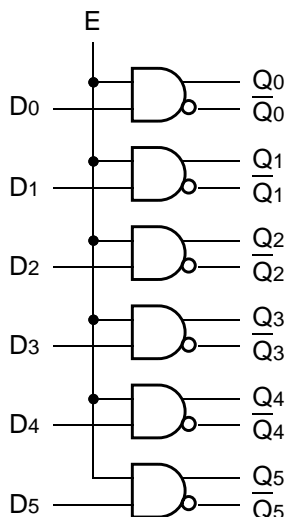


FEATURES

- 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

BLOCK DIAGRAM

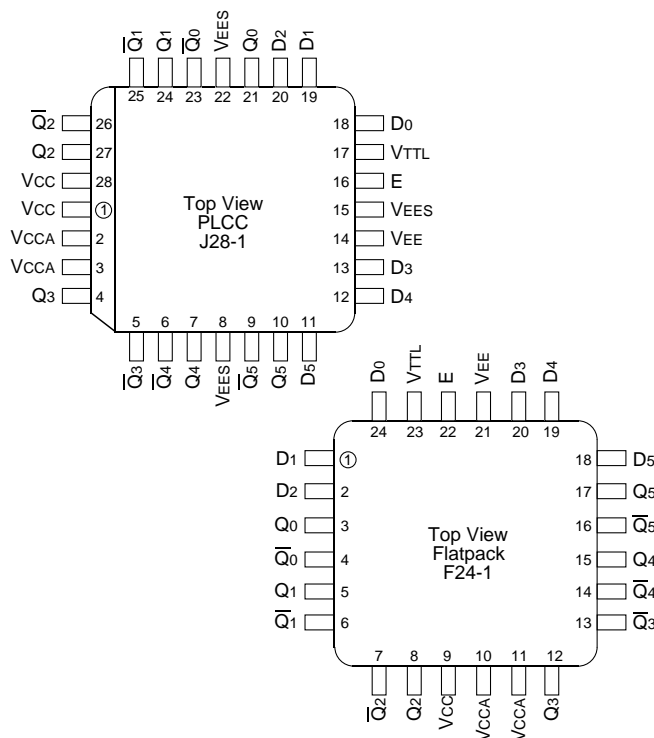


DESCRIPTION

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



PIN NAMES

Pin	Function
D0-D5	Data Inputs
E	Enable Inputs
Q0-Q5	Data Outputs
$\bar{Q}0-\bar{Q}5$	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	
VOH	Output HIGH Voltage	−1025	−986	−880	mV	VIN = VIH (Max.)	Loading with 50Ω
VOL	Output LOW Voltage	−1810	−1674	−1620	mV	VIN = VIL (Min.)	
VOHC	Output HIGH Voltage	−1035	—	—	mV	VIN = VIH (Min.)	Loading with 50Ω to −2V
VOLC	Output LOW Voltage	—	—	−1610	mV	VIN = VIL (Max.)	
VIH	Input HIGH Voltage	2.0	—	5.0	V	Guaranteed HIGH Signal for All Inputs	
VIL	Input LOW Voltage	0	—	0.8	V	Guaranteed LOW Signal for All Inputs	
VCD	Input Clamp Diode Voltage	—	—	−1.5	V	IIN = −10mA	
IIH	Input HIGH Current Data Enable	— —	— —	20 120	μA	VIN = +2.4V All Other Inputs VIN = GND	
IIH	Input HIGH Current Breakdown Test, All Inputs	—	—	1.0	mA	VIN = +5.5V, VTTL = Max., All Other Inputs VIN = GND	
IIL	Input LOW Current Data Enable	−1.2 −6.7	— —	— —	mA	VIN = +0.4V All Other Inputs VIN = VIH	
IEE	VEE Power Supply Current	−70	−45	−28	mA	All Inputs VIN = +4.0V	
ITTL	VTTL Power Supply Current	—	25	35	mA	All Inputs VIN = 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

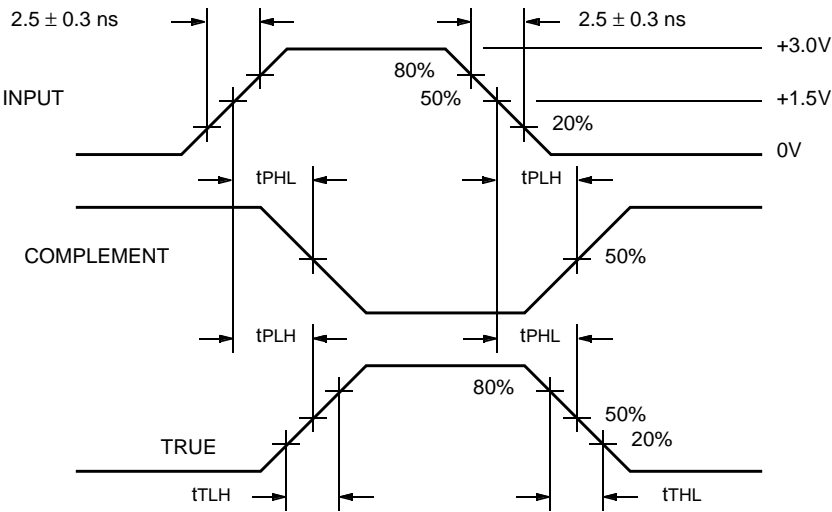


Figure 1. Propagation Delay and Transition Times

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

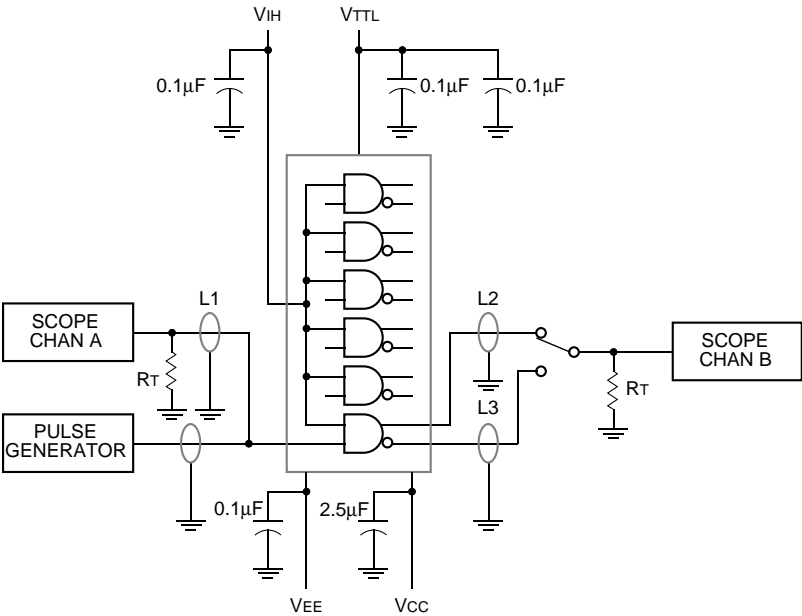


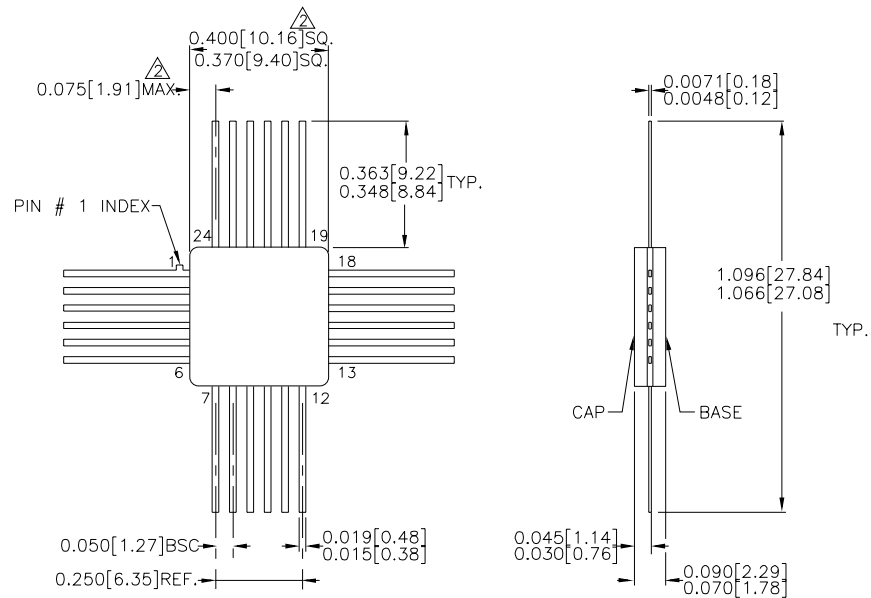
Figure 2. AC Test Circuit

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)

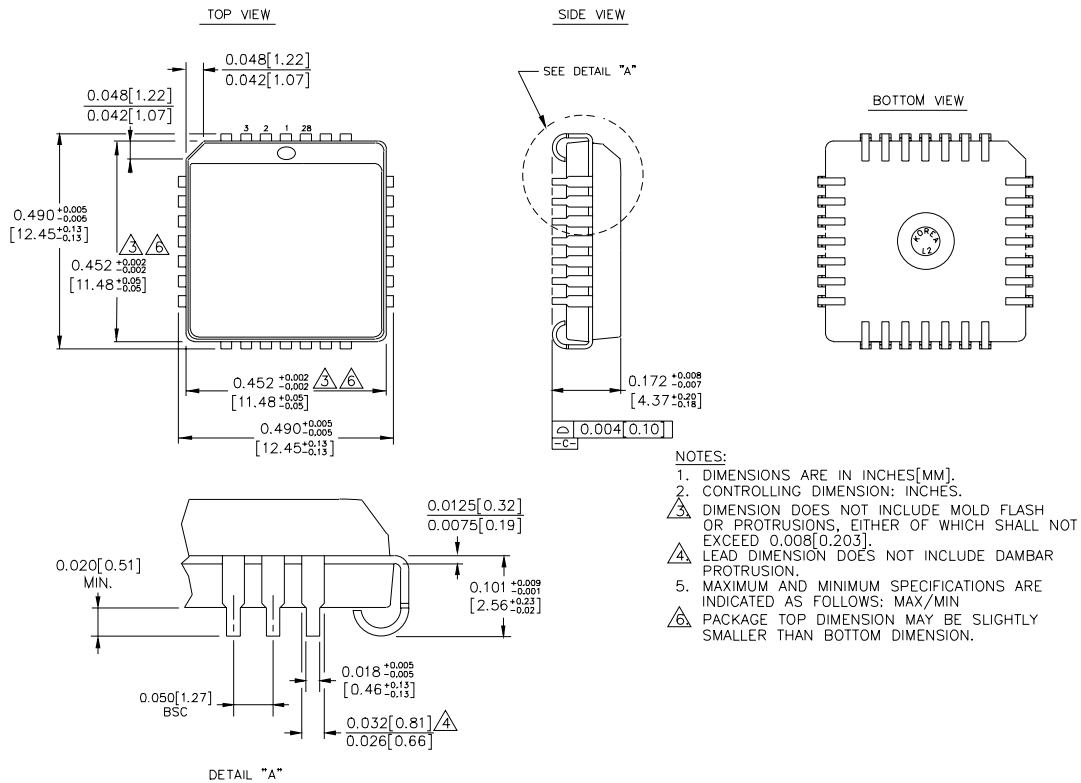


NOTES:

1. DIMENSIONS ARE IN INCHES[MM].
2. THIS DIMENSION INCLUDES GLASS 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

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