MC10ELT25, MC100ELT25

Differential ECL to TTL Translator

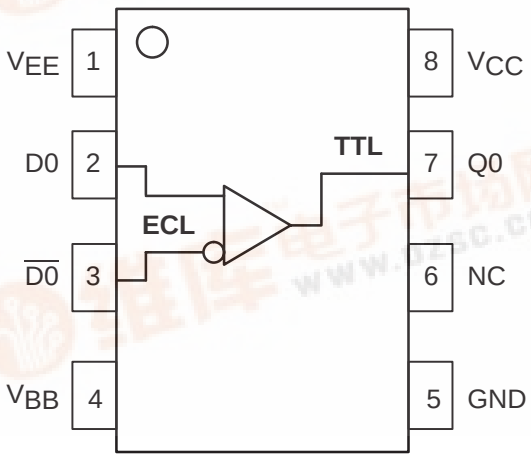
The MC10ELT/100ELT25 is a differential ECL to TTL translator. Because ECL levels are used a +5V, -5.2V (or -4.5V) and ground are required. The small outline 8-lead SOIC package and the single gate of the ELT25 makes it ideal for those applications where space, performance and low power are at a premium. 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 ELT25 to also be used in a single-ended input mode. In this mode the V_{BB} output is tied to the $\overline{IN}$ 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 0.01µF capacitor.

The ELT25 is available in both ECL standards: the 10ELT is compatible with MECL 10H logic levels while the 100ELT is compatible with ECL 100K logic levels. For further information regarding modeling, refer to AN1596/D “ECLinPS Lite Translator ELT Family SPICE I/O Model Kit”.

- 2.6ns Typical Propagation Delay
- Internal Input Resistors: Pulldown on D, Pulldown and Pullup on $\overline{D}$
- Q Output will default LOW with inputs open or at V_{EE}
- Differential ECL Inputs
- Small Outline SOIC Package
- 24mA TTL Outputs
- Flow Through Pinouts
- Moisture Sensitivity Level 1, Indefinite Time Out of Drypack. For Additional Information, See Application Note AND8003/D
- Flammability Rating: UL–94 code V–0 @ 1/8”, Oxygen Index 28 to 34
- Transistor Count: 135 devices

LOGIC DIAGRAM AND PINOUT ASSIGNMENT



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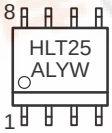
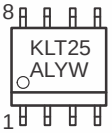
SO–8
D SUFFIX
CASE 751

MARKING DIAGRAM





H = MC10
K = MC100
A = Assembly Location
L = Wafer Lot
Y = Year
W = Work Week

*For additional information, see Application Note AND8002/D

PIN DESCRIPTION

PIN	FUNCTION
D	Diff ECL Inputs
Q	TTL Output
V_{CC}	Positive Supply
V_{EE}	Negative Supply
V_{BB}	Reference Output
GND	Ground

ORDERING INFORMATION

Device	Package	Shipping
MC10ELT25D	SO–8	98 Units / Rail
MC10ELT25DR2	SO–8	2500 Units / Reel
MC100ELT25D	SO–8	98 Units / Rail
MC100ELT25DR2	SO–8	2500 Units / Reel

Publication Order Number:

MAXIMUM RATINGS*

Symbol	Parameter		Value	Unit
V_{CC}	DC Supply Voltage (Referenced to GND, V_{EE} = –5.2)		7.0	V
V_{EE}	DC Supply Voltage (Referenced to GND, V_{CC} = 5.0)		–8.0	V
V_{IN}	Input Voltage		0 to V_{CC}	V
I_{OUT}	Current Applied to Output in Low Output State	Continuous Surge	50 100	mA
T_A	Operating Temperature Range (In Free-Air)		–40 to 85	°C
T_{STG}	Storage Temperature Range		–55 to +150	°C
θ_{JA}	Thermal Resistance (Junction–to–Ambient)	Still Air 500lfpm	190 130	°C/W
θ_{JC}	Thermal Resistance (Junction–to–Case)		41 to 44 ± 5%	°C/W
T_{sol}	Solder Temperature (<2 to 3 Seconds: 245°C desired)		265	°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_{CC} = 4.5V to 5.5V; V_{EE} = –4.2V to –5.5V 100ELT, –4.94V to –5.5V 10ELT; 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		11	16	mA	
I_{CCL}	Power Supply Current		13	18	mA	
I_{EE}	Power Supply Current		15	21	mA	
I_{OS}	Output Short Circuit Current	–150		–60	mA	

ECL INPUT DC CHARACTERISTICS

(V_{CC} = 4.5V to 5.5V; V_{EE} = –4.2V to –5.5V 100ELT, –4.94V to –5.5V 10ELT; 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
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	V_{EE} + 2.2	V_{CC}	V_{EE} + 2.2	V_{CC}	V_{EE} + 2.2		V_{CC}	V_{EE} + 2.2	V_{CC}	V
V_{PP}	Minimum Peak-to-Peak Input[1]	200		200		200			200		mV
V_{IH}	Input HIGH Voltage 10ELT 100ELT	–1230 –1165	–890 –880	–1170 –1165	–840 –880	–1130 –1165		–810 –880	–1060 –1165	–720 –880	mV
V_{IL}	Input LOW Voltage 10ELT 100ELT	–1950 –1810	–1500 –1475	–1950 –1810	–1480 –1475	–1950 –1810		–1480 –1475	–1950 –1810	–1445 –1475	mV
V_{BB}	Reference Output 10ELT 100ELT	–1.43 –1.38	–1.30 –1.26	–1.38 –1.38	–1.27 –1.26	–1.35 –1.38		–1.25 –1.26	–1.31 –1.38	–1.19 –1.26	V

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

AC CHARACTERISTICS

(V_{CC} = 4.5V to 5.5V; V_{EE} = –4.2V to –5.5V 100ELT, –4.94V to –5.5V 10ELT; 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
t_{PLH}	Propagation Delay	1.7	3.6	1.7	3.6	1.7		3.6	1.7	3.6	ns	C_L = 20pF
t_{PHL}	Propagation Delay	2.6	4.1	2.6	4.1	2.6		4.1	2.6	4.1	ns	C_L = 20pF

PACKAGE DIMENSIONS

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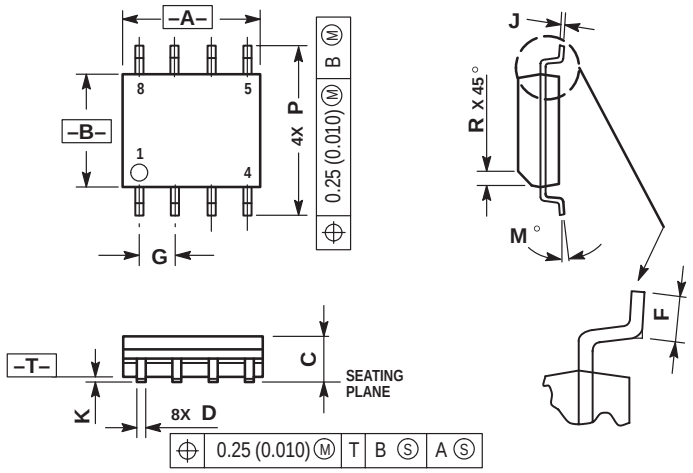
ISSUE P



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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