Advance Information

TTL to Differential PECL/Differential PECL to TTL Translator

MC10ELT28
MC100ELT28

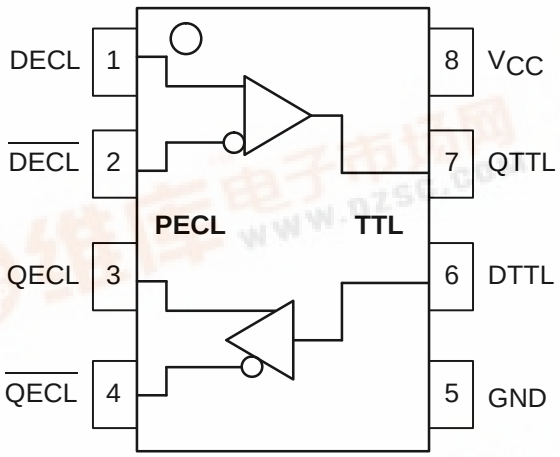
The MC10ELT/100ELT28 is a differential PECL to TTL translator and a TTL to differential PECL translator in a single package. Because PECL (Positive ECL) levels are used only +5V and ground are required. The small outline 8-lead SOIC package and the dual translation design of the ELT28 makes it ideal for applications which are sending and receiving signals across a backplane. Because the mature MOSAIC 1.5 process is used, low cost can be added to the list of features.

The ELT28 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 PECL to TTL Propagation Delay
- 1.2ns Typical TTL to PECL Propagation Delay
- Differential PECL Inputs/Ouputs
- Small Outline SOIC Package
- PNP TTL Inputs for Minimal Loading
- 24mA TTL Outputs
- Flow Through Pinouts

D SUFFIX
PLASTIC SOIC PACKAGE
CASE 751-05

LOGIC DIAGRAM AND PINOUT ASSIGNMENT



PIN DESCRIPTION

PIN	FUNCTION
QTTL	TTL Output
DTTL	TTL Inputs
QECL	Diff ECL Outputs
DECL	Diff ECL Inputs
V_{CC}	+5.0V Supply
GND	Ground

MAXIMUM RATINGS*

Symbol	Parameter	Value	Unit
V_{CC}	DC Supply Voltage (Referenced to GND)	7.0	V
T_A	Operating Temperature Range (In Free-Air)	–40 to 85	°C
T_{STG}	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.

This document contains information on a new product. Specifications and information herein are subject to change without notice.

TTL OUTPUT DC CHARACTERISTICS (V_{CC} = 4.75V to 5.25V; T_A = –40°C to 85°C)

Symbol	Characteristic	Min	Typ	Max	Unit	Condition
V_{OH}	Output HIGH Voltage	2.4			V	I_{OH} = –3.0mA
V_{OL}	Output LOW Voltage			0.5	V	I_{OL} = 24mA
I_{CCH}	Power Supply Current		27	40	mA	
I_{CCL}	Power Supply Current		29	42	mA	
I_{OS}	Output Short Circuit Current	–150		–60	mA	

TTL INPUT DC CHARACTERISTICS (V_{CC} = 4.75V to 5.25V; T_A = –40°C to 85°C)

Symbol	Characteristic	Min	Typ	Max	Unit	Condition
I_{IH}	Input HIGH Current			20	µA	V_{IN} = 2.7V
I_{IHH}	Input HIGH Current			100	µA	V_{IN} = 7.0V
I_{IL}	Input LOW Current			–0.6	mA	V_{IN} = 0.5V
V_{IK}				–1.2	V	I_{IN} = –18mA
V_{IH}	Input HIGH Voltage	2.0			V	
V_{IL}	Input LOW Voltage			0.8	V	

PECL OUTPUT DC CHARACTERISTICS (V_{CC} = 4.75V to 5.25V; T_A = –40°C to 85°C)

		–40°C		0°C		25°C			85°C			
Symbol	Characteristic	Min	Max	Min	Max	Min	Typ	Max	Min	Max	Unit	Condition
V_{OH}	Output HIGH 10ELT[1] Voltage 100ELT[1]	3.920 3.915	4.11 4.12	3.980 3.975	4.16 4.12	4.020 3.975	4.10 4.05	4.19 4.12	4.080 3.975	4.27 4.12	V	V_{CC} = 5.0V
V_{OL}	Output LOW 10ELT[1] Voltage 100ELT[1]	3.05 3.17	3.350 3.445	3.05 3.19	3.37 3.38	3.05 3.19	3.25 3.30	3.37 3.38	3.05 3.19	3.40 3.35	V	V_{CC} = 5.0V

1. Levels will vary 1:1 with V_{CC}.

PECL INPUT DC CHARACTERISTICS (V_{CC} = 4.75V to 5.25V; T_A = –40°C to 85°C)

		–40°C		0°C		25°C			85°C			
Symbol	Characteristic	Min	Max	Min	Max	Min	Typ	Max	Min	Max	Unit	Condition
I_{IH}	Input HIGH Current		150		150			150		150	µA	
I_{IL}	Input LOW Current	0.5		0.5		0.5			0.5		µA	
V_{CMR}	Common Mode Range	2.2	V_{CC}	2.2	V_{CC}	2.2		V_{CC}	2.2	V_{CC}	V	
V_{PP}	Minimum Peak-to-Peak Input[1]	200		200		200			200		mV	
V_{IH}	Input HIGH 10ELT Voltage 100ELT	3.770 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_{CC} = 5.0V
V_{IL}	Input LOW 10ELT Voltage 100ELT	3.05 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_{CC} = 5.0V
t_{PLH}	Prop DECL to QTTL Delay DTTL to QECL	2.0 0.6	5.5 1.2	2.0 0.65	5.5 1.45	2.0 0.9	1.2	5.5 1.5	2.0 0.6	5.5 1.35	ns	C_L = 20pF
t_{PHL}	Prop DECL to QTTL Delay DTTL to QECL	2.0 0.4	5.5 1.0	2.0 0.45	5.5 1.05	2.0 0.5	0.8	5.5 1.1	2.0 0.7	5.5 1.3	ns	C_L = 20pF
t_r, t_f	Rise/Fall Times QECL	0.15	1.5	0.15	1.5	0.15		1.5	0.15	1.5	ns	20% – 80%

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

OUTLINE DIMENSIONS

D SUFFIX
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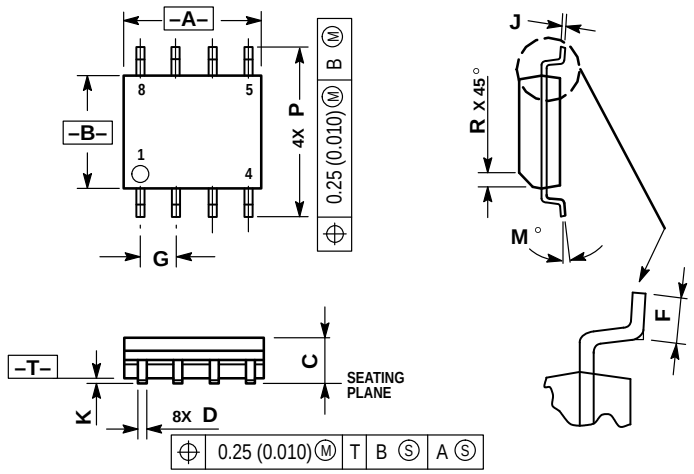
CASE 751–05
ISSUE P



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.

	MILLIMETERS	
DIM	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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