

MC100EPT24

LVTTTL/LVCMOS to Differential LVECL Translator

The MC100EPT24 is a LVTTTL/LVCMOS to differential LVECL translator. Because LVECL levels and LVTTTL/LVCMOS levels are used, a -3.3V , $+3.3\text{V}$ and ground are required. The small outline 8-lead SOIC package and the single gate of the EPT24 makes it ideal for those applications where space, performance, and low power are at a premium.

The EPT24 is available in the 100E standard and is compatible with ECL 100K logic levels.

- 350ps Typical Propagation Delay
- Maximum Frequency > 1.0GHz
- Differential ECL Outputs
- Small Outline SOIC Package
- PNP LVTTTL Inputs for Minimal Loading
- Flow Through Pinouts
- Q Output will default HIGH with inputs open
- ESD Protection: 4000 KV HBM, 200 V MM
- 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 = 181 devices

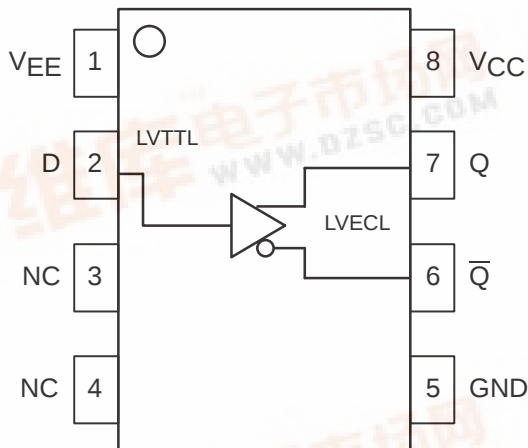


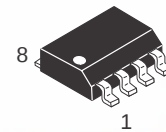
Figure 1. 8-Lead Pinout (Top View) and Logic Diagram



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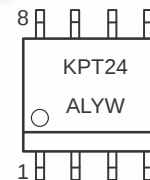
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SO-8
D SUFFIX
CASE 751

MARKING DIAGRAM



A = Assembly Location
L = Wafer Lot
Y = Year
W = Work Week

*For additional information, see Application Note AND8002/D

PIN DESCRIPTION

PIN	FUNCTION
Q, $\bar{Q}$	Differential LVECL Outputs
D	LVTTTL Input
VCC	Positive Supply
GND	Ground
VEE	Negative Supply

ORDERING INFORMATION

Device	Package	Shipping
MC100EPT24D	SOIC	98 Units/Rail
MC100EPT24DR2	SOIC	2500 Tape & Reel

MC100EPT24

MAXIMUM RATINGS*

Symbol	Parameter	Value	Unit
V_{EE}	Power Supply ($V_{CC} = 0V$)	-3.8 to 0	VDC
V_{CC}	Power Supply ($V_{EE} = 0V$)	3.8 to 0	VDC
V_I	Input Voltage ($V_{CC} = 0V$, V_I not more negative than V_{EE})	-3.8 to 0	VDC
V_I	Input Voltage ($V_{EE} = 0V$, V_I not more positive than V_{CC})	3.8 to 0	VDC
I_{out}	Output Current Continuous Surge	50 100	mA
T_A	Operating Temperature Range	-40 to +85	°C
T_{stg}	Storage Temperature	-65 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 $\pm$ 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.

LVTTTL INPUT DC CHARACTERISTICS ($V_{CC} = 3.3V \pm 0.3V$; $GND = 0V$; $T_A = -40^\circ C$ to $+85^\circ C$)

Symbol	Characteristic	Min	Typ	Max	Unit
I_{IH}	Input HIGH Current ($V_{in} = 2.7V$)			20	μA
I_{IHH}	Input HIGH Current MAX ($V_{in} = 6.0V$)			100	μA
I_{IL}	Input LOW Current ($V_{in} = 0.5V$)			-0.6	mA
V_{IK}	Input Clamp Voltage ($I_{in} = -18mA$)			-1.2	V
V_{IH}	Input HIGH Voltage	2.0			V
V_{IL}	Input LOW Voltage			0.8	V

LVECL OUTPUT DC CHARACTERISTICS ($V_{CC} = 3.3V \pm 0.3V$; $V_{EE} = -3.3V \pm 0.3V$; $GND = 0V$)

Symbol	Characteristic	-40°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
V_{OH}	Output HIGH Voltage (Note 1.)	-1135	-1020	-885	-1135	-1020	-885	-1135	-1030	-885	mV
V_{OL}	Output LOW Voltage (Note 1.)	-1935	-1750	-1685	-1935	-1770	-1685	-1925	-1790	-1685	mV
I_{CC}	Power Supply Current		2.0	4.0		2.0	4.0		2.0	4.0	mA
I_{EE}	Power Supply Current	20	30	38	20	30	38	20	30	38	mA

1. Output levels will vary 1:1 with GND; Outputs loaded through 50 Ω to GND - 2.0V.

AC CHARACTERISTICS ($V_{CC} = 3.3V \pm 0.3V$; $V_{EE} = -3.3V \pm 0.3V$; $GND = 0V$)

Symbol	Characteristic	-40°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
f_{max}	Maximum Toggle Frequency (Note 2.)	1.0			1.0			1.0			GHz
t_{PLH} , t_{PHL}	Propagation Delay to Output Differential (Note 3.)	300	500	800	300	530	800	300	560	800	ps
t_{JITTER}	Cycle-to-Cycle Jitter		TBD			TBD			TBD		ps
t_r t_f	Output Rise/Fall Times (20% - 80%) Q, $\bar{Q}$	70	125	170	80	130	180	100	150	200	ps

2. F_{max} guaranteed for functionality only. V_{OL} and V_{OH} levels are guaranteed at DC only.

3. TTL input of 0V to 3V.

MC100EPT24

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