

IL34C87

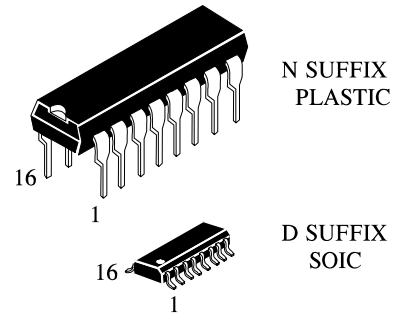
CMOS Quad TRISTATE Differential Line Driver.

General Description

The IL34C87T is a quad differential line driver designed for digital data transmission over balanced lines. The IL34C87T meets all the requirements of EIA standard RS-422 while retaining the low power characteristics of CMOS. This enables the construction of serial and terminal interfaces while maintaining minimal power consumption. The IL34C87T accepts TTL or CMOS input levels and translates these to RS-422 output levels. This part uses special output circuitry that enables the individual drivers to power down without loading down the bus. This device has separate enable circuitry for each pair of the four drivers. All inputs are protected against damage due to electrostatic discharge by diodes to V_{CC} and ground.

Pinning

Pin	Symbol	Description
01	A	Input of driver A
02	A1	Output A
03	A2	Inverted output A
04	En A/B	input of switching outputs of A and B receivers into the third state
05	B2	Inverted output B
06	B1	Output B
07	B	Input of driver B
08	GND	General pin
09	C	Input of driver C
10	C1	Output C
11	C2	Inverted output C
12	En C/D	input of switching outputs of C and D receivers into the third state
13	D2	Inverted output B
14	D1	Output B
15	D	Input of driver B
16	V_{CC}	Pin of power supply



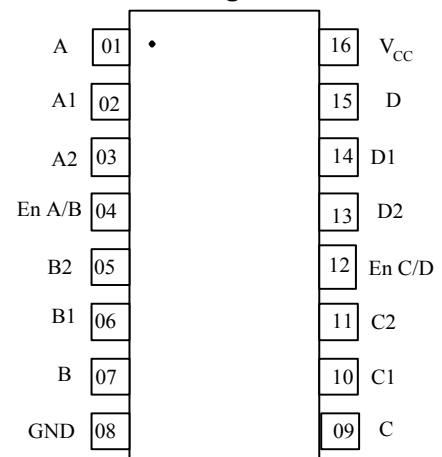
Designation Of microcircuit in package

IL34C86N Plastic DIP

IL34C86D SOIC

T_A from minus 40 to plus 85 °C

Pin configuration.



Features

- TTL input compatible
- Typical propagation delays: 6 ns
- Typical output skew: 0.5 ns
- Outputs won't load line when $V_{CC} = 0V$
- Meets the requirements of EIA standard RS-422
- Operation from single 5V supply
- TRI-STATE outputs for connection to system buses
- Low quiescent current
- Available in surface mount

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Truth Table

Input	Control Input	Non-Inverting Output	Inverting Output
H	H	H	L
L	H	L	H
X	L	Z	Z

L = Low logic state
H = High logic state
X = Irrelevant
Z = TRI-STATE (high performance)

Structure of microcircuit.

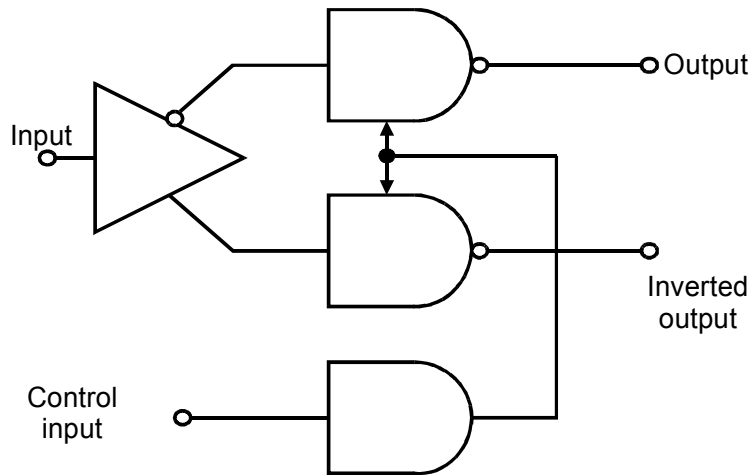


Table 1 – Limiting and extreme parameters

Parameter	Symbol	Operating condition		Maximum ratings		Units of measurement
		min	max	min	max	
Supply voltage	V_{CC}	4.50	5.50	-0.5	7	V
DC input voltage	V_{IN}	0	V_{CC}	-1.5	$V_{CC}+1.5$	
DC output voltage	V_{OUT}	0	V_{CC}	-0.5	7	
Protection diode current	V_{DIFF}	—	—	-20	+20	
Voltage on input Enable	V_{IN}	—	—	—	7	
Output current	—	—	—	-150	+150	mA
Input Rise or Fall Times (tr, tf)	t_r, t_f	—	500	—	—	ns
Dissipated power	DIP	P_D	—	—	1736*	mW
	SO		—	—	1226*	
Operating Temperature Range (TA)	T_A	-40	+85	—	—	°C
Storage temperature	T_{STG}	—	—	-65	+150	
Temperature of soldering, 4s	T_L	—	—	—	260	

* - at increasing temperature higher than 25°C P_D decreased on 13.89mW/°C for DIP package and on 9.80mW/°C for SO package.

Table 2 -Electric parameters
 $T = -40^{\circ} \div +85^{\circ}C$

parameter	symbol	conditions of measurement	standard		units of measurement
			Min	Max	
High level input voltage	V_{IH}		2.0	—	V
Low level input voltage	V_{IL}		—	0.8	
High level output voltage	V_{OH}	$I_{OUT} = -20mA$	2.5	—	V
Low level output voltage	V_{OL}	$I_{OUT} = +48mA$	—	0.5	
Differential output voltage	V_T	$R_L = 100 \text{ Ohm}$	2.0	—	V
Difference in differential outputs	$ V_T - \bar{V}_T $	$R_L = 100 \text{ Ohm}$	—	0.4	V
Output voltage	V_{OS}	$R_L = 100 \text{ Ohm}$	—	3.0	V
Difference in common mode output	$ V_{OS} - \bar{V}_{OS} $	$R_L = 100 \text{ Ohm}$	—	0.4	V
Input current	I_{IN}	$V_{IN} = V_{CC}, 0V,$ $V_{IH} \text{ or } V_{IL}$	—	± 1.0	mkA
Consumption current	I_{CC}	$I_{OUT} = 0mA,$ $V_{IN} = V_{CC} \text{ or } 0V$	—	500	mkA
		$I_{OUT} = 0mA,$ $V_{IN} = 2.4 \text{ or } 0.5V$	—	2.0	mA
Output current of the third state	I_{OZ}	$V_{OUT} = V_{CC} \text{ or } 0V, V_{CONTROL} = V_{IL}$	—	± 5.0	mkA
Short circuit output current	I_{SC}	$V_{IN} = V_{CC} \text{ or } 0V$	-30	-150	mA
Output current of the off state	I_{OFF}	$V_{CC} = 0V, V_{OUT} = 6V$	—	100	mkA
		$V_{CC} = 0V, V_{OUT} = -0.25V$	—	-100	
Time of propagation delay at switching off, switching on	t_{PLH}, t_{PHL}	$t_r, t_f \leq 6ns$	—	11	ns
Asymmetric transition time when switching in, switching off	Skew	$t_r, t_f \leq 6ns$	—	3	
Transition time when switching in, switching off	t_{RISE}, t_{FALL}	$t_r, t_f \leq 6ns$	—	10	
time of the third state propagation delay on input Enable	t_{PZH}	$t_r, t_f \leq 6ns$	—	25	
time of the third state propagation delay on input Enable	t_{PZL}	$t_r, t_f \leq 6ns$	—	26	
time of the third state propagation delay on input Enable	t_{PHZ}	$t_r, t_f \leq 6ns$	—	8	
time of the third state propagation delay on input Enable	t_{PLZ}	$t_r, t_f \leq 6ns$	—	12	

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Figure 4 – Time diagram of signals at changing dynamic parameters t_{TLH} , t_{THL} , t_{PLH} , t_{PHL} , SKEW.

