XINLUDA®
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XL485-SS   MSOP8
XL485CS   SOP8
XD485   DIP-8
RS-485/RS422

General Description

The x485 are low-power transceivers for RS-485 and RS-422 communication. Each part contains one driver and one Receiver The driver slew rates of the x485
 are not limited, allowing them to
transmit up to 2.5Mbps.
These transceivers draw between 120µA and 500µA of supply current when unloaded or fully loaded with disabled

Applications

Low-Power RS-485 Transceivers

Low-Power RS-422 Transceivers

Level Translators

Transceivers for EMI-Sensitive Applications

Industrial-Control Local Area Networks

ABSOLUTE MAXIMUM RATINGS

Supply Voltage (V_{CC}) 12V
Control Input Voltage ($\overline{RE}$, DE)....................-0.5V to (V_{CC} + 0.5V)
Driver Input Voltage (DI)............................-0.5V to (V_{CC} + 0.5V)
Driver Output Voltage (A, B)...................................-8V to +12.5V
Receiver Input Voltage (A, B)................................-8V to +12.5V
Receiver Output Voltage (RO)....................-0.5V to (V_{CC} +0.5V)
Continuous Power Dissipation (T_A = +70°C)
  8-Pin Plastic DIP (derate 9.09mW/°C above +70°C) 727mW
  8-Pin SO (derate 5.88mW/°C above +70°C).................471mW

  8-Pin µMAX (derate 4.1mW/°C above +70°C) 830mW
  8-Pin CERDIP (derate 8.00mW/°C above +70°C).........640mW
Operating Temperature Ranges
Storage Temperature Range ....-65°C to +160°C
Lead Temperature (soldering, 10sec) ....+300°C

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

DC ELECTRICAL CHARACTERISTICS

(V_{CC} = 5V ±5%, T_A = T_{MIN} to T_{MAX}, unless otherwise noted.) (Notes 1, 2)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Differential Driver Output (no load)	V_{OD1}				5	V
Differential Driver Output (with load)	V_{OD2}	R = 50Ω (RS-422)	2			V
		R = 27Ω (RS-485), Figure 4	1.5		5	
Change in Magnitude of Driver Differential Output Voltage for Complementary Output States	ΔV_{OD}	R = 27Ω or 50Ω, Figure 4			0.2	V
Driver Common-Mode Output Voltage	V_{OC}	R = 27Ω or 50Ω, Figure 4			3	V
Change in Magnitude of Driver Common-Mode Output Voltage for Complementary Output States	ΔV_{OD}	R = 27Ω or 50Ω, Figure 4			0.2	V
Input High Voltage	V_{IH}	DE, DI, $\overline{RE}$	2.0			V
Input Low Voltage	V_{IL}	DE, DI, $\overline{RE}$			0.8	V
Input Current	I_{IN1}	DE, DI, $\overline{RE}$			±2	µA
Receiver Differential Threshold Voltage	V_{TH}	-7V ≤ V_{CM} ≤ 12V	-0.2		0.2	V
Receiver Input Hysteresis	ΔV_{TH}	V_{CM} = 0V		70		mV
Receiver Output High Voltage	V_{OH}	I_O = -4mA, V_{ID} = 200mV	3.5			V
Receiver Output Low Voltage	V_{OL}	I_O = 4mA, V_{ID} = -200mV			0.4	V
Three-State (high impedance) Output Current at Receiver	I_{OZR}	0.4V ≤ V_O ≤ 2.4V			±1	µA

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DC ELECTRICAL CHARACTERISTICS (continued)

(V_{CC} = 5V ±5%, T_A = T_{MIN} to T_{MAX}, unless otherwise noted.) (Notes 1, 2)

PARAMETER	SYMBOL	CONDITIONS		MIN	TYP	MAX	UNITS
No-Load Supply Current (Note 3)	I_{CC}	485 $\overline{RE}$ = 0V or V_{CC}	DE = V_{CC}		500	900	µA
			DE = 0V		300	500	
Driver Short-Circuit Current, V_O = High	I_{OSD1}	-7V ≤ V_O ≤12V (Note 4)		35		250	mA
Driver Short-Circuit Current, V_O = Low	I_{OSD2}	-7V ≤ V_O ≤12V (Note 4)		35		250	mA
Receiver Short-Circuit Current	I_{OSR}	0V ≤ V_O ≤ V_{CC}		7		95	mA

SWITCHING CHARACTERISTICS—485

(V_{CC} = 5V ±5%, T_A = T_{MIN} to T_{MAX}, unless otherwise noted.) (Notes 1, 2)

PARAMETER	SYMBOL	CONDITIONS		MIN	TYP	MAX	UNITS
Driver Input to Output	t_{PLH}	R_{DIFF} = 54Ω, C_{L1} = C_{L2} = 100pF		10	30	60	ns
	t_{PHL}			10	30	60	
Driver Output Skew to Output	t_{SKEW}	R_{DIFF} = 54Ω, C_{L1} = C_{L2} = 100pF			5	10	ns
Driver Rise or Fall Time	t_R, t_F	Figures 6 and 8, R_{DIFF} = 54Ω, C_{L1} = C_{L2} = 100pF	485	3	15	40	ns
Driver Enable to Output High	t_{ZH}	C_L = 100pF, S2 closed			40	70	ns
Driver Enable to Output Low	t_{ZL}	C_L = 100pF, S1 closed			40	70	ns
Driver Disable Time from Low	t_{LZ}	C_L = 15pF, S1 closed			40	70	ns
Driver Disable Time from High	t_{HZ}	C_L = 15pF, S2 closed			40	70	ns
Receiver Input to Output	t_{PLH}, t_{PHL}	R_{DIFF} = 54Ω, C_{L1} = C_{L2} = 100pF	485	20	90	200	ns
| t_{PLH} - t_{PHL} | Differential Receiver Skew	t_{SKD}	R_{DIFF} = 54Ω, C_{L1} = C_{L2} = 100pF			13		ns
Receiver Enable to Output Low	t_{ZL}	C_{RL} = 15pF, S1 closed			20	50	ns
Receiver Enable to Output High	t_{ZH}	C_{RL} = 15pF, S2 closed			20	50	ns
Receiver Disable Time from Low	t_{LZ}	C_{RL} = 15pF, S1 closed			20	50	ns
Receiver Disable Time from High	t_{HZ}	C_{RL} = 15pF, S2 closed			20	50	ns
Maximum Data Rate	f_{MAX}			2.5			Mbps

NOTES FOR ELECTRICAL/SWITCHING CHARACTERISTICS

Note 1: All currents into device pins are positive; all currents out of device pins are negative. All voltages are referenced to device ground unless otherwise specified.

Note 2: All typical specifications are given for V_{CC} = 5V and T_A = +25°C.

Note 3: Supply current specification is valid for loaded transmitters when DE = 0V.

Note 4: Applies to peak current. See *Typical Operating Characteristics.*

Typical Operating Characteristics

(V_{CC} = 5V, T_A = +25°C, unless otherwise noted.)

OUTPUT CURRENT vs. RECEIVER OUTPUT LOW VOLTAGE

OUTPUT CURRENT vs. RECEIVER OUTPUT HIGH VOLTAGE

RECEIVER OUTPUT HIGH VOLTAGE vs. TEMPERATURE

RECEIVER OUTPUT LOW VOLTAGE vs. TEMPERATURE

DRIVER OUTPUT CURRENT vs. DIFFERENTIAL OUTPUT VOLTAGE

DRIVER DIFFERENTIAL OUTPUT VOLTAGE vs. TEMPERATURE
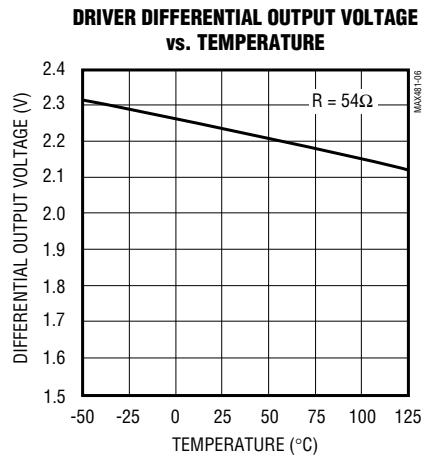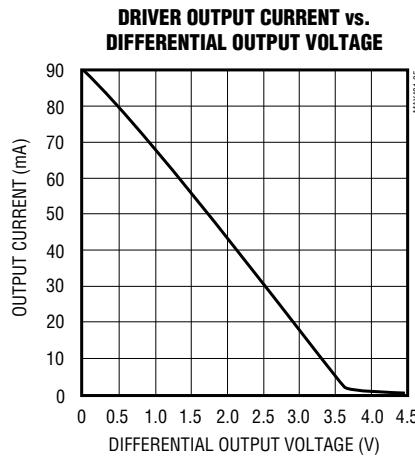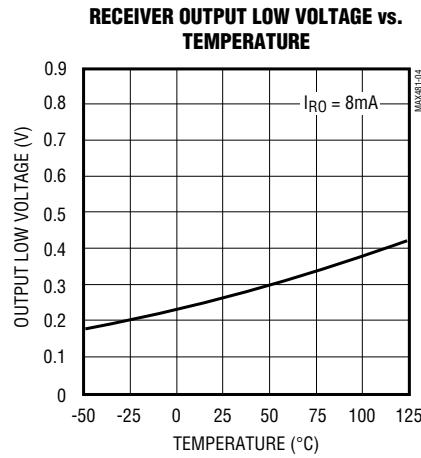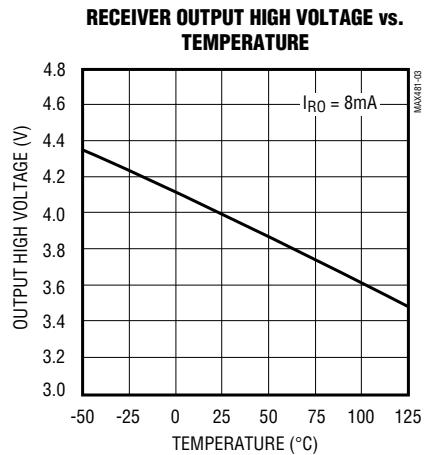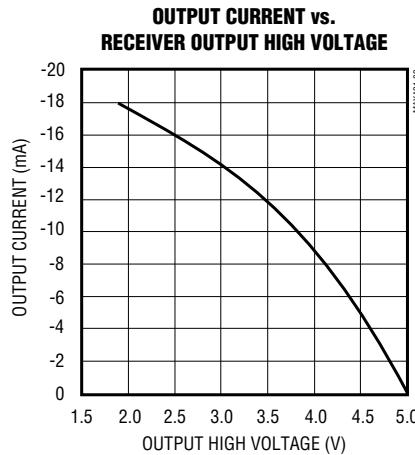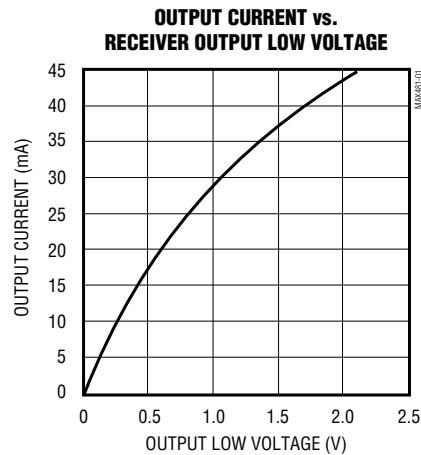
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Typical Operating Characteristics (continued)

(V_{CC} = 5V, T_A = +25°C, unless otherwise noted.)

OUTPUT CURRENT vs. DRIVER OUTPUT LOW VOLTAGE

OUTPUT CURRENT vs. DRIVER OUTPUT HIGH VOLTAGE

485 SUPPLY CURRENT vs. TEMPERATURE
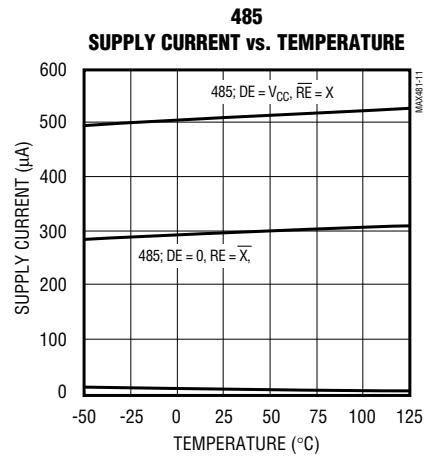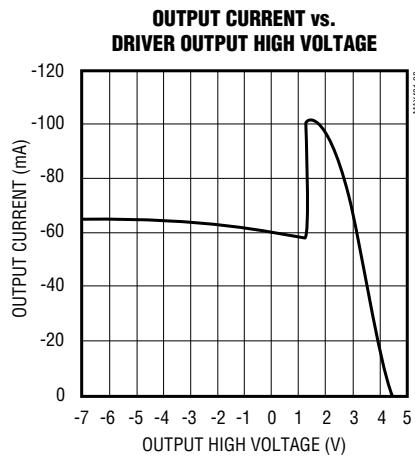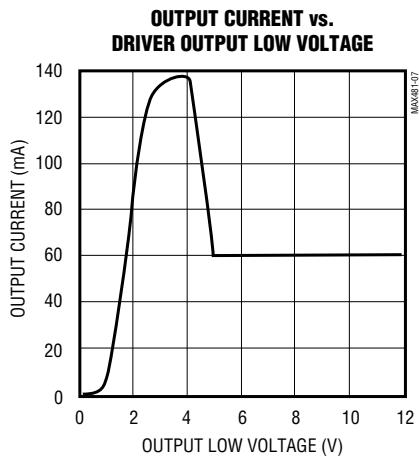
Pin Description

PIN		NAME	FUNCTION
485			
DIP/SOP MSOP	**µMAX**		
1	3	RO	Receiver Output: If A > B by 200mV, RO will be high; If A < B by 200mV, RO will be low.
2	4	$\overline{RE}$	Receiver Output Enable. RO is enabled when $\overline{RE}$ is low; RO is high impedance when $\overline{RE}$ is high.
3	5	DE	Driver Output Enable. The driver outputs, Y and Z, are enabled by bringing DE high. They are high impedance when DE is low. If the driver outputs are enabled, the parts function as line drivers. While they are high impedance, they function as line receivers if $\overline{RE}$ is low.
4	6	DI	Driver Input. A low on DI forces output Y low and output Z high. Similarly, a high on DI forces output Y high and output Z low.
5	7	GND	Ground
—	—	Y	Noninverting Driver Output
—	—	Z	Inverting Driver Output
6	8	A	Noninverting Receiver Input and Noninverting Driver Output
—	—	A	Noninverting Receiver Input
7	1	B	Inverting Receiver Input and Inverting Driver Output
—	—	B	Inverting Receiver Input
8	2	V_{CC}	Positive Supply: 4.75V ≤ V_{CC} ≤ 5.25V
—	—	N.C.	No Connect—not internally connected

TOP VIEW

RO 1 R 8 V_{CC}
$\overline{RE}$ 2 7 B
DE 3 6 A
DI 4 D 5 GND

DIP/SO

B 1 8 A
V_{CC} 2 *485* 7 GND
RO 3 6 DI
$\overline{RE}$ 4 5 DE

µ**MAX**

RO 1 R 8 V_{CC}
$\overline{RE}$ 2 7 B Rt
DE 3 6 A Rt
DI 4 D 5 GND

NOTE: PIN LABELS Y AND Z ON TIMING, TEST, AND WAVEFORM DIAGRAMS REFER TO PINS A AND B WHEN DE IS HIGH.
TYPICAL OPERATING CIRCUIT SHOWN WITH DIP/SO PACKAGE.
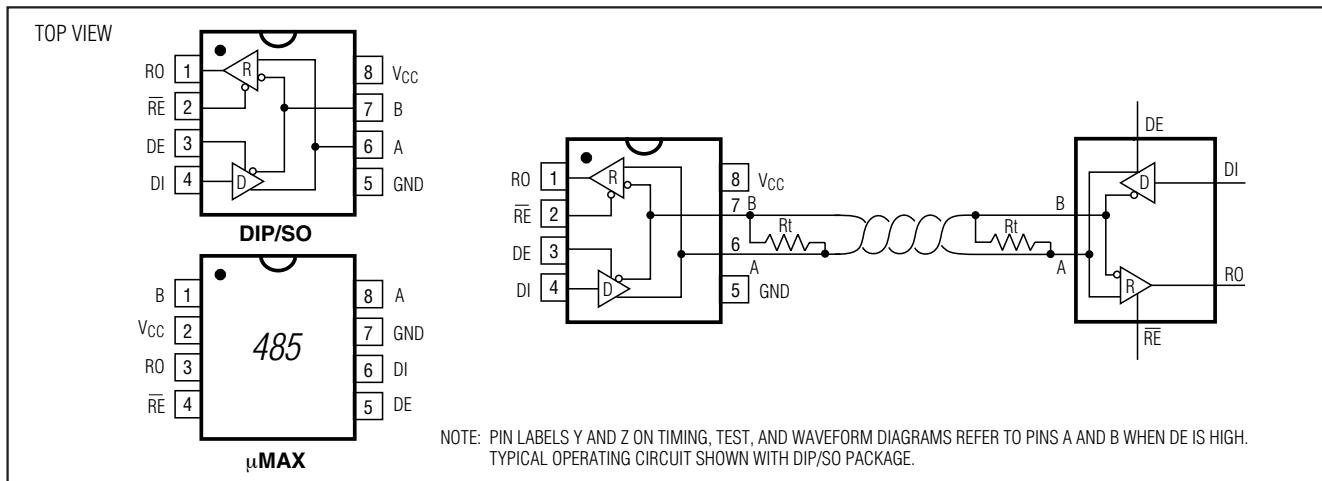
485 Pin Configuration and Typical Operating Circuit

TTL IN
t_R, t_F < 6ns

D

Z
Y

100pF

R = 54Ω

B
A

R

RECEIVER
OUT

100pF
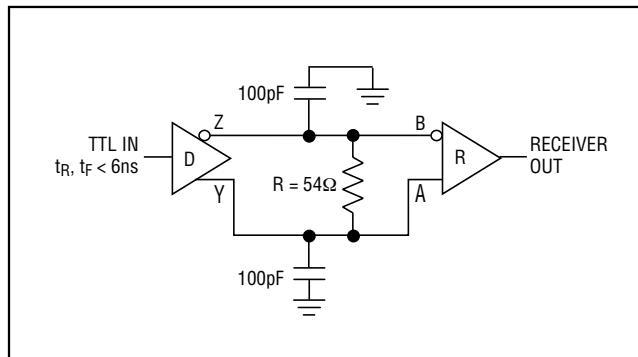
Receiver Propagation Delay Test Circuit

A
500mV/div

B
RO
2V/div

V_{CC} = 5V
T_A = +25°C

20ns/div

485 Receiver t_{PHL}

B
500mV/div

A
2V/div
RO

V_{CC} = 5V
T_A = +25°C

20ns/div
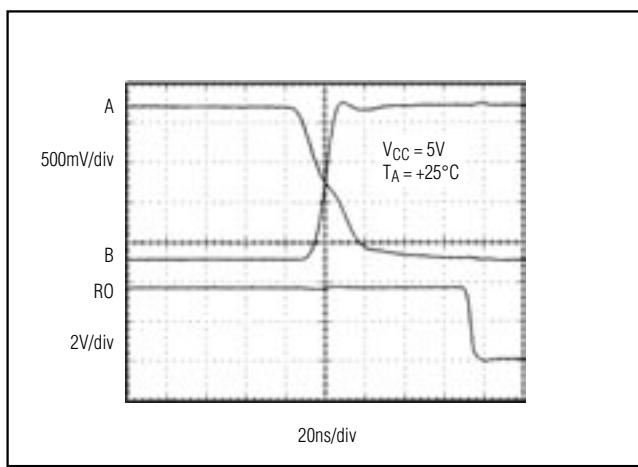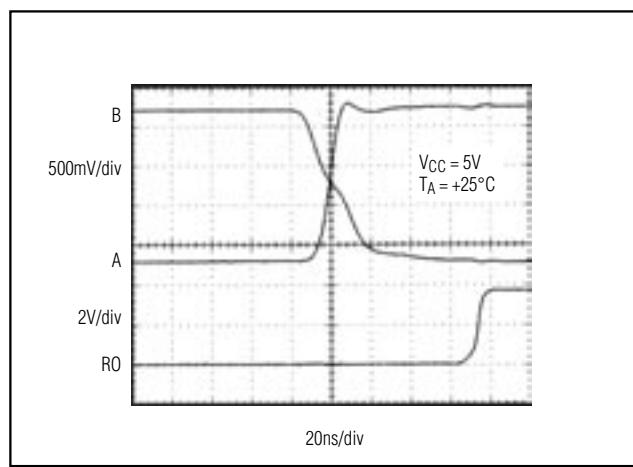
485 Receiver t_{PLH}

以上信息仅供参考. 如需帮助联系客服人员。谢谢 XINLUDA