

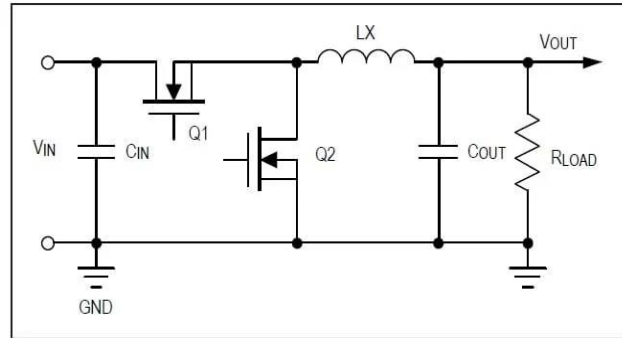
Synchronous buck converter

Description

This is a synchronous buck converter paper design.

It is a typical synchronous buck topology with 4 parallel SiC MOSFET. It operates at high switching frequency to achieve high efficiency and reduction of size & weight.

It may be used for high power applications, such as charging systems, solar MPPT, etc. It helps users to speed up SiC MOSFET system designs and shorten product development cycle significantly.



Advantages

Reduction in size vs IGBT design, High output power (4kW max.), High efficiency (>95%), Digital control output.

Specifications

Revision	Rated output power	Rated input voltage	Rated output voltage	Efficiency
APD-2024-P003	4kW max.	550Vdc	48Vdc	>95%

Core Chip (for reference only)

- MCU control: **ST** STM32G474VBT6
- SiC MOS: **ST** SCT011H75G3AG, **Wolfspeed** C3M0015065K
- Gate driver: **Infineon** 1EDN7550B
- Aux. Power: **ST** VIPER31
- Hi-Precision OP-AMP: **ST** TSZ181ILT
- Current sensor: **Allegro**
- Electrolytic Capacitor: **Lelon**
- Magnetic component: **knitter-switch**

Applications

- Solar power system
- MPPT
- High power charger

Block Diagram

