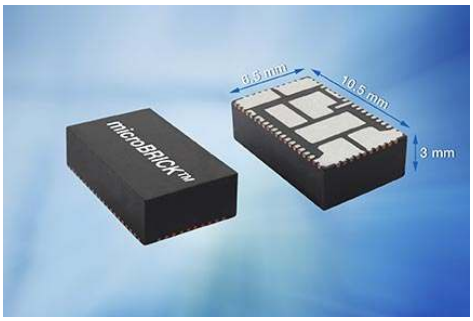
Increasing Power Density for POL Converters, New SiC931 microBRICK™ 20 A Buck Regulator Module in 10x6 PowerPAK® Package is 60 % Smaller Than Competing Solutions



Product Benefits:

- Highly efficient
  - 95 % peak efficiency
  - 1 µA supply current at shutdown
  - 50 µA operating current in idle mode
  - 20 A continuous current in a compact 10.5 mm by 6.5 mm by 3 mm PowerPAK® package
- Versatile
  - Input voltages from 4.5 V to 18 V
  - Adjustable output voltage down to 0.6 V
- Internally compensated over the entire V_{IN} and V_{OUT} range of operation
- Highly configurable
  - Programmable switching frequencies at 600 kHz, 1 MHz, 1.5 MHz, and 2 MHz
  - Adjustable soft start and current limit
  - Programmable operating modes: forced continuous conduction or power save
- Robust and reliable
  - Full set of protection features (OVP, OCP, SCP, OTP, power good flag)
  - PowerPAK QFN-style package is easier to handle and more reliable than LGA / BGA type packages
  - Low output capacitance
  - Wettable flanks improve board level reliability in industrial applications

Market Applications:

- POL converters in servers and personal and industrial computers; factory automation; telecom equipment; and consumer electronics

NEW PRODUCT INFORMATION

Product Group: Vishay Siliconix, ICs / **January** 2020

The News:

Vishay Intertechnology announces a new 20 A microBRICK synchronous buck regulator module designed to deliver increased power density for point of load (POL) converters. Offered in the compact 10x6 PowerPAK package, not only is the Vishay Siliconix SiC931 the smallest 20 A device on the market, but its 4.5 V to 18 V input voltage range is the widest, its 1 µA supply current at shutdown is the lowest, and its 90 % maximum duty cycle is 3x higher than the closest competing device.

- Up to 60 % smaller than other 20 A solutions, the SiC931 offers two high performance MOSFETs, an inductor, and a controller in a single 10.5 mm by 6.5 mm by 3 mm package, with only minimal external components needed for configuration and loop compensation
  - The regulator's compact size dramatically increases power density, while its high level of integration reduces design complexity and improves overall system reliability
- The device automatically chooses the correct internal compensation values required based on the operating condition during the start-up sequence of the regulator
- In power-saving mode, when the inductor current crosses zero, the control scheme turns off the low side MOSFET to deploy a diode emulation mode
  - The switching frequency decreases in proportion to load conditions, and there is no minimum switching frequency limitation, allowing for the best possible efficiency at light loads
- Constant on-time (COT) architecture delivers ultrafast transient response with minimum output capacitance and tight ripple regulation at very light loads
  - Enables loop stability regardless of the type of output capacitor used, including low ESR ceramic capacitors

The Key Specifications:

- 10.5 mm by 6.5 mm by 3 mm PowerPAK package
- Continuous current: 20 A
- Input voltage: 4.5 V to 18 V
- Output voltage: 0.6 V to 5.5 V
- Switching frequencies: 600 kHz, 1 MHz, 1.5 MHz, and 2 MHz
- Evaluation board available (SiC931EVB-A)

Availability:
Parts are available in 1050-unit tape-and-reel format or 210-unit trays. Samples and production quantities of the SiC931 are available now, with lead times of 12 weeks.

To access the product datasheet on the Vishay Website, go to
http://www.vishay.com/ppg?79602 (SiC931)

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