MOTOROLA
Semiconductor Components

Order Number: MC10EPT20/D
Rev. 0.1, 05/1999

MC10EPT20

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

ORDERING INFORMATION
MC10EPT20D SOIC

ECLinPS Plus™

Product Preview

LVTTL/LVCMOS to Differential LVPECL Translator

PIN DESCRIPTION

PIN	FUNCTION
Q, $\overline{Q}$	Diff LVPECL Outputs
D	LVTTL Input
V_{CC}	Positive Supply
GND	Ground

- 390ps Typical Propagation Delay
- Maximum Frequency >1.0GHz
- Differential LVPECL Outputs
- Small Outline SOIC Package
- PNP LVTTL Inputs for Minimal Loading
- V_{CC} Range of 3.0V to 3.6V
- ESD Protection: >1.5KV HBM, >200V MM
- Q Output will default HIGH with inputs open
- 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 = 150 devices

The MC10EPT20 is a 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 EPT20 makes it ideal for those applications where space, performance, and low power are at a premium.

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

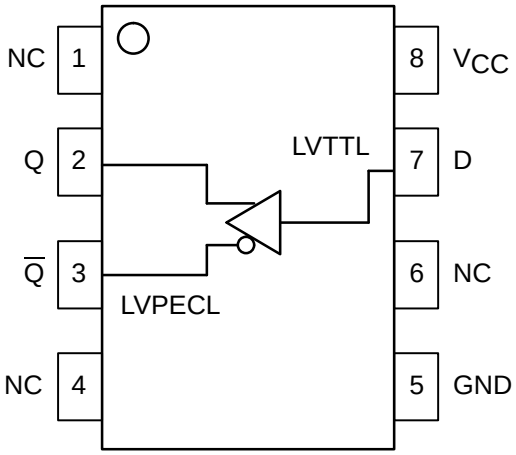


Figure 1. 8–Lead Pinout (Top View) **and Logic Diagram**

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.

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)			–1.2	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.)	TBD	TBD	TBD	TBD	38.5	TBD	TBD	TBD	TBD	mA
V_{OH}	Output HIGH Voltage (Note 2.)	2165	2240	2415	2230	2355	2480	2290	2415	2540	mV
V_{OL}	Output LOW Voltage (Note 2.)	1365	1490	1615	1430	1555	1680	1490	1615	1740	mV

NOTE: 10EP 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}.

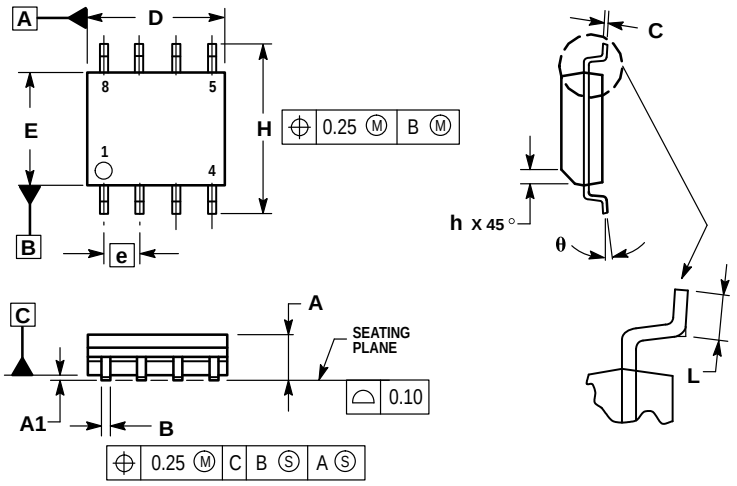
AC CHARACTERISTICS (V_{CC} = 3.3V ± 0.3V; GND = 0V)

		–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.)	TBD			TBD	>1.0		TBD			GHz
t_{PLH}, t_{PHL}	Propagation Delay to Output Differential		TBD TBD			340 390			TBD TBD		ps
t_{JITTER}	Cycle–to–Cycle Jitter		TBD			TBD			TBD		ps
t_r t_f	Output Rise/Fall Times (20% – 80%) Q, $\overline{Q}$		TBD			120			TBD		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°

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