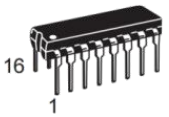
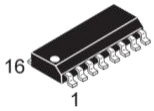
DS34C86 Quad CMOS Differential Line Receiver

Features

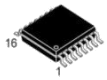
- Low power CMOS design
- ±0.2V sensitivity over the entire common mode range
- Typical propagation delays: 20 ns
- Typical input hysteresis: 50 mV
- Inputs won't load line when Vcc = 0V
- Meets the requirements of EIA standard RS-422
- TRI-STATE outputs for connection to system buses



DIP-16



SOP-16



TSSOP-16

Ordering Information

DEVICE	Package Type	MARKING	Packing	Packing Qty
DS34C86PG	DIP-16	DS34C86	TUBE	1000pcs/box
DS34C86DRG	SOP-16	DS34C86	REEL	2500pcs/reel
DS34C86PWRG	TSSOP-16	34C86	REEL	2500pcs/reel

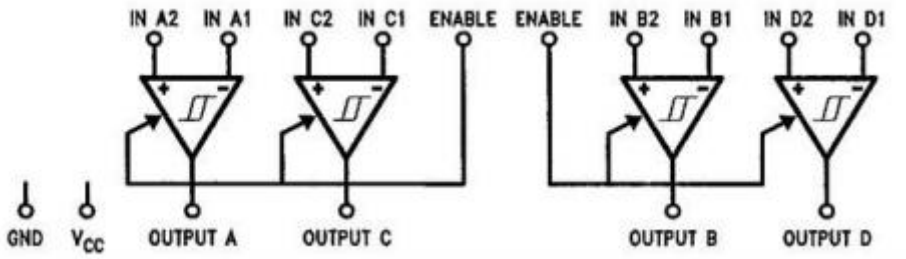
General Description

The DS34C86 is a quad differential line receiver designed to meet the RS-422, RS-423, and Federal Standards 1020 and1030 for balanced and unbalanced digital data transmission, while retaining the low power characteristics of CMOS.

The DS34C86 has an input sensitivity of 200 mV over the common mode input voltage range of ±7V. Hysteresis is provided to improve noise margin and discourage output instability for slowly changing input waveforms.

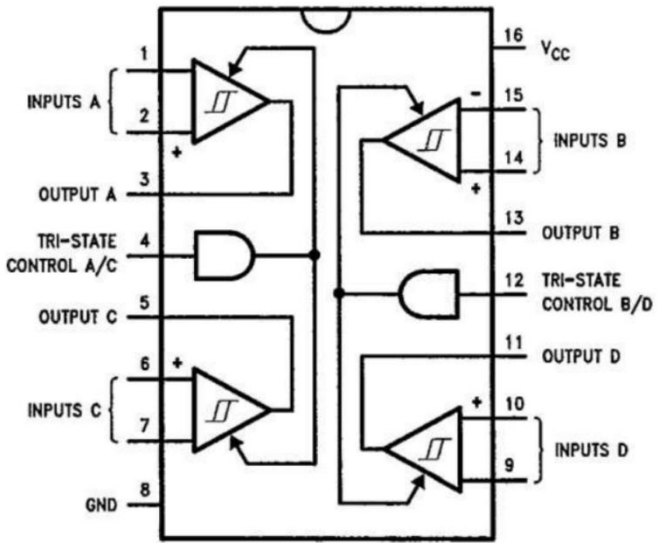
Separate enable pins allow independent control of receiver pairs. The TRI-STATE® outputs have 6 mA source and sink capability. The DS34C86 is pin compatible with the DS3486.

Logic Diagram



Connection Diagram

DIP-16/SOP-16/TSSOP-16



Top Vlew

Absolute Maximum Ratings (Notes 1 & 2)

Condition	Min	Max	UNITS
Supply Voltage (Vcc)	-	7	V
Common Mode Range (V_{CM})	-14	+14	V
Differentlal Input Voltage (V_{DIFF})	-14	+14	V
Enable Input Voltage (V_{IN})	-	7	V
Storage Temperature Range (T_{STG})	-65	+150	°C
Lead Temperature (Soldering 10 sec)	-	245	°C
Current Per Output	-25	+25	mA
Operating Conditions			
Supply Voltage (Vcc)	4.75	5.25	V
Operating Temperature Range (T_A)	-40	+85	°C
Enable Input Rise or Fall Times	-	500	ns

DC Electrical Characteristics

Vcc = 5V +5% (unless otherwise specified) (Note 3)

Symbor	Parameter	Conditions	Min	Typ	Max	Unlts
V_{TH}	Minimum Differential Input Voltage	V_{OUT} = V_{OH} or V_{OL} -7V <V_{CM} <+7V	-0.2		+0.2	V
R_{IN}	Input Resistance	-7V <V_{CM} < +7V (One Input AC GND)		10		kΩ
I_{IN}	Input Current (Under Test)	V_{IN} = +10V, Other Input GND V_{IN}= -10V, Other Input = GND		+1.1 -1.6		mA mA
V_{OH}	Minimum High Level Output Voltage	V_{CC}=Min,$V_{(DIFF)}$=+1V I_{OUT}=6.0mA	3.84	4.2		V
V_{OL}	Maximum Low Lever Output Voltage	V_{CC}=Max,$V_{(DIFF)}$=+1V I_{OUT}=6.0mA				V
V_{IH}	Minimum Enable High Input Level Voltage		2.0			V
V_{IL}	Maximum Enable Low Input Level Voltage				0.8	V
I_{OZ}	Maximum TRI-STATE Output Leakage Current	V_{OUT}=V_{CC} or GND, TRI-STATE Control=VIL		±0.5	±5.0	μA
I_I	Maximum Enable Input Current	V_{IN}=V_{CC} or GND			±1.0	μA
I_{CC}	Qulescent Power Supply Current	V_{CC}=Max,$V_{(DIFF)}$=+1V		12		mA
V_{HYST}	Input Hysteresis			50		mV

AC Electrical Characteristics

V_{CC} = 5V ±5% (unless otherwise specified) (Note 3)

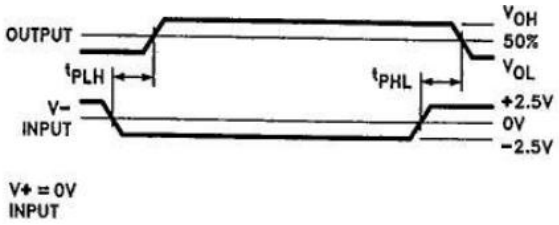
Symbor	Parameter	Conditions	Min	Typ	Max	Unlts
T_{PLH}, t_{PHL}	Propagation Delay Input to Output	C_L=50pF V_{DIFF}=2.5V		20		ns
t_{PLZ}, t_{PHZ}	Propagation Delay TRI-STATE Control to Output	C_L=50pF R_L+1000Ω V_{DIFF}=2.5v		12		ns
t_{PZL}, t_{PZH}	Propagation Delay TRI-STATE Control to Output	C_L=50pF R_L=1000Ω V_{DIFF}=2.5V		14		ns

Note 1: Absolute Maximum Ratings indicate limits beyond which damage to the device may occur. Operating Ratings indicate conditions for which the device is intended to be functional, but specific performance is not ensured.

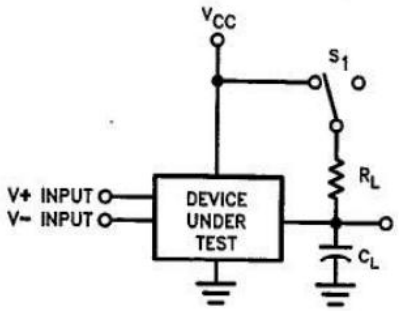
Note 2: Unless otherwise specifled, all voltages are referenced to ground.

Note 3: Unless otherwise specified, Min/Max limits apply across the -40°C to +65°C temperature ranger All typicals are given for Vca 5V and TA = 25°C.

Propagation Delay



Test Circuit for TRI-STATE Output Tests

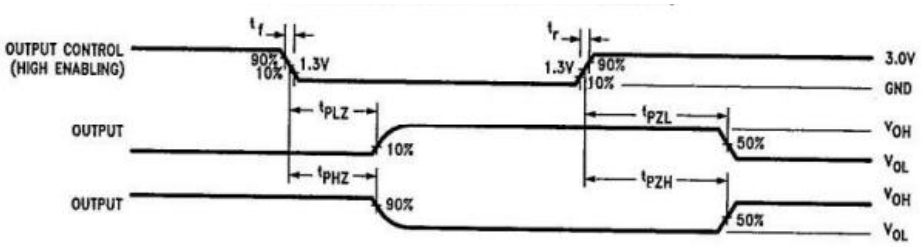


CL = Includes load and test jig capacitance.

S1 =Vcc for tpzu, and tpLz measurements.

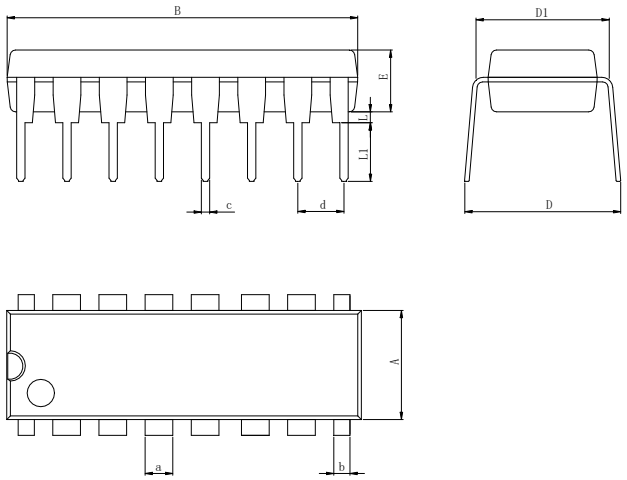
S1 = GND for tPzH, and tpHz measurements.

TRI-STATE Output Enable and Disable Waveforms


OUTPUT CONTROL
(HIGH ENABLING)
OUTPUT
OUTPUT
t_f
t_r
90%
10%
1.3V
t_{PLZ}
t_{PHZ}
t_{PZL}
t_{PZH}
50%
3.0V
GND
V_{OH}
V_{OL}

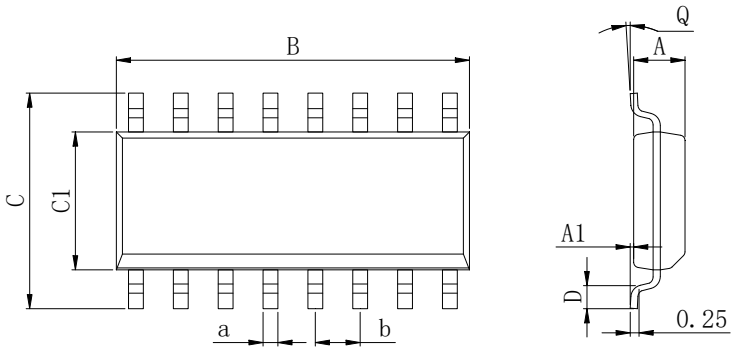
Physical Dimensions

DIP-16



Dimensions In Millimeters(DIP-16)											
Symbol:	A	B	D	D1	E	L	L1	a	b	c	d
Min:	6.10	18.94	8.10	7.42	3.10	0.50	300	1.50	0.85	0.40	2.54 BSC
Max:	6.68	19.56	10.9	7.82	3.55	0.70	3.60	1.55	0.90	0.50	

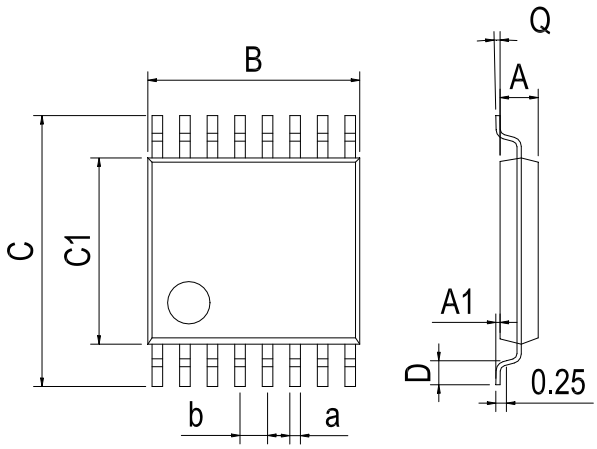
SOP-16



Dimensions In Millimeters(SOP-16)									
Symbol:	A	A1	B	C	C1	D	Q	a	b
Min:	1.35	0.05	9.80	5.80	3.80	0.40	0°	0.35	1.27 BSC
Max:	1.55	0.20	10.0	6.20	4.00	0.80	8°	0.45	

Physical Dimensions

TSSOP-16



Dimensions In Millimeters(TSSOP-16)									
Symbol:	A	A1	B	C	C1	D	Q	a	b
Min:	0.85	0.05	4.90	6.20	4.30	0.40	0°	0.20	0.65 BSC
Max:	0.95	0.20	5.10	6.60	4.50	0.80	8°	0.25	

Revision History

DATE	REVISION	PAGE
2014-6-9	New	1-8
2023-9-15	Modify the package dimension diagram TSSOP-16、Update encapsulation type、Update Lead Temperature、Updated DIP-16 dimension、Add annotation for Maximum Ratings.	1、3、5、6

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