

**MOTOROLA**  
SEMICONDUCTOR TECHNICAL DATA

# Differential PECL to TTL Translator

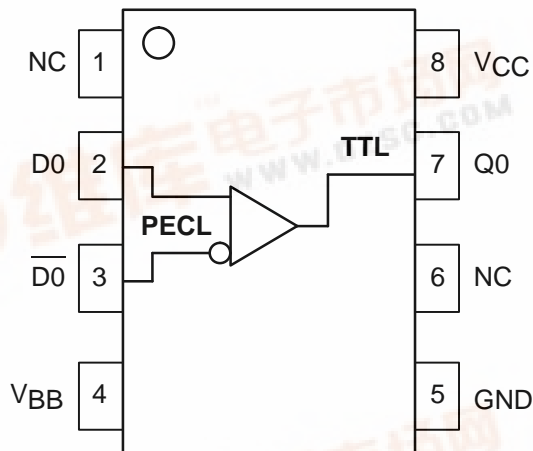
The MC10ELT/100ELT21 is a differential PECL to TTL translator. Because PECL (Positive ECL) levels are used only +5V and ground are required. The small outline 8-lead SOIC package and the single gate of the ELT21 makes it ideal for those applications where space, performance and low power are at a premium. Because the mature MOSAIC 1.5 process is used, low cost can be added to the list of features.

The  $V_{BB}$  output allows the ELT21 to also be used in a single-ended input mode. In this mode the  $V_{BB}$  output is tied to the IN input for a non-inverting buffer or the IN input for an inverting buffer. If used the  $V_{BB}$  pin should be bypassed to ground via a 0.01 $\mu$ F capacitor.

The ELT21 is available in both ECL standards: the 10ELT is compatible with positive MECL 10H logic levels while the 100ELT is compatible with positive ECL 100K logic levels.

- 3.5ns Typical Propagation Delay
- Differential PECL Inputs
- Small Outline SOIC Package
- 24mA TTL Output
- Flow Through Pinouts

### LOGIC DIAGRAM AND PINOUT ASSIGNMENT



## MC10ELT21 MC100ELT21



**D SUFFIX**  
PLASTIC SOIC PACKAGE  
CASE 751-05

### PIN DESCRIPTION

PIN	FUNCTION
Q	TTL Output
D	Diff PECL Inputs
VCC	+5.0V Supply
$V_{BB}$	Reference Output
GND	Ground



# MC10ELT21 MC100ELT21

## MAXIMUM RATINGS\*

Symbol	Parameter	Value	Unit
V <sub>CC</sub>	DC Supply Voltage (Referenced to GND)	7.0	V
T <sub>A</sub>	Operating Temperature Range (In Free-Air)	-40 to 85	°C
T <sub>STG</sub>	Storage Temperature Range	-55 to +150	°C

\* Maximum Ratings are those values beyond which damage to the device may occur. Functional operation should be restricted to the Recommended Operating Conditions.

## TTL OUTPUT DC CHARACTERISTICS (V<sub>CC</sub> = 4.75V to 5.25V; T<sub>A</sub> = -40°C to 85°C)

Symbol	Characteristic	Min	Typ	Max	Unit	Condition
V <sub>OH</sub>	Output HIGH Voltage	2.4			V	I <sub>OH</sub> = -3.0mA
V <sub>OL</sub>	Output LOW Voltage			0.5	V	I <sub>OL</sub> = 24mA
I <sub>CCH</sub>	Power Supply Current		20	29	mA	
I <sub>CCL</sub>	Power Supply Current		22	32	mA	
I <sub>OS</sub>	Output Short Circuit Current	-150		-60	mA	

## PECL INPUT DC CHARACTERISTICS (V<sub>CC</sub> = 4.75V to 5.25V; T<sub>A</sub> = -40°C to 85°C)

Symbol	Characteristic	-40°C		0°C		25°C			85°C		Unit	Condition
		Min	Max	Min	Max	Min	Typ	Max	Min	Max		
I <sub>IH</sub>	Input HIGH Current		150		150			150		150	μA	
I <sub>IL</sub>	Input LOW Current	0.5		0.5		0.5			0.5		μA	
V <sub>CMR</sub>	Common Mode Range	2.2	V <sub>CC</sub>	2.2	V <sub>CC</sub>	2.2		V <sub>CC</sub>	2.2	V <sub>CC</sub>	V	
V <sub>PP</sub>	Minimum Peak-to-Peak Input <sup>1</sup>	200		200		200			200		mV	
V <sub>IH</sub>	Input HIGH Voltage	10ELT 3.770 100ELT 3.835	4.110 4.120	3.830 3.835	4.16 4.12	3.870 3.835		4.19 4.12	3.930 3.835	4.265 4.120	V	V <sub>CC</sub> = 5.0V
V <sub>IL</sub>	Input LOW Voltage	10ELT 3.05 100ELT 3.19	3.500 3.525	3.05 3.19	3.520 3.525	3.05 3.19		3.520 3.525	3.05 3.19	3.550 3.525	V	V <sub>CC</sub> = 5.0V
V <sub>BB</sub>	Reference Output	10ELT 3.57 100ELT 3.62	3.70 3.74	3.62 3.62	3.73 3.74	3.65 3.62		3.75 3.74	3.69 3.62	3.81 3.75	V	V <sub>CC</sub> = 5.0V

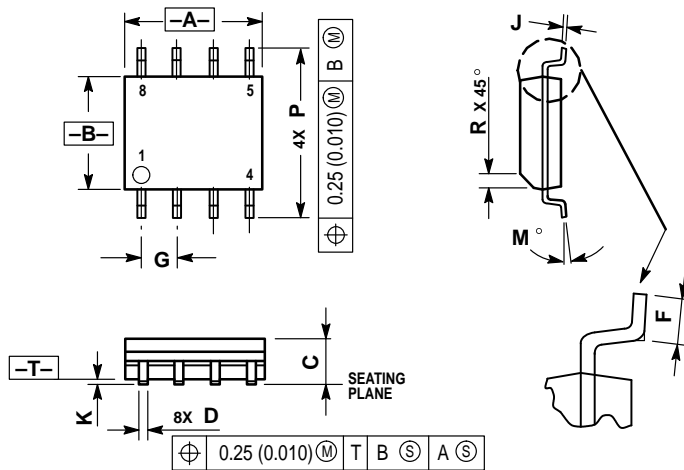
1. 200mV input guarantees full logic swing at the output.

## AC CHARACTERISTICS (V<sub>CC</sub> = 4.75V to 5.25V; T<sub>A</sub> = -40°C to 85°C)

Symbol	Characteristic	-40°C		0°C		25°C			85°C		Unit	Condition
		Min	Max	Min	Max	Min	Typ	Max	Min	Max		
t <sub>PLH</sub>	Propagation Delay <sup>1</sup>	2.0	5.5	2.0	5.5	2.0		5.5	2.0	5.5	ns	C <sub>L</sub> = 20pF
t <sub>PHL</sub>	Propagation Delay <sup>1</sup>	2.0	5.5	2.0	5.5	2.0		5.5	2.0	5.5	ns	C <sub>L</sub> = 20pF

OUTLINE DIMENSIONS


D SUFFIX  
PLASTIC SOIC PACKAGE  
CASE 751-05  
ISSUE P



NOTES:

1. DIMENSIONS A AND B ARE DATUMS AND T IS A DATUM SURFACE.
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
3. DIMENSIONS ARE IN MILLIMETER.
4. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
5. MAXIMUM MOLD PROTRUSION 0.15 PER SIDE.
6. DIMENSION D DOES NOT INCLUDE MOLD PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 TOTAL IN EXCESS OF THE D DIMENSION AT MAXIMUM MATERIAL CONDITION.

DIM	MILLIMETERS	
	MIN	MAX
A	4.80	5.00
B	3.80	4.00
C	1.35	1.75
D	0.35	0.49
F	0.40	1.25
G	1.27 BSC	
J	0.18	0.25
K	0.10	0.25
M	0°	7°
P	5.80	6.20
R	0.25	0.50

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