MC100EPT22

Dual LVTTL/LVCMOS to Differential LVPECL Translator

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.

- 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: 4.0 KV HBM, 200 V MM
- Maximum Frequency > 1.1 GHz
- Moisture Sensitivity Level 1, Indefinite Time Out of Drypack. For Additional Information, See Application Note AND8003/D
- Flammability Rating: UL–94 code V–0 @ 1/8”, Oxygen Index 28 to 34
- Transistor Count = 164 devices

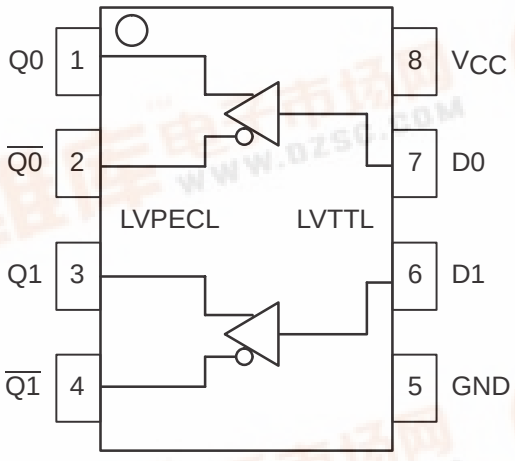

Figure 1. 8–Lead Pinout (Top View) **and Logic Diagram**

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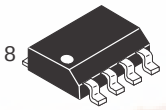
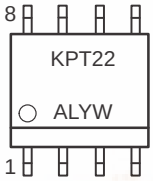


SO–8
D SUFFIX
CASE 751

MARKING DIAGRAM



A = Assembly Location
L = Wafer Lot
Y = Year
W = Work Week

*For additional information, see Application Note AND8002/D

PIN DESCRIPTION	
PIN	**FUNCTION**
Q0, Q1, $\overline{Q0}$, $\overline{Q1}$	Diff. LVPECL Outputs
D0, D1	LVTTL Inputs
V_{CC}	Positive Supply
GND	Ground

ORDERING INFORMATION

Device	Package	Shipping
MC100EPT22D	SOIC	98 Units/Rail
MC100EPT22DR2	SOIC	2500 Tape & Reel

Publication Order Number:

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.

LVTTL INPUT DC CHARACTERISTICS (V_{CC} = 3.3V ±0.3V; GND = 0V; T_A = –40°C to +85°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} = –18mA)			–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 ± 0.3V, GND = 0V) (Note 3.)

		–40°C			25°C			85°C			
Symbol	Characteristic	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Unit
ICC	Power Supply Current HIGH (Note 1.)	32	43	55	35	45	60	37	46	62	mA
V_{OH}	Output HIGH Voltage (Note 2.)	2100	2240	2400	2100	2280	2400	2100	2350	2400	mV
V_{OL}	Output LOW Voltage (Note 2.)	1350	1490	1600	1350	1555	1600	1350	1550	1600	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}.

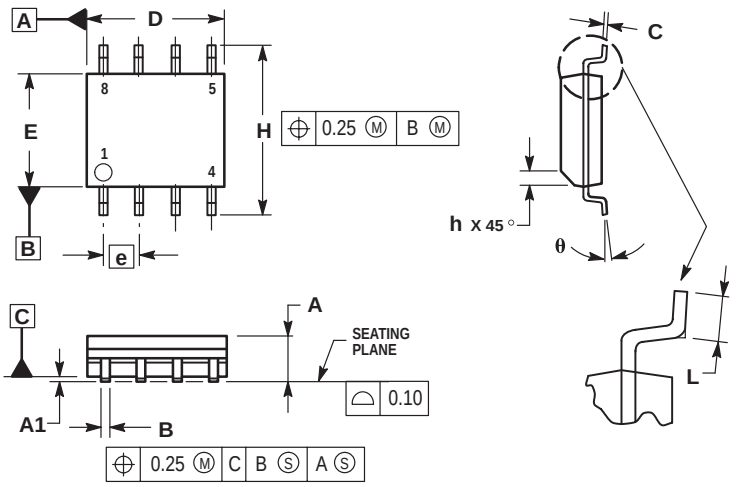
AC CHARACTERISTICS (V_{CC} = 3.3V ± 0.3V; GND = 0V)

		–40°C			25°C			85°C			
Symbol	Characteristic	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Unit
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, $\overline{Q}$	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.

PACKAGE 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°

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