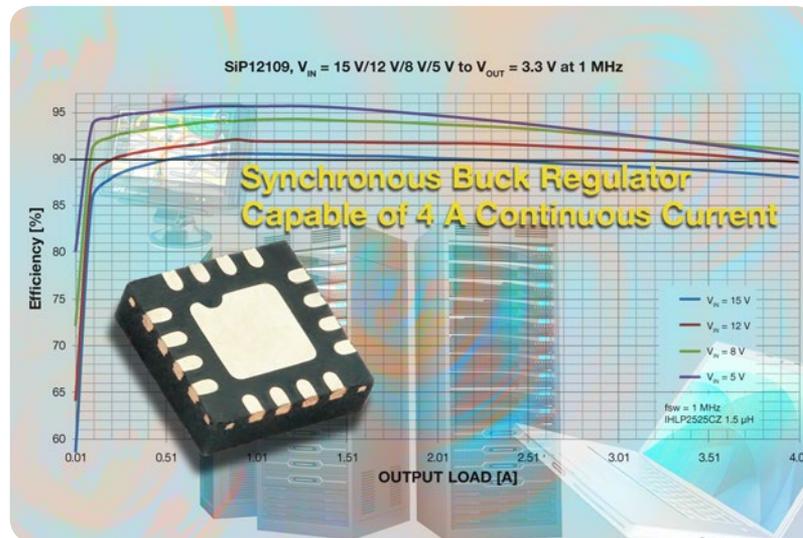


Compact Synchronous microBuck® Regulator with Ultrafast Transient Response



The new SiP12109 is a high-frequency current-mode constant-on-time (CM-COT) synchronous microBuck® regulator. Featuring integrated high-side and low-side power MOSFETs, the SiP12109 comes in a compact 3 mm x 3 mm power enhanced QFN-16L package.

KEY FEATURES

- Ultra fast transient response: CM-COT (current-mode constant-on time) architecture with minimum output capacitance and tight ripple regulation at light load
- Full protection feature set: Integrates features like output overvoltage protection (OVP), output undervoltage protection (UVP), short circuit protection (SCP), cycle-by-cycle over current protection (OCP), and thermal shutdown (OTP)
- Diode emulation and frequency fold back for improved light load efficiency
- Supported by Vishay PowerCAD Simulator for circuit and efficiency simulation

APPLICATIONS

- Notebook computers
- Handheld PCs and servers
- Handheld devices
- POLs for telecom
- Consumer electronics
- Industrial and automation

RESOURCES

- Datasheet: SiP12109 - www.vishay.com/doc?62694
- For technical questions contact PowerICtechsupport@vishay.com
- Vishay PowerCAD Simulator: <http://vishay.transim.com/login.aspx>





SiP12109 Synchronous microBUCK® Regulator

The SiP12109 is a high-frequency current-mode constant-on-time (CM-COT) synchronous buck regulator with integrated high-side and low-side power MOSFETs. Its power stage is capable of supplying 4 A continuous current at a 1.5 MHz switching frequency. This regulator produces an adjustable output voltage down to 0.6 V from a 4.5 V to 16 V input rail to accommodate a variety of applications, including computing, consumer electronics, telecom, and industrial.

The SiP12109 uses a control scheme based on a current-mode constant-on-time architecture that delivers fast transient response and minimizes external components. The device employs inductor valley current sensing which eliminates the need for the high-ESR bulk output capacitors or virtual ESR network usually needed in COT controllers for loop stability. This device also incorporates a power-saving feature by enabling diode emulation mode and frequency foldback as the load decreases.

The SiP12109 integrates a high-performance power stage with dual n-channel MOSFETs capable of up to 4 A output current. The MOSFETs are optimized to achieve up to 95 % efficiency. The device incorporates a full set of protection and monitoring features such as overcurrent protection, output undervoltage protection, over temperature protection, short-circuit protection (SCP), cycle-by-cycle over current protection (OCP), and easy power sequencing.

The SiP12109 is available in a lead (Pb)-free power 3 mm x 3 mm enhanced QFN-16L package.

