

## MCP1641X

### Low IQ Boost Converter With Auto Bypass

#### General Information

The MCP1641X step-up DC-DC converters family provides an automatic input-to-output voltage bypass operation which helps optimizing battery utilization and achieving high efficiency while fresh batteries' nominal voltage is in the same range with the converter's output value. The MCP1641X can be powered by either single-cell, two-cell alkaline/NiMH batteries or single-cell Li-Ion/Li-Polymer batteries. A low-voltage designed architecture allows the regulator to start up without high inrush current or output voltage overshoot from a low input voltage.



#### Features

- Input Voltage Range: 0.8V (after start-up) to 5.25V
- Low device quiescent current: 5  $\mu$ A typical, PFM mode (not switching)
- 1A typical peak input current limit:
  - I<sub>OUT</sub> > 170 mA @ 2V V<sub>OUT</sub>, 1.2V V<sub>IN</sub>
  - I<sub>OUT</sub> > 200 mA @ 3.3V V<sub>OUT</sub>, 1.5V V<sub>IN</sub>
  - I<sub>OUT</sub> > 450 mA @ 5.0V V<sub>OUT</sub>, 3.6V V<sub>IN</sub>
- Automatic input-to-output bypass operation
- Selectable switching mode:
  - PWM operation: 500 kHz (MCP16412/4/6/8)
  - Automatic PFM/PWM operation (MCP16411/3/5/7)
- Programmable UVLO & Low Battery Output (LBO)
- Selectable shutdown states:
  - Output discharge option (MCP16411/2/5/6)
  - Input-to-output bypass option (MCP16413/4/7/8)
- Shutdown current: 2.3  $\mu$ A typical
- Package options: 10-lead MSOP and 10-lead 3 mm x 3 mm TDFN

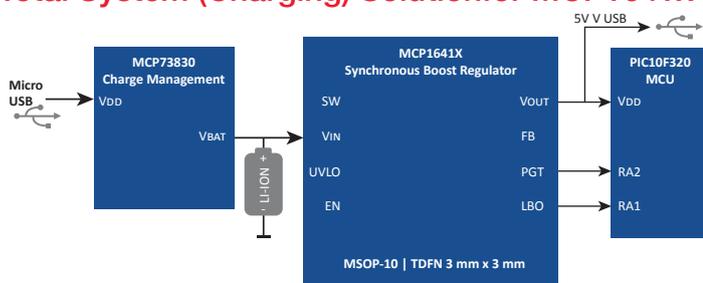
#### Applications

- Personal and health care products
- Single-cell or two-cell powered IoT devices
- Bluetooth® headsets
- Remote controllers, portable instruments

#### Benefits

- Internal compensation and integrated features reduce bill of materials and cost
- Soft start feature keeps the inrush current at reasonable levels, which is important in battery-powered applications
- Low quiescent current and 96% efficiency maximize battery life and utilization

#### Total System (Charging) Solution for MCP1641x



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DS20006444A