MAXREFDES182# Power Line Communication with ModelGauge Fuel Gauge and Charger

MAXREFDES182

Top

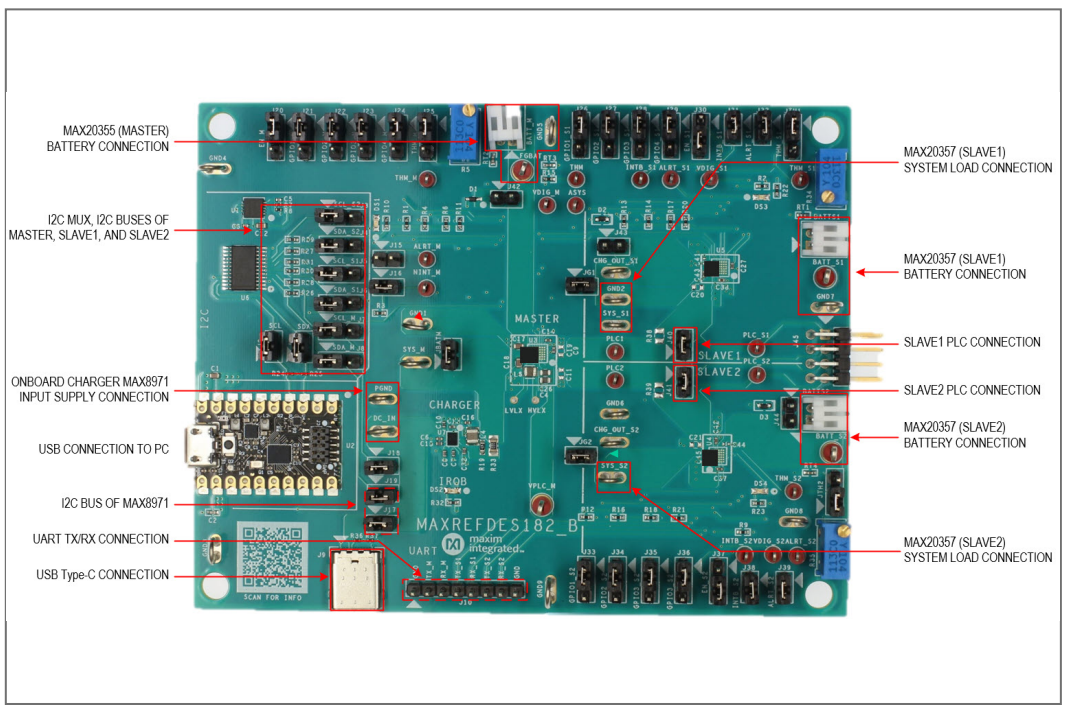
Description & Features | Details | Support & Training | Order Now

Description

The MAXREFDES182 is a fully assembled and tested surface-mount printed circuit board (PCB) that demonstrates the integrated power line communication (PLC) and charging system for applications such as true wireless stereo (TWS) headsets. The MAX20355 is the Master IC in the charging case while the MAX20357 is the Slave IC in the earbud.

The MAXREFDES182 includes the IC evaluation board with integrated I^2C interface and USB Micro-B cable. MS Windows®-based graphical user interface (GUI) software is available for use with the EV kit and can be downloaded from the product page under the ‘Design Resources’ tab. MS Windows 7 or newer Windows operating system is required to use the EV kit GUI software.

Design files, firmware, and software can be found on the ‘Design Resources’ tab. The board is also available for purchase.



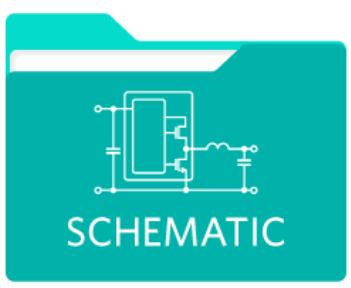
Features

- System solution for charging and data transfer over a single contact
- Insertion/removal detection
- Various PLC commands
- Autonomous charging with headroom control
- Mailbox data transfer
- Moisture detection

Applications

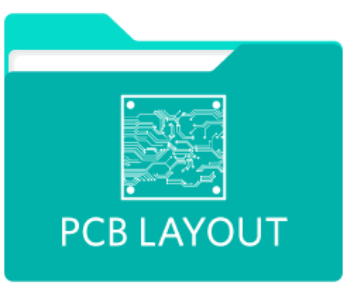
- True wireless stereo (TWS) headphones
- Augmented reality glasses
- Wearable devices

Schematic



Download the full circuit schematic.

PCB Layout



Download printed circuit board layout information.

BOM

Review the bill of materials used to build this design.

Download Schematic | Download PCB Layout | Download BOM

Details Section

Quick Start Guide | Procedure | Detailed Description | Detailed Description of Hardware | Detailed Description of Software | Detailed Description of the Fuel Gauge GUI

Procedure

Follow these steps to install the EV kit software, make required hardware connections, and start the operation of the kits. The EV kit software can be launched without the hardware. Note that after establishing communication with the ICs, configure the ICs correctly for proper operation.

1. Visit under the Design Resources tab to download the latest version of the MAXREFDES182 EV kit GUI software. Save the software to a temporary folder and unpack the zip file.
2. Install the EV kit software on the computer by running MAXREFDES182GUISetupX.X.X.exe in the temporary folder. The program files are copied, and icons are created in the Windows Start menu. The software requires the .NET Framework 4.5 or later. If connected to the Internet, MS Windows automatically updates the .NET framework as needed.
3. The EV kit software launches automatically after installation, or alternatively launch it by clicking the icon in the MS Windows Start menu.
4. Make jumper connections based on Figure 2 or the Default Position column in Table 1. Adjust the jumper connections later when evaluating more features.
5. Set up the test circuit as shown in Figure 2. Choose between the Figure 2 solid line and dash line power input options at each input. If DC power supply is applied at the DC_IN and PGND test points, preset the voltage to 5.0V and current limit to 500mA. If the battery simulator is applied to FGBAT, BATT_S1 or BATT_S2, preset the voltage to 3.5V and current limit to 500mA. Do not turn on the power supply until all connections are completed.
6. Use the Micro-B USB cable to connect the EV kit to the PC.
7. Launch the MAXREFDES182 GUI software. Select Device > Connect from the window options to connect to the EV kit. If the connection is successful, it displays the list of devices available for connection. Select the devices and click Connect. Go to **MAX20357 #1 > Charger** and toggle the **Charger On/Off** to turn off the MAX20357_1 charger. Repeat the same action on MAX20357 #2 to turn on the MAX20357_2 charger.
8. PLC connection between the MAX20355 and MAX20357 should be established. Both MAX20357 should be charging at 100mA (Fast-Charge Constant Current mode 1)

View Less

Order Now

Part Number	
MAXREFDES182# MAXREFDES182# Power Line Communication with ModelGauge Fuel Gauge and Charger	

Maxim Devices (2)

Part Number	Name	Product Family		Design kits and evaluation modules
MAX20355	Power Line Communication with ModelGauge Fuel Gauge and Buck-Boost Converter	Battery Management		Not Available
MAX20357	Power Line Communication with ModelGauge Fuel Gauge and Charger	Battery Management		Not Available

Design Files (3)

Title	Type	Size	Date
MAXREFDES182 BOM	XLSX	16KB	2022-10-21
MAXREFDES182 Schematic	PDF	68KB	2022-10-21
MAXREFDES182 PCB	PDF	1MB	2022-10-21

Support & Training