

## Product brief

# OptiMOS™ 5 and 6 25 V, 40 V, 60 V family

## High performance portfolio extension for PQFN 3.3 x 3.3 mm

With the innovation and best-in-class performance at the heart of Infineon, we are rendering the supply of outstanding products to the marketplace. By expanding the current product portfolio with new best-in-class OptiMOS™ 5 and 6 products in 25 V, 40 V and 60 V, once again, Infineon is setting new standards in MOSFET on-state resistance ( $R_{DS(on)}$ ) and switching performance in a small 3.3 x 3.3 mm footprint. Infineon is thriving to improve the product with the system in mind, by combining leading edge silicon technology with ever improving packaging innovation.

The new OptiMOS™ devices are a perfect fit for enhanced efficiency and power density solutions such as synchronous rectification in switched mode power supplies (SMPS) for telecom bricks and server applications and portable chargers. In addition, the portfolio includes an optimized device with industry lowest  $R_{DS(on)}$  (0.9 mΩ at  $V_{GS}=10$  V), targeting mainly Or-ing circuits.

Offering highest PCB routing flexibility, the small footprint of only 3.3 x 3.3 mm combined with outstanding electrical performance further contributes towards best-in-class power density and form factor improvement in the end application.

Up to 15% reduction in  $R_{DS(on)}$  and FOMs can be achieved over corresponding existing devices as can be seen in figure 1.

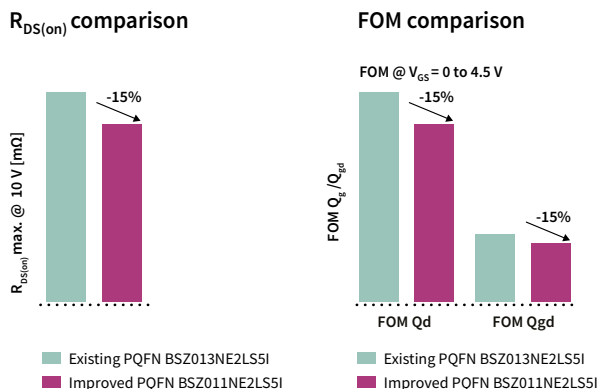


Figure 1: Comparison between existing and new PQFN 3.3 x 3.3mm package OptiMOS™ 5 25 V with monolithically integrated Schottky-like diode

### Key features

- > New BiC products
- > Small PQFN 3.3 x 3.3 package
- > Dedicated Or-ing products
- > Monolithically integrated Schottky-like diode
- > Ultra low charges
- > Ideal for high performance applications
- > RoHS compliant - halogen free

### Key benefits

- > Highest efficiency
- > Less paralleling
- > Very low voltage overshoot
- > Reduced need for snubber circuit
- > System cost reduction
- > Small package for highest PCB layout routing flexibility

### Target applications

- > SMPS
- > Server
- > Telecom DC-DC converters
- > Portable chargers
- > Or-ing switches

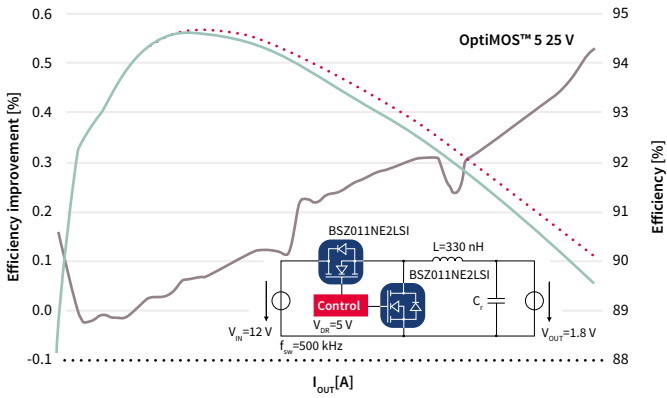


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High performance portfolio extension for PQFN 3.3 x 3.3 mm

New high performance PQFN 3.3 x 3.3 mm package enables further performance improvement:

## a) Efficiency

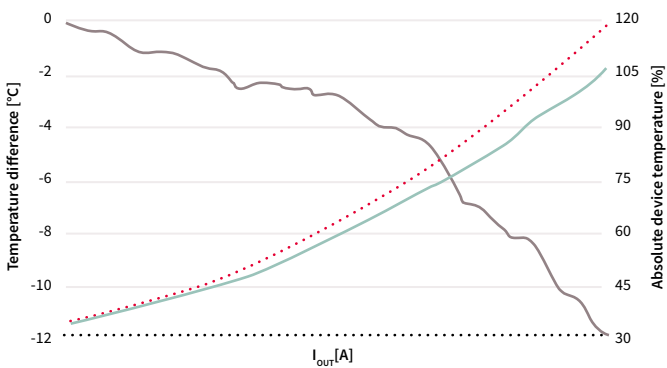


Compared to the previous OptiMOS™ products, a significantly reduced  $R_{DS(on)}$  in PQFN 3.3 x 3.3 mm package enables an increase of the system efficiency, as shown in Figure 2a.

Benefits are clearly visible in terms of a reduced system temperature displayed in Figure 2b. The improved performance leads to a more relaxed thermal management contributing reduction in the system size.

With the BSZ011NELS5I an additional device with integrated Schottky-like diode is complementing the high performance portfolio. This allows for further increase in system efficiency in applications like synchronous rectification.

## b) Temperature performance



- BSZ011NE2LS5I - OptiMOS™ 5 - high performance PQFN 3.3 x 3.3 mm
- BSZ013NE2LS5I - OptiMOS™ 5 - existing PQFN 3.3 x 3.3 mm
- Measured performance improvement in % or °C

Figure 2: Benchmark results for a synchronous buck converter demonstrating the performance improvement of the new high performance PQFN 3.3 x 3.3mm products  
 a) efficiency improvement by up to 0.5% at full load  
 b) device temperature reduction by 12°C  
 BSZ011NE2LS5I - OptiMOS™ 5 - high performance PQFN 3.3 x 3.3 mm  
 BSZ013NE2LS5I - OptiMOS™ 5 - existing PQFN 3.3 x 3.3 mm  
 Measured performance improvement in % or °C

## Product portfolio OptiMOS™ 5 and 6 25 V, 40 V, 60 V family

Package	Part number	$V_{DS}$ [V]	$R_{DS(on)}$ max. @ $V_{GS} = 10$ V [mΩ]
PQFN 3.3 x 3.3 mm	BSZ009NE2LS5	25	0.9
	BSZ010NE2LS5	25	1.0
	BSZ011NE2LS5I	25	1.1
	BSZ018N04LS6	40	1.8
	BSZ037N06LS5	60	3.7
	BSZ039N06NS	60	3.9

Published by  
 Infineon Technologies Austria AG  
 9500 Villach, Austria

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