MC100EPT26

1:2 Fanout Differential LVPECL to LVTTL Translator

The MC100EPT26 is a 1:2 Fanout Differential LVPECL to LVTTL translator. Because LVPECL (Positive ECL) levels are used only +3.3V and ground are required. The small outline 8–lead SOIC package and the 1:2 fanout design of the EPT26 makes it ideal for applications which require the low skew duplication of a signal in a tightly packed PC board.

The VBB output allows the EPT26 to be used in a single–ended input mode. In this mode the VBB output is tied to the $\overline{D0}$ input for a non–inverting buffer or the D0 input for an inverting buffer. If used, the VBB pin should be bypassed to ground via a 0.01μF capacitator.

- 1.4ns Typical Propagation Delay
- 275MHz Fmax (Clock bit stream, not pseudo–random)
- Differential LVPECL inputs
- Small Outline SOIC Package
- 24mA TTL outputs
- Flowthrough Pinouts
- ESD Protection: >2KV HBM, >100V MM
- Internal Input Resistors: Pulldown on D, Pulldown and Pullup on $\overline{D}$
- Q Outputs will default LOW with inputs open or at V_{EE}
- V_{BB} Output
- New Differential Input Common Mode Range
- 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 = 117 devices

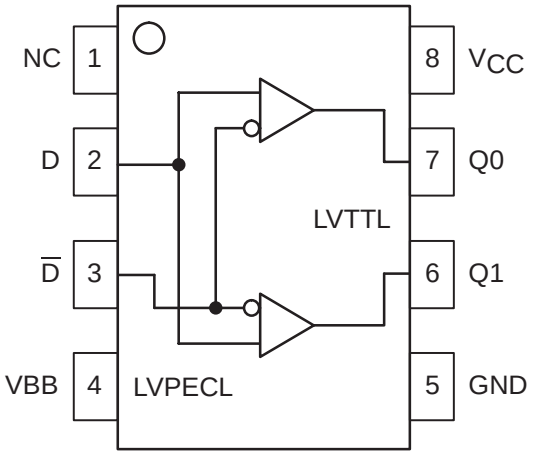

Figure 1. 8–Lead Pinout (Top View) **and Logic Diagram**

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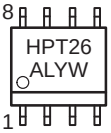
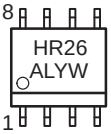
MARKING DIAGRAMS*

SO–8
D SUFFIX
CASE 751



TSSOP–8
DT SUFFIX
CASE 948R



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	LVTTL Outputs
D, $\overline{D}$	Differential LVPECL Input Pair
V_{CC}	Positive Supply
V_{BB}	Reference Voltage
GND	Ground

ORDERING INFORMATION

Device	Package	Shipping
MC100EPT26D	SO–8	98 Units / Rail
MC100EPT26DR2	SO–8	2500 / Reel
MC100EPT26DT	TSSOP–8	98 Units / Rail
MC100EPT26DTR2	TSSOP–8	2500 / Reel

MAXIMUM RATINGS*

Symbol	Parameter	Value	Unit
V_{CC}	Power Supply (GND = 0V)	0 to 3.8	VDC
V_I	Input Voltage (GND = 0V, V_I not more positive than V_{CC})	0 to 3.8	VDC
I_{out}	Output Current Continuous Surge	50 100	mA
I_{BB}	V_{BB} Sink/Source Current†	± 0.5	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.

† Use for inputs of same package only.

DC CHARACTERISTICS (V_{CC} = 3.3V ± 0.3V; GND = 0V; T_A = –40°C to 85°C)

Symbol	Characteristic	Min	Typ	Max	Unit
I_{CCH}	Power Supply Current (Outputs set to HIGH)	10	20	18	mA
I_{CCL}	Power Supply Current (Outputs set to LOW)	15	28	35	mA
V_{IH}	Input HIGH Voltage (V_{CC} = 3.3) (Note 1.)	2135		2420	mV
V_{IL}	Input LOW Voltage (V_{CC} = 3.3) (Note 1.)	1490		1825	mV
I_{IH}	Input HIGH Current			150	µA
I_{IL}	Input LOW Current D $\overline{D}$	 –150		0.5	µA
V_{OH}	Output HIGH Voltage (I_{OH} = –3.0mA) (Note 2.)	2.4			V
V_{OL}	Output LOW Voltage (I_{OL} = 24mA) (Note 2.)			0.5	V
I_{OS}	Output Short Circuit Current	–50		–150	mA
V_{IHCMR}	Input HIGH Voltage Common Mode Range (Note 3.)	2.0		3.3	V
V_{BB}	Output Voltage Reference		2.0		V

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. All values vary 1:1 with V_{CC}.
2. All loading with 500 ohms to GND, CL = 20pF.
3. V_{IHCMR} min varies 1:1 with GND, max varies 1:1 with V_{CC}.

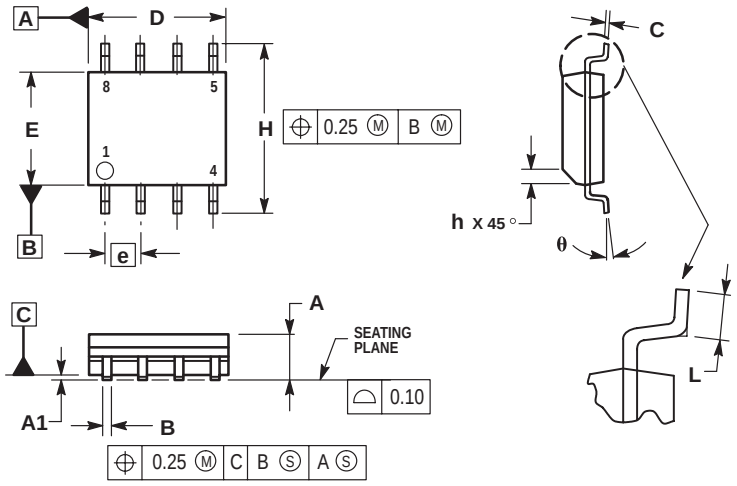
AC CHARACTERISTICS (V_{CC} = 3.3V ± 0.3V; GND = 0V)

		–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.)	275	350		275	350		275	350		MHz
t_{PLH}, t_{PHL}	Propagation Delay to Output Differential (Note 5.)	1.2 1.2	1.5 1.5	1.8 1.8	1.2 1.2	1.5 1.5	1.8 1.8	1.3 1.2	1.7 1.5	2.2 1.8	ns
t_{SK++} t_{SK--} t_{SKPP}	Output–to–Output Skew++ Output–to–Output Skew– – Part–to–Part Skew (Note 6.)		60 25 500			60 25 500			60 25 500		ps
t_{JITTER}	Cycle–to–Cycle Jitter		TBD			TBD			TBD		ps
V_{PP}	Input Voltage Swing (Diff.)	150	800	1200	150	800	1200	150	800	1200	mV
t_r t_f	Output Rise/Fall Times (0.8V – 2.0V) Q, $\overline{Q}$	330	600	900	330	600	900	330	650	900	ps

4. F_{max} guaranteed for functionality only. V_{OL} and V_{OH} levels are guaranteed at DC only.
5. Reference (V_{CC} = 3.3V ± 5%, GND = 0V)
6. Skews are measured between outputs under identical transitions.

PACKAGE DIMENSIONS

SO–8
D SUFFIX
PLASTIC SOIC PACKAGE
CASE 751–06
ISSUE T

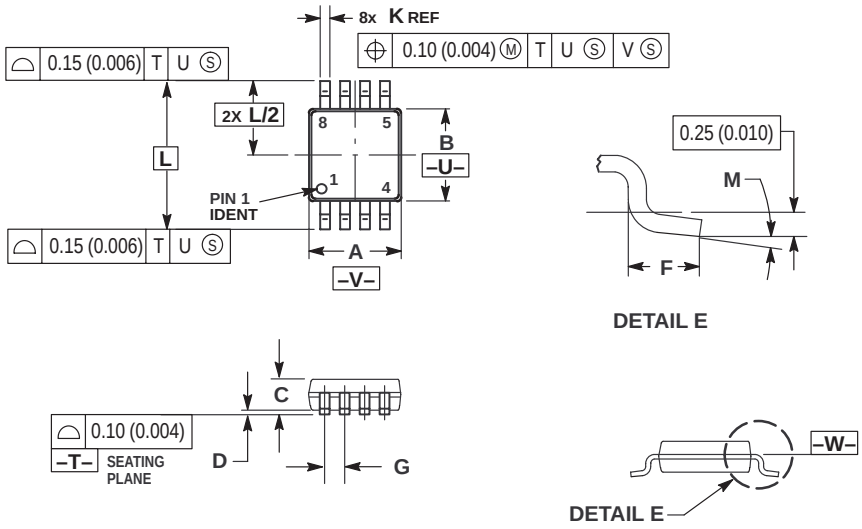


NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. DIMENSIONS ARE IN MILLIMETER.
3. DIMENSION D AND E DO NOT INCLUDE MOLD PROTRUSION.
4. MAXIMUM MOLD PROTRUSION 0.15 PER SIDE.
5. DIMENSION B DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 TOTAL IN EXCESS OF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

PACKAGE DIMENSIONS

TSSOP–8
DT SUFFIX
PLASTIC TSSOP PACKAGE
CASE 948R–02
ISSUE A



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSION A DOES NOT INCLUDE MOLD FLASH. PROTRUSIONS OR GATE BURRS. MOLD FLASH OR GATE BURRS SHALL NOT EXCEED 0.15 (0.006) PER SIDE.
4. DIMENSION B DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSION. INTERLEAD FLASH OR PROTRUSION SHALL NOT EXCEED 0.25 (0.010) PER SIDE.
5. TERMINAL NUMBERS ARE SHOWN FOR REFERENCE ONLY.
6. DIMENSION A AND B ARE TO BE DETERMINED AT DATUM PLANE –W–.

	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
A	2.90	3.10	0.114	0.122
B	2.90	3.10	0.114	0.122
C	0.80	1.10	0.031	0.043
D	0.05	0.15	0.002	0.006
F	0.40	0.70	0.016	0.028
G	0.65 BSC		0.026 BSC	
K	0.25	0.40	0.010	0.016
L	4.90 BSC		0.193 BSC	
M	0°	6°	0°	6°

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