

Evaluates: MAX20431

MAX20431 Evaluation Kit

General Description

The MAX20431 evaluation kit (EV kit) is a fully assembled and tested application circuit for the MAX20431: high-efficiency four-output PMIC. The EV kit can test all outputs to full load within the normal operation input range of 3.5V to 36V. The IC features two modes of watchdog operation, challenge/response and simple windowed mode, which can also be disabled for simplified evaluation. I²C communication must be used to configure the MAX20431 and monitor errors. A PC to I²C interface such as the MINIQUSB or MAX32625PICO, and software for reading and writing to I²C registers (such as SimpleI2C) simplify testing.

Features

- Integrated IC Minimizes Board Area and Layout
- Input Voltage Range from 3.5V to 36V
- User-Programmable Settings through I²C
- Challenge/Response or Simple Windowed Watchdog
- 2.1MHz Fixed-Frequency Switching with Spread-Spectrum Option
- Status Monitoring through $\overline{\text{RESET}}$ Pin and I²C Status Registers
- Fully Assembled and Tested
- Proven PCB Layout with Automotive-Grade Components

[Ordering Information](#) appears at end of data sheet.

Quick Start

Required Equipment

- MAX20431 EV kit
- I²C read/write software such as SimpleI2C
- I²C interface such as MINIQUSB or MAX32625PICO (PICO board)
- DC power supply (capable of 0-36V output)
- Digital multimeters (DMM)
- Electronic load

Procedure

Note: In the following sections, software-related items are identified by bolding. Text in **bold** refers to items directly from the EV kit software.

The MAX20431 EV kit is fully assembled and tested. Use the following steps to verify board operation:

- 1) Verify that all jumpers are in their default configuration according to [Table 2](#).
- 2) If using the MINIQUSB, connect the USB cable from the PC to the MINIQUSB board and then plug it into J1 on the EV kit. If using the PICO board, separate cables must be used to connect the SDA, SCL, GND, and V_{DD} pins to the EV kit.
- 3) Connect the positive and negative terminals of the power supply to VSUP and PGND test pads, respectively.
- 4) Set the power-supply voltage to 13.5V and then turn on the power supply.
- 5) If using SimpleI2C, open the software and load in the register map for MAX20431 by selecting **Regmap** in the menu bar, then **Load Regmap**. Check and enable **Auto Read** on the left menu bar.
- 6) To establish connection to the EV kit, select **Device** in the menu bar, then **Scan for Address**. The software should find the default address (0x70). Click **OK**.
- 7) The default operation of MAX20431 has Packet Error Checking (PEC) enabled. To send I²C command with PEC, Select **Settings** in the menu bar, then **PEC**, then the **CRC-8, X⁸ + X² + X + 1** option.

