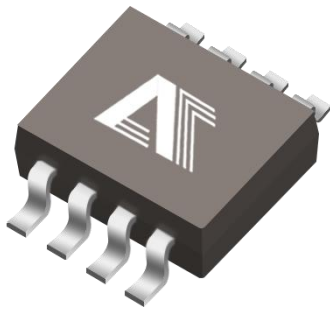




RS-485/RS-422CHIP

SP3485EN

Product Data Sheet

AOTE DCC

RELEASE

◆ Summary :

MAX/SP (ST) 3485XX is a transceiver chip used in RS485 and RS422 communication systems, with a transmission rate of up to 10Mbps for transmitting and receiving data.

MAX/SP (ST) 3485XX is an RS485 interface chip for half duplex communication, with driver enable (DE) and receive enable/RE control pins. The receiver of MAX/SP (ST) 3485XX is designed with an input impedance of 1/8 unit load, and can accommodate 128 loads on the bus.

ESD: 1K (If the product requires hot plugging, please add protective devices)

◆ Product features

- Encapsulation: SOP-8
- Input tri state output
- Half duplex communicatio
- A. B-end short circuit protection

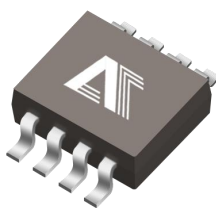
◆ Applications

- Low power RS485&RS422 receiver
- Electricity meter, water meter, gas meter
- level conversion
- Access control and security system

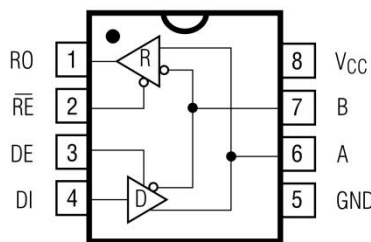
Applicable models:

MAX3485CSA,MAX3485ECSA,MAX3485EESA,MAX3485ESA,SP3485EEN,SP3485EN,ST3485EBDR.ST3485ECDR Wait

◆ Product packaging



SOP-8



◆ Order Information

Model	Encapsulation	Minimum packaging	Temperature range
MAX3485XX	SOP8	2500/盘	0°C至+70°C
SP3485XX			
ST3485XX			

◆ Pin Function Description

Pin number	Pin name	Pin Description
1	RO	Receiver output: When/RE is at low level, if $(A-B) \geq 200\text{mV}$, then RO output is at high level; If $(A-B) \leq -200\text{mV}$, then the RO output is at a low level.
2	/RE	Receiver Enable Control: When/RE is at a low level, the receiver function is effective; /When RE is high, the receiver function is disabled.
3	DE	The transmitter is controllable: the transmitter function is effective when DE is at a high level; When DE is low, the transmitter function is disabled
4	DI	Transmitter input: When DE is at high level and DI input is at low level, A outputs low level and B outputs high level; When the DI input is at a high level, A outputs a high level and B outputs a low level
5	GND	grounding
6	A	Receiver in-phase input and transmitter reverse output
7	B	Receiver reverse input and transmitter reverse output
8	VCC	Power pin: usually connected to a 5V power supply

◆ Absolute maximum rated value of the product

Name	Signal parameters	Scope	Unit
Power supply voltage	VCC	-0.3 to 8.0	V
Control input signal voltage	/RE,DF	-0.3to(Vcc+0.3)	V
Receiver input signal voltage	A,B	± 13	V
Receiver output voltage	RO	-0.3 to (Vcc+ 0.3)	V
Output voltage of transmitter	A,B	± 13	V
Input voltage of transmitter	DI	-0.3to(Vcc+0.3)	V
Operating Temperature	T _{OP}	0 to +70	°C
Storage temperature	T _{STO}	-65 to +150	°C

◆ Recommended working conditions

Name	Signal parameters	Min	Typ	Max	Unit
power supply voltage	Vcc	3		5.5	V
Control input signal high voltage	/RE,DE,DI	2			V
Control input signal low voltage	/RE,DE,DI			0.8	V
Receiver input signal voltage	A,B			± 12	V
Operating Temperature			0 to +70		°C

DC characteristics (Note: Unless otherwise specified, VCC=5V, TA=25 °C)

Parameter	Name	Test conditions		Min	Typ	Max	Unit
Transmitter							
Differential signal output	V _{OD1}	no-load				5	V
Differential signal output	V _{OD2}	Fig.1,RI=27Ω		1.5			V
Differential signal output variation amplitude	ΔV _{OD}	Fig.1,RI=27Ω				0.2	V
Common mode output voltage	V _{OC}	Fig.1,RI=27Ω				3	V
Change amplitude of common mode voltage output	ΔV _{OC}	Fig.1,RI=27Ω				0.2	V
Input signal high level	V _{IH}	DE,DI,REB		2.0			V
Input signal low level	V _{IL}	DE,DI,REB				0.8	V
Control pin input current	I _{IN1}	DE,DI,REB				±2	μA
A/B pin input current	I _{IN2}	DE=0, V _{CC} =0V or 5.25V	V _{IN} =12V			1.0 -0.8	mA
			V _{IN} =-7V				
Output short-circuit current	I _{OSD}	-7V≤V _{OUT} ≤12V	-250		250	mA	
Receiver							
Receiver differential signal threshold voltage	V _{TH}			-200		200	mV
Receiver input delay	ΔT _{TH}						mV
Receiver output high level	V _{OH}	I _O =-4mA,V _{ID} =200mV		V _{CC} -1.5			V
Receiver output low level	V _{OL}	I _O =-4mA,V _{ID} =-200mV				0.4	V
Receiver tri state output current	I _{OZR}	0.4V≤V _{CM} ≤2.4V				±1	μA
Receiver input impedance	R _{IN}	-7V≤V _{CM} ≤+12V		32			mA
Receiver short-circuit current	I _{OSR}	Fig.6.0V≤V _{RO} ≤V _{CC}		±7		±95	μA
Power supply current							
Power supply current	I _{CC}	no-load, /RE=GND, DI=V _{CC} or GND	DE=V _{CC}		155	900	μA
			DE=GND		160	600	μA

Note: 1. The current entering the device is positive, and the current flowing out of the device is negative.

AC characteristics (If there is no other explanation, VCC=5V, TA=25 °C)

Parameter	Name	Test conditions	Min	Typ	Max	Unit
Drive input to output $t_{DPLH}-t_{DH}$	t_{DSKEW}	$R_{DIFF}=54\Omega$ $C_{L1}=C_{L2}=100pF$			100	ns
Drive up or down time	t_{DF}, t_{DR}	$R_{DIFF}=54\Omega$ $C_{L1}=C_{L2}=100pF$	200	530	750	ns
transmission rate	f_{Data}				10	Mbps
Driver enables low output	t_{DZL}	$C_{DL}=100pF, S1$ Close			2500	ns
Driver enables high output	t_{DZH}	$C_{DL}=100pF, S2$ Close			1500	ns
Invalid from low to drive	t_{DLZ}	$C_{DL}=15pF, S1$ Close			100	ns
Invalid from high to drive	t_{DHz}	$C_{DL}=15pF, S2$ Close			100	ns
Receiver input to output	t_{RPLH}, t_{RPHL}	$V_{ID} \geq 2.0V; V_{ID} \leq 15ns$ Rise and fall time		120	200	ns
$t_{RPLH}-t_{RPH}$	t_{RSKD}	$V_{ID} \geq 2.0V; V_{ID} \leq 15ns$ Rise and fall time		5	30	ns
Receiver enabled to output low	t_{RZL}	$C_{RL}=15pF, S1$ Close		20	50	ns
Receiver enables high output	t_{RZH}	$C_{RL}=15pF, S2$ Close		20	50	ns
Receiver from low to invalid time	t_{RLZ}	$C_{RL}=15pF, S1$ Close		20	50	ns
Receiver from high to invalid time	t_{RHZ}	$C_{RL}=15pF, S2$ Close		20	50	ns
Drive input to output $t_{DPLH}-t_{DH}$	t_{DSKEW}	$R_{DIFF}=54\Omega$ $C_{L1}=C_{L2}=100pF$			100	ns

◆ Function Menu

Transmitting				
Inputs			Outputs	
/RE	DE	DI	A	B
x	1	0	0	1
x	1	1	1	0
x	0	x	High resistance	High resistance

Receiving			
Inputs			Outputs
/RE	DE	A-B	RO
0	0	$\geq 0.2V$	1
0	0	$\leq -0.2V$	0
0	0	Open/Shorted	State of Uncertainty
1	0	x	High resistance

X=any state

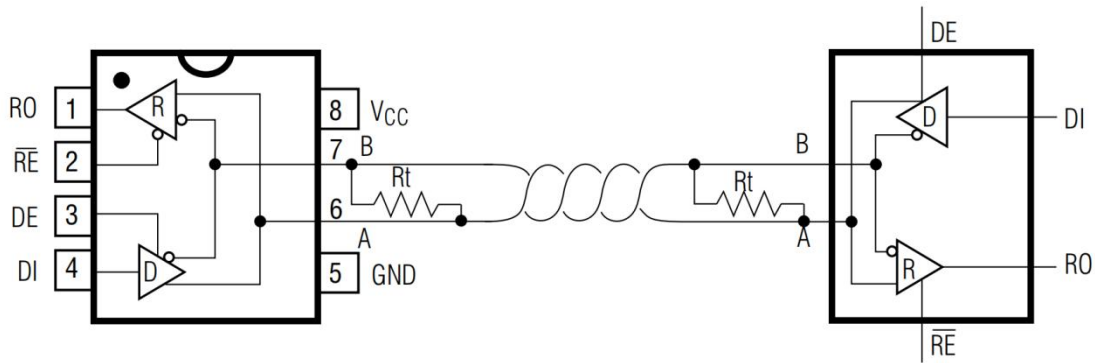


Figure 1: Typical half duplex application circuit of MAX/SP (ST)

1. Briefly describe

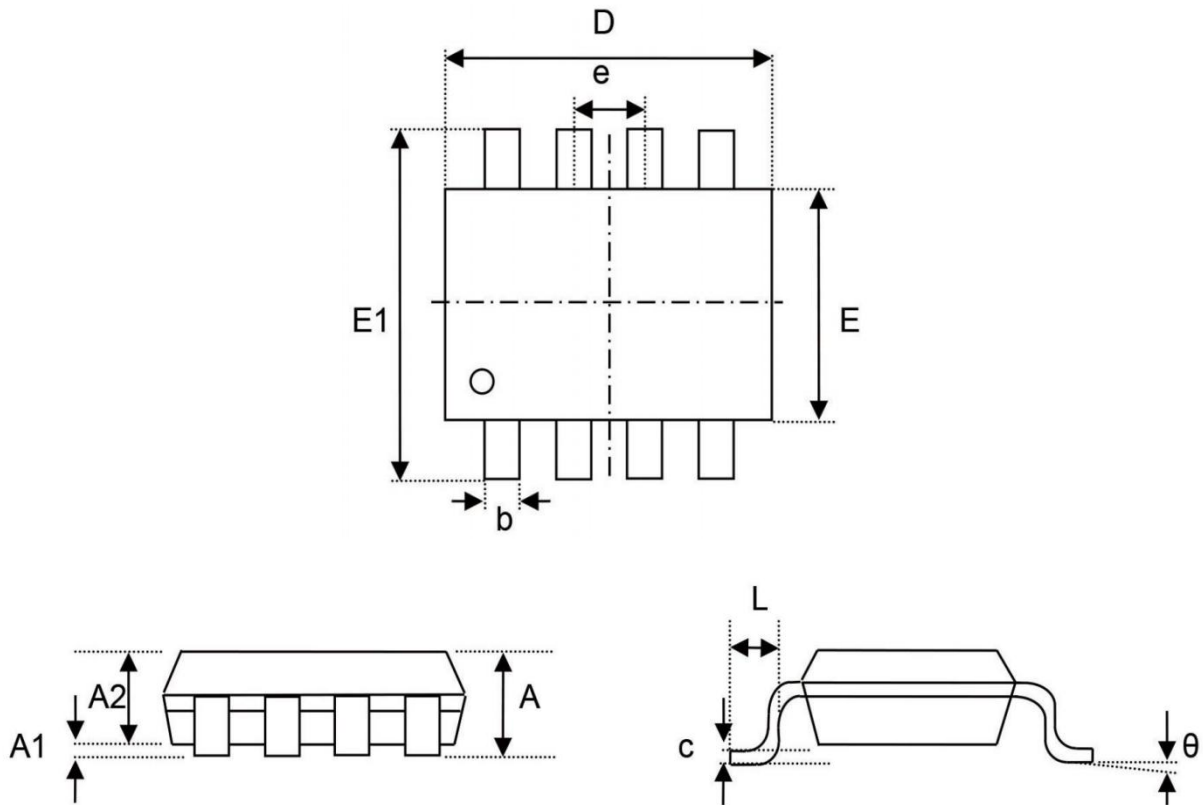
The MAX3485ECSA high-speed transceiver used for RS485/RS422 communication includes a driver and receiver. The MAX/SP (ST) 3485XX has a low slew rate driver, which can reduce EMI and reflections caused by improper cable termination, achieving data transmission of up to 10Mbps.

2. Receiver input filtering

The receiver of MAX/SP (ST) 3485XX not only has input lag, but also includes input filtering function. This filtering function improves the noise suppression ability of slowly rising and falling differential signals. The filter increases the transmission delay of the receiver by 25%.

◆ Packaging dimensions

SOP8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.500	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 BSC		0.050 BSC	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

◆ Attention

- AOTE implements dynamic technical updates. Specifications are subject to change. Refer to the official website for the latest version.
- Users must strictly adhere to specified conditions. Failures caused by misuse (overload, high temperature, incompatible circuits) are excluded from warranty.
- Contact technical support for customized validation in critical applications (medical devices, industrial control).
- This document is valid until December 31, 2026 Updates will be notified on the official website.
- For further clarification on technical specifications or application solutions, please contact us through official channels: