

NU2121 I²C Controlled Bidirectional High Efficiency 10-A Switched Capacitor Converter

1 Feature

- Support 2:1 and 1:2 switched capacitor DC/DC converter for 2S battery in series
- Excellent light-load mode efficiency performance
 - 2:1 DCDC- Up to 99% efficiency at 1A/4.0V
 - 2:1 DCDC- Up to 99% efficiency at 0.1A/4.0V
 - 1:2 DC/DC Up to 98.8% efficiency at 2A/4.0V
- Ultra-low 50uA quiescent current with open load
- Integrated driver ACDRV of the external Back-Back high-side switch
- Audio mode to eliminate audible noise issue, selective switching frequency: 30KHz and 25KHz
- Dithering switching frequency to optimize the EMI emission
- Dead battery activation power path
- Power good indicator output
- Integrated Programmable Protection Features for Safe Operation
 - Input Under-Voltage Protection (VIN_UVP)
 - Input Over-Voltage Protection (VIN_OVP)
 - Output Over-Voltage Protection (VOUT_OVP)
 - Two-level forward direction Output Over-Current Protection IOCP and VOCP
 - Reverse direction Input Over-Current Protection
 - VAC Over-Voltage Protection (VAC_OVP)
 - Two-level thermal alarms and 150°C thermal protection with hiccup mode
- Programmable Settings for System Optimization
 - STAT, FLAG, and MASK options for Interrupts
- I2C compatible interface supporting 1.2V/1.8V/3.3V supply
- Package: WLCSP 42, 2.77mm * 2.37mm

2 Applications

- Smart Phone
- Tablet PC

3 Descriptions

The NU2121 is a standalone, bi-directional switched capacitor converter with integrated power switches that delivers 10A output current to forward (2:1 conversion) direction and 5A output current to reverse direction (1:2 conversion). This architecture and the integrated FETs are optimized to enable a 50% duty cycle in fixed frequency mode. The NU2121 consumes low quiescent current of 50uA (typical) in switching mode with 0A load or 14uA in low power mode. The optimized skip control scheme improves the efficiency of the light load greatly. The NU2121 is available in a tiny lead-free 0.4 mm pitch 7x6 pin WLCSP package. Its high switching frequency up to 1MHz reduces the capacitor size and further minimizes the circuit footprint.

Device Information

PART NUMBER	PACKAGE	BODY SIZE (NOM)
NU2121	WLCSP (42)	2.77mm×2.37mm

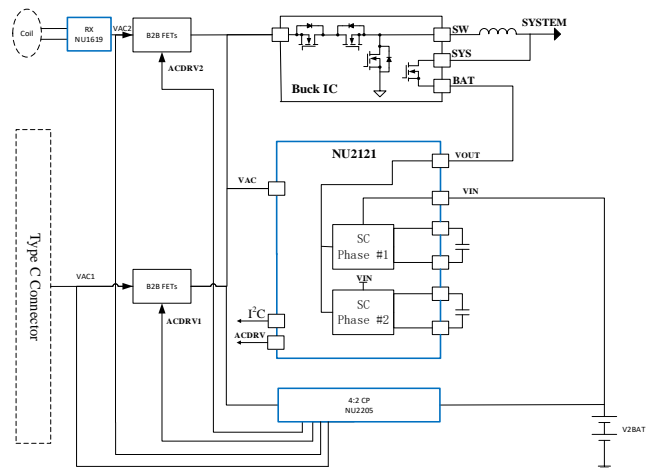


Figure 1-1. Simplified Application Diagram

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