Power Management IC
CS600

BOSCH

FEATURES

- One synchronous 5V primary buck-boost converter
- One Pre-Boost / Boost converter with external power-stage (SRP)
- Wide Vin range: 3.2V – 36V, Pmax = 35W
- 4x programmable step down converter with integrated half-bridge power-stages (SMPS)
- 4x programmable LDO linear regulators
- Two step-down converter with 3 dual gate driver (DGD SMPS)
- Programmable power-up and power-down sequencing between all supply rails
- SPI communication interface
- Wide junction temperature range: -40°C to 150°C
- AEC-Q100 grade 1 automotive qualified
- OTP memory to store user configuration

APPLICATIONS

- Power supply for ADAS systems comprising high peformance Video SoCs and FPGAs

DESCRIPTION

The PMIC provides an innovative programmable and configurable architecture, offering scalability to minimum total system costs for automotive applications requiring high Functional Safety compliance. It is delivered in a multi row QFN package aQFN96.

The CS600 can provide power for a complete system, including application µC, SoC, FPGA, memory and system peripherals, in a wide range of applications. The CS600 can be custom configured.

SAFETY FEATURES

- Developed in compliance with the ISO26262 standard, allowing to reach ASIL D on system level
- Temperature monitoring and over-temperature shutdown
- Voltage monitoring
- Over-current protection

BLOCK DIAGRAM
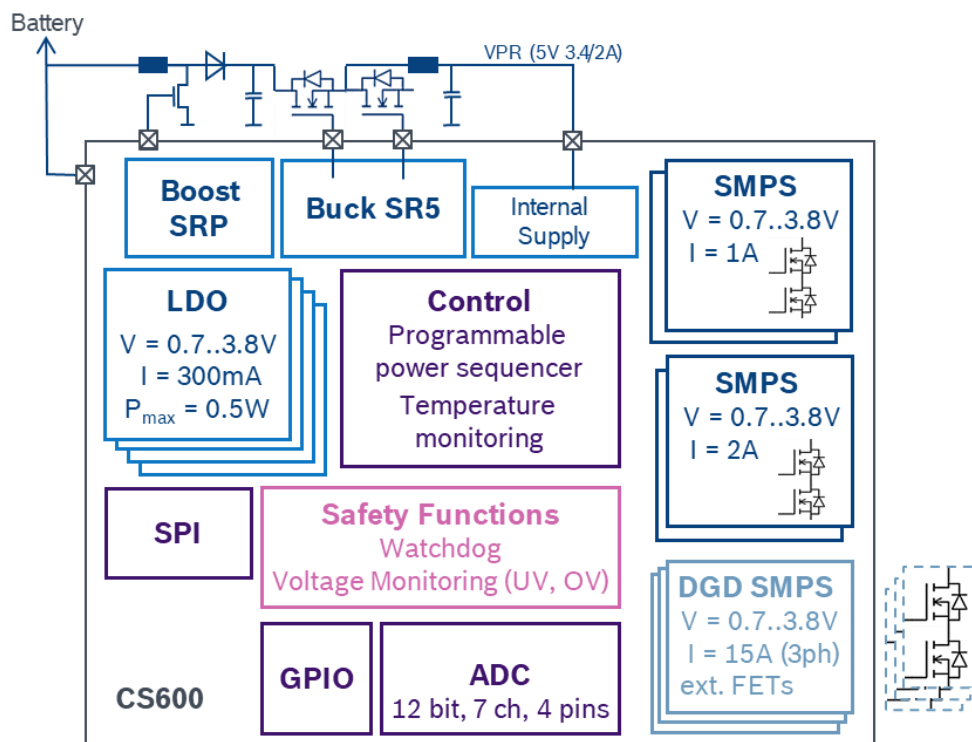
Power Management IC **CS600**

PREREGULATOR OPTIONS

1x synchr. 5V primary buck converter
- Wide V_{in} range: 5.5V – 36V, P_{max} = 35W
- Fixed frequency (480kHz) or spread spectrum
- Short circuit protection, soft-start

1x Pre-Boost & Boost converter with external power-stage (SRP)
- Wide V_{in} range: 3.2V – 36V, P_{max} = 35W
- Time limit Pre-Boost mode for very low battery voltage operation during system start
- Over current protection
- Soft-start

POWER RAILS

General to all power rails
- V_{out} programmable:
    - Vout = 0.7V – 1.64V @ 3.2mV steps
    - Vout = 1.64V – 3.825V @ 7.5mV steps
- Soft-start for each regulator
- All integrated output stages are short circuit protected
- Programmable power-up and power-down sequencing between all supply rails

4x step down converter with integrated half-bridge power-stages (SMPS)
- Output current: 2 x 2A and 2 x 1A
- $f_{switching}$~1.9MHz

4x LDO linear regulators
- V_{out} programmable: 0.7V – 3.825V
- I_{max} = 300mA (peak: 500mA)

Two step down converter with three dual gate drivers (DGD SMPS)
- Configuration for up to two independent regulators
- Current sensing for each rail using external shunt
- One regulator is configurable into single, dual or triple-phase regulation mode

SAFETY

Complies with ASIL B, Capable for ASIL D systems
- Voltage monitoring (UV, OV) for
  SRP Boost / SR5 / SMPS / DGD / LDO
- Over-current protection for
  SRP Boost / SR5 / SMPS / DGD / LDO
- Temperature monitoring and over-temperature shutdown
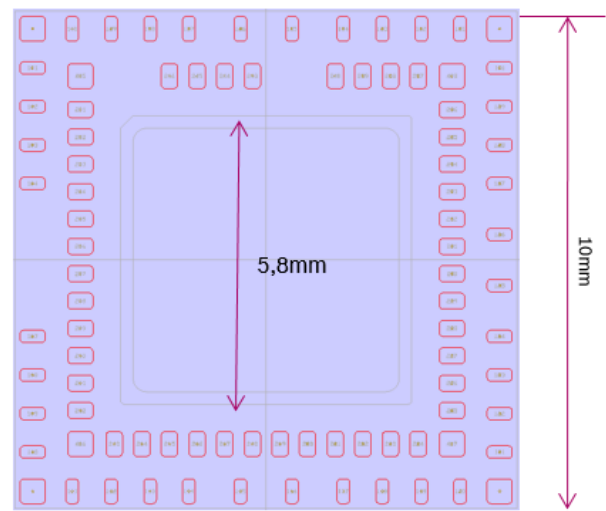- Watchdog and Clock monitor

12BIT ADC
- 4 generic input channels
- 2 on-chip temperature sensors
- Ubat measurement (via voltage divider)

GENERAL
- SPI communication interface
- GPIOs for various programmable functions
- Safety output ports NSTP0 and NSTP1
- Wide junction temperature range from -40°C to 150°C
- AEC-Q100 automotive qualified, grade 1
- OTP memory for device configuration of several functions

PACKAGE
- Multi-row aQFN96, 10x10mm²

5,8mm

10mm