

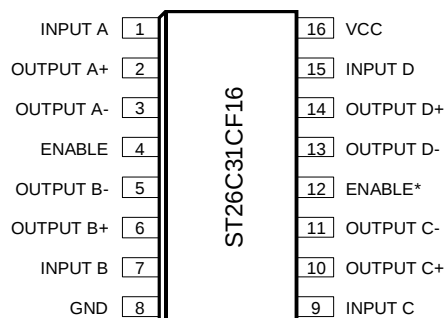
QUAD RS-422 CMOS DIFFERENTIAL LINE DRIVER

DESCRIPTION

The ST26C31 is a CMOS quad differential line driver designed to meet the standard RS-422 requirements and digital data transmission over balanced lines. To improve noise margin and output stability for slow changing input signals special hysteresis is built in the ST26C31 circuit.

The ST26C31 is a high speed CMOS line driver designed to operate with MFM / RLL controllers and hard disk drives as well as RS-422 digital data transmission applications. ST26C31 is suitable for low power 5V operation with high input voltage protection devices.

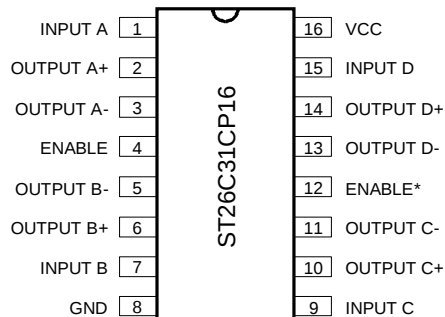
SOIC package



FEATURES

- Pin-to-pin compatible with National DS26C31C
- Low power CMOS design
- Three-state outputs with enable pin
- Meets the EIA RS-422 requirements
- Low propagation delays
- High speed

Plastic-DIP package

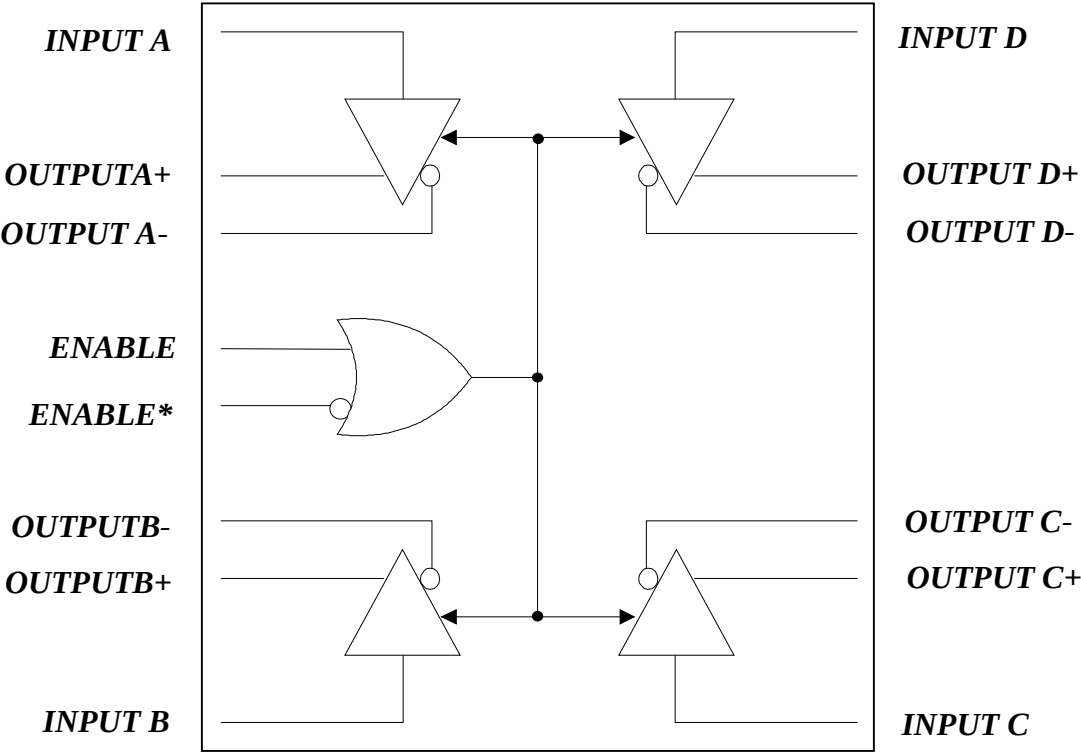


ORDERING INFORMATION

Part number	Package	Operating temperature
ST26C31CP16	Plastic-DIP	0° C to + 70° C
ST26C31CF16	SOIC	0° C to + 70° C
ST26C31IP16	Plastic-DIP	-40° C to + 85° C
ST26C31IF16	SOIC	-40° C to + 85° C

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BLOCK DIAGRAM



SYMBOL DESCRIPTION

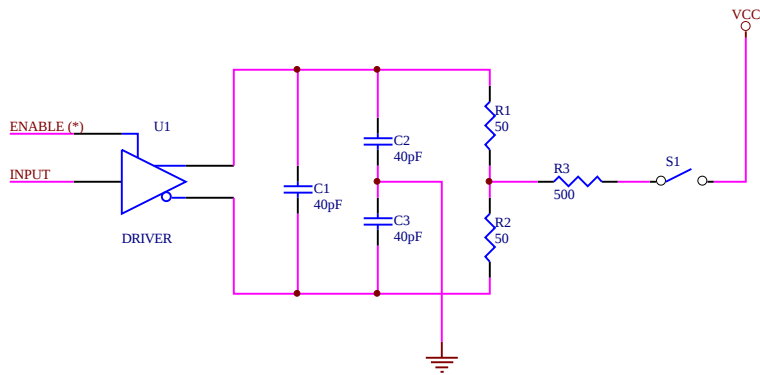
Symbol	Pin	Signal Type	Pin Description
INPUT A	1	I	Driver A input pin.
OUTPUT A+	2	O	Driver A differential non-inverting output pin.
OUTPUT A-	3	O	Driver A differential inverting output pin.
ENABLE	4	I	Gate control (active high). This pin is one of the two control pins which enables or disables all four drivers. All four drivers are gated with two input or gate.
OUTPUT B-	5	O	Driver B differential inverting output pin.
OUTPUT B+	6	O	Driver B differential non-inverting output pin.
INPUT B	7	I	Driver B input pin.
GND	8	O	Signal and power ground.
INPUT C	9	I	Driver C input pin.
OUTPUT C+	10	O	Driver C differential non-inverting output pin.
OUTPUT C-	11	O	Driver C differential inverting output pin.
ENABLE*	12	I	Gate control (active low). See ENABLE pin description.
OUTPUT D-	13	O	Driver D differential inverting output pin.
OUTPUT D+	14	O	Driver D differential non-inverting output pin.
INPUT D	15	I	Driver D input pin.
VCC	16	I	Power supply pin.

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Functional table

Enable	Enable*	Input	Differential Non-Inverting Output	Differential Inverting Output
L	H	X	Z	Z
L	L	L	L	H
L	L	H	H	L
H	L	L	L	H
H	L	H	H	L
H	H	L	L	H
H	H	H	H	L

X=Don't care
Z=Three state (high impedance)



AC ELECTRICAL CHARACTERISTICS

$T_A=0^{\circ} - 70^{\circ} \text{ C}$, $V_{CC}=5.0 \text{ V} \pm 10\%$ unless otherwise specified.

Symbol	Parameter	Limits			Units	Conditions
		Min	Typ	Max		
T_1	Propagation delay, input to output		8	10	ns	S1 open
T_2	Differential output rise and fall time		8	10	ns	S1 open
T_3	Output enable time		18	20	ns	S1 close
T_4	Output disable time		18	20	ns	S1 close
$*T_5$	Skew			2	ns	S1 open

* Skew is defined as the difference in propagation delays between complementary outputs at the 50% point.

ABSOLUTE MAXIMUM RATINGS

Supply range	7 Volts
Voltage at any pin	GND-0.3 V to VCC+0.3 V
Operating temperature	0° C to +70° C
Storage temperature	-40° C to +150° C
Package dissipation	500 mW

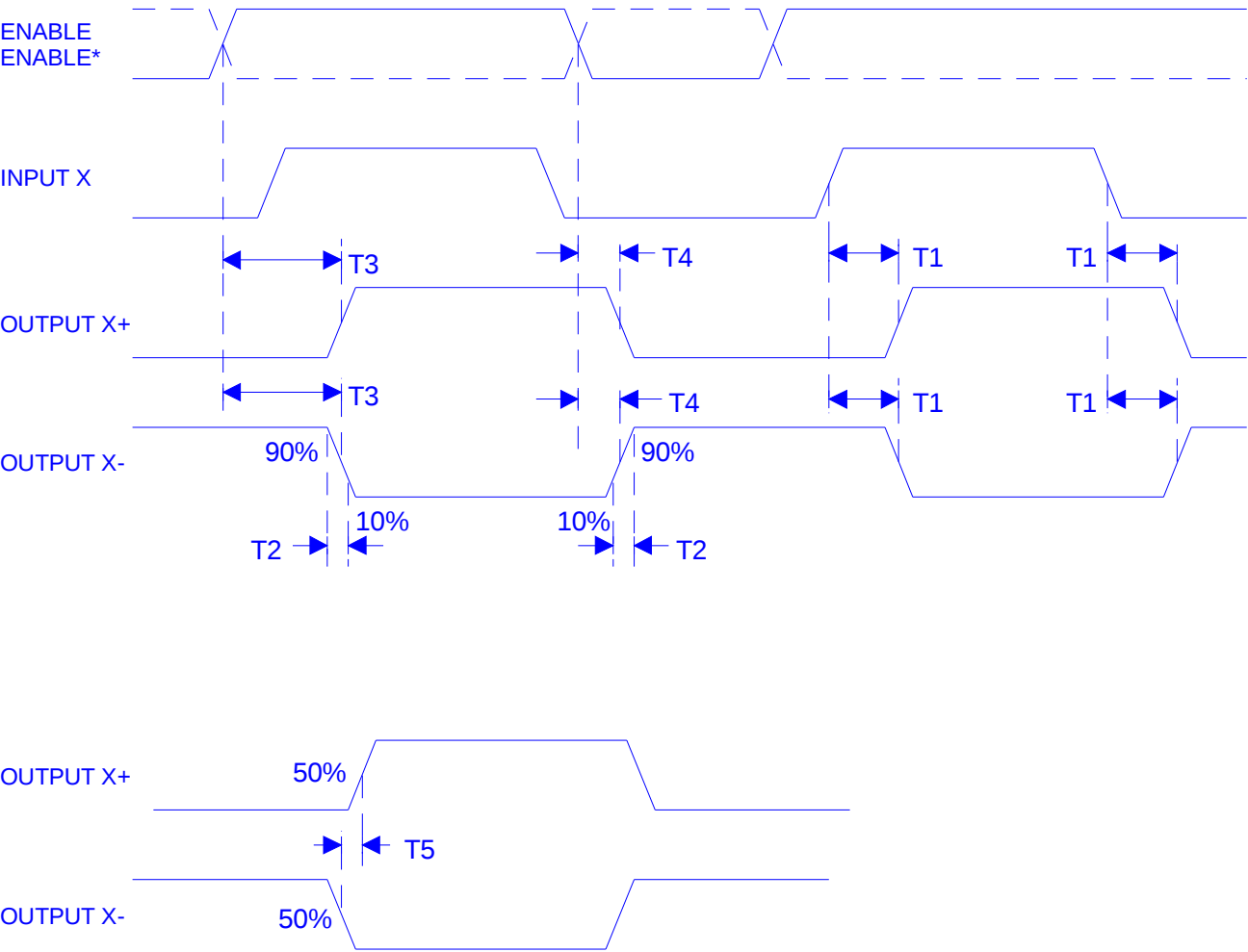
DC ELECTRICAL CHARACTERISTICS

$T_A = 0^\circ - 70^\circ \text{ C}$, $V_{CC} = 5.0 \text{ V} \pm 10\%$ unless otherwise specified.

Symbol	Parameter	Limits			Units	Conditions
		Min	Typ	Max		
I_{IN}	Input current			± 1.0	μA	
I_{CC}	Operating current		600		μA	
I_{OZ}	Three state output leakage		± 2.0		μA	
V_{IH}	Input high level	2.0			V	
V_{IL}	Input low level			0.8	V	
V_{OH}	Output high level	2.5			V	
V_{OL}	Output low level			0.5	V	
V_{OS}	Differential output level	2.0			V	$R_L = 100\Omega$
V_{OC}	Common mode output voltage			3.0	V	$R_L = 100\Omega$
V_{OD}	Difference in common mode output			0.4	V	$R_L = 100\Omega$
C_{IN}	Input capacitance	7	10	15	pF	
C_{PD}	Power dissipation capacitance		100		pF	
I_{OS}	Output short current	-200		-30	mA	$V_{IN} = V_{CC} \text{ or GND}$
I_{OFF}	Output leakage current power off			100	μA	$V_{out} = 6V$
				-100	μA	$V_{out} = 0.25V$
I_{DC}	Output current			± 150	mA	

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DIFFERENTIAL LINE DRIVER TIMING



2631-CK-1