



NEW PRODUCT NOTIFICATION
21 May 2018

Flex Power Modules announces new BGA packaging option for digital point-of-load DC/DC converters

- BMR466 and BMR461 DC/DC converters now offer power system architects more design options with choice of BGA or LGA packages
- Targeting distributed and intermediate applications in ICT, telecom and industrial markets

Flex Power Modules today announced that its BMR466 and BMR461 digital point-of-load (POL) DC/DC power modules are now available to customers with BGA (Ball Grid Array) packaging, as well as in their original compact LGA (Land Grid Array) package. Both modules target deployment in distributed power and intermediate bus voltage architectures within the ICT (Information and Communication Technology), telecom and industrial sectors, in addition to being suitable for high-power and high-performance use in products such as networking and telecommunications equipment, servers and data storage applications, as well as industrial equipment.

Proven to deliver a power density of $24\text{A}/\text{cm}^3$, and up to 94.4% efficiency with a 5V input and a 1.8V output, at half load, the BMR466 can handle up to 60A and is designed to power microprocessors, FPGAs, ASICs and other digital ICs on complex boards. In addition, up to eight of the fully regulated 60A (maximum) POL converters can be connected in parallel to deliver up to 480A in multi-module and multi-phase systems. Operating from a 4.5V to 14V input, the BMR466 is ideally suited to operation across a range of intermediate bus voltages and complies with the Dynamic Bus Voltage scheme to reduce power dissipation and save energy. The factory default output voltage is set to 1.2V, but can be adjusted from 0.6V to 1.8V either via a pin-strap resistor or PMBus commands.

Through software control, the BMR466 uses class-leading adaptive compensation of the PWM control loop and advanced energy-optimization algorithms to reduce energy



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consumption and deliver a stable and secure power supply with fast transient performance over a wide range of operating conditions. In multi-module systems, two or more of the single-phase BMR466 POL converters can be synchronized with an external clock to enable phase spreading, which means the reduction of input ripple current and corresponding capacitance requirements and efficiency losses.

Introduced in 2013, the BMR461 was the first 12x12x8mm 12A digital POL module to combine Dynamic Loop Compensation (DLC), low-bias current technology and advanced energy-optimization algorithms to reduce energy consumption. The module's DLC is based on 'state-space' or 'model- predictive' control, which guarantees stability while also achieving the optimum dynamic performance without requiring any external components.

Also operating from a 4.5V to 14V input, the BMR461 makes significant gains in efficiency, especially in sub-1V modules where it performs up 10 points higher than high-market-average units. For example, taking power from a 5V intermediate bus, the BMR461 is designed to power 0.6V applications and is verified to reach up to 85.7% efficiency at full load, whereas conventional units that are not using low-bias-current technology will have a typical efficiency of 75%. Or when operated from the 12V intermediate bus with the output set to 5V at 80% load, the BMR461 delivers 96% efficiency.

Both the BMR461 and BMR466 have been designed and manufactured by Flex to meet the highest standards available for DC/DC power converters in the industry, delivering the levels of quality and confidence that are required by power system designers to develop long-term and high-performance platforms. Flex Power Designer is available here:

<http://www.digitalpowerdesigner.com/>

Both the BMR461 and BMR466 are available in production now in both BGA and LGA variants in OEM quantities.



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About Flex Power Modules

Flex Power Modules, a division of Flex (NASDAQ: FLEX), designs and manufactures scalable power supply solutions that improve the operational efficiencies of advanced data center, IT information and communications networks. Flex Coldwatt™ products provide a complete on-board system solution for cloud, storage and server applications. Coldwatt products address customer challenges while delivering superior quality, cost and performance at scale.

About Flex

Flex is the Sketch-to-Scale™ solutions provider that designs and builds Intelligent Products for a Connected World™. With approximately 200,000 professionals across 30 countries, Flex provides innovative design, engineering, manufacturing, real-time supply chain insight and logistics services to companies of all sizes in various industries and end-markets. For more information, visit flex.com or follow us on Twitter @Flexintl. Flex – Live Smarter™

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