

MC10ELT25, MC100ELT25

Differential ECL to TTL Translator

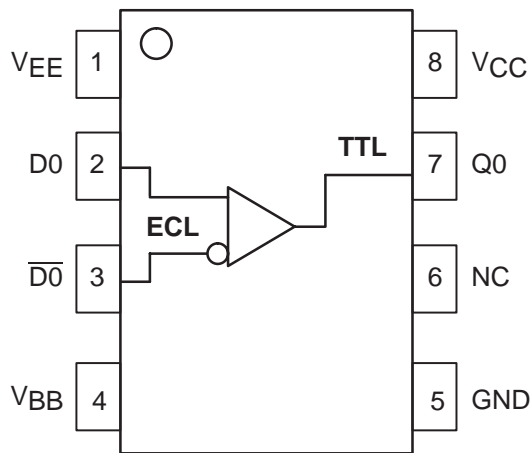
The MC10ELT/100ELT25 is a differential ECL to TTL translator. Because ECL levels are used a +5V, -5.2V (or -4.5V) and ground are required. The small outline 8-lead SOIC package and the single gate of the ELT25 makes it ideal for those applications where space, performance and low power are at a premium.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

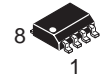
LOGIC DIAGRAM AND PINOUT ASSIGNMENT



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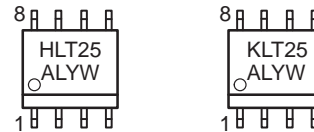
Formerly a Division of Motorola

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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

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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)

Symbol	Characteristic	-40°C		0°C		25°C			85°C		Unit	
		Min	Max	Min	Max	Min	Typ	Max	Min	Max		
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

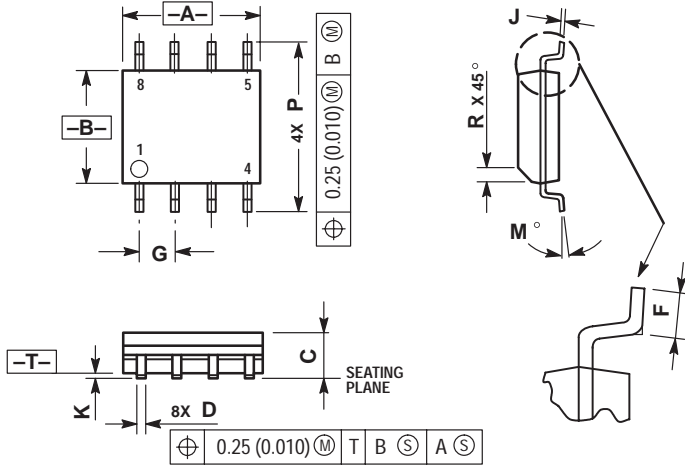
(V_{CC} = 4.5V to 5.5V; V_{EE} = -4.2V to -5.5V 100ELT, -4.94V to -5.5V 10ELT; T_A = -40°C to 85°C)

Symbol	Characteristic	-40°C		0°C		25°C			85°C		Unit	Condition
		Min	Max	Min	Max	Min	Typ	Max	Min	Max		
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

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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

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