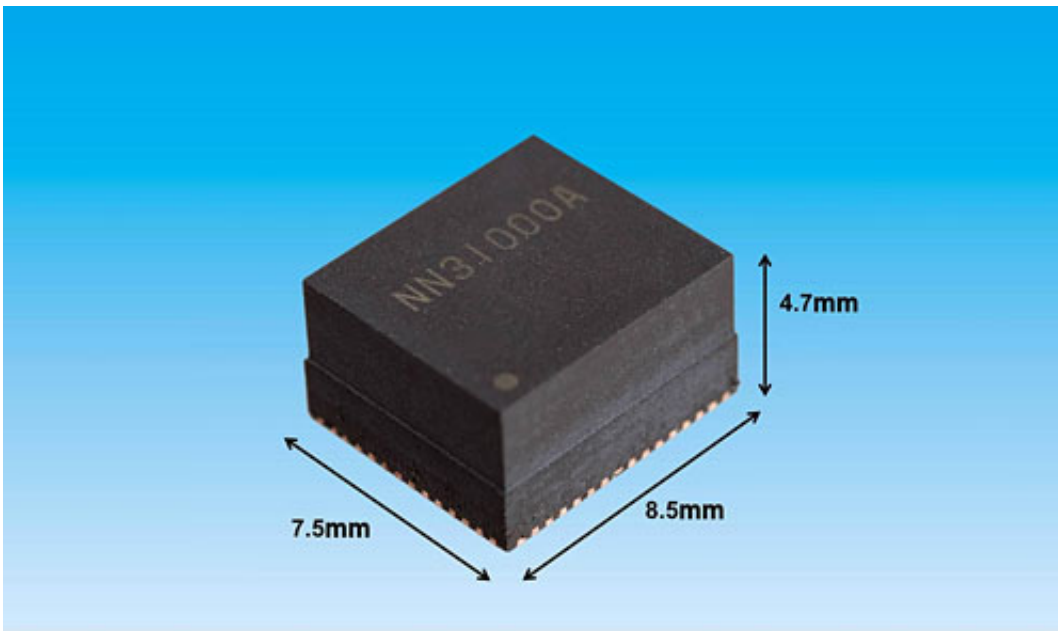


Panasonic announces 'PSiP' power supply module with 50% smaller footprint

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Power supply module "PSiP"

Panasonic Corporation March 2014

The new "PSiP" power supply modules help shorten the time for designing circuit boards and reduce mounting area by 50% compared to conventional power supply modules. The new products are suitable for communication infrastructure equipment and industrial devices.

Panasonic Corporation today announced that it will start shipping its new "PSiP" (Power Supply in Package) DC-DC regulator power supply

modules with integrated inductor later this month. These new products are optimized for use in power supply units for communication infrastructure equipment and industrial devices. The PSiP series modules will help facilitate designing power supply for products that require downsizing, such as small cell base stations.

Recent years have seen increasing focus on the "Internet of Things" (IoT), whereby electronic devices are connected and communicate each other via the Internet. With the advent of the IoT era bringing an increase in the volume of information and the number of users of connected devices, there is growing demand for communication infrastructure devices such as high-density servers and compact, lightweight small-cell [base stations](#) that can be installed anywhere to boost accessibility. To make such devices compact and lightweight, power supply modules used in them need to be made smaller.

Panasonic's PSiP series has the smallest mounting area in the industry, with its unique configuration to mount all the necessary components for a DC-DC regulator, used in communication infrastructure equipment and industrial and other devices, into a single module. The new power supply modules also offer improved performance in terms of low heat generation and low noise profile.

They also eliminate the need of designing a separate power source system and reduce the burden of incorporating heat and noise considerations into circuit board design, thereby making the overall design time significantly shorter.

The PSiP power supply modules, NN31000A, NN31001A and NN31002A, are suitable for use in communications infrastructure equipment - such as radio base stations, light transceivers, routers, switches and servers - and industrial applications, as well as other applications such as security cameras and measuring devices.

The new products will be on display from March 2016 to 20 at APEC 2014 in Fort Worth, Texas.

Main features:

1. Shortening time for designing circuit boards

Panasonic's unique component layout structure has been deployed to integrate the control IC, MOSFET, capacitor and inductor components needed for a DC-DC regulator into a single module package, thereby eliminating the time otherwise required for power source system design. Additionally, Panasonic's high-efficiency technology has achieved lower heat generation, while the smaller mounting area has reduced the areas for generating heat and noise. This allows for greater freedom in component and wiring layouts, so that the design process can be completed more quickly. Besides, the new modules' high-speed load response minimizes fluctuations in output voltage to improve stability in device operation, leading to safer design and significant reduction of the time needed to evaluate the finished set.

2. Circuit board miniaturization with smaller package and reduced area for heat and noise generation

Integrating the power supply into a single module has made the PSiP series the smallest package in the industry. A low ON resistance trench MOS has been used in MOSFET for optimum switching control, thereby improving power conversion efficiency up to 95% at high current, and lowering heat generation from components on the circuit board. Usually, device miniaturization leads to increased heat generation, but the new [power supply](#) modules combine both miniaturization and lower heat generation.

Since the integration into a single module also enables the high current lines and noise lines to be kept within PSiP, both the heat generation area and the noise generation area can be reduced by two thirds.

With a smaller package, low [heat generation](#), and smaller areas for heat and noise generation, the new products make it possible to mount components more densely while reducing the size of both circuit board and heat dissipation components.

3. Stable output voltage with high-speed response to prevent erroneous operation

A hysteretic control method has been used to control the DC-DC regulator, thereby improving high-speed response to load fluctuations within the regulator. Panasonic's hysteretic control method uses an error amplifier found in normal feedback control to operate the comparator without phase compensation. This offers the fastest theoretical response to fluctuating input/output conditions to control output. As a result, it is possible to minimize output voltage fluctuations caused by load change in PSiP, as well as improving device operation stability by eliminating erroneous operation in devices such as CPUs and FPGAs.

Provided by Panasonic Corporation

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