



High-Efficiency Dual Buck Converters with Load Switch for LPDDR5/5X and LPDDR4X Power Solution

1 Descriptions

The SC6301 is a total power solution PMIC for LPDDR5, LPDDR5X, and LPDDR4X memory. It can meet the requirement of the output voltage and power sequence from the JEDEC standard and support flexible power state operation S3/S5 with EN and VDDQEN control.

The device integrates two synchronous, high-frequency buck converters (VDD2 and VDDQ). The converters adopt a constant on-time control mode with internal ramp compensation which features excellent load transient performance and supports very low ESR output capacitors such as ceramic capacitors. It also provides high efficiency with internal low R_{ds(on)} power MOSFETs. The VDD2 can support up to 14A peak output current, and the VDDQ can support up to 3A output current.

The device also integrates a 18mΩ load switch for VDD1. The VDD1 supports up to 3A peak output current with 1.8V input voltage.

The SC6301 integrates rich protections to extend the operating range without damaging itself or the system load. The protection features include UVLO, OVP, OCP, UVP, and thermal shutdown protection.

The SC6301 adopts a 3x3mm FCQFN3X3 package.

2 Features

- 3.1V to 28V Input Voltage Range for VDD2
- Low Quiescent Current
- LPDDR5 Memory Power Solution Compatible with LPDDR5X and LPDDR4X
- 14A Peak Output Current for VDD2
- 3A Peak Output Current for VDD1
- 3A Continuous Output Current for VDDQ
- Constant on-time Control for Fast Transient Response
- Stable with Low ESR Capacitors
- 650kHz Switching Frequency for VDD2
- Low R_{ds(ON)} Internal Power MOSFETs
- High Output Accuracy
- Power Sequencing Control
- Internal Soft Start
- Power Good Indication
- Output Discharge Function
- UVLO, OCP, OVP, UVP, and Thermal Shutdown
- Non-Latch for UVLO and Thermal Shutdown
- Package: 3mmx3mm, FCQFN3X3

3 Applications

- Notebook, PC Computers
- Tablets, Portable Instrument
- Network Systems
- Distributed power systems

4 Device Information

ORDER NUMBER	PACKAGE	BODY SIZE
SC6301DFHR	FCQFN3X3	3mm x 3mm