

LTM2881: Isolated 20Mbps RS485/RS422 μ Module Transceiver with Power

DESCRIPTION

Demonstration circuit DC1503A is an Isolated RS485/RS422 μ Module[®] transceiver + power featuring the LTM[®]2881. The demo circuit is a 2500V_{RMS} galvanically isolated RS485/RS422 transceiver interface. All components are integrated into the μ Module transceiver. The demo circuit operates from a supply on V_{CC} and a logic

supply on V_L . The part generates the output voltage V_{CC2} and communicates all necessary signaling across the isolation barrier using isolation μ Module technology.

Design files for this circuit board are available at <http://www.linear.com/demo>.

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Table 1. Performance Summary ($T_A = 25^\circ\text{C}$)

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
V_{CC}	Input Supply Range	LTM2881-5	4.5	5	5.5	V
		LTM2881-3	3.0	3	3.6	V
V_L	Logic Signal Supply Range		1.62		5.5	V
V_{CC2}	Output Voltage	$I_{LOAD} = 0\text{mA to }100\text{mA}$, $DE = 0\text{V}$	4.7	5		V
f_{MAX}	Maximum Data rate	$\overline{SLO} = V_{CC2}$	20			Mbps
V_{IORM}	Maximum Working Insulation Voltage	GND to GND2	560			V
	Common Mode Transient Immunity	GND to GND2	30			kV/ μ s

OPERATING PRINCIPLES

The LTM2881 contains an isolated DC/DC converter, delivering power to V_{CC2} at 5V from the input supply V_{CC} . Isolation is maintained by the separation of GND and GND2 where significant operating voltages and transients can exist without affecting the operation of the LTM2881. The logic side ON pin enables or shuts down the LTM2881. RS485/RS422 signaling is controlled by the logic inputs DE, DI, TE and RE. Connection to the transceiver pins (A, B, Y and Z) allows full- or half-duplex operation on the isolated side of the demo circuit. A full-/half-duplex switch is included on the demo circuit to ease setting the system

configuration. A driver termination resistor is included on the demo circuit to allow master termination in full-duplex configurations. Additional logic signaling from the isolated side to the logic side is available with the D_{IN} to D_{OUT} pins. The \overline{SLO} pin configures the slew rate of the driver output pins Y and Z.

Data is transmitted out the driver pins Y and Z from the input DI with the input DE set high. Data is received through the difference in A and B to the output RO with the input \overline{RE} set low.

QUICK START PROCEDURE

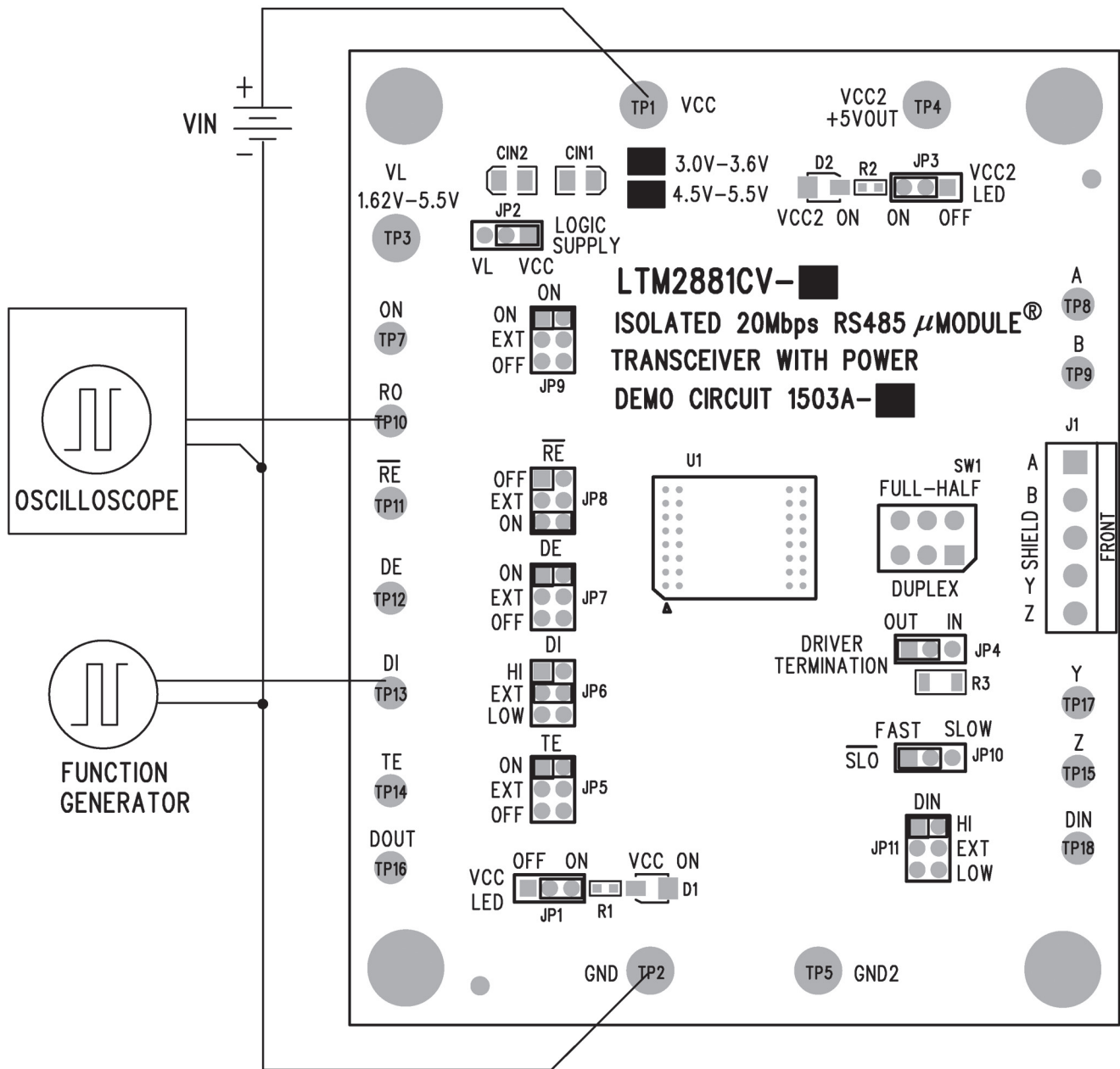


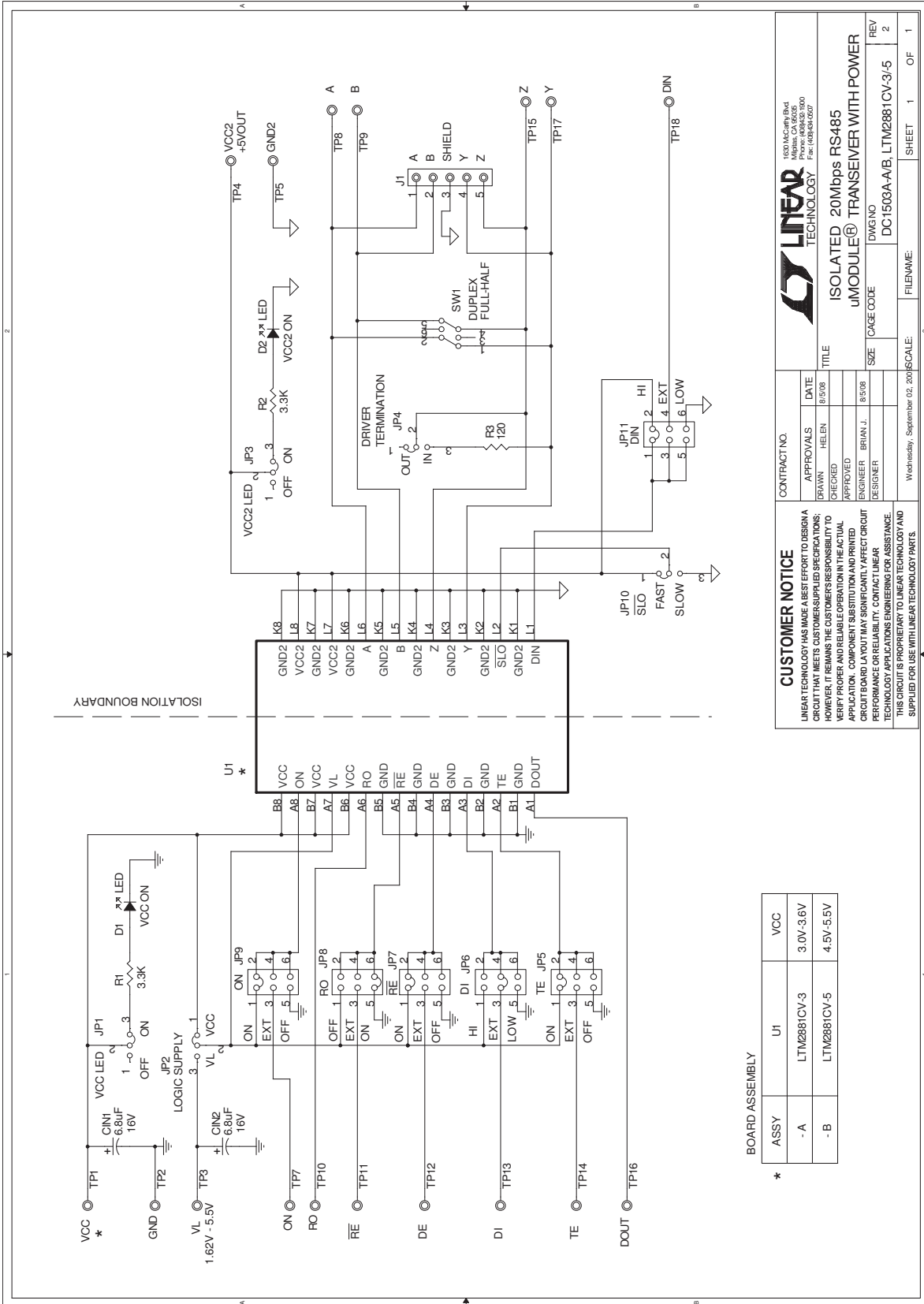
Figure 2. Proper Measurement Equipment Setup

DEMO MANUAL DC1503A

PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
REQUIRED CIRCUIT COMPONENTS				
1	1	U1	I.C., LTM2881CV-3 I.C., LTM2881CV-5	LINEAR LTM2881CV-3#PBF LINEAR LTM2881CV-5#PBF
HARDWARE (FOR DEMO BOARD ONLY)				
2	2	CIN1, CIN2	CAP, TANT 6.8 μ F 16V 10% TAJA	AVX TAJA685K016R
3	2	D1, D2	LED, SMT, GREEN, 2.1V 15mA	PANASONIC LN1351C-(TR)
4	1	R1	RES., CHIP 1k 1/16W, 5%, 0603	VISHAY, CRCW06031K00JNEA
5	1	R2	RES., CHIP 3.3k 1/16W, 5%, 0603	VISHAY, CRCW06033K30JNEA
6	1	R3	RES., CHIP 120 Ω 1/4W, 5%, 1206	VISHAY, CRCW1206120RJNEA
7	1	SW1	SWITCH, SLIDE, DPDT	E-SWITCH, EG2271
8	1	J1	TERMINAL BLOCK, 5-PIN 3.5mm	ON-SHORE TECH ED555/5DS
9	5	JP1-JP4, JP10	2mm SINGLE ROW HEADER, 3 PIN	SAMTEC, TMM-103-02-L-S
10	6	JP5-JP9, JP11	2mm DOUBLE ROW HEADER, 6 PIN	SAMTEC, TMM-103-02-L-D
11	11	JP1-JP11	SHUNT	SAMTEC, 2SN-BK-G
12	5	TP1-TP5	TEST POINT, TURRET, 0.095	MILL-MAX, 2501-2-00-80-00-00-07-0
13	12	TP7-TP18	TEST POINT, TURRET, 0.065	MILL-MAX, 2308-2-00-80-00-00-07-0
14	4	(Stand-Off)	STAND-OFF, NYLON 0.375" tall	KEYSTONE, 8832 (SNAP ON)

SCHEMATIC DIAGRAM



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ISOLATED 20Mbps RS485 iMODULE® TRANSCEIVER WITH POWER		TITLE	REV
CONTRACT NO.	APPROVALS	DATE	SHEET 1 OF 1
DRAWN: HELEN	CHECKED:	8/5/08	FILENAME:
APPROVED:	ENGINEER: BRIAN J.	8/5/08	SCALE:
DESIGNER:	DWG NO: DC1503A-A-B, LTM2881CV-3/5	SIZE:	2
Wednesday, September 02, 2008		SCALE:	2

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BOARD ASSEMBLY

ASSY	U1	VCC
- A	LTM2881CV-3	3.0V-3.6V
- B	LTM2881CV-5	4.5V-5.5V

* U1



DEMO MANUAL DC1503A

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