

NU2205 I²C Controlled 2-Cell High Efficiency 10-A Switched Cap Fast Charger

1 Feature

- 98.0% Efficient at 4:2 charge mode, 99.2% Efficient at 2:2 charge mode
- Switched Cap Architecture Optimized for 50% Duty Cycle.
 - Input Voltage is 2x Battery Voltage (6.8 V to 9.5V)
 - Output Current is 2x of Input Current (Up to 6 A)
 - Reduces Power Loss Across the Cable
- Bypass Mode from Adapter to Battery
 - Low Ron Charging Path Resistance to Support 8A Input and Output Charging Current
- Dual Input Power Path Management
 - Two Drivers for External Back-back MOSFETs integrated to manage power from two different input sources
- Support Master and Slave Operation
- Integrated Programmable Protection Features for Safe Operation
 - Input Over-Voltage Protection (BUS_OVP)
 - Input Over-Current Protection (BUS_OCP) with Adjustable Alarm
 - BUS Reverse-Current Protection (BUS_RCP)
 - Input Over-Voltage with External OVP FET
 - Battery Over-Voltage Protection (BAT_OVP) with Adjustable Alarm
 - Output Over-Voltage (VOUT_OVP)
 - IBAT Over-Current Protection (BAT_OCP) with Adjustable Alarm
 - Battery Temperature Monitoring
 - Connector Temperature Monitoring
- Programmable Settings for System Optimization
 - STAT, FLAG, and MASK options for Interrupts
 - ADC Readings and Configuration
- Integrated 15-Bit Effective Analog-to-Digital Converter (ADC)
 - -0.8%~+1.2% VAC1, VAC2 Voltage
 - -0.6%~+1.4% BUS Voltage
 - -5%~+5.7% BUS current at 3A
 - ±3% BUS current at 4.5A
 - ±1% VOUT Voltage

- -0.14%~+0.29% BAT voltage with Differential Sensing
- -2%~+2.7% BAT Current at 9 A with External R_{SENSE} = 2m Ω
- ±1% BAT Temperature
- ±1% BUS Temperature
- ±4°C Die Temperature

2 Applications

- Smart Phone
- Tablet PC

3 Descriptions

The NU2205 is a 99% efficient, 10-A battery charging solution using a switched cap architecture. This architecture and the integrated FETs are optimized to enable a 50% duty cycle, allowing the cable current to be half the current delivered to the battery, reducing the losses over the charging cable as well as limiting the temperature rise in the application. The dual-phase architecture reduces the input cap requirements as well as reducing the output voltage ripple.

Device Information

| PART NUMBER | PACKAGE | BODY SIZE (NOM) |
|-------------|------------|-----------------|
| NU2205 | WLCSP (80) | 3.213mm×4.053mm |

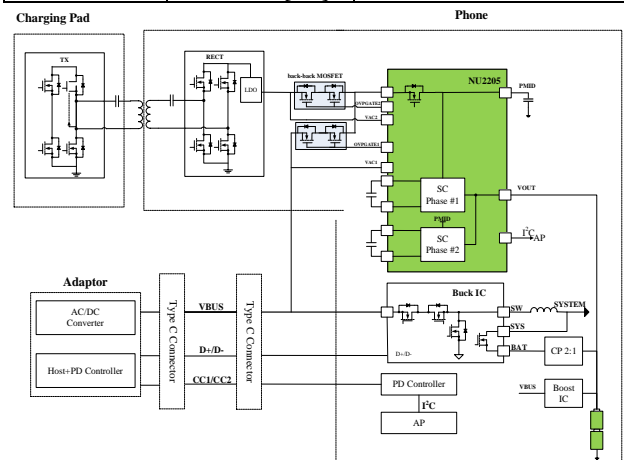


Figure 1. Simplified Application Diagram