



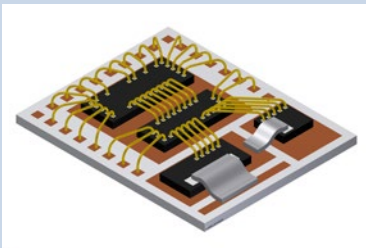
# DrBlade 1.0

## The Revolutionary Next Packaging Generation

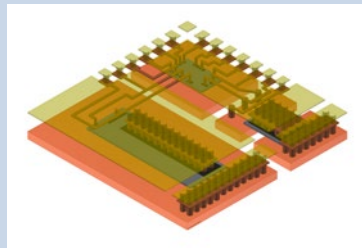
DrBlade, the new ultra-compact integrated MOSFET halfbridge with driver for DC/DC buck converter applications, is the first member of Infineon's Blade package family, realized by chip embedding packaging technology. By replacing standard packaging processes like bonding or molding a 30% reduced package footprint can be realized.

New silicon technologies achieve lowest  $R_{DS(on)}$  values and power losses. In achieving highest power density without compromising in performance, the interconnect and cooling are becoming the limiting factors. The Blade packaging technology realizes a low package resistance and inductance as well as high current handling capability at a significant reduced form factor. Additionally, the thermal resistances to the package bottom and top side are optimized. With multiple routing layers compact integrated products can be realized. DrBlade is realized in a revolutionary new packaging technology and a new, ideal solution for buck converter applications with highest efficiency and power density requirements.

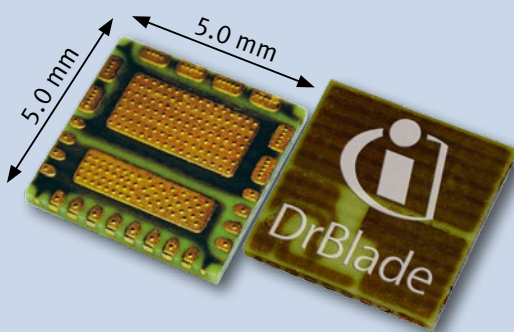
### Packaging Technology Comparison



Conventional



NEW: Blade packaging technology



[www.infineon.com/drblade](http://www.infineon.com/drblade)

### Features

- Compatible to Intel® VR12 Driver and Mosfets Module (DrMOS) functionality
- High current capability 40 A
- Capable of operating up to 1.2MHz switching frequency- Fast switching technology for improved performance
- Small package size and low profile: 5 x 5 x 0.5 mm<sup>3</sup>
- Optimized footprint for DC/DC converter layout and improved cooling to the PCB
- Low thermal resistance to the top side
- RoHS compliant and halogen free

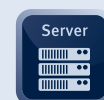
### Benefits

- 94% peak efficiency at 1.2V<sup>1)</sup>
- Compact and simplified layout for a DC/DC converter
- Optimized cooling system
- Environmentally friendly

<sup>1)</sup> Typical power stage efficiency,  $V_{IN}=12V$ ,  $V_{DRV}=V_{CIN}=5V$ ,  $f_{SW}=300kHz$ ,  $L=210nH$ ,  $0.2m\Omega$ , no air flow, no heat sink

### Applications

- High performance desktop and server DCDC-converters
- Single Phase and Multiphase DCDC point of load (PoL) converters
- CPU/GPU voltage regulation in Desktop Graphics Cards, DDR Memory, Graphic Memory
- High Power Density Voltage Regulator Modules (VRM)

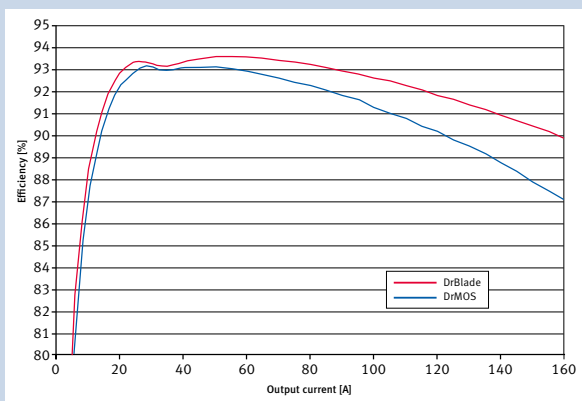


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### Efficiency Measurement

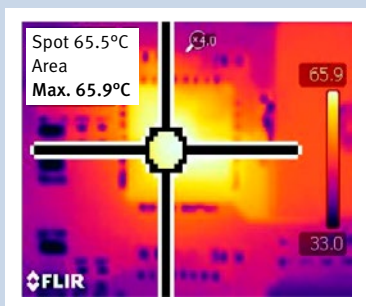
Efficiency measurement of a 4-phase DC/DC converter (measurement conditions:  $V_{in}$  12V,  $V_{out}$  1.2V,  $L_{out}$  210nH (DCR 0.29 mOhm),  $f_{switch}$  313kHz,  $T_{ambient} = 25^{\circ}C$ , 300lfm, included losses: power stage, inductor and controller)



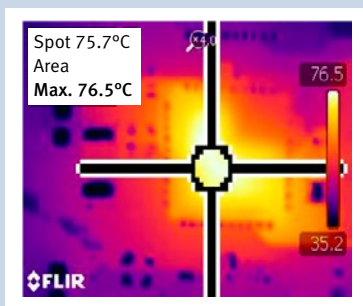
DC/DC converter stage  
(left DrBlade, right DrMOS)

### Thermal Measurement

Thermal performance at 40 A.  $V_{in}$  12V,  $V_{out}$  1.2V,  $f_{switch}$  450kHz, 100 lfm, no heatsink,  $T_{ambient}$  25°C, 1 phase operation.  
Thermal equilibrium, 10 min at 40 A



DrBlade



DrMOS

### DrBlade Product Specification

	$I_{out}$ max. [A]	$f_{switch}$ max. [MHz]	$R_{thj}$ typ. bottom side low-side [K/W]	$R_{thj}$ typ. top side low-side [K/W]
TDA21310	40	1,2	1,0	2,0

Next generation DrBlade in development

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