Applications

- PECL clock source

General Description

The Vaishali VT73LVP10 is a general purpose TTL (CMOS) to differential LVPECL translator, with active-LOW enable. The device operates from a single 3.3V supply. When /EN is LOW or open circuit, the device accepts an LVTTL or LVCMOS input and provides differential LVPECL outputs referenced to the positive supply rail. When /EN is HIGH, the Q output is set to the LOW state and QN output is set to the HIGH state.

Features

- 700ps typical propagation delay
- Differential LVPECL outputs
- Flow-through pinout
- -40° C to +85° C operating temperature range
- 5V - tolerant inputs
- ESD rating >2000V (Human Body Model) or >200V (Machine Model)
- Available as die, 8-pin SOIC or 8 pin MSOP package

Figure 1. Functional Block Diagram & Pin Assignment

8 pin SOIC/ MSOP

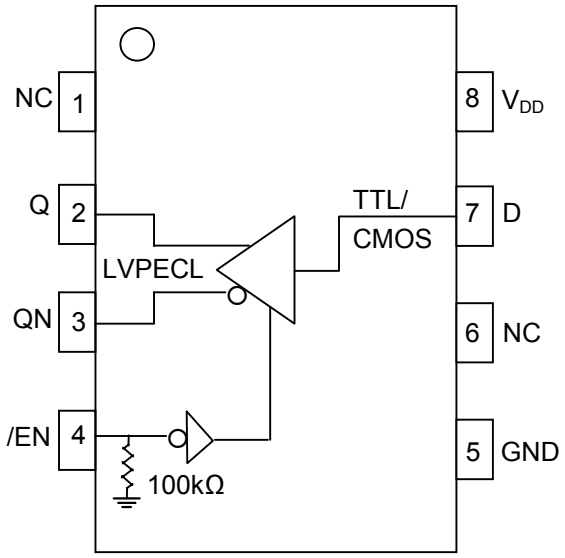

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Table 1. Pin Description

Name	Description	Type	Pin #
/EN	CMOS/TTL Active LOW enable input, with pull-down resistor	I	4*
Q	PECL data output	O	2
QN	PECL complementary data output	O	3
V_{DD}	Connect to 3.3V	P	8
D	CMOS/TTL data input	I	7
GND	Connect to ground	P	5

Legend: I = Input
O = Output
P = Power supply connection
* = Internal 100kΩ pull-down resistor

Table 2. Absolute Maximum Ratings

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{DD}	Supply voltage	Referenced to GND			6	V
V_{IN}	Input voltage	Referenced to GND	-0.5		6	V
I_{OUT}	Output current in LOW state				50	mA
T_{STG}	Storage temperature		-65		150	^{o}C

Stresses above those listed under Absolute Maximum Ratings may cause permanent damage to the device. These ratings are stress specifications only and correct functional operation of the device at these or any other conditions above those listed in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect product reliability.

Table 3. Operating Conditions

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{DD}	Power Supply Voltage		3.0		3.6	V
T_A	Ambient Temperature		-40		85	^{o}C
V_{IH}	Input HIGH Voltage	D, /EN inputs	2.0			V
V_{IL}	Input LOW Voltage	D, /EN inputs			0.8	V
t_{Rin}	Input slew rate	10% to 90% (L $\rightarrow$ H)	1			V/ns
t_{Fin}	Input slew rate	90% to 10% (H $\rightarrow$ L)	1			V/ns

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Table 4. DC Characteristics

T_A = -40°C to +85°C, V_{DD} = 3.0V to 3.6V unless otherwise stated below.

Symbol	Parameter	Conditions		Min	Typ	Max	Units
$\|I_{IH}\|$	Input HIGH Current	V_{IN} = 2.7V	D input			1	µA
			/EN input			50	
$\|I_{IL}\|$	Input LOW Current	V_{IN} = 0.5V	D input			1	µA
			/EN input			20	
V_{IK}	Input Clamp Diode Voltage	I_{IN} = -18mA				-1.2	V
V_{OH}	Output HIGH Voltage(1, 2)	-40°C	V_{DD} = 3.3V	2275	2375	2475	mV
		25°C		2200	2300	2400	mV
		85°C		2125	2225	2325	mV
V_{OL}	Output LOW Voltage(1, 2)	-40°C	V_{DD} = 3.3V	1350	1450	1550	mV
		25°C		1400	1500	1600	mV
		85°C		1450	1550	1650	mV
I_{DD}	Power Supply Current(2)				33		mA

Notes: 1. The VT73LVP10 is designed to meet these specifications after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board.
2. Q and QN outputs are loaded with 50 ohms to V_{DD}-2 volts.

Table 5. AC Characteristics

T_A = -40°C to +85°C, V_{DD} = 3.0V to 3.6V

Symbol	Parameter	Conditions	Min	Typ	Max	Units
t_{PLH}	Propagation Delay (1)			0.7	1.2	ns
t_{PHL}	Propagation Delay (1)			0.7	1.2	ns
t_{PLH}	Propagation Delay	/EN to Q, QN		1.5	2.5	ns
t_{PHL}	Propagation Delay	/EN to Q, QN		1.5	2.5	ns
t_r/t_f	Output Rise/Fall time	20%-80%	0.25	0.35	0.7	ns
f_{MAX}	Maximum Input Frequency	LVTTL or LVCMOS input	170			MHz
f_{MAX}	Maximum Input Frequency (2)	750mV peak-to-peak sine wave (AC coupled)	400			MHz

Notes: 1. Q and QN outputs are loaded with 50 ohms to V_{DD}-2 volts.
2. Measured using a 750mV peak-to-peak, 50% duty cycle clock source.

Ordering Information

Part Number	Marking	Shipping/Packaging	No. of Pins	Package	Temperature
VT73LVP10S1	VT73LVP10S1	Tubes	8	SOIC	-40°C to +85°C
VT73LVP10S1X	VT73LVP10S1	Tape & Reel	8	SOIC	-40°C to +85°C
VT73LVP10M	VT73LVP10M	Tubes	8	MSOP	-40°C to +85°C
VT73LVP10MX	VT73LVP10M	Tape & Reel	8	MSOP	-40°C to +85°C
VT73LVP10/D		Dice in waffle-pak			-40°C to +85°C
VT73LVP10/DW		Dice in wafer form			-40°C to +85°C

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