MOTOROLA
SEMICONDUCTOR TECHNICAL DATA

Order number: MC100ES60T22
Rev 1, 5/2004

MC100ES60T22

3.3V Dual LVTTL/LVCMOS to Differential LVPECL Translator

The MC100ES60T22 is a low skew dual LVTTL/LVCMOS to differential LVPECL translator. The low voltage PECL levels, small package, and dual gate design are ideal for clock translation applications.

Features

- 280 ps typical propagation delay
- 100 ps max output-to-output skew
- LVPECL operating range: V_{CC} = 3.135 V to 3.8 V
- 8-lead SOIC package
- Ambient temperature range –40°C to +85°C



D SUFFIX
8 LEAD SOIC PACKAGE
CASE 751

ORDERING INFORMATION

Device	Package
MC100ES60T22D	SO-8
MC100ES60T22DR2	SO-8

PIN DESCRIPTION

Pin	Function
D0, D1	LVTTL/LVCMOS Inputs
Qn, $\overline{Qn}$	LVPECL Differential Outputs
V_{CC}	Positive Supply
GND	Negative Supply

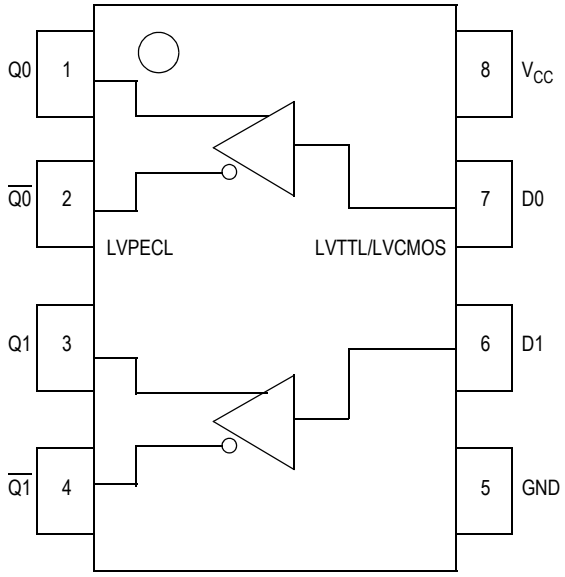


Figure 1. 8-Lead Pinout (Top View) and Logic Diagram

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Table 1. General Specifications

Characteristics		Value
Internal Input Pulldown Resistor		75 kΩ
Internal Input Pullup Resistor		75 kΩ
ESD Protection	Human Body Model Machine Model	> 2000 V > 200 V
θ_{JA} Thermal Resistance (Junction-to-Ambient)	0 LFPM, 8 SOIC 500 LFPM, 8 SOIC	190°C/W 130°C/W

Meets or exceeds JEDEC Spec EIA/JESD78 IC Latchup Test

Table 2. Absolute Maximum Ratings[1]

Symbol	Rating	Conditions	Rating	Units
V_{SUPPLY}	Power Supply Voltage	Difference between V_{CC} & V_{EE}	3.9	V
V_{IN}	Input Voltage	$V_{CC} - V_{EE} \leq 3.6$ V	V_{CC} + 0.3 V_{EE} – 0.3	V V
I_{out}	Output Current	Continuous Surge	50 100	mA mA
T_A	Operating Temperature Range		–40 to +85	°C
T_{STG}	Storage Temperature Range		–65 to +150	°C

1. Absolute maximum continuous ratings are those maximum values beyond which damage to the device may occur. Exposure to these conditions or conditions beyond those indicated may adversely affect device reliability. Functional operation at absolute-maximum-rated conditions is not implied.

Table 3. DC Characteristics (V_{CC} = 3.135 V to 3.8 V; V_{EE} = 0 V)

Symbol	Characteristic	–40°C			0°C to 85°C			Unit
		Min	Typ	Max	Min	Typ	Max	
I_{GND}	Power Supply Current			17			22	mA
V_{OH}[1]	Output HIGH Voltage	V_{CC} – 1150	V_{CC} – 1020	V_{CC} – 800	V_{CC} – 1200	V_{CC} – 970	V_{CC} – 750	mV
V_{OL}[1]	Output LOW Voltage	V_{CC} – 1950	V_{CC} – 1620	V_{CC} – 1250	V_{CC} – 2000	V_{CC} – 1680	V_{CC} – 1300	mV

1. Outputs are terminated through a 50 Ω resistor to V_{CC} – 2 volts

Table 4. LVTTL / LVCMOS Input DC Characteristics (V_{CC} = 3.135 V to 3.8 V)

Symbol	Characteristic	Condition	–40°C			0°C to 85°C			Unit
			Min	Typ	Max	Min	Typ	Max	
I_{IN}	Input Current	$V_{IN} = V_{CC}$			±150			±150	μA
V_{IK}	Input Clamp Voltage	I_{IN} = –18 mA			–1.2			–1.2	V
V_{IH}	Input HIGH Voltage		2.0		V_{CC}+0.3	2.0		V_{CC}+0.3	V
V_{IL}	Input LOW Voltage				0.8			0.8	V

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Table 5. AC Characteristics (V_{CC} = 3.134 V to 3.8 V; V_{EE} = 0 V)

Symbol	Characteristic	–40°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
f_{max}	Maximum Toggle Frequency			1			1			1	GHz
t_{PLH}, t_{PHL}	Propagation Delay	100	260	400	100	280	400	100	280	450	ps
t_{SKEW}	Skew part-to-part			300			300			350	ps
t_{JITTER}	Cycle-to-Cycle Jitter RMS (1σ)			1			1			1	ps
V_{outPP}	Output Peak-to-Peak Voltage	350	750		350	750		350	750		mV
t_r / t_f	Output Rise/Fall Times (20% – 80%)	50		400	50		400	50		400	ps

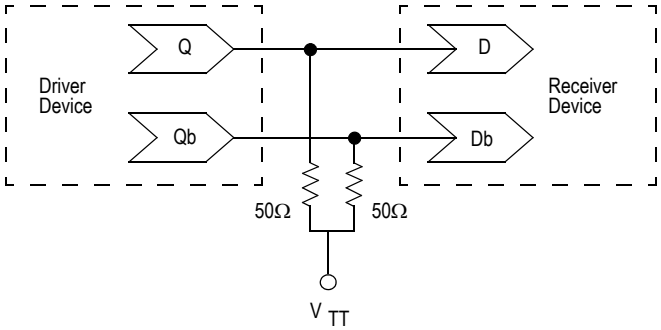


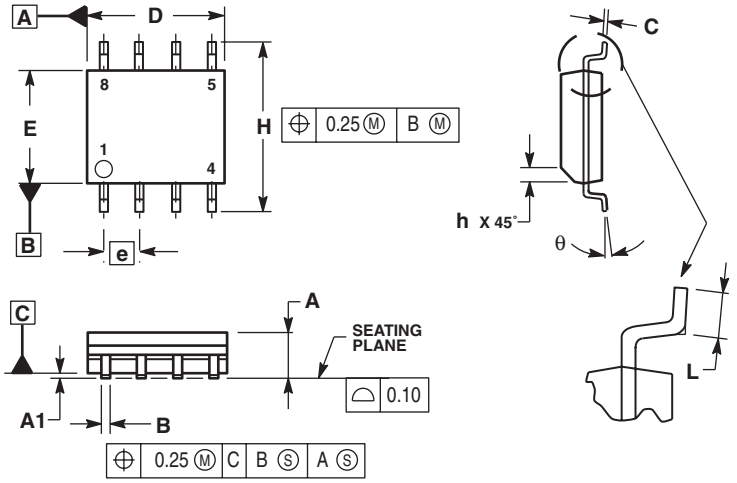
Figure 2. Typical Termination for Output Driver and Device Evaluation

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OUTLINE DIMENSIONS

SOIC-8
D SUFFIX
8-LEAD 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
q	0°	7°

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