

Product brief

OptiMOS™ 6 power MOSFET 40 V family

Infineon's first product family of next generation, cutting edge MOSFETs

Innovation and best-in-class performance are the key to Infineon's success in introducing outstanding products to the marketplace. The OptiMOS™ 6 family of 40 V devices is once again setting a new technology standard in the field of discrete power MOSFETs. Compared to alternative products, Infineon's leading thin wafer technology is enabling significant performance benefits.

Infineon's OptiMOS™ 6 power MOSFET 40 V family is optimized for a variety of applications and circuits, such as synchronous rectification in switched mode power supplies (SMPS) in servers, desktop PCs, wireless chargers, quick chargers and ORing circuits. Improvements in on-state resistance ($R_{DS(on)}$) and figure of merits ($FOM - R_{DS(on)} \times Q_g$ and Q_{gd}) enable designers to increase efficiency, allowing easier thermal design and less paralleling, leading to system cost reduction.

Key features

- > Compared to alternative products:
 - $R_{DS(on)}$ reduced by 30%
 - Improved $FOM Q_g \times R_{DS(on)}$ by 29%
 - Improved $FOM Q_{gd} \times R_{DS(on)}$ by 46%
- > Optimized for synchronous rectification
- > Suited for ORing circuits
- > RoHS compliant - halogen free
- > MSL1 rated

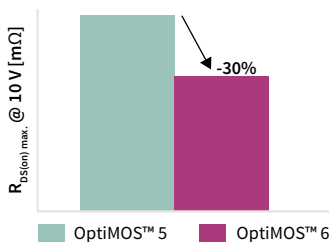
Key benefits

- > Highest system efficiency
- > Less paralleling required
- > Increased power density
- > Very low voltage overshoot
- > Reduced need for snubber circuit
- > System cost reduction

Target applications

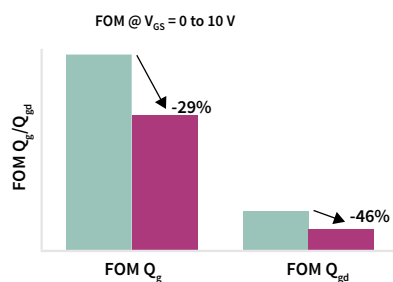
- > SMPS
- > Server
- > Telecom
- > Charger
- > Drives
- > Multicopter
- > Wireless charging

$R_{DS(on)}$ comparison



Comparison between OptiMOS™ 6 and previous generation of lowest available $R_{DS(on)}$

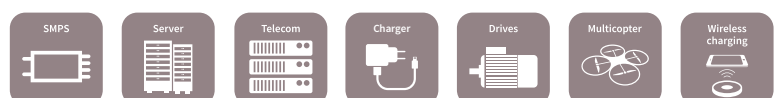
FOM comparison



Comparison of $FOM Q_g$ and $FOM Q_{gd}$ between OptiMOS™ 6 and previous generation

Infineon's market-leading OptiMOS™ 6 power MOSFETs 40 V are available in two different packages:

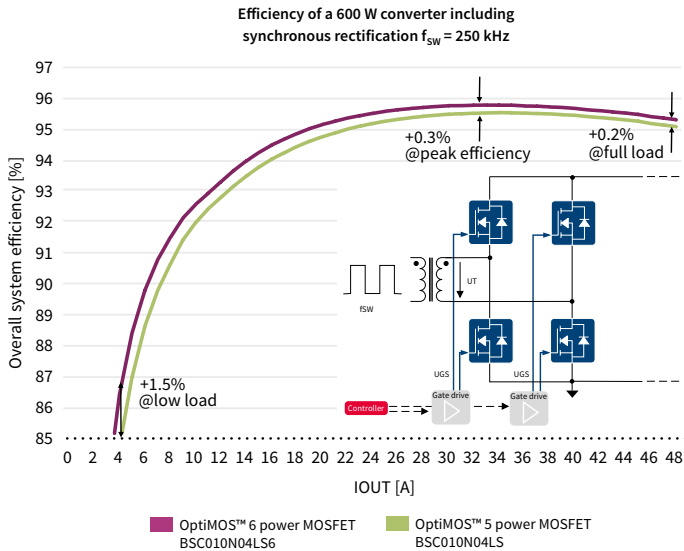
- > SuperSO8 - 5 x 6 mm with $R_{DS(on)}$ ranging from 5.9 mΩ down to 0.7 mΩ
- > PQFN 3x3 - 3.3 x 3.3 mm with $R_{DS(on)}$ ranging from 6.3 mΩ down to 1.8 mΩ



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OptiMOS™ 6 40 V combines the best-in-class $R_{DS(on)}$ with the superior switching performance



In SMPS applications, OptiMOS™ 6 is the perfect solution for optimizing efficiency over a wide range of output power, avoiding the trade-off between low and high load conditions.

At the low output power range, the switching losses dominate the efficiency curve. The OptiMOS™ 6 power MOSFET BSC010N04LS6 achieves a much better efficiency in this range compared to the same $R_{DS(on)}$ OptiMOS™ 5 due to its superior switching performance.

Moreover, at a higher output power, where the $R_{DS(on)}$ losses are getting more dominant, the OptiMOS™ 6 can maintain the advantage, leading to a better performance throughout the whole operating range.

Product portfolio

| Package | Part number | V_{DS} [V] | $R_{DS(on)}$ max. @VGS = 10 V [mΩ] |
|--------------------------|---------------|--------------|------------------------------------|
| SuperSO8 5 x 6 mm | BSC007N04LS6 | 40 | 0.7 |
| | BSC010N04LS6 | 40 | 1.0 |
| | BSC022N04LS6 | 40 | 2.2 |
| | BSC059N04LS6 | 40 | 5.9 |
| PQFN 3x3 3.3 x 3.3 mm | BSZ018N04LS6* | 40 | 1.8 |
| | BSZ021N04LS6* | 40 | 2.1 |
| | BSZ024N04LS6* | 40 | 2.4 |
| | BSZ063N04LS6* | 40 | 6.3 |

*Coming in Q2/2019

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