



LOW POWER HEX TTL-to-ECL TRANSLATOR

SY100S324

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 National's 324
- Function and pinout compatible with National and Signetics F100K
- ESD protection of 2000V
- Available in Cerdip, CerpacK and PLCC

DESCRIPTION

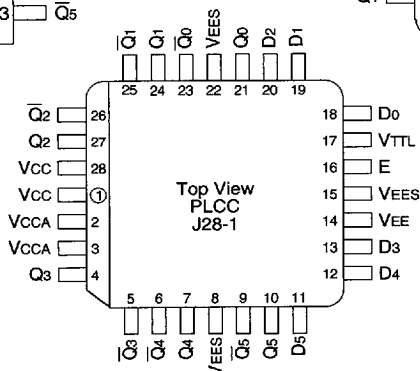
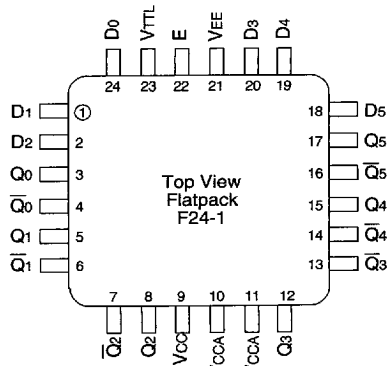
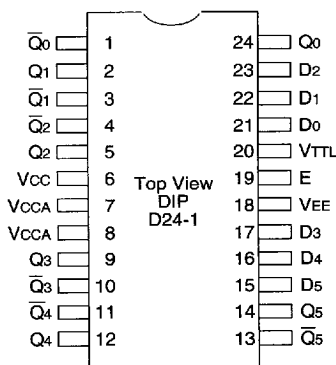
The SY100S324 is a hex translator designed to convert TTL logic levels to 100K ECL levels. The inputs are TTL compatible with differential outputs that can either be used as an inverting/non-inverting translator or as differential line drivers. A common Enable (E), when LOW, holds all inverting outputs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

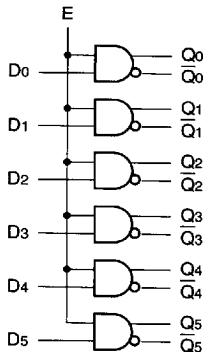
PIN NAMES

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

PIN CONFIGURATIONS



BLOCK DIAGRAM



DC ELECTRICAL CHARACTERISTICS

$V_{EE} = -4.2V$ to $-5.5V$ unless otherwise specified, $V_{CC} = V_{CCA} = GND$, $V_{TTL} = +4.5V$ to $+5.5V$, $T_A = 0^{\circ}C$ to $+85^{\circ}C$

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

CERDIP

$V_{EE} = -4.2V$ 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	500	950	1500	ps	See Switching Wave Form Figures
t _{TLH} t _{THL}	Transition Time 20% to 80%, 80% to 20%	450	—	1800	ps	

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

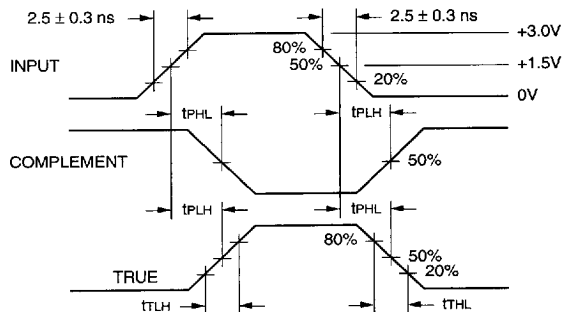


Figure 1. Propagation Delay and Transition Times

TEST CIRCUIT

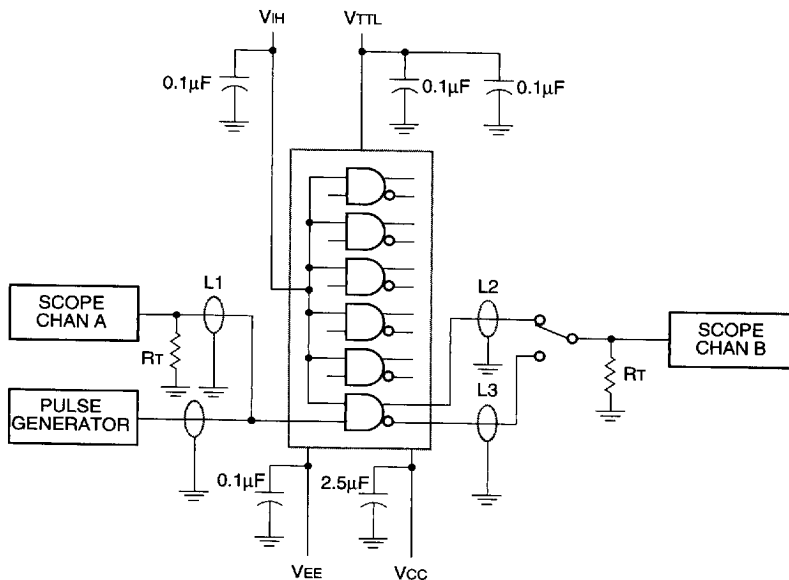


Figure 2. AC Test Circuit

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 = 50Ω 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 ≤ 3pF

PRODUCT ORDERING CODE

Ordering Code	Package Type	Operating Range
SY100S324DC	D24-1	Commercial
SY100S324FC	F24-1	Commercial
SY100S324JC	J28-1	Commercial
SY100S324JCTR	J28-1	Commercial