

FEATURES

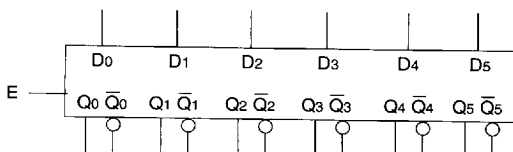
- Operates from a single +5V supply
- Differential PECL outputs
- ESD protection of 2000V
- Companion chip to SY100S390 PECL-to-TTL translator
- Function and pinout compatible with National and Signetics F100K
- Available in CERDIP, CERPACK and PLCC

DESCRIPTION

The SY100S391 is a hex TTL-to-PECL translator for converting TTL logic levels to 100K logic levels. The unique feature of this translator is the ability to do this translation using only one +5V supply. The differential outputs allow each circuit to be used as an inverting/non-inverting translator, or as a differential line driver. A common enable (E), when LOW, holds all inverting outputs HIGH and all non-inverting inputs LOW.

The SY100S391 is ideal for those mixed PECL/TTL applications which only have a +5V supply available. When used in the differential mode, the S391, due to its high common mode rejection, overcomes voltage gradients between the TTL and PECL ground systems.

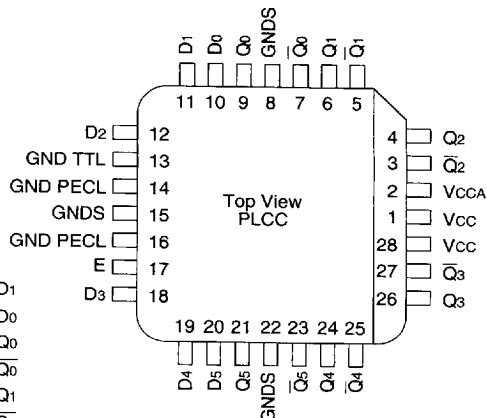
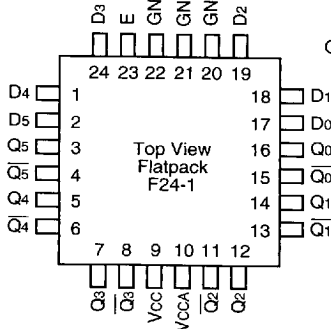
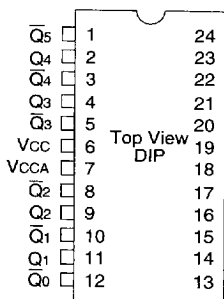
LOGIC SYMBOL



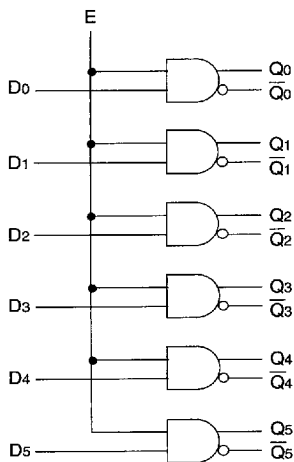
PIN NAMES

Label	Function
D0 — D5	Data Inputs (TTL)
Q0 — Q5	Data Outputs (PECL)
$\bar{Q}0 — \bar{Q}5$	Inverting Data Outputs (PECL)
E	Enable Input (TTL)
VCCA	Vcc0 for ECL Outputs

PIN CONFIGURATIONS



BLOCK DIAGRAM



TRUTH TABLE

Inputs		Outputs	
D _n	E	Q _n	$\overline{Q}_n$
H	H	H	L
L	H	L	H
H	L	L	H
L	L	L	H

NOTE:

1. H = High Voltage Level, L = Low Voltage Level

GUARANTEED OPERATING CONDITIONS

Parameter	Symbol	Value	Unit
Operating Temperature	T _A	0 to +85	°C
Supply Voltage	V _{CC}	+4.5 to +5.5	V

ABSOLUTE MAXIMUM RATINGS⁽¹⁾

RatingSymbol	Value	Unit	
Storage Temperature	T _{STG}	-65 to +150	°C
Max. Junction Temp. Ceramic Plastic	T _J	+175 +150	°C °C
V _{CC} Pin Potential to Ground Pin	—	-0.5 to +7.0	V
PECL Output Current (DC Output HIGH)	—	-50	mA
TTL Input Voltage ⁽²⁾	—	-0.5 to +7.0	V
TTL Input Current ⁽²⁾	—	-30 to +5.0	mA

NOTES:

1. Permanent device damage may occur if ABSOLUTE MAXIMUM RATINGS are exceeded. This is a stress rating only and functional operation is not implied at conditions other than those detailed in the operational sections of this data sheet. Exposure to ABSOLUTE MAXIMUM RATING conditions for extended periods may affect device reliability.

2. Either voltage limit or current limit is sufficient to protect inputs.

TTL-TO-PECL DC ELECTRICAL CHARACTERISTICS⁽¹⁾

VCC = +5.0V ± 10%; GND = 0V

Symbol	Parameter	Min.	Typ.	Max.	Unit	Condition
VOH	Output HIGH Voltage	VCC –1025	VCC –955	VCC –870	mV	VIN = VIH (Max.) or VIL (Min.) Loading with 50Ω to VCC –2V
VOL	Output LOW Voltage	VCC –1890	VCC –1705	VCC –1620		
VOHC	Output HIGH Voltage Corner Point High	VCC –1035	—	—	mV	VIN = VIH (Min.) or VIL (Max.) Loading with 50Ω to VCC –2V
VOLC	Output LOW Voltage Corner Point Low	—	—	VCC –1610		
VIH	Input HIGH Voltage	2.0	—	5.0	V	Over VTTL, VEE, TA Range
VIL	Input LOW Voltage	0	—	0.8	V	Over VTTL, VEE, TA Range
IIH	Input HIGH Current	—	—	10	μA	VIN = +2.7V
	Breakdown Current	—	—	100	μA	VIN = +5.5V, VCC = Max.
IIL	Input LOW Current	—	—	–0.8 –4.2	mA	VIN = +0.5V
	Dn E					
VCD	Input Clamp Diode Voltage	—	—	–1.2	V	IIN = –18mA
ICC	VCC Supply Current	25	—	69	mA	Inputs Open

NOTE:

- The specified limits represent the "worst case" value for the parameter. Since these values normally occur at the temperature extremes, additional noise immunity and guardbanding can be achieved by decreasing the allowable system operating ranges. Conditions for testing shown in the tables are chosen to guarantee operation under "worst case" conditions.

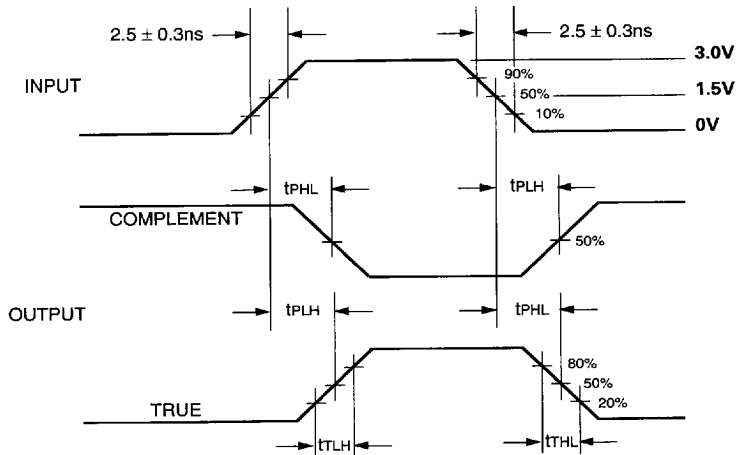
AC ELECTRICAL CHARACTERISTICS

CERDIP, CERPACK AND PLCC

VCC = +5.0V ± 10%; TC = 0°C to +85°C

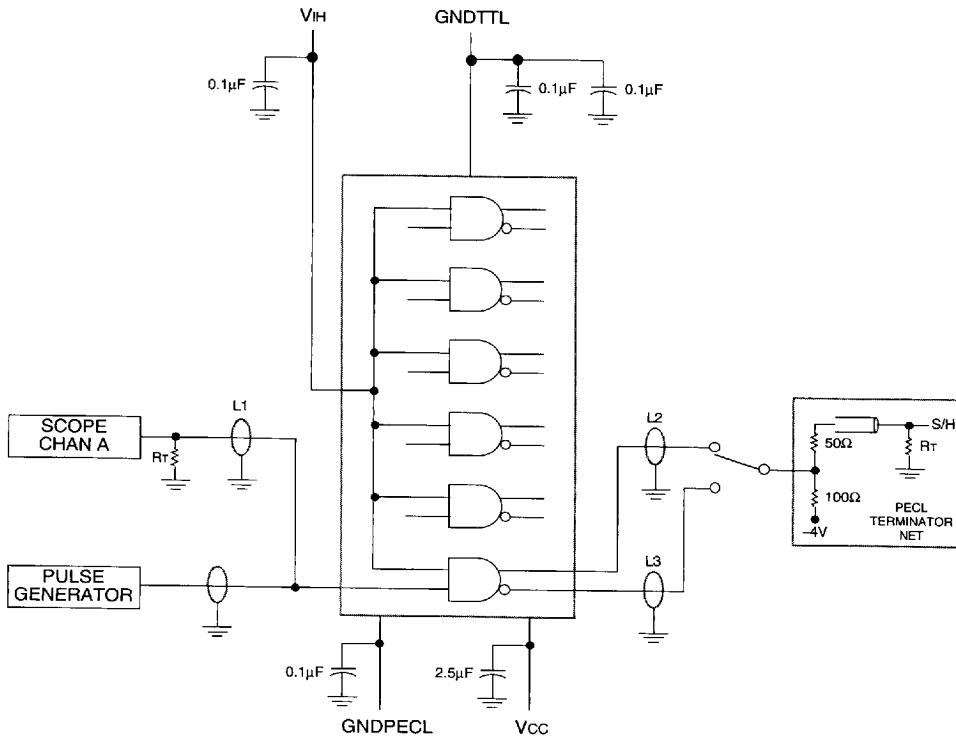
Symbol	Parameter	TA = 0°C		TA = +25°C		TA = 85°C		Unit
		Min.	Max.	Min.	Max.	Min.	Max.	
tPLH tPHL	Propagation Delay Data and Enable to Output	400	1400	400	1400	400	1400	ps
tTLH tTHL	Transition Time 20% to 80%, 80% to 20%	350	1700	350	1700	350	1700	ps

TIMING DIAGRAM



Propagation Delay and Transition Times

TEST CIRCUIT



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PRODUCT ORDERING CODE

Ordering Code	Package Type	Operating Range
SY100S391DC	D24-1	Commercial
SY100S391FC	F24-1	Commercial
SY100S391JC	J28-1	Commercial
SY100S391JCTR	J28-1	Commercial