Semtech Announces World's Smallest Vin Boost Converters

Semtech Corp. today announced a new boost converter platform offering the world’s smallest step-up regulators for low-voltage applications. The SC120, SC121 and SC122 boost inputs from as low as 0.7V to a regulated output settable from 1.8V to 5.0V and are available in tiny 1.5x2mm ultra-thin (0.6mm max.) plastic packages. With many advanced features, these devices are ideally suited for portable applications powered by alkaline, NiMH, or 1-cell Li-ion batteries, or as point-of-load regulators in non-portable applications where a low voltage needs to be boosted to a higher voltage rail for localized use.

“The new SC120 platform sets the benchmark for its sophisticated features, performance, and ease of use within a tiny, thin, reliable, and green footprint.” said Scott Brown, Semtech Vice President of Marketing for Power Management Products.

The SC120 features and performance include 1.2MHz low-noise PWM operation, an internal low-on-resistance switch and synchronous rectifier for up to 94% efficiency, automatic PSAVE mode for light-load efficiency, an anti-ringing circuit that dampens stray oscillations on the inductor terminal, ±1.5% initial accuracy, internal/external feedback modes, soft-start, thermal and current limit protection, and a 0.1µA real shutdown mode that reverses the rectifier’s body-diode and actively discharges the output fully to ground.

For highly noise sensitive applications, the SC121 eliminates the PSAVE mode in favor of forced-PWM operation at all loads. And for specialized keep-alive applications, the SC122 utilizes PSAVE mode only and allows the output voltage to float high during shutdown by eliminating active discharge. The SC122 also limits the input to no more than 1.6V and the output to a fixed 3.3V.

For ease of use, the SC12x devices utilize internal loop compensation and internal soft-start to minimize external components. Grounding the feedback pin enables internally fixed 3.3V regulation mode, which requires only three small external components: two ceramic capacitors and an inductor. For setting other output voltages from 1.8V to 5.0V via external feedback, only two small resistors and a small feed-forward capacitor are added.

The SC120, SC121, and SC122 are available in a 1.5x2mm, 6-pin MLPD-UT package. The SC120 is also available in a 6-pin SOT23 package. All devices are lead-free, halogen-free, and WEEE and RoHS compliant to meet worldwide environmental and regulatory requirements.

Key Features of the SC120, SC121, and SC122
- Input voltage operation down to 0.7V
- Fixed 3.3V output or external feedback for 1.8V to 5.0V
- Internal synchronous rectifier for up to 94% efficiency
- 1.2MHz PWM switching for small inductor and ceramic capacitors
- PWM with automatic PSAVE (SC120)
- Forced-PWM at all loads (SC121)
- Forced-PSAVE (SC122)
- 0.1µA shutdown with body-diode reversal
- Active discharge to GND (SC120, SC121)
- High-Z shutdown -- Vout can float high (SC122)
- Anti-ringing circuitry
- Soft-start, current limit, and thermal shutdown protection
- Packages: 1.5x2mm ultra-thin MLPD (all) or SOT23 (SC120 only)

Pricing and Availability
The SC120, SC121, and SC122 (Order codes: SC120ULTRT, SC121ULTRT, SC122ULTRT) are priced at $0.80 each in MLPD-UT package in 3,000-piece lots. The SC120 (Order code: SC120SKTRT) is priced at $0.71 each in SOT23 package in 3,000-piece lots. Each device is available immediately in production quantities. Evaluation boards (SC120EVB, SC121SKEVB, SC121EVB, and SC122EVB) are also available. Semtech offers comprehensive design assistance, including field- and factory-based support. Data sheets, volume pricing, and delivery quotes, as well as evaluation kits and samples, are available by contacting http://www.semtech.com/info [1].

Links:
[1] http://www.semtech.com/info