



3.3V/5V DUAL LVTTTL/LVCMOS-to-DIFFERENTIAL LVPECL TRANSLATOR

ECL Pro™
SY100EPT22V

FEATURES

- 3.3V and 5V power supply option
- 300ps typical propagation delay
- Differential LVPECL outputs
- I_{CC} Max 25mA
- PNP LVTTTL 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 LVTTTL/LVCMOS/LVPECL or TTL/CMOS/PECL systems.

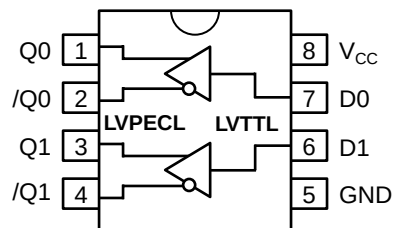
The device only requires a single positive supply of 3.3V or 5V - no negative supply is required.

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
$Q_0, /Q_0, Q_1, /Q_1$	Differential LVPECL Outputs
D_0, D_1	LVTTTL Inputs
V_{CC}	Positive Supply
GND	Ground

PACKAGE/ORDERING INFORMATION



Available in 8-pin SOIC and
8-pin MSOP

Ordering Information⁽¹⁾

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

Notes:

1. Contact factory for die availability. Dice are guaranteed at $T_A = 25^\circ\text{C}$, DC Electricals only.
2. Tape and Reel.
3. Pb-Free package is recommended for new designs.

ABSOLUTE MAXIMUM RATINGS⁽¹⁾

Symbol	Parameter	Value	Unit
V _{CC}	Power Supply Voltage	−0.5 to +7.0	V
V _I	TTL Input Voltage	−0.5 to V _{CC}	V
I _I	TTL Input Current	−30 to +5.0	mA
I _O	PECL Output Current		mA
	— Continuous	50	
	— Surge	100	
T _{LEAD}	Lead Temperature (Soldering, 20sec.)	+260	°C
T _{store}	Storage Temperature	−65 to +150	°C
T _A	Operating Temperature	−40 to +85	°C

TRUTH TABLE

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

Notes:

- 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⁽¹⁾V_{CC} = +3.3V ±5% or +5.0V ±5%

Symbol	Parameter	T _A = −40°C		T _A = 0°C		T _A = +25°C		T _A = +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.		
I _{CC}	Power Supply Current	—	25	—	25	—	25	—	25	mA	—

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.

TTL DC ELECTRICAL CHARACTERISTICS⁽¹⁾V_{CC} = +3.3V ±5% or +5.0V ±5%

Symbol	Parameter	T _A = −40°C		T _A = 0°C		T _A = +25°C		T _A = +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.		
V _{IH}	Input HIGH Voltage	2.0	—	2.0	—	2.0	—	2.0	—	V	—
V _{IL}	Input LOW Voltage	—	0.8	—	0.8	—	0.8	—	0.8	V	—
I _{IH}	Input HIGH Current	—	20 100	—	20 100	—	20 100	—	20 100	μA	V _{IN} = 2.7V V _{IN} = V _{CC}
I _{IL}	Input LOW Current	—	−0.2	—	−0.2	—	−0.2	—	−0.2	mA	V _{IN} = 0.5V
V _{IK}	Input Clamp Voltage	—	−1.2	—	−1.2	—	−1.2	—	−1.2	V	I _{IN} = −18mA

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.

PECL DC ELECTRICAL CHARACTERISTICS⁽¹⁾ $V_{CC} = +3.3V \pm 5\%$ or $+5.0V \pm 5\%$

Symbol	Parameter	$T_A = -40^\circ C$			$T_A = 0^\circ C$			$T_A = +25^\circ C$			$T_A = +85^\circ C$			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
V_{OH}	Output HIGH Voltage ⁽²⁾ 100EPT	2220	—	2420	2275	—	2420	2275	—	2420	2275	—	2420	mV
V_{OL}	Output LOW Voltage ⁽²⁾ 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} .

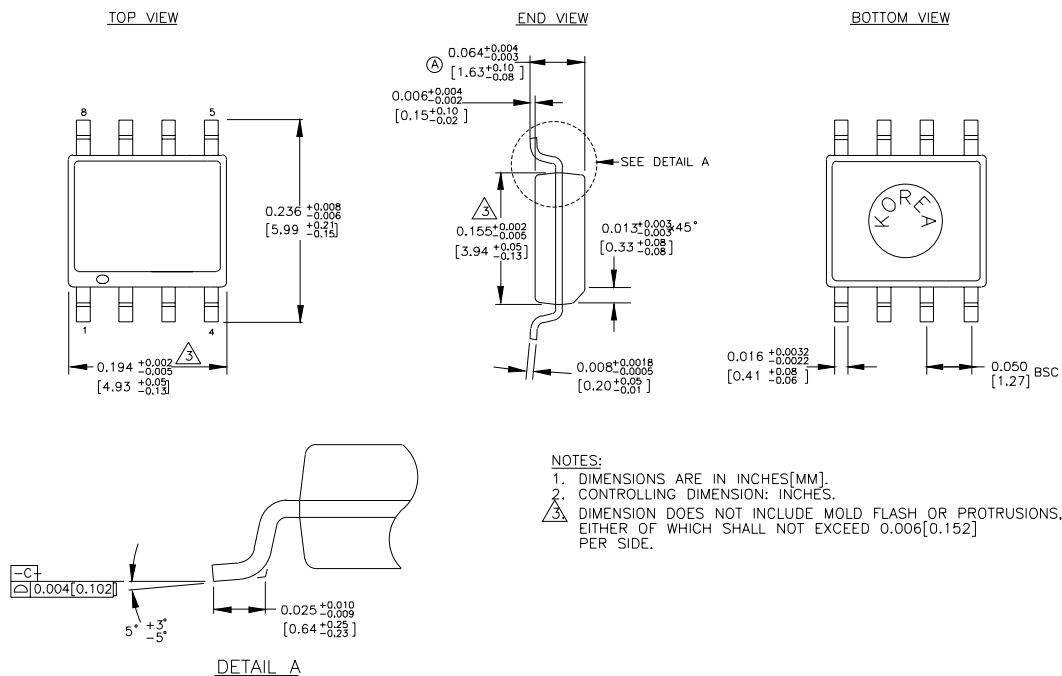
AC ELECTRICAL CHARACTERISTICS^(1, 2) $V_{CC} = +3.3V \pm 5\%$ or $+5.0V \pm 5\%$

Symbol	Parameter	$T_A = -40^\circ C$		$T_A = 0^\circ C$		$T_A = +25^\circ C$		$T_A = +85^\circ C$		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	50Ω to $V_{CC} - 2.0V$
t_{skpp}	Part-to-Part Skew ⁽²⁾	—	500	—	500	—	500	—	500	ps	50Ω to $V_{CC} - 2.0V$
t_{skew}	Within-Device Skew ^(2, 3)	—	100	—	100	—	100	—	100	ps	50Ω 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	50Ω to $V_{CC} - 2.0V$
f_{MAX}	Maximum Toggle Frequency	—	800	—	800	—	800	—	800	MHz	50Ω to $V_{CC} - 2.0V$

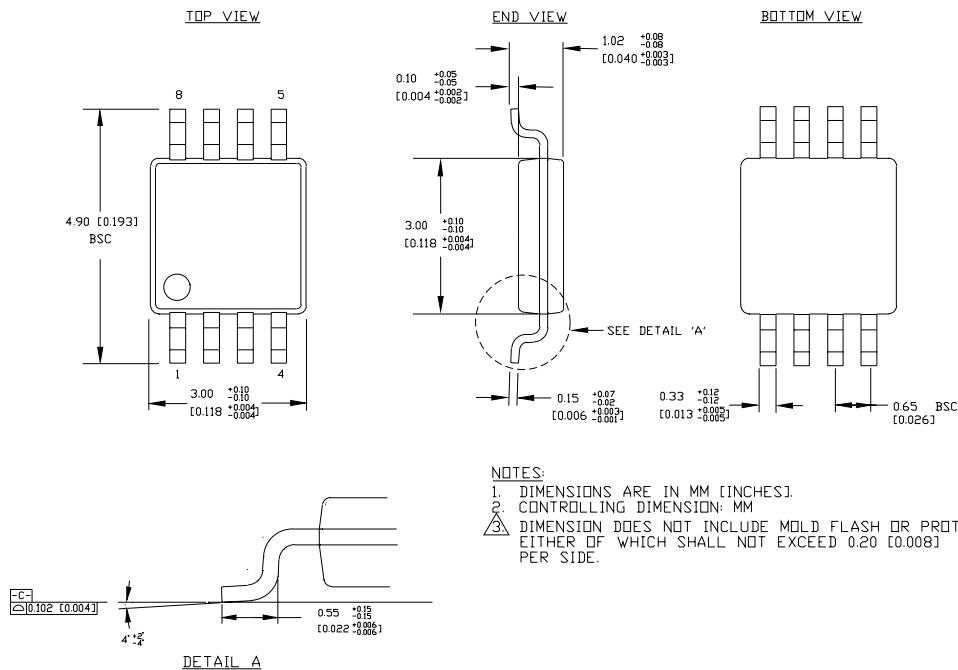
Notes:

- 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

MICREL, INC. 2180 FORTUNE DRIVE SAN JOSE, CA 95131 USATEL + 1 (408) 944-0800 FAX + 1 (408) 474-1000 WEB <http://www.micrel.com>

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