

Product Preview

# Dual Differential LVPECL to TTL Translator

The MC100EPT23 is a dual differential LVPECL to TTL translator. Because LVPECL (Positive ECL) levels are used only +3.3V and ground are required. The small outline 8-lead SOIC package and the dual gate design of the EPT23 makes it ideal for applications which require the translation of a clock and a data signal.

The EPT23 is available in only the ECL 100K standard. Since there are no LVPECL outputs or an external  $V_{BB}$  reference, the EPT23 does not require both ECL standard versions. The LVPECL inputs are differential; there is no specified difference between the differential input 10H and 100K standards. Therefore, the MC100EPT23 can accept any standard differential LVPECL input referenced from a  $V_{CC}$  of 3.3V.

- 2.0ns Typical Propagation Delay
- Differential LVPECL Inputs
- Small Outline SOIC Package
- 24mA TTL Outputs
- Flow Through Pinouts
- ESD Performance: Human Body Model 1200V; Machine Model 150V

**Note:**

- 1) Pulling the output higher than  $V_{CC}$  is not recommended. Doing so causes excessive leakage and possible latchup leading to reliability risk.

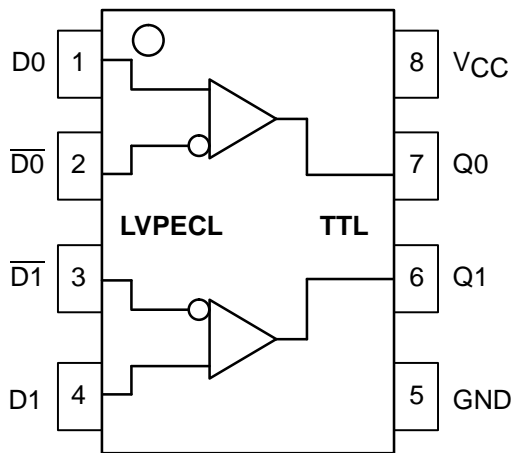


Figure 1. 8-Lead Pinout and Logic Diagram

## MC100EPT23



**D SUFFIX**  
8-LEAD PLASTIC SOIC PACKAGE  
CASE 751-06

### PIN DESCRIPTION

PIN	FUNCTION
$Q_n$	TTL Outputs
$D_n$	Diff LVPECL Inputs
$V_{CC}$	+3.3V Supply
GND	Ground



**MAXIMUM RATINGS\***

Symbol	Parameter	Value	Unit
V <sub>CC</sub>	DC Supply Voltage (Referenced to GND)	−0.5 to +3.8	V
T <sub>A</sub>	Operating Temperature Range (In Free-Air)	−40 to 85	°C
T <sub>STG</sub>	Storage Temperature Range	−55 to +150	°C
Θ	Thermal Resistnace Through Package (No Air Flow)	130	°C/W

\* Maximum Ratings are those values beyond which damage to the device may occur. Functional operation should be restricted to the Recommended Operating Conditions.

**TTL OUTPUT DC CHARACTERISTICS** (V<sub>CC</sub> = 3.0V to 3.6V; T<sub>A</sub> = −40°C to 85°C)

Symbol	Characteristic	Min	Typ	Max	Unit	Condition
V <sub>OH</sub>	Output HIGH Voltage	2.2			V	I <sub>OH</sub> = −3.0mA
V <sub>OL</sub>	Output LOW Voltage			0.5	V	I <sub>OL</sub> = 24mA
I <sub>CCH</sub>	Power Supply Current		20	26	mA	
I <sub>CCL</sub>	Power Supply Current		28	37	mA	
I <sub>OS</sub>	Output Short Circuit Current	−80		−130	mA	

**PECL INPUT DC CHARACTERISTICS** (V<sub>CC</sub> = 3.0V to 3.6V; T<sub>A</sub> = −40°C to 85°C)

Symbol	Characteristic	−40°C		0°C		25°C			85°C		Unit	Condition
		Min	Max	Min	Max	Min	Typ	Max	Min	Max		
I <sub>IH</sub>	Input HIGH Current		150		150			150		150	μA	
I <sub>IL</sub>	Input LOW Current D0, D1 D0, D1	−100 −100		−100 −100		−100 −100			−100 −100		μA	
V <sub>CMR</sub>	Common Mode Range	1.2	V <sub>CC</sub>	1.2	V <sub>CC</sub>	1.2		V <sub>CC</sub>	1.2	V <sub>CC</sub>	V	
V <sub>PP</sub>	Minimum Peak-to-Peak Input	100		100		100			100		mV	Note 1.

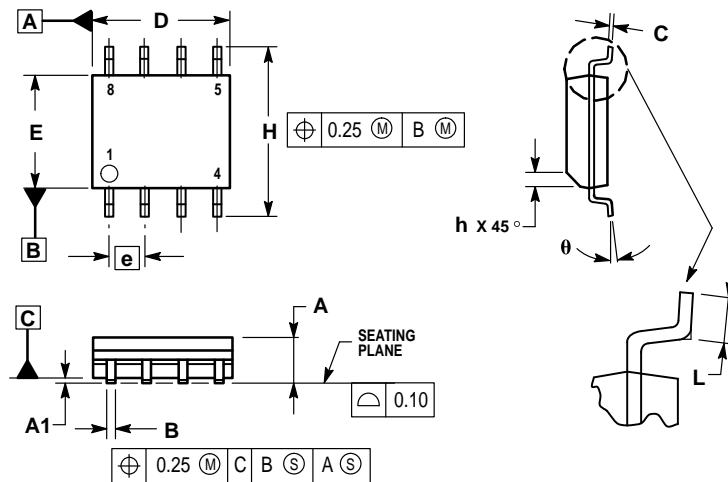
1. 200mV input guarantees full logic swing at the output.

**AC CHARACTERISTICS** (V<sub>CC</sub> = 3.0V to 3.6V; T<sub>A</sub> = −40°C to +85°C)

Symbol	Characteristic	−40°C			0°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
t <sub>PLH</sub>	Propagation Delay (Note 2.)	1.0	1.7		1.0	1.7		1.0	1.7		1.0	1.7		ns
t <sub>PHL</sub>	Propagation Delay (Note 2.)	1.0	1.4		1.0	1.4		1.0	1.4		1.0	1.4		ns
f <sub>max</sub>	Max Input Frequency (Note 2.)	275			275			275			275			MHz
t <sub>skpp</sub>	Part-to-Part Skew (Note 2.)			0.5			0.5			0.5			0.5	ns
t <sub>sk++</sub>	Output-to-Output Skew			60			60			60			110	ps
t <sub>sk−−</sub>	Output-to-Output Skew			25			25			25			25	ps
t <sub>r</sub> , t <sub>f</sub>	Output Rise/Fall	330		700	330		700	330		700	330		700	ps

2. C<sub>L</sub> = 20pF.


**D SUFFIX**  
**PLASTIC SOIC PACKAGE**  
CASE 751-06  
ISSUE T



**NOTES:**

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. DIMENSIONS ARE IN MILLIMETER.
3. DIMENSION D AND E DO NOT INCLUDE MOLD PROTRUSION.
4. MAXIMUM MOLD PROTRUSION 0.15 PER SIDE.
5. DIMENSION B DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 TOTAL IN EXCESS OF THE B DIMENSION AT MAXIMUM MATERIAL CONDITION.

DIM	MILLIMETERS	
	MIN	MAX
A	1.35	1.75
A1	0.10	0.25
B	0.35	0.49
C	0.19	0.25
D	4.80	5.00
E	3.80	4.00
e	1.27 BSC	
H	5.80	6.20
h	0.25	0.50
L	0.40	1.25
θ	0°	7°

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