MAX20038EVKIT

Evaluation Kit for the MAX20038

Description

The MAX20038 evaluation kit (EV kit) demonstrates the MAX20038 automotive high-current, high-efficiency stepdown DC-DC converter with integrated USB protection and host charger adapter emulation.

The IC features integrated host-charger port-detection circuitry adhering to the USB-IF BC1.2 battery charging specification, Apple® iPod®/iPhone®/iPad® and Samsung® charge-detection termination resistors, and Chinese Telecommunication Industry Standard YD/T 1591-2009.

The IC integrates high side current-sensing and voltage adjustment circuitry that provides automatic USB voltage adjustment to compensate for voltage drops in captive cables associated with automotive applications. The high-efficiency, step-down, synchronous, DC-DC converter operates from a voltage up to 28V and is protected from load dump transients up to 40V. The converter is programmable for frequencies from 275kHz to 2.2MHz and can deliver 3A of continuous current at 105°C.

The EV kit is populated with an I²C-enabled MAX20038. The I²C interface allows for flexible configuration, detailed fault diagnostics, and access to the on-chip ADC that reports output voltage and current. The I²C features are easily accessed by using the Maxim command module (MINIQUSB) along with the provided example GUI.

The EV kit is configured for 2.2MHz operation, and the included 3m USB cable allows for demonstration of the cable compensation capability of the IC. The high-voltage data switches of the MAX20038 require data line tuning to achieve an optimal eye diagram. The EV kit comes populated with tuning components optimized for use with the supplied cable. Refer to Figure 19 in the MAX20037/MAX20038 IC data sheet for the MAX20038 tuned near-eye diagram.

Key Features

- Configurable Charge-Detection Modes
  - USB-IF BC1.2 CDP, DCP
  - Apple 2.4A, 1.0A
  - China YD/T1591-2009 Charging Specification
- Automatic USB Voltage Adjustment by Integrated DC-DC Converter (275kHz to 2.2MHz)
- Proven PCB Layout
- Fully Assembled and Tested