



**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.

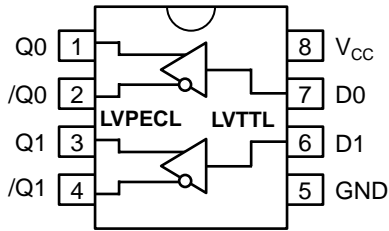
The device only requires a single positive supply of 3.3V or 5V - no negative supply is required.

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 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

**PACKAGE/ORDERING INFORMATION**



Available in 8-pin SOIC and 8-pin MSOP

**Ordering Information<sup>(1)</sup>**

Part Number	Package Type	Operating Range	Package Marking	Lead Finish
SY100EPT22VZC	Z8-1	Commercial	XEP22V	Sn-Pb
SY100EPT22VZCTR <sup>(2)</sup>	Z8-1	Commercial	XEP22V	Sn-Pb
SY100EPT22VKC	K8-1	Commercial	XP22	Sn-Pb
SY100EPT22VKCTR <sup>(2)</sup>	K8-1	Commercial	XP22	Sn-Pb
SY100EPT22VKI	K8-1	Industrial	XP22	Sn-Pb
SY100EPT22VKITR <sup>(2)</sup>	K8-1	Industrial	XP22	Sn-Pb
SY100EPT22VZI	Z8-1	Industrial	XEP22V	Sn-Pb
SY100EPT22VZITR <sup>(2)</sup>	Z8-1	Industrial	XEP22V	Sn-Pb
SY100EPT22VZG <sup>(3)</sup>	Z8-1	Industrial	XEP22V with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY100EPT22VZGTR <sup>(2, 3)</sup>	Z8-1	Industrial	XEP22V with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY100EPT22VKG <sup>(3)</sup>	K8-1	Industrial	XP22 with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY100EPT22VKGTR <sup>(2, 3)</sup>	K8-1	Industrial	XP22 with Pb-Free bar-line indicator	Pb-Free NiPdAu

**Notes:**

1. Contact factory for die availability. Dice are guaranteed at T<sub>A</sub> = 25°C, DC Electricals only.
2. Tape and Reel.
3. Pb-Free package is recommended for new designs.

### 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		mA
	— Continuous	50	
	— Surge	100	
T <sub>LEAD</sub>	Lead Temperature (Soldering, 20sec.)	+260	°C
T <sub>store</sub>	Storage Temperature	-65 to +150	°C
T <sub>A</sub>	Operating Temperature	-40 to +85	°C

**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.

### TRUTH TABLE

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

### 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	—	20	—	20	—	20	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>** $V_{CC} = +3.3V \pm 5\%$  or  $+5.0V \pm 5\%$ 

Symbol	Parameter	$T_A = -40^\circ\text{C}$			$T_A = 0^\circ\text{C}$			$T_A = +25^\circ\text{C}$			$T_A = +85^\circ\text{C}$			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
$V_{OH}$	Output HIGH Voltage <sup>(2)</sup> 100EPT	2220	—	2420	2275	—	2420	2275	—	2420	2275	—	2420	mV
$V_{OL}$	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  $V_{CC} = 3.3V$ . Level Specifications will vary 1:1 with  $V_{CC}$ .

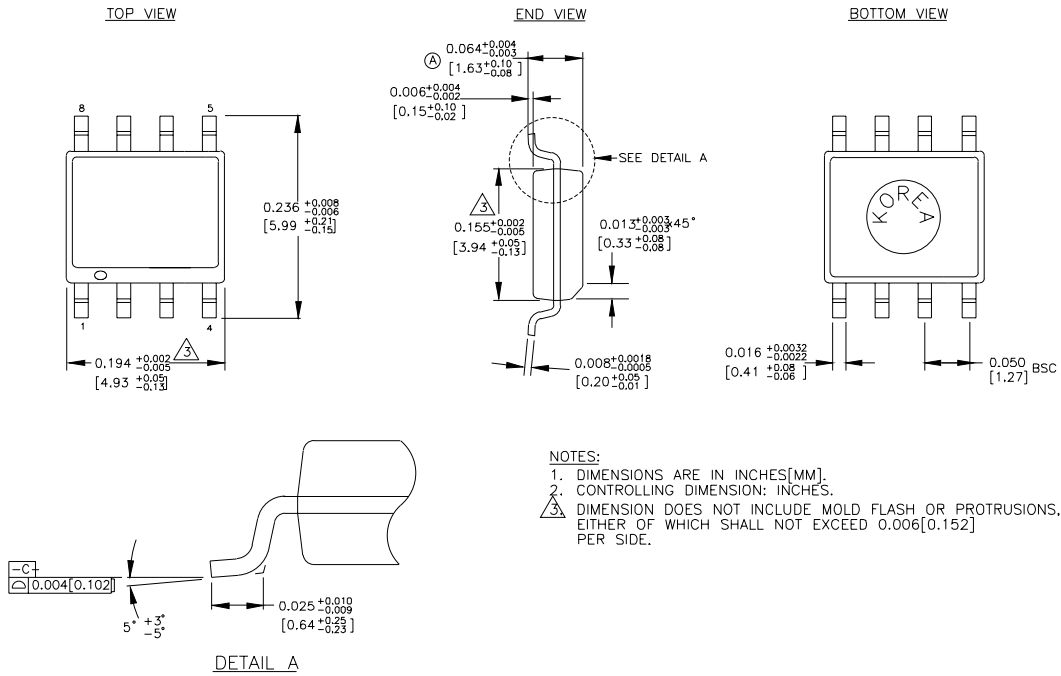
**AC ELECTRICAL CHARACTERISTICS<sup>(1, 2)</sup>** $V_{CC} = +3.3V \pm 5\%$  or  $+5.0V \pm 5\%$ 

Symbol	Parameter	$T_A = -40^\circ\text{C}$		$T_A = 0^\circ\text{C}$		$T_A = +25^\circ\text{C}$		$T_A = +85^\circ\text{C}$		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.		
$t_{PD}$	Propagation Delay to Output D, ENECL/ENTTL	100	600	100	600	100	600	100	600	ps	$50\Omega$ to $V_{CC} - 2.0V$
$t_{skpp}$	Part-to-Part Skew <sup>(2)</sup>	—	500	—	500	—	500	—	500	ps	$50\Omega$ to $V_{CC} - 2.0V$
$t_{skew}$	Within-Device Skew <sup>(2, 3)</sup>	—	100	—	100	—	100	—	100	ps	$50\Omega$ to $V_{CC} - 2.0V$
$t_r$ $t_f$	Output Rise/Fall Time 20% to 80%	200	500	200	500	200	500	200	500	ps	$50\Omega$ to $V_{CC} - 2.0V$
$f_{MAX}$	Maximum Toggle Frequency	—	800	—	800	—	800	—	800	MHz	$50\Omega$ to $V_{CC} - 2.0V$

**Notes:**

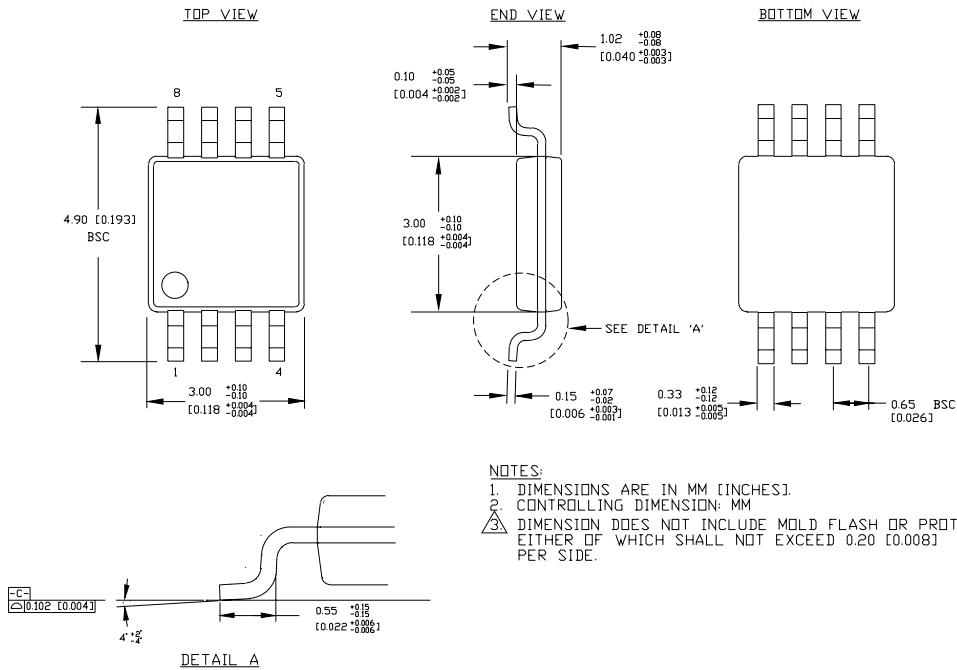
- Parametric values specified at: 3 volt Power Supply Range 100EPT22V Series: +3.0V to +3.8V.  
5 volt Power Supply Range 100EPT22V Series: +4.2V to +5.5V.
- Guaranteed, but not tested.
- Same transition @common  $V_{CC}$  levels.

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



Rev. 03

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



Rev. 01

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