



# 3.3V/5V DUAL LVTTL/LVCMOS-to-DIFFERENTIAL LVPECL TRANSLATOR

ECL Pro™  
SY100EPT22V

## FEATURES

- 3.3V and 5V power supply option
- 300ps typical propagation delay
- Differential LVPECL outputs
- I<sub>CC</sub> Max 25mA
- PNP LVTTL inputs for minimal loading
- Flow-through pinouts
- Q outputs will default HIGH with inputs open
- Max. frequency range 800MHz
- Available in 8-pin MSOP and SOIC package



ECL Pro™

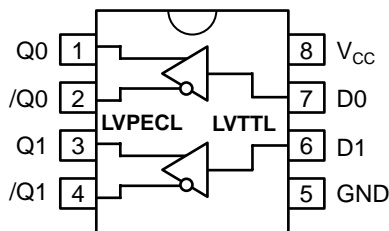
## DESCRIPTION

The SY100EPT22V is a dual TTL/CMOS to differential PECL translator. Capable of running from a 3.3 or 5V supply, the part can be used in either LVTTL/LVCMOS/LVPECL or TTL/CMOS/PECL systems.

The device only requires a single positive supply of 3.3V or 5V - no negative supply is required.

The tiny 8-pin MSOP package and the low skew, dual gate design of the EPT22V makes it ideal for those applications where space, performance, and low power are at a premium.

## PIN CONFIGURATION/BLOCK DIAGRAM



(Available in 8-pin SOIC and 8-pin MSOP)

## PIN NAMES

Pin	Function
Q <sub>0</sub> , /Q <sub>0</sub> , Q <sub>1</sub> , /Q <sub>1</sub>	Differential LVPECL Outputs
D <sub>0</sub> , D <sub>1</sub>	LVTTL Inputs
V <sub>CC</sub>	Positive Supply
GND	Ground

**ABSOLUTE MAXIMUM RATINGS<sup>(1)</sup>**

Symbol	Parameter	Value	Unit
V <sub>CC</sub>	Power Supply Voltage	-0.5 to +7.0	V
V <sub>I</sub>	TTL Input Voltage	-0.5 to V <sub>CC</sub>	V
I <sub>I</sub>	TTL Input Current	-30 to +5.0	mA
I <sub>O</sub>	PECL Output Current — Continuous — Surge	50 100	mA
T <sub>store</sub>	Storage Temperature	-65 to +150	°C
T <sub>A</sub>	Operating Temperature	-40 to +85	°C

**TRUTH TABLE**

D	Q	/Q
H	H	L
L	L	H
Open	H	L

**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.

**DC ELECTRICAL CHARACTERISTICS<sup>(1)</sup>**

V<sub>CC</sub> = +3.3V ±5% or +5.0V ±5%

Symbol	Parameter	T <sub>A</sub> = -40°C		T <sub>A</sub> = 0°C		T <sub>A</sub> = +25°C		T <sub>A</sub> = +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.		
I <sub>CC</sub>	Power Supply Current	—	25	—	25	—	25	—	25	mA	—

**Notes:**

1. Parametric values specified at:
 

3 volt Power Supply Range	100EPT22V Series:	+3.0V to +3.8V.
5 volt Power Supply Range	100EPT22V Series:	+4.2V to +5.5V.

**TTL DC ELECTRICAL CHARACTERISTICS<sup>(1)</sup>**

V<sub>CC</sub> = +3.3V ±5% or +5.0V ±5%

Symbol	Parameter	T <sub>A</sub> = -40°C		T <sub>A</sub> = 0°C		T <sub>A</sub> = +25°C		T <sub>A</sub> = +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.		
V <sub>IH</sub>	Input HIGH Voltage	2.0	—	2.0	—	2.0	—	2.0	—	V	—
V <sub>IL</sub>	Input LOW Voltage	—	0.8	—	0.8	—	0.8	—	0.8	V	—
I <sub>IH</sub>	Input HIGH Current	—	20 100	—	20 100	—	20 100	—	20 100	μA	V <sub>IN</sub> = 2.7V V <sub>IN</sub> = V <sub>CC</sub>
I <sub>IL</sub>	Input LOW Current	—	-0.2	—	-0.2	—	-0.2	—	-0.2	mA	V <sub>IN</sub> = 0.5V
V <sub>IK</sub>	Input Clamp Voltage	—	-1.2	—	-1.2	—	-1.2	—	-1.2	V	I <sub>IN</sub> = -18mA

**Notes:**

1. Parametric values specified at:
 

3 volt Power Supply Range	100EPT22V Series:	+3.0V to +3.8V.
5 volt Power Supply Range	100EPT22V Series:	+4.2V to +5.5V.

### PECL DC ELECTRICAL CHARACTERISTICS<sup>(1)</sup>

V<sub>CC</sub> = +3.3V ±5% or +5.0V ±5%

Symbol	Parameter	T <sub>A</sub> = -40°C			T <sub>A</sub> = 0°C			T <sub>A</sub> = +25°C			T <sub>A</sub> = +85°C			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
V <sub>OH</sub>	Output HIGH Voltage <sup>(2)</sup> 100EPT	2220	—	2420	2275	—	2420	2275	—	2420	2275	—	2420	mV
V <sub>OL</sub>	Output LOW Voltage <sup>(2)</sup> 100EPT	1470	—	1750	1490	—	1680	1490	—	1680	1490	—	1680	mV

**Notes:**

- Parametric values specified at: 3 volt Power Supply Range 100EPT22V Series: +3.0V to +3.8V.  
5 volt Power Supply Range 100EPT22V Series: +4.2V to +5.5V.
- These values are for V<sub>CC</sub> = 3.3V. Level Specifications will vary 1:1 with V<sub>CC</sub>.

### AC ELECTRICAL CHARACTERISTICS<sup>(1, 2)</sup>

V<sub>CC</sub> = +3.3V ±5% or +5.0V ±5%

Symbol	Parameter	T <sub>A</sub> = -40°C		T <sub>A</sub> = 0°C		T <sub>A</sub> = +25°C		T <sub>A</sub> = +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.		
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay to Output D, ENECL/ENTTL	100	600	100	600	100	600	100	600	ps	50Ω to V <sub>CC</sub> - 2.0V
t <sub>skpp</sub>	Part-to-Part Skew <sup>(2)</sup>	—	500	—	500	—	500	—	500	ps	50Ω to V <sub>CC</sub> - 2.0V
t <sub>skew</sub>	Within-Device Skew <sup>(2, 3)</sup>	—	100	—	100	—	100	—	100	ps	50Ω to V <sub>CC</sub> - 2.0V
t <sub>r</sub> t <sub>f</sub>	Output Rise/Fall Time 20% to 80%	200	500	200	500	200	500	200	500	ps	50Ω to V <sub>CC</sub> - 2.0V
f <sub>MAX</sub>	Maximum Toggle Frequency	—	800	—	800	—	800	—	800	MHz	50Ω to V <sub>CC</sub> - 2.0V

**Notes:**

- Parametric values specified at: 3 volt Power Supply Range 100EPT22V Series: +3.0V to +3.8V.  
5 volt Power Supply Range 100EPT22V Series: +4.2V to +5.5V.
- Guaranteed, but not tested.
- Same transition @common V<sub>CC</sub> levels.

### PRODUCT ORDERING CODE

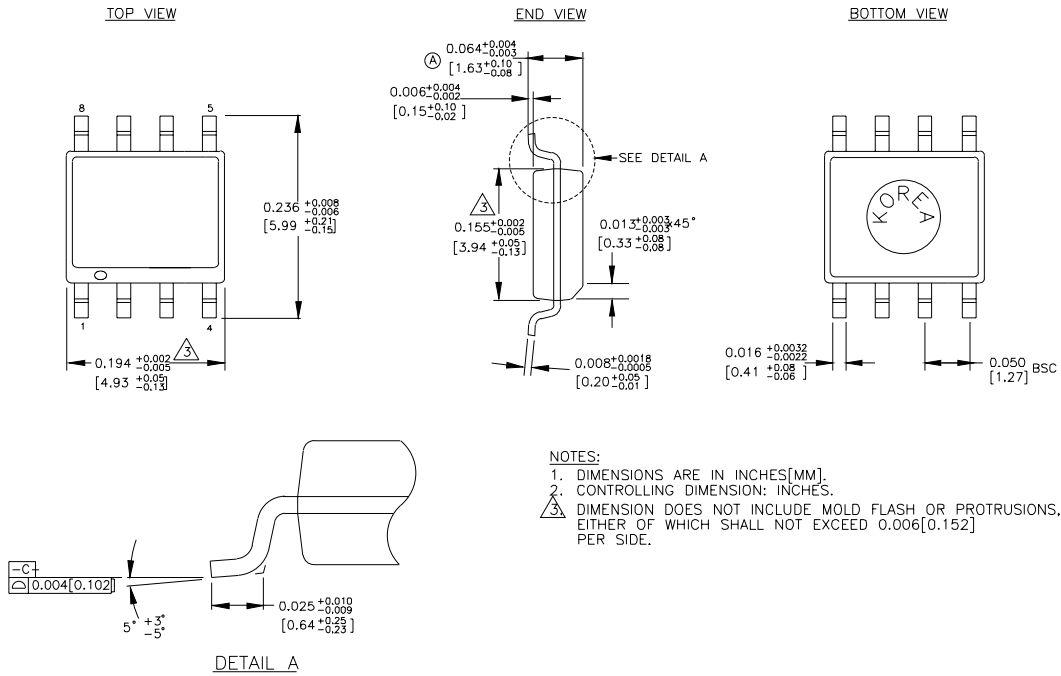
Ordering Code	Package Type	Operating Range	Package Marking
SY100EPT22VZC	Z8-1	Commercial	XEP22V
SY100EPT22VZCTR <sup>(1)</sup>	Z8-1	Commercial	XEP22V
SY100EPT22VKC	K8-1	Commercial	XP22
SY100EPT22VKCTR <sup>(1)</sup>	K8-1	Commercial	XP22
SY100EPT22VZZ <sup>(3)</sup>	Z8-1	Commercial	XEP22V
SY100EPT22VZZTR <sup>(1,3)</sup>	Z8-1	Commercial	XEP22V
SY100EPT22VKZ <sup>(3)</sup>	K8-1	Commercial	XP22
SY100EPT22VKZTR <sup>(1,3)</sup>	K8-1	Commercial	XP22

Ordering Code	Package Type	Operating Range	Package Marking
SY100EPT22VZI <sup>(2)</sup>	Z8-1	Industrial	XEP22V
SY100EPT22VZITR <sup>(1,2)</sup>	Z8-1	Industrial	XEP22V
SY100EPT22VKI <sup>(2)</sup>	K8-1	Industrial	XP22
SY100EPT22VKITR <sup>(1,2)</sup>	K8-1	Industrial	XP22
SY100EPT22VZY <sup>(2,3)</sup>	Z8-1	Industrial	XEP22V
SY100EPT22VZYTR <sup>(1,2,3)</sup>	Z8-1	Industrial	XEP22V
SY100EPT22VKY <sup>(2,3)</sup>	K8-1	Industrial	XP22
SY100EPT22VKYTR <sup>(1,2,3)</sup>	K8-1	Industrial	XP22

**Notes:**

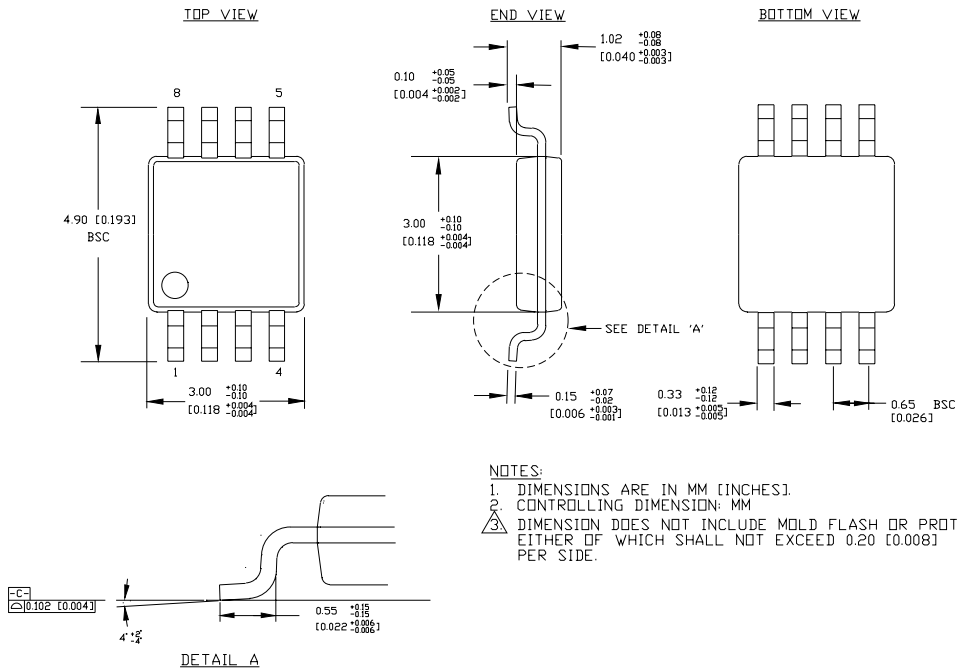
- Tape and Reel.
- Recommended for new designs.
- Pb-Free (lead-free).

**8 LEAD PLASTIC SOIC (Z8-1)**



Rev. 03

**8 LEAD MSOP (K8-1)**



Rev. 01

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