

## 100LVELT22

### 3.3V Dual LVTTTL/LVCMOS to Differential LVPECL Translator

#### General Description

The 100LVELT22 is a LVTTTL/LVCMOS to differential LVPECL translator operating from a single +3.3V supply.

Both outputs of a differential pair should be terminated in  $50\Omega$  to  $V_{CC} - 2.0V$  even if only one output is being used. If an output pair is unused both outputs can be left open (un-terminated).

The 100 series is temperature compensated.

#### Features

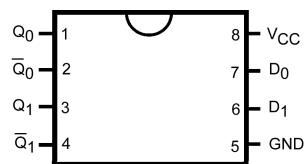
- Typical propagation delay of 350 ps
- <100 ps skew between outputs
- Max  $I_{CC}$  of 28 mA at 25°C
- When TTL input is left Open Q output defaults HIGH
- Fairchild MSOP-8 package is a drop-in replacement to ON TSSOP-8
- Flow through pinout
- Meets or exceeds JEDEC specification EIA/JESD78 IC latch-up test
- Moisture Sensitivity Level 1
- ESD Performance:  
Human Body Model > 2000V  
Machine Model > 200V

#### Ordering Code:

Order Number	Package Number	Product Code Top Mark	Package Description
100LVELT22M	M08A	KVT22	8-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150" Narrow
100LVELT22M8 (Preliminary)	MA08D	KR22	8-Lead Molded Small Outline Package (MSOP), JEDEC MO-187, 3.0mm Wide

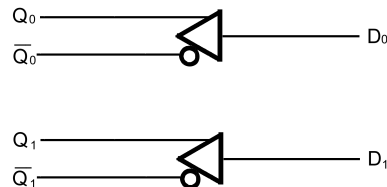
Devices also available in Tape and Reel. Specify by appending suffix letter "X" to the ordering code.

#### Connection Diagram



Top View

#### Logic Diagram



#### Pin Descriptions

Pin Name	Description
$Q_n, \bar{Q}_n$	LVPECL Differential Outputs
$D_0, D_1$	LVTTTL/LVCMOS Inputs
$V_{CC}$	Positive Supply
GND	Ground

**Absolute Maximum Ratings** (Note 1)

Supply Voltage ( $V_{CC}$ )	0.0V to +7.0V
Input Voltage ( $V_I$ ) $V_I \leq V_{CC}$	0.0V to +7.0V
DC Output Current ( $I_{OUT}$ )	
Continuous	50 mA
Surge	100 mA
Storage Temperature ( $T_{STG}$ )	-65°C to +150°C

**Recommended Operating Conditions**

Power Supply Operating	$V_{CC} = 3.0V$ to 3.8V
LVTTTL/LVCMOS Input Voltage	0.0V to $V_{CC}$
Free Air Operating Temperature ( $T_A$ )	-40°C to +85°C

**Note 1:** The "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. The device should not be operated at these limits. The parametric values defined in the Electrical Characteristics tables are not guaranteed at the absolute maximum rating. The "Recommended Operating Conditions" table will define the conditions for actual device operation.

**LVPECL DC Electrical Characteristics**  $V_{CC} = 3.3V$ ; GND = 0.0V (Note 2)

Symbol	Parameter	-40°C			25°C			85°C			Units
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
$I_{CC}$	Power Supply Current			28			28			29	mA
$V_{OH}$	Output HIGH Voltage (Note 3)	2215		2420	2275		2420	2275		2420	mV
$V_{OL}$	Output LOW Voltage (Note 3)	1470		1745	1490		1680	1490		1680	mV

**Note 2:** Output parameters vary 1 to 1 with  $V_{CC}$ .  $V_{CC}$  can vary  $\pm 0.15V$ .

**Note 3:** Outputs are terminated through a 50 $\Omega$  resistor to  $V_{CC} - 2.0V$ .

**Note:** Devices are designed to meet the DC specifications after thermal equilibrium has been established. Circuit is tested with air flow greater than 500LFPM maintained.

**LVTTTL/LVCMOS DC Electrical Characteristics**  $V_{CC} = 3.3V$ ; GND = 0.0V (Note 4)

Symbol	Parameter	$T_A = -40^\circ C$ to $85^\circ C$			Units	Condition
		Min	Typ	Max		
$I_{IH}$	Input HIGH Current			20 100	$\mu A$	$V_{IN} = 2.7V$ $V_{IN} = V_{CC}$
$I_{IL}$	Input LOW Current			-200	$\mu A$	$V_{IN} = 0.5V$
$V_{IK}$	Clamp Diode Voltage			-1.2	V	$I_{IN} = -18 mA$
$V_{IH}$	Input HIGH Voltage	2.0			V	
$V_{IL}$	Input LOW Voltage			0.8	V	

**Note 4:**  $V_{CC}$  can vary  $\pm 0.15V$ .

**Note:** Devices are designed to meet the DC specifications after thermal equilibrium has been established. Circuit is tested with air flow greater than 500LFPM maintained.

**AC Electrical Characteristics**  $V_{CC} = 3.3V$ ; GND = 0.0V (Note 5)

Symbol	Parameter	-40°C			25°C			85°C			Units	Figure Number
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max		
$f_{MAX}$	Maximum Toggle Frequency			TBD			TBD			TBD	MHz	
$t_{JITTER}$	Cycle-to-Cycle Jitter			TBD			TBD			TBD	ps	
$t_{PLH} / t_{PHL}$	Propagation Delay (Note 6)	200	350	600	200	350	600	200	350	600	ps	Figure 1
$t_{SKEW}$	Skew Output-to-Output Part-to-Part		30	100 400		30	100 400		30	100 400	ps	
$t_r, t_f$	Output Rise Time Q (20% to 80%)	200		550	200		500	200		500	ns	Figure 2

**Note 5:**  $V_{CC}$  can vary  $\pm 0.15V$ .

**Note 6:** Specifications for standard LVTTTL input signal (see Figure 1).

Switching Waveforms

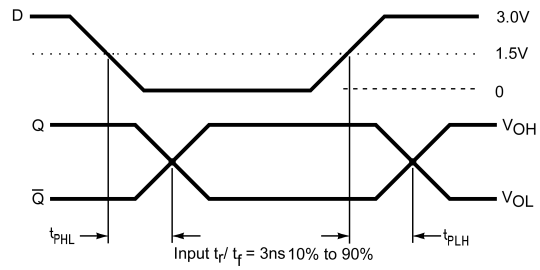


FIGURE 1. LVTTTL to Differential LVPECL Propagation Delay

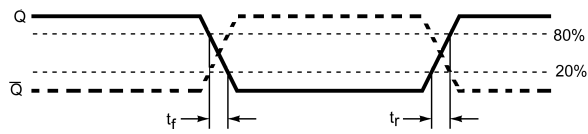
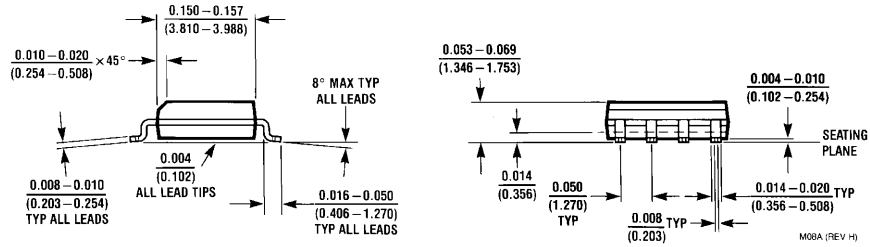
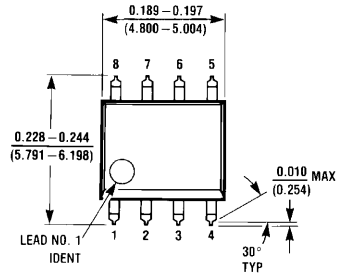


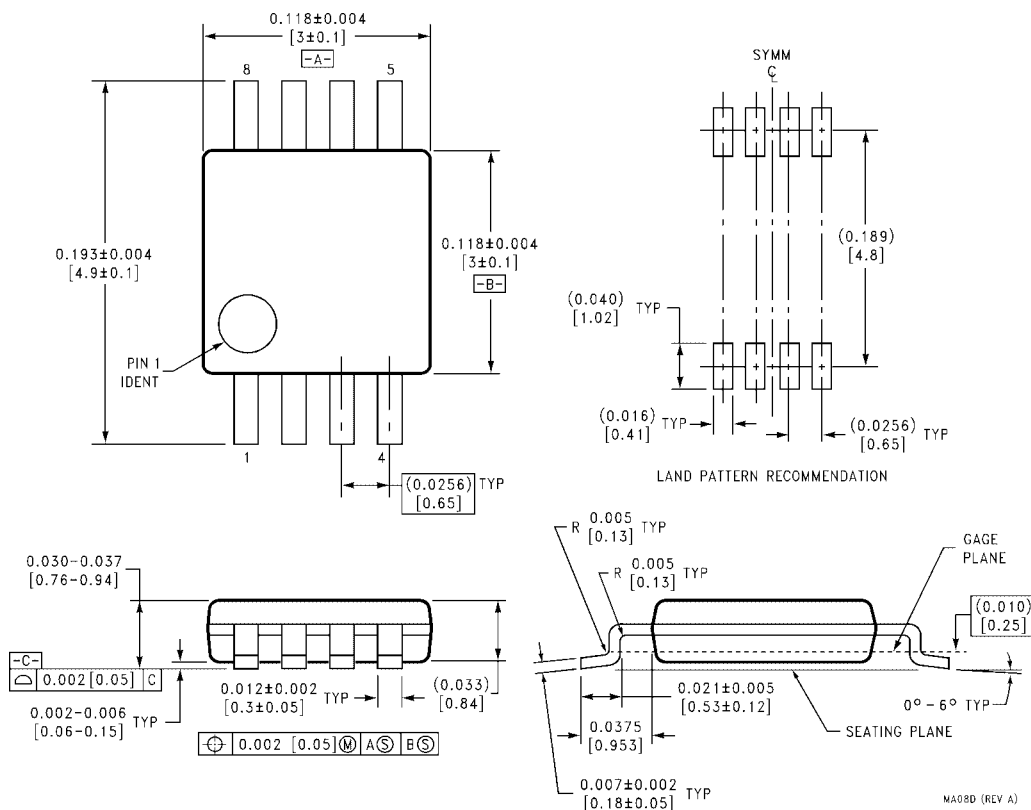
FIGURE 2. Differential Output Edge Rates

**Physical Dimensions** inches (millimeters) unless otherwise noted



**8-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150" Narrow  
Package Number M08A**

**Physical Dimensions** inches (millimeters) unless otherwise noted (Continued)



**8-Lead Molded Small Outline Package (MSOP), JEDEC MO-187, 3.0mm Wide  
Package Number MA08D**

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