

ECLPS Plus™

Dual LVTTL/LVCMOS to Differential LVPECL Translator

- 420ps Typical Propagation Delay
- Differential LVPECL Outputs
- Small Outline SOIC Package
- PNP LVTTL Inputs for Minimal Loading
- Flow Through Pinouts
- Q Output will default HIGH with inputs open
- ESD Protection: TBD KV HBM, TBD V MM
- Maximum Frequency > 1.1 GHz
- Moisture Sensitivity Level 1, Indefinite Time Out of Drypack
- Flammability Rating: UL-94 code V-0 @ 1/8", Oxygen Index 28 to 34
- Transistor Count = 164 devices

The MC100EPT22 is a dual LVTTL/LVCMOS to differential LVPECL translator. Because LVPECL (Positive ECL) levels are used only +3.3V and ground are required. The small outline 8-lead SOIC package and the single gate of the EPT22 makes it ideal for those applications where space, performance, and low power are at a premium. Because the mature MOSAIC 5 process is used, low cost and high speed can be added to the list of features.

MC100EPT22



SO-8, D SUFFIX
8-LEAD PLASTIC SOIC PACKAGE
CASE 751

ORDERING INFORMATION

MC100EPT22D SOIC

PIN DESCRIPTION

PIN	FUNCTION
Q0, Q1, $\overline{Q0}$, $\overline{Q1}$	Diff LVPECL Outputs
D0, D1	LVTTL Inputs
VCC	Positive Supply
GND	Ground



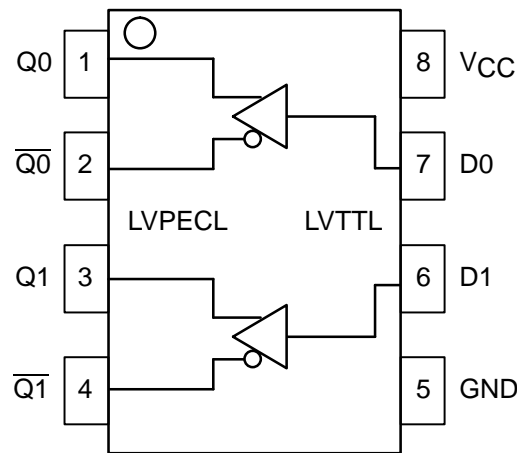


Figure 1. 8-Lead Pinout (Top View) and Logic Diagram

MAXIMUM RATINGS*

Symbol	Parameter	Value	Unit
V _{CC}	Power Supply	6.0 to 0	VDC
V _I	Input Voltage (V _I not more positive than V _{CC})	6.0 to 0	VDC
I _{out}	Output Current Continuous Surge	50 100	mA
T _A	Operating Temperature Range	−40 to +85	°C
T _{stg}	Storage Temperature	−65 to +150	°C
θ _{JA}	Thermal Resistance (Junction-to-Ambient) Still Air 500lfpm	190 130	°C/W
θ _{JC}	Thermal Resistance (Junction-to-Case)	41 to 44 ± 5%	°C/W
T _{sol}	Solder Temperature (<2 to 3 Seconds: 245°C desired)	265	°C

* Maximum Ratings are those values beyond which damage to the device may occur.

LVTTTL INPUT DC CHARACTERISTICS ($V_{CC} = 3.3V \pm 0.3V$; GND = 0V; $T_A = -40^\circ\text{C}$ to $+85^\circ\text{C}$)

Symbol	Characteristic	Min	Typ	Max	Unit
I_{IH}	Input HIGH Current ($V_{in} = 2.7V$)			20	μA
I_{IHH}	Input HIGH Current MAX ($V_{in} = 6.0V$)			100	μA
I_{IL}	Input LOW Current ($V_{in} = 0.5V$)			-0.6	mA
V_{IK}	Input Clamp Voltage ($I_{in} = -18\text{mA}$)			-1.0	V
V_{IH}	Input HIGH Voltage	2.0			V
V_{IL}	Input LOW Voltage			0.8	V

LVPECL OUTPUT DC CHARACTERISTICS ($V_{CC} = 3.3V \pm 0.3V$, GND = 0V) (Note 3.)

Symbol	Characteristic	-40°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
I_{CC}	Power Supply Current HIGH (Note 1.)	32	43	55	35	45	60	37	46	62	mA
V_{OH}	Output HIGH Voltage (Note 2.)	2165	2240	2415	2155	2280	2480	2290	2415	2540	mV
V_{OL}	Output LOW Voltage (Note 2.)	1365	1490	1615	1430	1555	1680	1490	1615	1740	mV

NOTE: 100EP circuits are designed to meet the DC specifications shown in the above table after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board and transverse airflow greater than 500lfpm is maintained.

1. $V_{CC} = 3.3V$, GND = 0V, all other pins floating.
2. All loading with 50 ohms to V_{CC} -2.0 volts.
3. Output parameters vary 1:1 with V_{CC} .

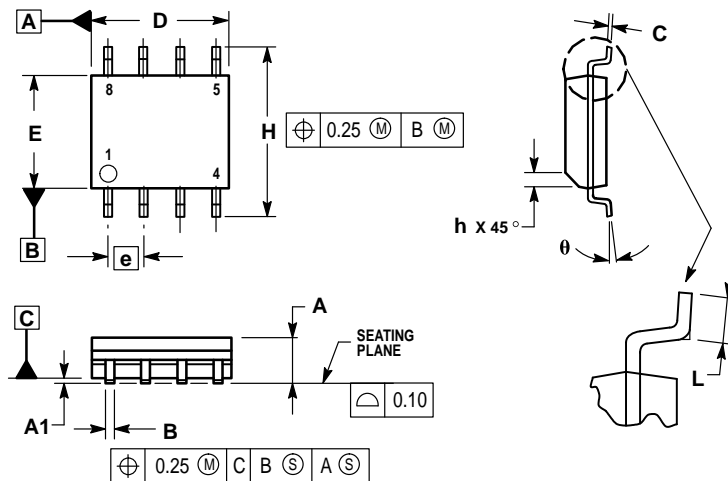
AC CHARACTERISTICS ($V_{CC} = 3.3V \pm 0.3V$; GND = 0V)

Symbol	Characteristic	-40°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
f_{max}	Maximum Toggle Frequency (Note 4.)	0.8	1.1		0.8	1.1		0.8	1.1		GHz
t_{PLH} , t_{PHL}	Propagation Delay to Output Differential	250	400	650	250	420	675	300	500	700	ps
t_{JITTER}	Cycle-to-Cycle Jitter		TBD			TBD			TBD		ps
t_r & t_f	Output Rise/Fall Times (20% – 80%) Q, \bar{Q}	50	110	200	60	120	220	70	140	250	ps

4. F_{max} guaranteed for functionality only. V_{OL} and V_{OH} levels are guaranteed at DC only.

OUTLINE DIMENSIONS


SO-8, 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°

Motorola reserves the right to make changes without further notice to any products herein. Motorola makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Motorola assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters which may be provided in Motorola data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. Motorola does not convey any license under its patent rights nor the rights of others. Motorola products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Motorola product could create a situation where personal injury or death may occur. Should Buyer purchase or use Motorola products for any such unintended or unauthorized application, Buyer shall indemnify and hold Motorola and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Motorola was negligent regarding the design or manufacture of the part. Motorola and  are registered trademarks of Motorola, Inc. Motorola, Inc. is an Equal Opportunity/Affirmative Action Employer.

Mfax is a trademark of Motorola, Inc.

How to reach us:

USA/EUROPE/Locations Not Listed: Motorola Literature Distribution;
P.O. Box 5405, Denver, Colorado 80217. 1-303-675-2140 or 1-800-441-2447

JAPAN: Motorola Japan Ltd.; SPD, Strategic Planning Office, 141,
4-32-1 Nishi-Gotanda, Shinagawa-ku, Tokyo, Japan. 81-3-5487-8488

Customer Focus Center: 1-800-521-6274

Mfax™: RMFAX0@email.sps.mot.com – TOUCHTONE 1-602-244-6609
Motorola Fax Back System – US & Canada ONLY 1-800-774-1848
– <http://sps.motorola.com/mfax/>

ASIA/PACIFIC: Motorola Semiconductors H.K. Ltd.; Silicon Harbour Centre,
2, Dai King Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong.
852-26629298

HOME PAGE: <http://motorola.com/sps/>

