



Application Brief

DrBlade™ 2 power stage and Digital VR Controller DC/DC Voltage Regulation Complete Solution

Infineon's digital voltage regulation system solution combining DrBlade™ 2 power stage and 4th Generation VR Controller provides highest configurability with minimum external component count to meet increasingly stringent voltage regulation requirements of new microprocessor generations. Small, high efficient and thermally enhanced power stages in the novel RoHS 2016 compliant Blade packaging technology maximize power density and save PCB real estate. Continuous innovation in FET, driver and controller technology enable peak efficiencies above 95% to maximize system performance.

The extensively validated system approach offers sense and protection features for superior system robustness as well as higher reliability and comes with a Graphic User Interface (GUI) to program controller parameters and tune the VR while in operation.

Furthermore Infineon has a highly trained worldwide engineering structure to provide high quality support from design to manufacturing.

Key Features

- 60A max avg. load current
- 4.5V to 16V input voltage
- Temperature sensing and thermal warning
- Load current sensing
- Digital configuration

Key Benefits

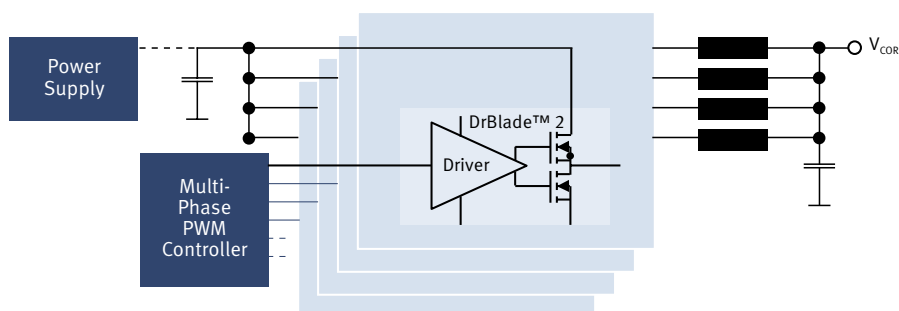
- System stability and robustness
- Fast and easy system optimization
- Minimum solution footprint
- > 95% peak efficiency
- RoHS compliant and leadfree

Applications

- Desktop and Server V_{core} and non- V_{core} buck-converter
- Single Phase and Multiphase PoL
- CPU/GPU Regulation in Notebook, Desktop Graphics Cards, DDR Memory, Graphic Memory
- High Power Density Voltage Regulator Modules (VRM) and SoC

Application Diagram

Our power architectures address the need for more accurate and efficient power delivery to support increasingly challenging requirements of today's DC/DC Computing applications.



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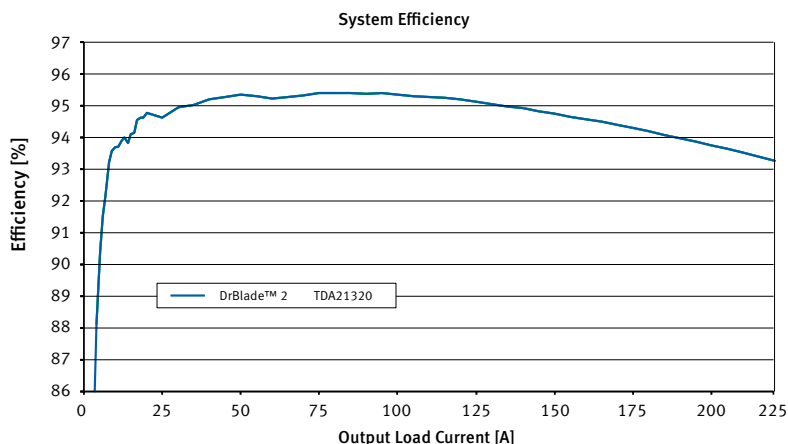
Efficiency Measurement

With the following example DrBlade™ 2 provides > 95% peak efficiency:

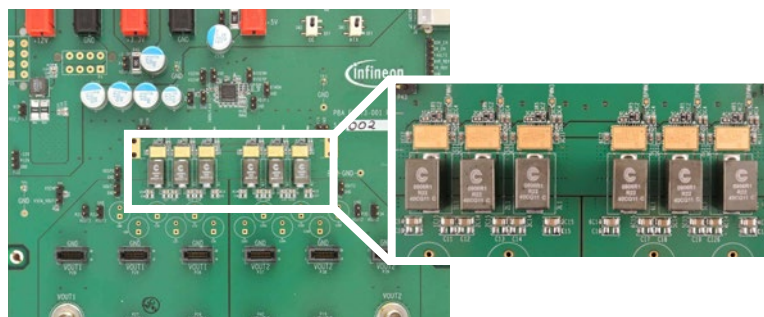
$V_{in} = 12V, V_{out} = 1.82V$
 $LL = 0m\Omega, L_{out} = 150nH$ (Vitec)
 $f_{switch} = 429kHz$
 $T_{amb} = 25^{\circ}C$

No Air Flow

Included Losses: Controller,
power stage, inductor



Infinion's System Solution with 4th Generation Digital Controller and DrBlade™ 2 power stage in next generation package with integrated current sense achieves greater than 95% peak efficiency.



Highest efficiency at all load conditions enables system designers to overcome thermal challenges to reach a new level of system miniaturization.

DC/DC System Solution Product Portfolio



Product Type	Part No. / Product Name	Max. phases/rail	Package Name
power stage (driver+MOSFETs)	TDA21320 DrBlade™ 2.0	-	LG-WIQFN-38-1 (6.6x4.5x0.6mm ³)
power stage (driver+MOSFETs)	TDA21321 DrBlade™ 2.1	-	LG-WIQFN-38-1 (6.6x4.5x0.6mm ³)
Digital VR Controller	PX7247HDN	6+1	VQFN-48 (6x6x0.9mm ³)
Digital VR Controller	PX7241HDN	3+3	VQFN-48 (6x6x0.9mm ³)
Digital VR Controller	PX7143HDN	3+0	VQFN-40 (5x5x0.9mm ³)
Digital VR Controller	PX7242HDM	1+1	VQFN-40 (5x5x0.9mm ³)
Digital VR Controller	PX7141HDM	1+0	VQFN-40 (5x5x0.9mm ³)
Dig. VR12.5 VCore Controller	PX8746HDN*	6+0	VQFN-48 (6x6x0.9mm ³)
Dig. VR12.5 DDR Controller	PX8143HDM*	3+0	VQFN-40 (5x5x0.9mm ³)

*example out of a broad range of VR12.5. controllers

Published by
Infinion Technologies Austria AG
9500 Villach, Austria

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Order Number: B111-H9893-X-X-7600-DB2014-0001
Date: 05 / 2014

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