Product Preview

Dual Differential LVPECL to TTL Translator

MC100EPT23

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.

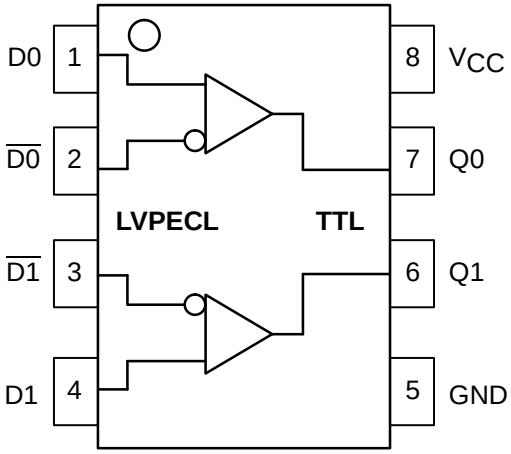


Figure 1. 8–Lead Pinout and Logic Diagram

D SUFFIX
8–LEAD PLASTIC SOIC PACKAGE
CASE 751–06

PIN DESCRIPTION

PIN	FUNCTION
Qn	TTL Outputs
Dn	Diff LVPECL Inputs
V_{CC}	+3.3V Supply
GND	Ground

This document contains information on a product under development. Motorola reserves the right to change or discontinue this product without notice.

MAXIMUM RATINGS*

Symbol	Parameter	Value	Unit
V_{CC}	DC Supply Voltage (Referenced to GND)	–0.5 to +3.8	V
T_A	Operating Temperature Range (In Free-Air)	–40 to 85	°C
T_{STG}	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_{CC} = 3.0V to 3.6V; T_A = –40°C to 85°C)

Symbol	Characteristic	Min	Typ	Max	Unit	Condition
V_{OH}	Output HIGH Voltage	2.2			V	I_{OH} = –3.0mA
V_{OL}	Output LOW Voltage			0.5	V	I_{OL} = 24mA
I_{CCH}	Power Supply Current		20	26	mA	
I_{CCL}	Power Supply Current		28	37	mA	
I_{OS}	Output Short Circuit Current	–80		–130	mA	

PECL INPUT DC CHARACTERISTICS (V_{CC} = 3.0V to 3.6V; T_A = –40°C to 85°C)

		–40°C		0°C		25°C			85°C			
Symbol	Characteristic	Min	Max	Min	Max	Min	Typ	Max	Min	Max	Unit	Condition
I_{IH}	Input HIGH Current		150		150			150		150	µA	
I_{IL}	Input LOW Current D0, D1 $\overline{D0}$, $\overline{D1}$	–100 –100		–100 –100		–100 –100			–100 –100		µA	
V_{CMR}	Common Mode Range	1.2	V_{CC}	1.2	V_{CC}	1.2		V_{CC}	1.2	V_{CC}	V	
V_{PP}	Minimum Peak-to-Peak Input	100		100		100			100		mV	Note 1.

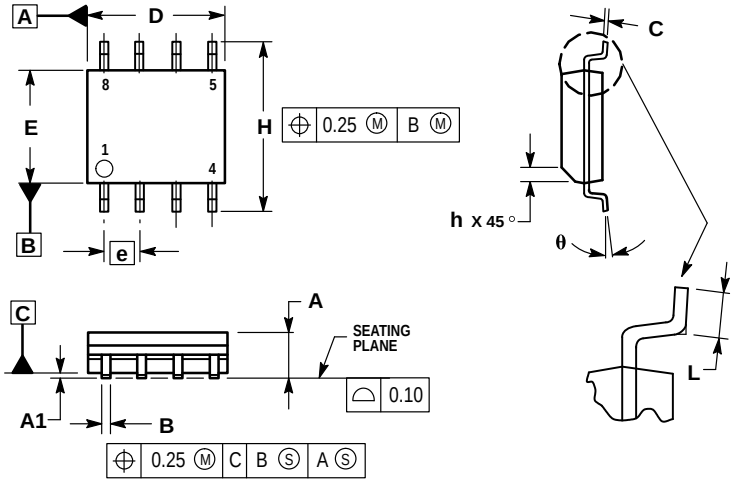
1. 200mV input guarantees full logic swing at the output.

AC CHARACTERISTICS (V_{CC} = 3.0V to 3.6V; T_A = –40°C to +85°C)

		–40°C			0°C			25°C			85°C			
Symbol	Characteristic	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Unit
t_{PLH}	Propagation Delay (Note 2.)	1.0	1.7		1.0	1.7		1.0	1.7		1.0	1.7		ns
t_{PHL}	Propagation Delay (Note 2.)	1.0	1.4		1.0	1.4		1.0	1.4		1.0	1.4		ns
f_{max}	Max Input Frequency (Note 2.)	275			275			275			275			MHz
t_{skpp}	Part–to–Part Skew (Note 2.)			0.5			0.5			0.5			0.5	ns
t_{sk++}	Output–to–Output Skew			60			60			60			110	ps
t_{sk--}	Output–to–Output Skew			25			25			25			25	ps
t_r, t_f	Output Rise/Fall	330		700	330		700	330		700	330		700	ps

2. C_L = 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.

	MILLIMETERS	
DIM	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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JAPAN: Nippon Motorola Ltd.: SPD, Strategic Planning Office, 141,
4–32–1 Nishi–Gotanda, Shagawa–ku, Tokyo, Japan. 03–5487–8488

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Mfax™: RMFAX0@email.sps.mot.com – TOUCHTONE 1–602–244–6609
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51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852–26629298

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