

# MC10ELT25, MC100ELT25

## Differential ECL to TTL Translator

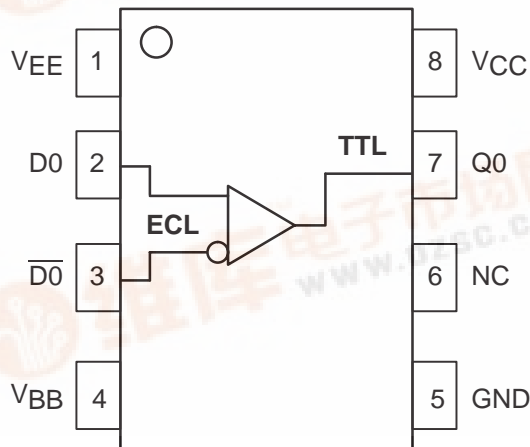
The MC10ELT/100ELT25 is a differential ECL to TTL translator. Because ECL levels are used a +5V, -5.2V (or -4.5V) and ground are required. The small outline 8-lead SOIC package and the single gate of the ELT25 makes it ideal for those applications where space, performance and low power are at a premium. 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 0.01 $\mu$ F 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

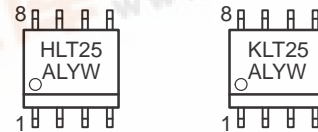
### LOGIC DIAGRAM AND PINOUT ASSIGNMENT



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### MARKING DIAGRAM



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



## MC10ELT25, MC100ELT25

### MAXIMUM RATINGS\*

Symbol	Parameter	Value	Unit
V <sub>CC</sub>	DC Supply Voltage (Referenced to GND, V <sub>EE</sub> = -5.2)	7.0	V
V <sub>EE</sub>	DC Supply Voltage (Referenced to GND, V <sub>CC</sub> = 5.0)	-8.0	V
V <sub>IN</sub>	Input Voltage	0 to V <sub>CC</sub>	V
I <sub>OUT</sub>	Current Applied to Output in Low Output State	50 100	mA
	Continuous Surge		
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
θ <sub>JA</sub>	Thermal Resistance (Junction-to-Ambient)	190 130	°C/W
	Still Air 500lfpm		
θ <sub>JC</sub>	Thermal Resistance (Junction-to-Case)	41 to 44 ± 5%	°C/W
T <sub>sol</sub>	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<sub>CC</sub> = 4.5V to 5.5V; V<sub>EE</sub> = -4.2V to -5.5V 100ELT, -4.94V to -5.5V 10ELT; 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		11	16	mA	
I <sub>CCL</sub>	Power Supply Current		13	18	mA	
I <sub>EE</sub>	Power Supply Current		15	21	mA	
I <sub>OS</sub>	Output Short Circuit Current	-150		-60	mA	

### ECL INPUT DC CHARACTERISTICS

(V<sub>CC</sub> = 4.5V to 5.5V; V<sub>EE</sub> = -4.2V to -5.5V 100ELT, -4.94V to -5.5V 10ELT; T<sub>A</sub> = -40°C to 85°C)

Symbol	Characteristic	-40°C		0°C		25°C			85°C		Unit	
		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	V <sub>EE</sub> + 2.2	V <sub>CC</sub>	V <sub>EE</sub> + 2.2	V <sub>CC</sub>	V <sub>EE</sub> + 2.2		V <sub>CC</sub>	V <sub>EE</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 100ELT	-1230 -890 -1165	-1170 -840 -1165	-840 -880 -1165	-1130 -1130 -1165		-810 -880	-1060 -1165	-720 -880	mV	
V <sub>IL</sub>	Input LOW Voltage	10ELT 100ELT	-1950 -1810	-1500 -1475	-1950 -1810	-1480 -1475	-1950 -1810		-1480 -1475	-1950 -1810	-1445 -1475	mV
V <sub>BB</sub>	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

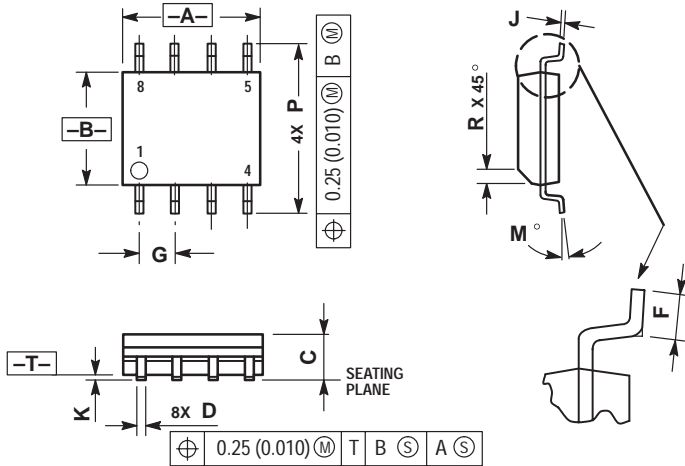
(V<sub>CC</sub> = 4.5V to 5.5V; V<sub>EE</sub> = -4.2V to -5.5V 100ELT, -4.94V to -5.5V 10ELT; T<sub>A</sub> = -40°C to 85°C)

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	1.7	3.6	1.7	3.6	1.7		3.6	1.7	3.6	ns	C <sub>L</sub> = 20pF
t <sub>PHL</sub>	Propagation Delay	2.6	4.1	2.6	4.1	2.6		4.1	2.6	4.1	ns	C <sub>L</sub> = 20pF

# MC10ELT25, MC100ELT25

## PACKAGE DIMENSIONS

SO-8  
D SUFFIX  
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

## MC10ELT25, MC100ELT25

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