



Product Brief

OptiMOS™ 5 25 V and 30 V

Boost System Performance With Best-in-Class Technology

With the new OptiMOS™ 5 25 V and 30 V product family, Infineon offers benchmark solutions by enabling highest power density and energy efficiency, both in standby and full operation.

OptiMOS™ 5 25 V and 30 V products are based on a new silicon technology, optimized to meet and exceed the energy efficiency and power density requirements of the tightened next generation Voltage Regulation standards in DC/DC applications. OptiMOS™ 5 products address a broad range of Voltage Regulation applications in the Computing industry, such as Server, Datacom and Client, focusing on Intel's VR and IMVP platforms.

High Efficiency and System Cost Optimization

The OptiMOS™ 5 25 V and 30 V product family includes SuperSO8 and S308 packages, which support industry standard footprints. With 1.3 mΩ on-state resistance at 10 V, a new Best-in-Class product can be realized in a small form factor with 3.3x3.3 mm² footprint (S308 package), further enabling the reduction of area consumption and board space in high power, high density designs.

Besides the discrete product portfolio, OptiMOS™ 5 MOSFETs are used in Infineon's new halfbridge (Power Block) and DrMOS 5x5 products. The new MOSFET technology improves performance relevant parameters, such as FOM_g or FOM_{gd} by more than 30% and enables a significant reduction of power losses. These improvements allow designers to increase overall system efficiency and to operate at higher switching frequencies, optimizing system costs and reducing energy consumption.

Main Features

- Best-in-Class on-state resistance
- Benchmark switching performance (lowest Figure of Merits $R_{on} \times Q_g$ and $R_{on} \times Q_{gd}$)
- RoHS compliant and halogen free
- Optimized EMI behavior (integrated damping network)

Key Benefits

- Highest efficiency
- Highest power density with S308 or Power Block package
- Reduction of overall system costs
- Operation at high-switching frequency

Applications

- Desktop and Server
- Single-phase and Multiphase PoL
- CPU/GPU VR in Notebooks
- High Power Density Voltage Regulator
- Or-ing
- E-fuse



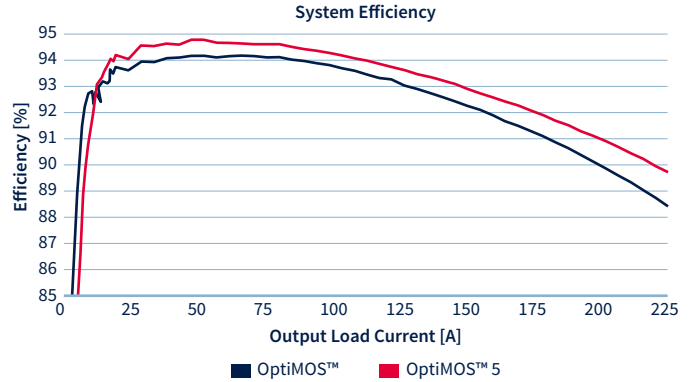
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The following chart illustrates the efficiency curve for OptiMOS™ 5 25 V compared to its predecessor OptiMOS™. OptiMOS™ 5 25 V and 30 V products increase the performance by approximately 1 % over the whole load range with a peak efficiency of almost 95 %.

Measurement on 5-phase Board:

$V_{in} = 12\text{ V}$; $V_{out} = 1.8\text{ V}$; $F_{SW} = 430\text{ kHz}$; $L = 150\text{ nH}$; $V_{DRV} = 5\text{ V}$
 Parts used: OptiMOS™ – BSZ036NE2LS and BSC010NE2LS;
 OptiMOS™ 5 – BSZ033NE2LS and BSC009NE2LS5



Product Portfolio

$R_{DS(on)}$ max@ $V_{GS} = 10\text{ V}$ [mΩ]	SuperSO8 25 V	S3O8 25 V	SuperSO8 30 V	S3O8 30 V
< 2	BSC009NE2LS5 $R_{DS(on)} = 0.9\text{ m}\Omega$	BSZ013NE2LS5I $R_{DS(on)} = 1.3\text{ m}\Omega$	BSC0500NSI $R_{DS(on)} = 1.3\text{ m}\Omega$	BSZ0500NSI $R_{DS(on)} = 1.55\text{ m}\Omega$
	BSC009NE2LS5I $R_{DS(on)} = 0.95\text{ m}\Omega$	BSZ014NE2LS5IF* $R_{DS(on)} = 1.45\text{ m}\Omega$	BSC0501NSI $R_{DS(on)} = 1.9\text{ m}\Omega$	
	BSC015NE2LS5I $R_{DS(on)} = 1.5\text{ m}\Omega$	BSZ017NE2LS5I $R_{DS(on)} = 1.7\text{ m}\Omega$		
2 – 4.4	BSC026NE2LS5 $R_{DS(on)} = 2.6\text{ m}\Omega$	BSZ031NE2LS5 $R_{DS(on)} = 3.1\text{ m}\Omega$	BSC0502NSI $R_{DS(on)} = 2.4\text{ m}\Omega$	BSZ0501NSI $R_{DS(on)} = 2.0\text{ m}\Omega$
		BSZ033NE2LS5 $R_{DS(on)} = 3.3\text{ m}\Omega$	BSC0503NSI $R_{DS(on)} = 3.2\text{ m}\Omega$	BSZ0502NSI $R_{DS(on)} = 2.8\text{ m}\Omega$
			BSC0504NSI $R_{DS(on)} = 3.7\text{ m}\Omega$	BSZ0503NSI $R_{DS(on)} = 3.4\text{ m}\Omega$
				BSZ0506NS $R_{DS(on)} = 4.4\text{ m}\Omega$

* optimized for resonant applications (e.g. LLC converter)

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