Using the LTM2881 as an Isolated 5V Power Supply

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2500V_{RMS} Isolated 5V 1W Power With No External Components

The LTM®2881 is an isolated RS485 transceiver that guards against large ground-to-ground differentials. An onboard DC/DC converter provides isolated 5V power to the output. Figure 1 shows the LTM2881 configured as a dedicated isolated power supply with the RS485 transceiver disabled, providing a simple powerful general purpose isolated power supply capable of delivering 1W at 5V. Figure 2 shows a logically-controlled switched output by taking advantage of the isolated RS485 driver to control a discrete PMOSFET. The controlling signal DI operates relative to the V_L supply, which supports voltages from 1.62V to 5.5V. In both configurations, observation of a V_{CC2} fault is accomplished by observing a high impedance condition on RO or D_{OUT}. When V_{CC2} is greater than 2.6V, RO and D_{OUT} are driven to the appropriate logic level based on the inputs A and B and D_{IN}. When V_{CC2} is less than 2.4V, RO and D_{OUT} are high impedance.

Features:

- 5V (LTM2881-5) or 3.3V (LTM2881-3) Input Supply Voltage
- 5V DC Output Delivers 200mA at 62% Efficiency with a 5V Input (LTM2881-5) or 120mA at 52% Efficiency with a 3.3V Input (LTM2881-3)
- Zero Current (Typical) Shutdown Mode When ON Pin is Low.
- Overcurrent and Overtemperature Protection
- No External Components Required. Decoupling Capacitors are Integrated.
- Small Package: 15mm × 11.25mm × 2.8mm

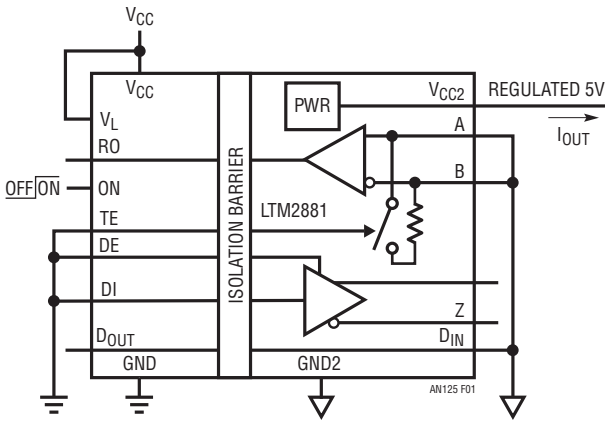


Figure 1. LTM2881 Configured as a Dedicated Isolated 5V Power Supply

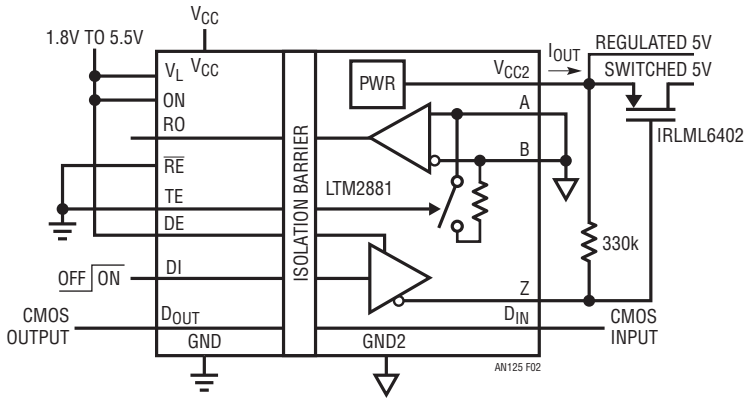
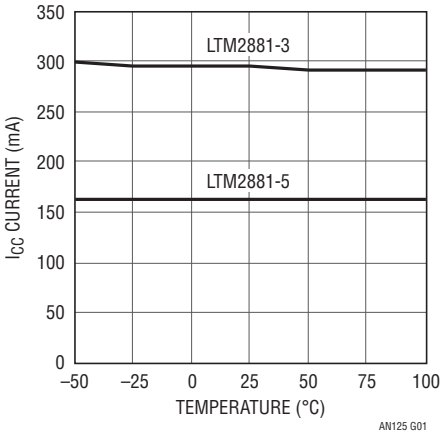


Figure 2. Switched 5V Power with Isolated CMOS Logic Connection to V_L Voltage Interface

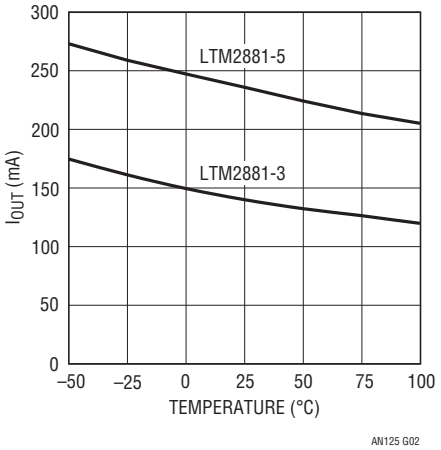
Typical Performance Characteristics

T_A = 25°C, LTM2881-3 V_{CC} = 3.3V, LTM2881-5 V_{CC} = 5V, V_L = 3.3V, GND = GND2 = 0V, ON = V_L unless otherwise noted.

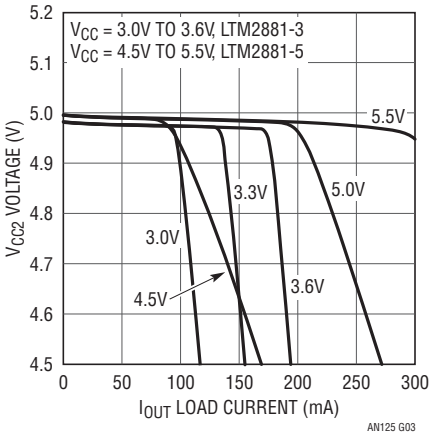
V_{CC} Supply Current vs Temperature at I_{OUT} = 100mA on V_{CC2}



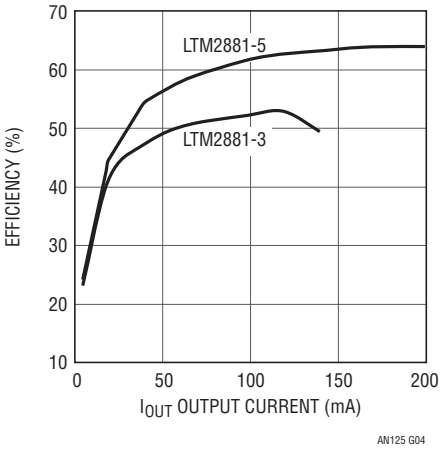
I_{OUT} Current vs Temperature; RS485 Disabled: DE = TE = 0, V_{CC2} = 4.75V



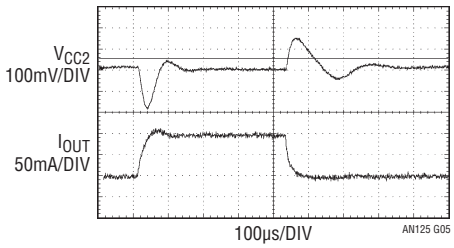
V_{CC2} Output Voltage vs I_{OUT} Load Current



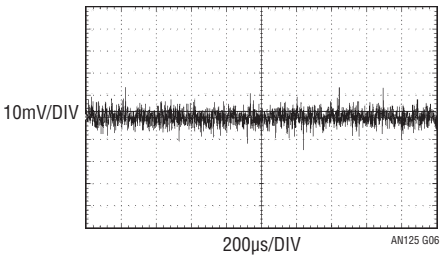
V_{CC2} Power Efficiency



V_{CC2} Load Step (100mA)



V_{CC2} Noise



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