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**CTS100ELT22**

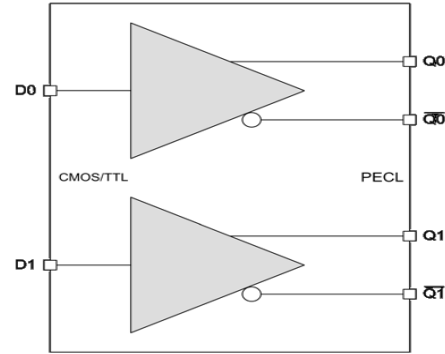
**Dual CMOS/TTL to Differential PECL Translator**

MSOP8, SOIC8

**FEATURES**

- 0.5ns Typical Propagation Delay
- <100ps Typical Output to Output Skew
- Flow Through Pinouts
- Differential PECL Output
- RoHS Compliant Pb Free Packages

**BLOCK DIAGRAM**



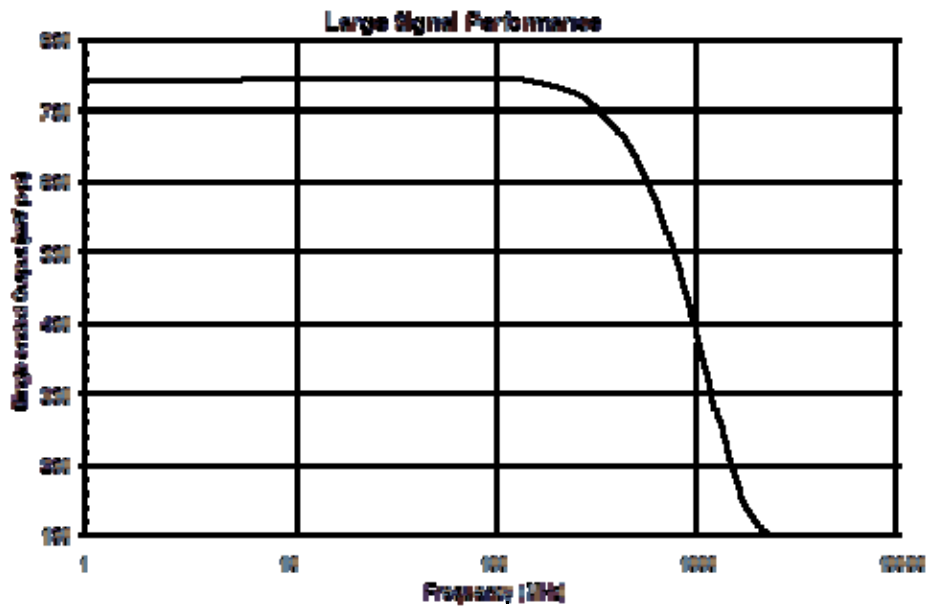
**DESCRIPTION**

The CTS100ELT22 is a dual CMOS/TTL to differential PECL translator. Because PECL (Positive ECL) levels are used, only V<sub>CC</sub> and ground are required. The small outline packaging and the low skew, dual gate design of the CTS100ELT22 makes it ideal for applications that require the translation of a clock and a data signal.

The CTS100ELT22 is a direct replacement for the ON Semi MC100ELT22, MC100LVELT22 and Micrel SY89322V.

**ENGINEERING NOTES**

When the D input is left floating, the Q output is forced HIGH, and the  $\overline{Q}$  output is forced LOW.



**CTS100ELT22 Large Signal Bandwidth**

## ELECTRICAL SPECIFICATIONS

Absolute Maximum Ratings are those values beyond which device life may be impaired.

Symbol	Characteristic	Condition	Rating	Unit
$V_{CC}$	DC Power Supply	( $V_{EE} = 0V$ )	0 to +8.0	V
$V_{IN}$	Input Voltage	( $V_{EE} = 0V$ )	0 to +6.0	V
$I_{OUT}$	Output Current	Continuous	50	mA
		Surge	100	
$T_A$	Operating Temperature Range		-40 to +85	°C
$T_{STG}$	Storage Temperature Range		-65 to +150	°C
ESD <sub>HBM</sub>	Human Body Model		2500	V
ESD <sub>MM</sub>	Machine Model		200	V
ESD <sub>CDM</sub>	Charged Device Model		2500	V

### TTL/CMOS Input DC Characteristics (GND = 0.0V, $V_{CC} = +3.3V$ to 5.5V)

Symbol	Characteristic	Condition	Min	Typ	Max	Unit
$I_{IH}$	Input HIGH Current	$V_{IN} = 2.7V$			15	μA
$I_{IHH}$	Input HIGH Current	$V_{IN} = V_{CC}$			20	μA
$I_{IL}$	Input LOW Current	$V_{IN} = 0.5V$			-0.1	mA
$V_{IK}$	Input Clamp Diode Voltage	$I_{IN} = -18mA$			-1.2	V
$V_{IH}$	Input HIGH Voltage		2			V
$V_{IL}$	Input LOW Voltage				0.8	V

### LVPECL DC Characteristics (GND = 0.0V, $V_{CC} = +3.3V$ )

Symbol	Characteristic	-40 °C			0 °C			25 °C			85 °C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
$V_{OH}$	Output HIGH Voltage <sup>1,2</sup>	2160		2420	2205		2420	2235	2345	2420	2255		2420	mV
$V_{OL}$	Output LOW Voltage <sup>1,2</sup>	1470		1745	1490		1680	1490	1595	1680	1490		1680	mV
$I_{CC}$	Power Supply Current <sup>3</sup>			24			24			24			25	Ma

<sup>1</sup> Each output is terminated through a 50Ω resistor to  $V_{CC} - 2V$ .

<sup>2</sup> Output parameters vary 1:1 with  $V_{CC}$ .

<sup>3</sup>  $I_{CC}$  measurements must be done with outputs open.

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**PECL DC Characteristics (GND = 0.0V, V<sub>CC</sub> = +5.0V)**

Symbol	Characteristic	-40 °C			0 °C			25 °C			85 °C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
V <sub>OH</sub>	Output HIGH Voltage <sup>1,2</sup>	3860		4120	3905		4120	3935	4045	4120	3955		4120	mV
V <sub>OL</sub>	Output LOW Voltage <sup>1,2</sup>	3170		3445	3190		3380	3190	3295	3380	3190		3380	mV
I <sub>EE</sub>	Power Supply Current <sup>3</sup>			24			24			24			25	mA

<sup>1</sup> Each output is terminated through a 50Ω resistor to V<sub>CC</sub> - 2V.

<sup>2</sup> Output parameters vary 1:1 with V<sub>CC</sub>.

<sup>3</sup> I<sub>CC</sub> measurements must be done with outputs open.

**AC Characteristics (GND = 0.0V, V<sub>CC</sub> = +3.0V to +5.5V)**

Symbol	Characteristic	-40 °C			0 °C			25 °C			85 °C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
t <sub>PLH</sub> /t <sub>PHL</sub>	Propagation Delay to Output <sup>1</sup>	100		550	100		550	100		550	100		550	ps
t <sub>R</sub> /t <sub>F</sub>	Output Rise/Fall Times Q (20%-80%)	80		250	80		250	80		250	80		250	ps
f <sub>MAX</sub>	Maximum Frequency <sup>2</sup>	800			800			800			800			MHz

<sup>1</sup> Propagation delay is measured from +1.5V on the input to 50% of the PECL output swing.

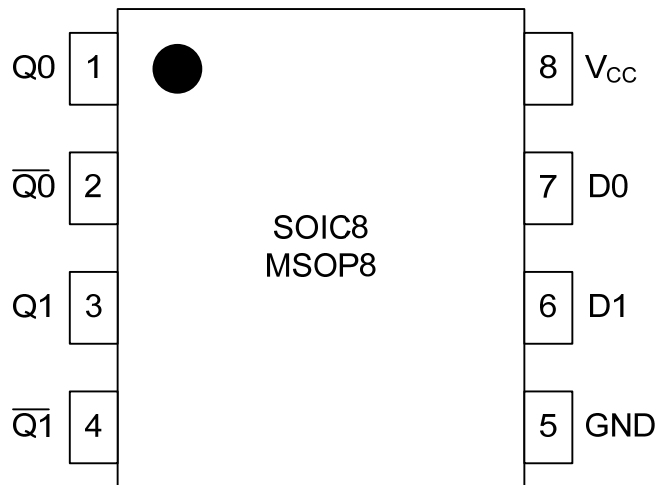
<sup>2</sup> Output as -3dB.



### Pin Description and Configuration

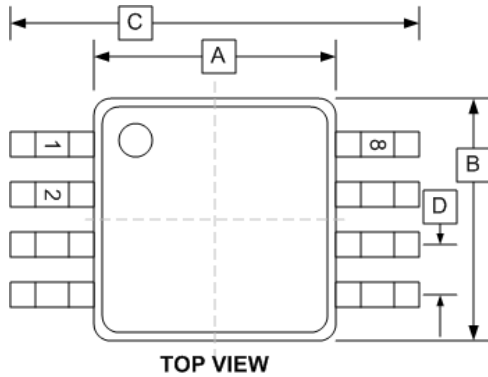
#### Pin Assignments

Pin	Name	Type	Function
1	Q0	Output	PECL Output
2	$\overline{Q0}$	Output	PECL Output
3	Q1	Output	PECL Output
4	$\overline{Q1}$	Output	PECL Output
5	GND	Power	Negative Supply
6	D1	Input	Data Input
7	D0	Input	Data Input
8	V <sub>CC</sub>	Power	Positive Supply

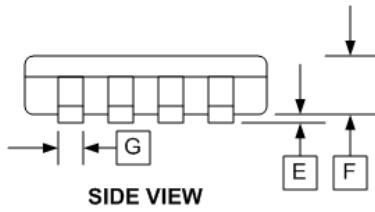
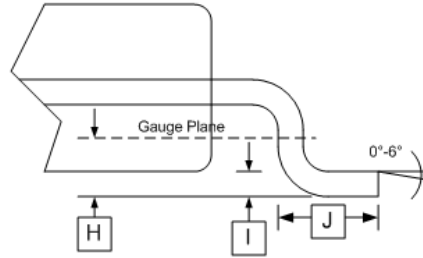


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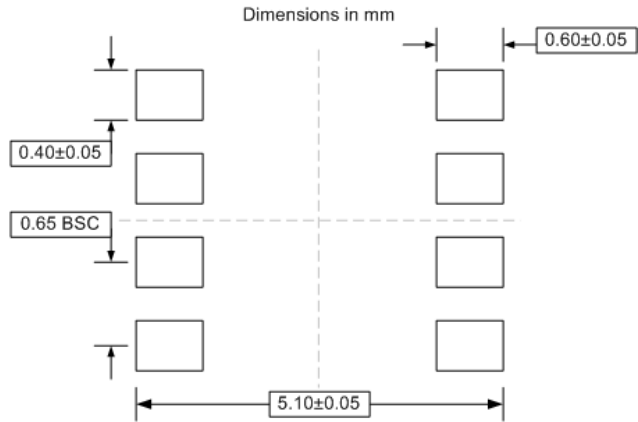
**PACKAGE DIMENSIONS**



**MSOP8 (T)**



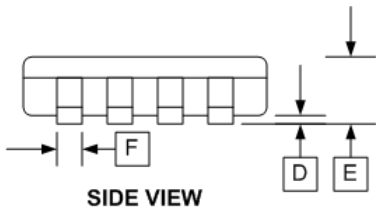
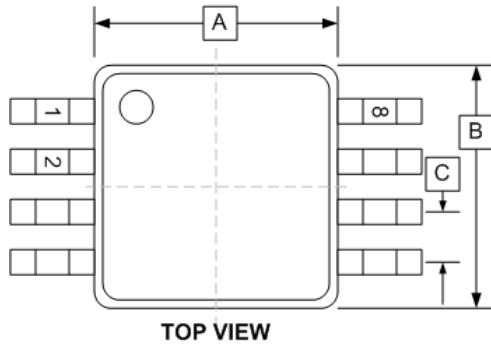
**PCB LAND PATTERN/FOOTPRINT**



DIM	INCHES	
	MIN	MAX
A	0.118±0.004	
B	0.118±0.004	
C	0.192±0.008	
D	0.0256 TYP	
E	0.004±0.002	
F	0.034±0.002	
G	0.009±0.014	
H	0.010	
I	0.006±0.002	
J	0.021±0.004	

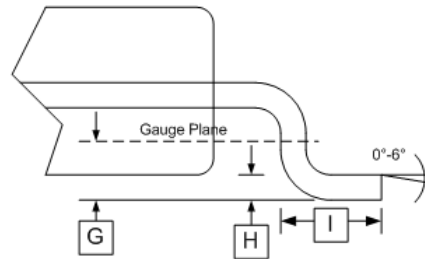
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**PACKAGE DIMENSIONS**

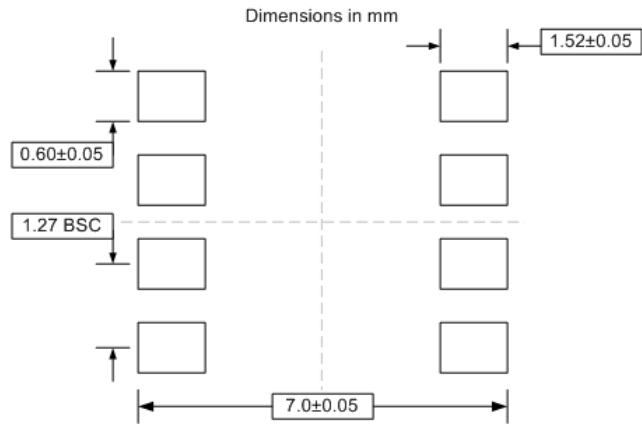


DIM	mm	
	MIN	MAX
A	3.81	3.99
B	4.80	4.98
C	1.27 BSC	
D	0.10	0.25
E	1.37	1.68
F	0.36	0.48
G	0.25	
H	0.19	0.25
I	0.41	0.86

**SOIC8 (D)**



**PCB LAND PATTERN/FOOTPRINT**



**PART ORDERING INFORMATION**

Part Number	Package	Marking
CTS100ELT22DG	SOIC8	CTS100G / ELT22 / YYWW
CTS100ELT22TG	MSOP8	HT22G / YYWW