

<a href="#">ADM2485</a>	高速隔离 RS-485 收发器
<a href="#">ADP3330</a>	高精度、低压差线性调节器

## 半双工、隔离式 RS-485 接口

### 电路功能与优势

此电路采用高速、隔离式 RS-485 收发器 ADM2485 和高精度线性调节器 ADP3330，可提供半双工、隔离式 RS-485 接口。该电路不仅可实现信号与电源隔离，同时缩小了电路板空间，降低了功耗。

### 电路描述

ADM2485 为半双工 RS-485 收发器，很容易达到完全隔离的

RS-485 PROFIBUS 兼容节点。ADM2485 集成一个变压器驱动器，与外部变压器和 LDO 配合使用时，它能产生在 VDD2 与 GND2 之间供电的 5 V 隔离电源。

ADM2485 的振荡器输出 D1 和 D2 可驱动中心抽头变压器 T1。一对肖特基二极管和一个滤波电容则用来从次级绕组中产生整流信号。ADP3330 线性电压调节器为 ADM2485 总线端电路 (VDD2) 提供 5 V 调节电源，如图 1 所示。

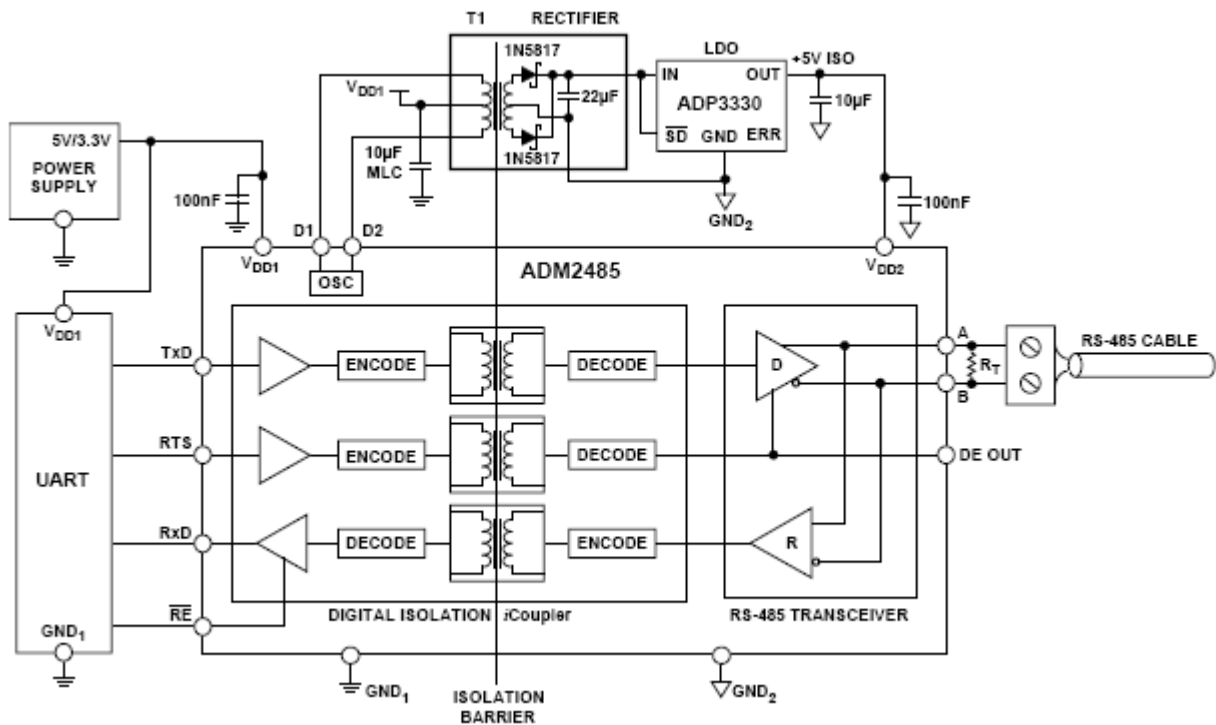


图 1. 利用 ADM2485 和 ADP3330 实现半双工、隔离式 RS-485 接口（原理示意图）

Rev.A

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### 常见变化

当 ADM2485 的逻辑端采用 3.3 V 电源供电时, 需用一个 1CT:2.2CT 变压器 T1 将电源电压从 3.3 V 升至 6 V, 以确保 ADP3330 LDO 具有足够的裕量, 可以提供 5 V 调节输出。

如果 ADM2485 的逻辑端采用 5 V 电源供电, 则需要一个 1CT:1.5CT 变压器 T1, 以确保 ADP3330 LDO 具有足够的裕量, 可以提供 5 V 调节输出。

配合 ADM2485 使用的外部变压器必须具有中心抽头绕组。变压器的匝数比必须适当设置, 以最小的输入电压, 在预计的最大负载电流下提供所需的最小输出电压。表 1 给出了适用于图 1 中 ADM2485 电路的变压器。

表 1. 变压器供应商

制造厂商	源边电压 3.3V	源边电压 5V
Coilcraft	DA2304-AL	DA2303-AL
C&D Technologies	782482/35C	782485/55C

### 进一步阅读

Chen, Baoxing. 2006. *iCoupler® Products with isoPower® Technology: Signal and Power Transfer Across Isolation Barrier Using Microtransformers*. Analog Devices.

Wayne, Scott. 2005. “iCoupler® Digital Isolators Protect RS-232, RS-485, and CAN Buses in Industrial, Instrumentation, and Computer Applications.” *Analog Dialogue*, Volume 39. Analog Devices (October).

### 数据手册和评估板

[ADM2485 Data Sheet](#).

[ADP3330 Data Sheet](#).

### 修订历史

6/09—Rev. 0 to Rev. A

Updated Format ..... Universal

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