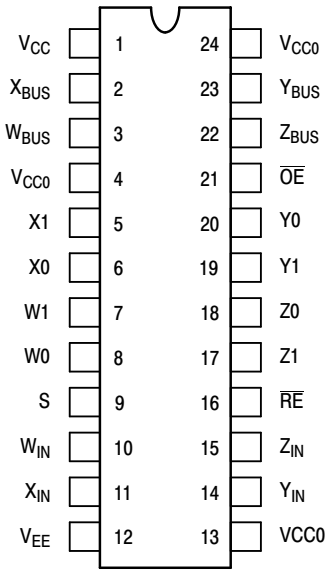
Description

The MC10H330 is a Quad Bus Driver/Receiver with two−to−one output multiplexers. These multiplexers have a common select and output enable. When disabled, ($\overline{OE}$ = high) the bus outputs go to −2.0 V. Their output can be brought to a low state (V_{OL}) by applying a high level to the receiver enable ($\overline{RE}$ = High). The parameters specified are with 25 Ω loading on the bus drivers and 50 Ω loads on the receivers.

Features

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

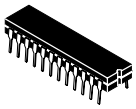
DIP
PIN ASSIGNMENT

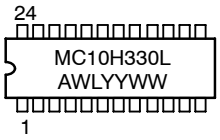


Pin assignment is for Dual−in−Line Package.
For PLCC pin assignment, see the Pin Conversion Tables on page 18 of the ON Semiconductor MECL Data Book (DL122/D).

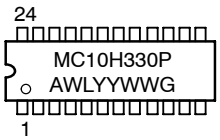
*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

MARKING DIAGRAMS*

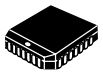


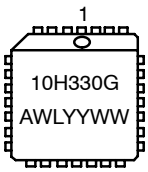


CDIP−24
L SUFFIX
CASE 758



PDIP−24
P SUFFIX
CASE 724





PLCC−28
P SUFFIX
CASE 776

A	= Assembly Location
WL	= Wafer Lot
YY	= Year
WW	= Work Week
G	= Pb−Free Package

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} = 0)	−8.0 to 0	Vdc
V_I	Input Voltage (V_{CC} = 0)	0 to V_{EE}	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 °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%) (Note 1)

Symbol	Characteristic	0°		25°		75°		Unit
		Min	Max	Min	Max	Min	Max	
I_E	Power Supply Current	–	157	–	143	–	157	mA
I_{inH}	Input Current High Pins 5–8, 17–20 Pins 16, 21 Pin 9	 – – –	 667 514 475	 – – –	 417 321 297	 – – –	 417 321 297	μA
I_{inL}	Input Current Low	0.5	–	0.5	–	0.3	–	μA
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	−1.17	−0.84	−1.13	−0.81	−1.07	−0.735	Vdc
V_{IL}	Low Input Voltage	−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. Receiver outputs are terminated through a 50 Ω resistor to −2.0 Vdc. Bus outputs are terminated through a 25 Ω resistor to −2.0 Vdc.

Table 3. AC PARAMETERS

Symbol	Characteristic	0°		25°		75°		Unit
		Min	Max	Min	Max	Min	Max	
t_{pd}	Propagation Delay							ns
	Select–to–Input	1.8	5.3	1.8	5.3	1.8	5.3	
	Data–to–Bus Output	0.5	2.0	0.5	2.0	0.5	2.0	
	Select–to–Bus Output	1.0	3.2	1.0	3.2	1.0	3.2	
	$\overline{OE}$–to–Bus Output	0.8	2.2	0.8	2.2	0.8	2.2	
	Bus–to–Input	0.8	2.1	0.8	2.1	0.8	2.4	
	$\overline{RE}$–to–Input	0.5	2.2	0.5	2.2	0.5	2.2	
	Data–to–Receiver Input	1.3	4.0	1.3	4.0	1.3	4.0	
t_r	Rise Time	0.5	2.0	0.5	2.0	0.5	2.0	ns
t_f	Fall Time	0.5	2.0	0.5	2.0	0.5	2.0	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.

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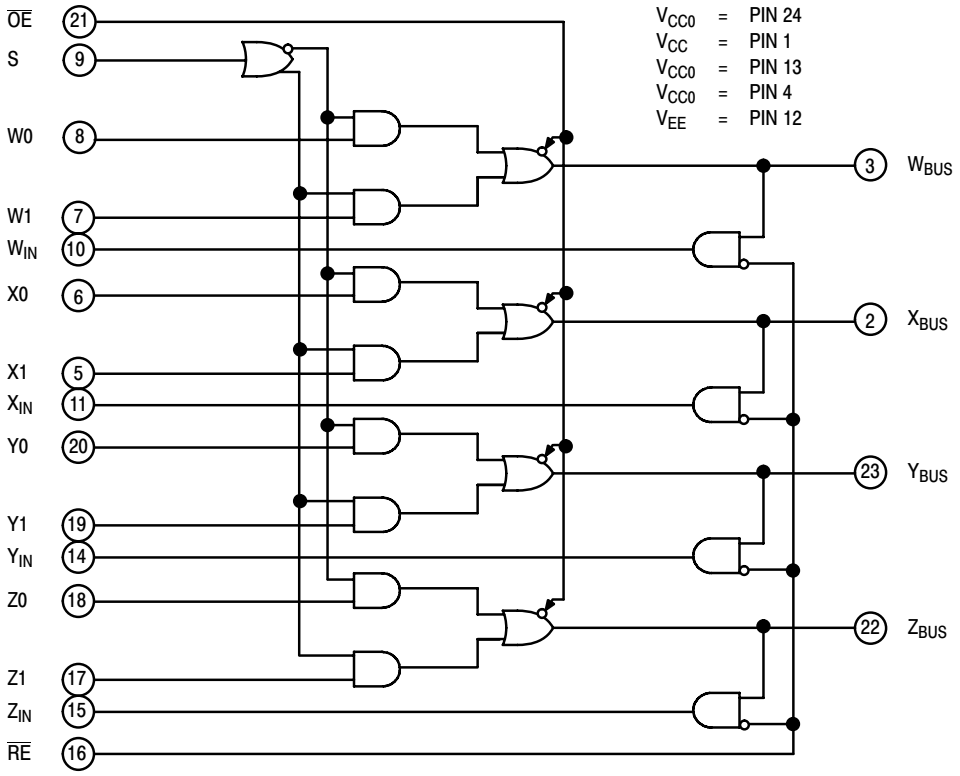
LOGIC DIAGRAM



MULTIPLEXER TRUTH TABLE

$\overline{OE}$	S	W_{Bus}	X_{Bus}	Y_{Bus}	Z_{Bus}
H	X	−2.0 V	−2.0 V	−2.0 V	−2.0 V
L	L	W0	X0	Y0	Z0
L	H	W1	X1	Y1	Z1

RECEIVER TRUTH TABLE

RE	W_{in}	X_{in}	Y_{in}	Z_{in}
H	L	L	L	L
L	W_{Bus}	X_{Bus}	Y_{Bus}	Z_{Bus}

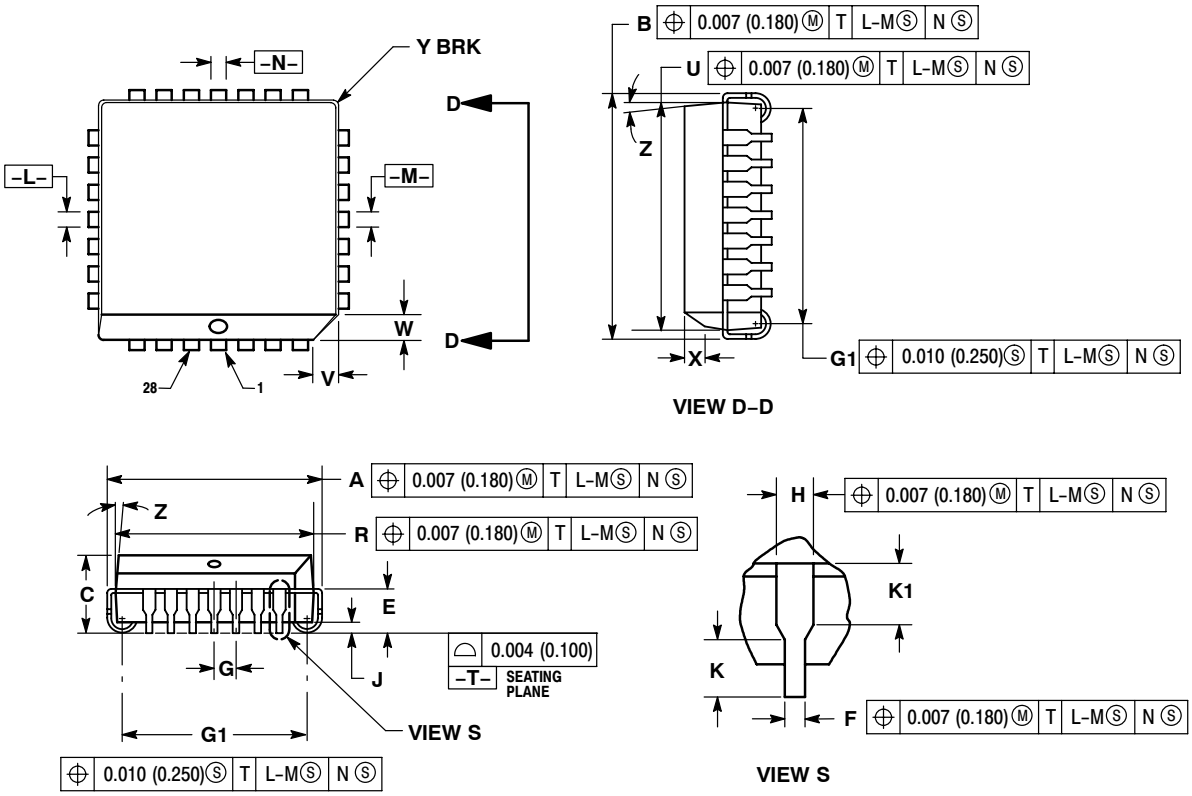
ORDERING INFORMATION

Device	Package	Shipping†
MC10H330FN	PLCC−28	37 Units / Rail
MC10H330FNG	PLCC−28 (Pb−Free)	37 Units / Rail
MC10H330FNR2	PLCC−28	500 / Tape & Reel
MC10H330FNR2G	PLCC−28 (Pb−Free)	500 / Tape & Reel
MC10H330L	CDIP−24	15 Unit / Rail
MC10H330P	PDIP−24	15 Unit / Rail
MC10H330PG	PDIP−24 (Pb−Free)	15 Unit / Rail

MC10H330

PACKAGE DIMENSIONS

PLCC–28
FN SUFFIX
PLASTIC PLCC PACKAGE
CASE 776–02
ISSUE D



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	0.485	0.495	12.32	12.57
B	0.485	0.495	12.32	12.57
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	0.450	0.456	11.43	11.58
U	0.450	0.456	11.43	11.58
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	0.410	0.430	10.42	10.92
K1	0.040	---	1.02	---

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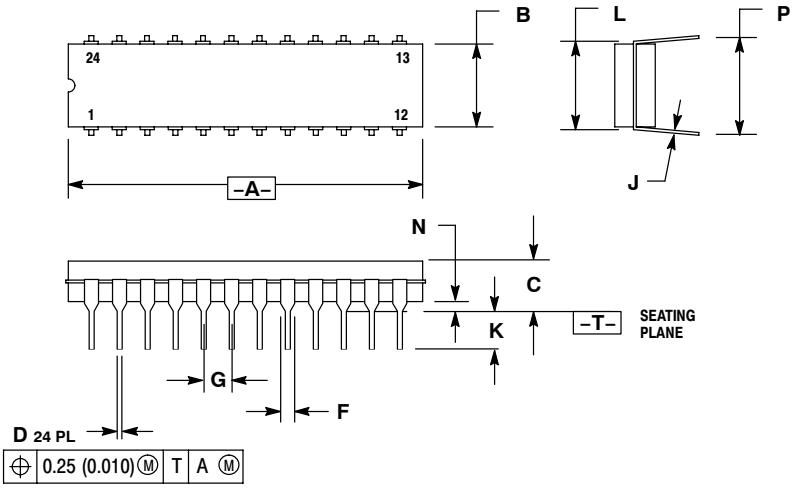
MC10H330

PACKAGE DIMENSIONS

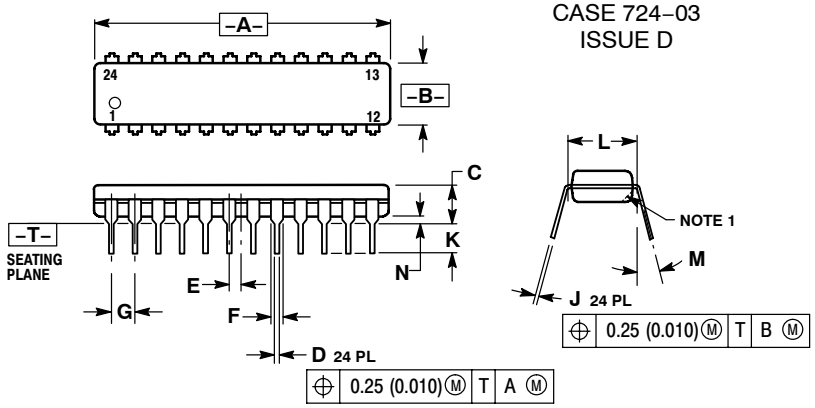
CDIP–24
L SUFFIX
CERAMIC DIP PACKAGE
CASE 758–02
ISSUE A



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION L TO CENTER OF LEADS WHEN FORMED PARALLEL.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	1.240	1.285	31.50	32.64
B	0.285	0.305	7.24	7.75
C	0.160	0.200	4.07	5.08
D	0.015	0.021	0.38	0.53
F	0.045	0.062	1.14	1.57
G	0.100 BSC		2.54 BSC	
J	0.008	0.013	0.20	0.33
K	0.100	0.165	2.54	4.19
L	0.300	0.310	7.62	7.87
N	0.020	0.050	0.51	1.27
P	0.360	0.400	9.14	10.16

PDIP–24
P SUFFIX
PLASTIC DIP PACKAGE
CASE 724–03
ISSUE D



NOTES:
1. CHAMFERED CONTOUR OPTIONAL.
2. DIMENSION L TO CENTER OF LEADS WHEN FORMED PARALLEL.
3. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
4. CONTROLLING DIMENSION: INCH.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	1.230	1.265	31.25	32.13
B	0.250	0.270	6.35	6.85
C	0.145	0.175	3.69	4.44
D	0.015	0.020	0.38	0.51
E	0.050 BSC		1.27 BSC	
F	0.040	0.060	1.02	1.52
G	0.100 BSC		2.54 BSC	
J	0.007	0.012	0.18	0.30
K	0.110	0.140	2.80	3.55
L	0.300 BSC		7.62 BSC	
M	0°	15°	0°	15°
N	0.020	0.040	0.51	1.01

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