

FEATURES

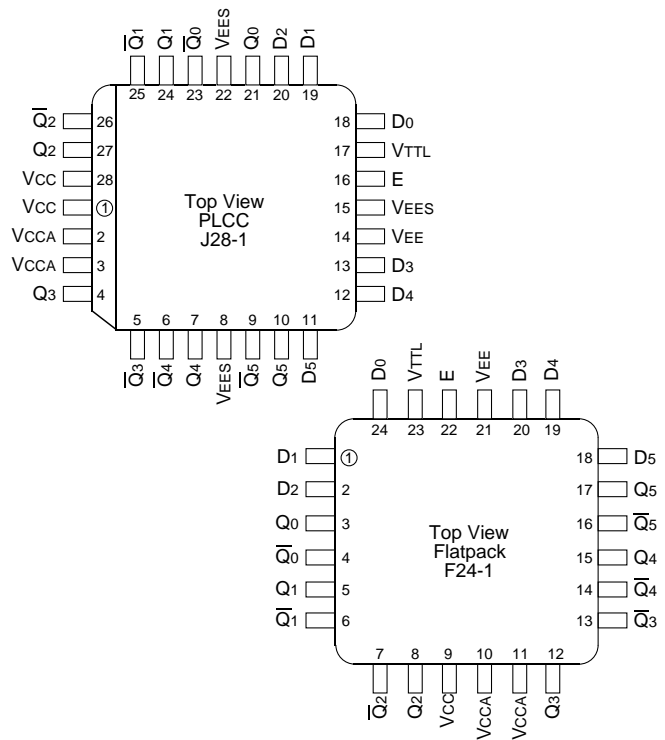
- Max. propagation delay of 1.4ns
- IEE min. of -70mA
- Industry standard 100K ECL levels
- Extended supply voltage option:
VEE = -4.2V to -5.5V
- Differential outputs
- Voltage and temperature compensation for improved noise immunity
- Internal 75KΩ input pull-down resistors
- Twice as fast as Fairchild's 324
- Function and pinout compatible with Fairchild F100K
- Available in 24-pin CERPACK and 28-pin PLCC packages

DESCRIPTION

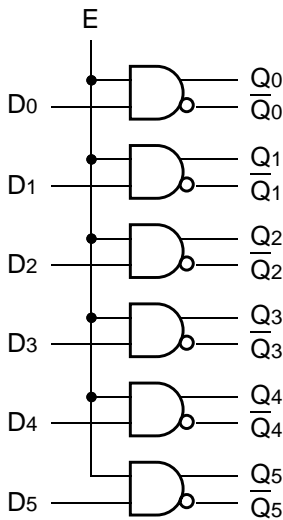
The SY100S324 is a hex translator designed to convert TTL logic levels to 100K ECL levels. The inputs are TTL compatible with differential outputs that can either be used as an inverting/non-inverting translator or as differential line drivers. A common Enable (E), when LOW, holds all inverting outputs HIGH and holds all non-inverting outputs LOW.

When used in the differential mode, due to its high common mode rejection, it overcomes voltage gradients between the TTL and ECL ground systems. The VEE and VTTL power may be applied in either order.

PIN CONFIGURATIONS



BLOCK DIAGRAM



PIN NAMES

Pin	Function
D0-D5	Data Inputs
E	Enable Inputs
Q0-Q5	Data Outputs
Q0-Q5	Complementary Data Outputs
VEES	VEE Substrate
VTTL	TTL Vcc Power Supply
VCCA	Vcco for ECL Outputs

DC ELECTRICAL CHARACTERISTICS

$V_{EE} = -4.2V$ to $-5.5V$ unless otherwise specified, $V_{CC} = V_{CCA} = GND$, $V_{TTL} = +4.5V$ to $+5.5V$

Symbol	Parameter	Min.	Sim.	Max.	Unit	Condition
V_{OH}	Output HIGH Voltage	-1025	-986	-880	mV	$V_{IN} = V_{IH} (Max.)$
V_{OL}	Output LOW Voltage	-1810	-1674	-1620	mV	$V_{IN} = V_{IL} (Min.)$
V_{OHC}	Output HIGH Voltage	-1035	—	—	mV	$V_{IN} = V_{IH} (Min.)$
V_{OLC}	Output LOW Voltage	—	—	-1610	mV	$V_{IN} = V_{IL} (Max.)$
V_{IH}	Input HIGH Voltage	2.0	—	5.0	V	Guaranteed HIGH Signal for All Inputs
V_{IL}	Input LOW Voltage	0	—	0.8	V	Guaranteed LOW Signal for All Inputs
V_{CD}	Input Clamp Diode Voltage	—	—	-1.5	V	$I_{IN} = -10mA$
I_{IH}	Input HIGH Current Data Enable	— —	— —	20 120	μA	$V_{IN} = +2.4V$ All Other Inputs $V_{IN} = GND$
I_{IH}	Input HIGH Current Breakdown Test, All Inputs	—	—	1.0	mA	$V_{IN} = +5.5V$, $V_{TTL} = Max.$, All Other Inputs $V_{IN} = GND$
I_{IL}	Input LOW Current Data Enable	-1.2 -6.7	— —	— —	mA	$V_{IN} = +0.4V$ All Other Inputs $V_{IN} = V_{IH}$
I_{EE}	V_{EE} Power Supply Current	-70	-45	-28	mA	All Inputs $V_{IN} = +4.0V$
I_{TTL}	V_{TTL} Power Supply Current	—	25	35	mA	All Inputs $V_{IN} = GND$

AC ELECTRICAL CHARACTERISTICS

PLCC /FLATPACK

$V_{EE} = -4.2V$ to $-5.5V$ unless otherwise specified, $V_{CC} = V_{CCA} = GND$, $V_{TTL} = +4.5V$ to $+5.5V$

Symbol	Parameter	Min.	Typ.	Max.	Unit	Condition
t_{PLH} t_{PHL}	Propagation Delay Data and Enable to Output	400	850	1400	ps	See Switching Wave Form Figures
t_{TLH} t_{THL}	Transition Time 20% to 80%, 80% to 20%	350	—	1700	ps	

SWITCHING WAVEFORM

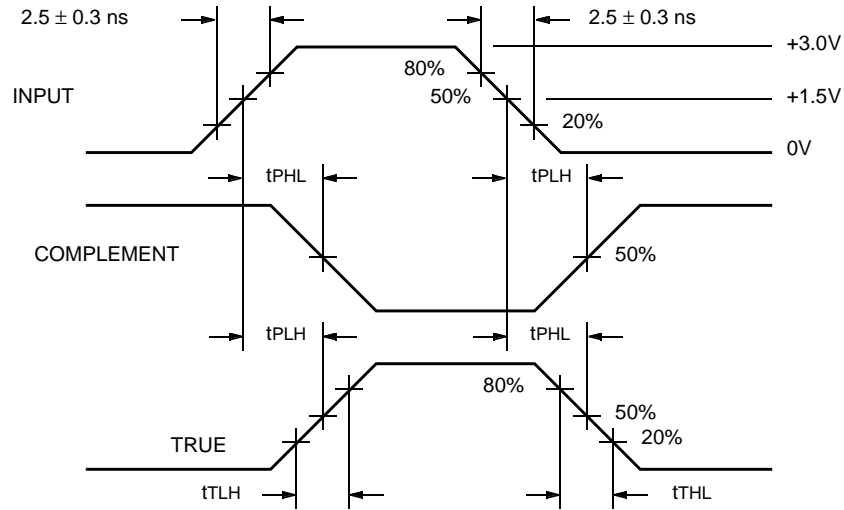


Figure 1. Propagation Delay and Transition Times

NOTE:

$V_{EE} = -4.2V$ to $-5.5V$ unless otherwise specified, $V_{CC} = V_{CCA} = GND$, $V_{TTL} = +4.5V$ to $+5.5V$

TEST CIRCUIT

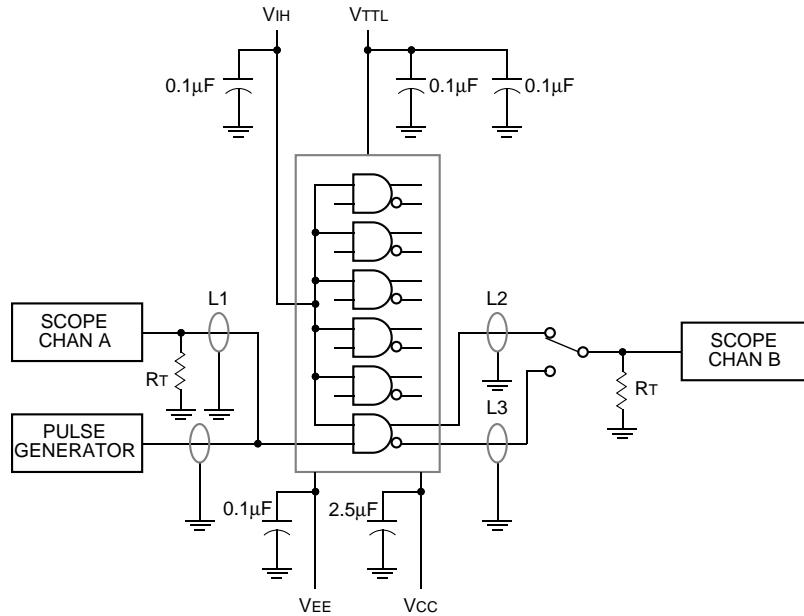


Figure 2. AC Test Circuit

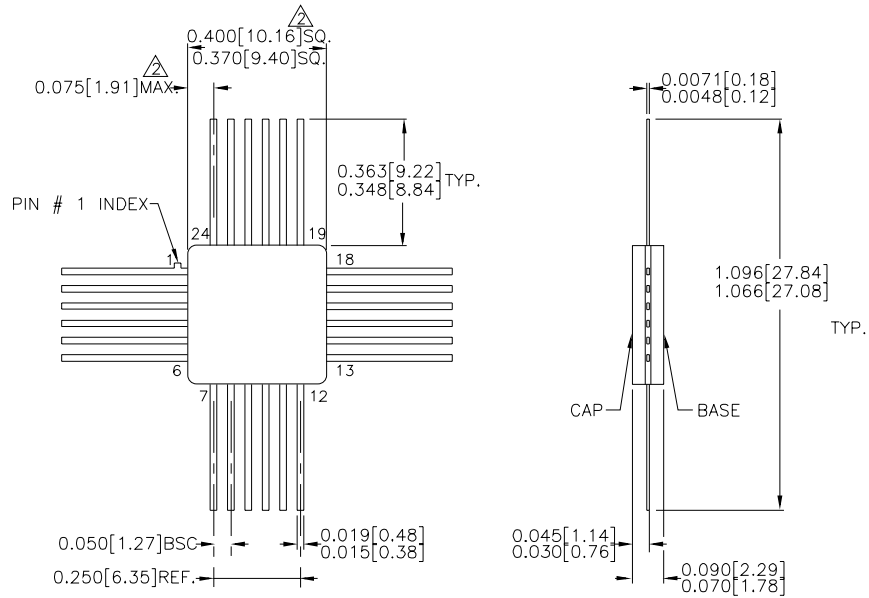
NOTES:

- $V_{CC}, V_{CCA} = +2V, V_{EE} = -2.5V, V_{TTL} = +7.0V, V_{IH} = +6.0V$
- L1, L2 and L3 = equal length 50Ω impedance lines
- $R_T = 50\Omega$ terminator internal to scope
- Decoupling 0.1µF from GND to V_{CC}, V_{EE} and V_{TTL}
- All unused outputs are loaded with 50Ω to GND
- C_L = Fixture and stray capacitance $\leq 3pF$

PRODUCT ORDERING CODE

Ordering Code	Package Type	Operating Range
SY100S324FC	F24-1	Commercial
SY100S324JC	J28-1	Commercial
SY100S324JCTR	J28-1	Commercial

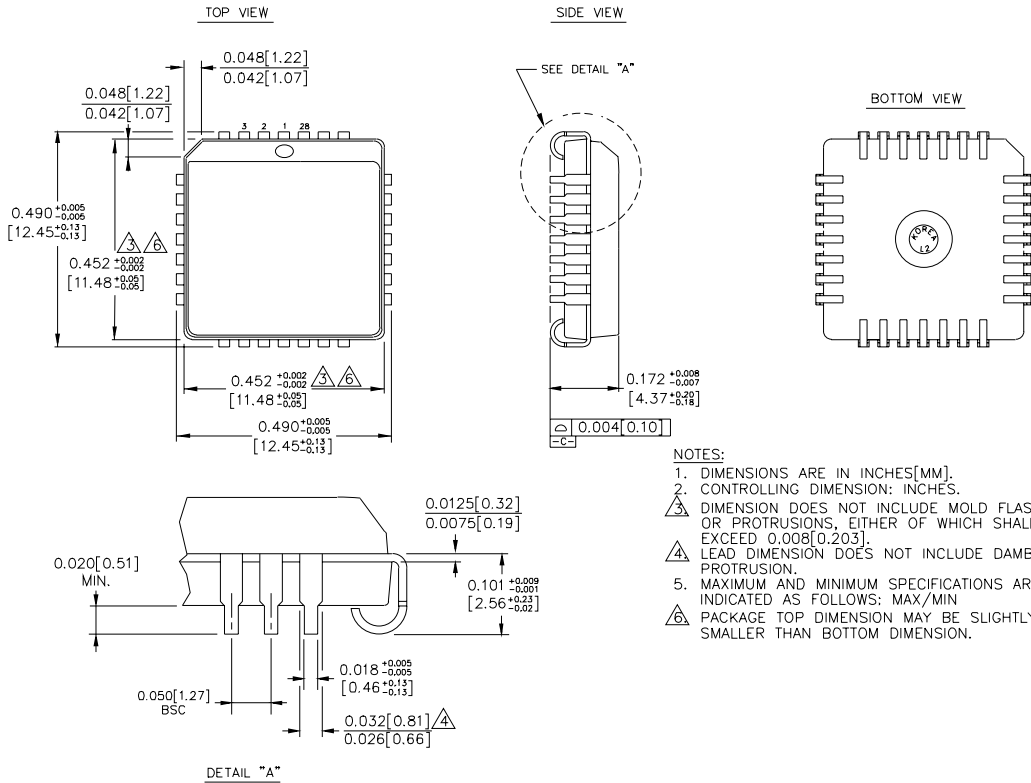
24 LEAD CERPACK (F24-1)



- NOTES:**
1. DIMENSIONS ARE IN INCHES[MM].
 2. THIS DIMENSION INCLUDES CLASS PROTRUSION AND CAP TO BASE ALIGNMENT TOLERANCES.
 3. DIMENSIONS SHOWN ARE MAX/MIN, WHERE NOTED.

Rev. 03

28 LEAD PLCC (J28-1)



Rev. 03

MICREL-SYNERGY 3250 SCOTT BOULEVARD SANTA CLARA CA 95054 USA

TEL + 1 (408) 980-9191 FAX + 1 (408) 914-7878 WEB <http://www.micrel.com>

This information is believed to be accurate and reliable, however no responsibility is assumed by Micrel for its use nor for any infringement of patents or other rights of third parties resulting from its use. No license is granted by implication or otherwise under any patent or patent right of Micrel Inc.

© 2000 Micrel Incorporated