



System Solution

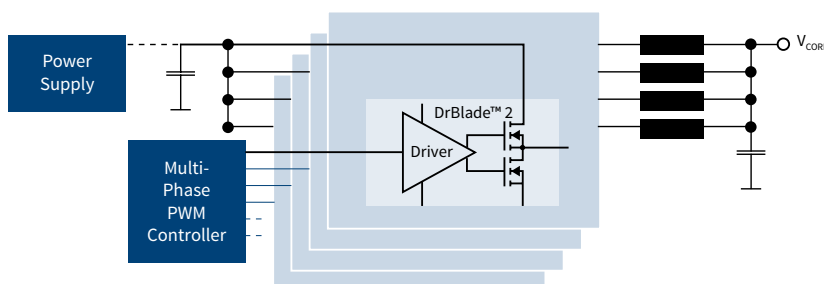
Digital VR Controller and DrBlade™ 2 Power Stage DC/DC Solution for FPGA, ASSP and ASIC in Datacom/Telecom

Infineon's digital voltage regulation system solution combining 4th Generation VR Controller and DrBlade™ 2 power stage provides highest configurability with minimum external component count. It meets increasingly stringent voltage regulation requirements of next generation FPGA, ASSP and ASICs in today's medium and high current PoL applications used in Telecom/Datacom environments. The digital multi-phase and multi-rail controllers enables OEMs and ODMs to improve efficiency and total cost of ownership while increasing power density and optimizing the total system footprint of the voltage regulator.

The I²C/PMBus interface connects the digital controllers to the application system and provides real time telemetry information, monitoring and control capabilities. Small, highly 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 comprehensive telemetry, sense and protection features for superior system robustness as well as higher reliability and comes with the PowerCode™ 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.

Application Diagram

Our power architectures address all needs of ASICs, ASSP and FPGA in Networking Application.



Main Features

- Multiphase & multi-rail in single chip
- 60 A max average load current
- Accurate (tele)metry: I, V, T°...
- Digital configuration
- Highest V_{out} (setpoint) accuracy
- 4.5 V to 16 V input voltage

Key Benefits

- Highest power efficiency (peak > 95%)
- Minimum solution footprint
- System stability and robustness
- Fast and easy system optimization

Applications

- Next-Generations Datacom and Telecom solution
- Data Center, Enterprise and Service Provider applications
- High-End enterprise routers and switches
- Edge and core and ISP routers

Digital VR Controller and DrBlade™ 2 Power Stage

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Efficiency Measurement

In the following example, Infineon's system solution including Controller and DrBlade™ 2 power stage provides > 95% peak efficiency:

5-phase board; $V_{in} = 12\text{ V}$, $V_{out} = 1.82\text{ V}$

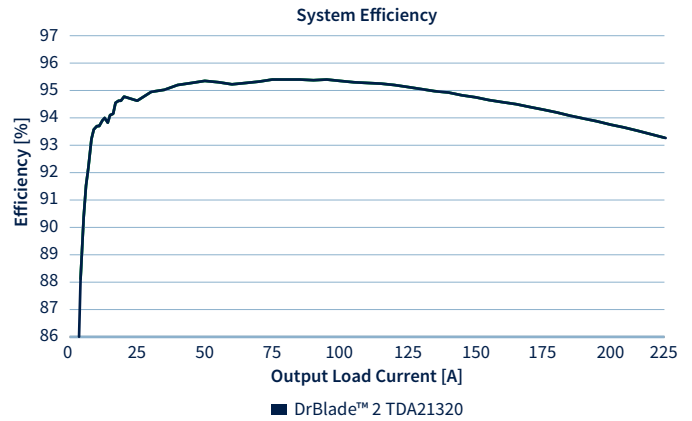
$L_L = 0\text{ m}\Omega$, $L_{out} = 150\text{ nH}$ (Vitec)

$f_{switch} = 429\text{ kHz}$

$T_{amb} = 25\text{ }^\circ\text{C}$

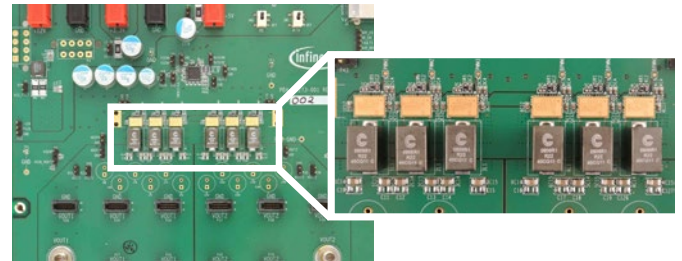
No Air Flow

Included losses: Controller, power stage, inductor



Infineon's system solution with Digital Controller and DrBlade™ 2 Power Stage

Infineon's system solution achieves more than 95% peak efficiency with highly accurate integrated current sense. 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.	Max. Phase Configuration	Package Name
Digital VR Controller	PX7247HDN	6 + 1	VQFN-48 (6.0x6.0 mm ²)
Digital VR Controller	PX7241HDN	3 + 3	VQFN-48 (6.0x6.0 mm ²)
Digital VR Controller	PX7143HDM	3 + 0	VQFN-40 (5.0x5.0 mm ²)
Digital VR Controller	PX7242HDM	1 + 1	VQFN-40 (5.0x5.0 mm ²)
Digital VR Controller	PX7141HDM	1 + 0	VQFN-40 (5.0x5.0 mm ²)
Baxter Digital Controller	IR3580M	8 + 0	QFN-48 (6.0x6.0 mm ²)
Baxter Digital Controller	IR3581M	6 + 1	QFN-48 (6.0x6.0 mm ²)
Baxter Digital Controller	IR3584M	4 + 1	QFN-48 (5.0x5.0 mm ²)

Product Type	Part No.	Package Name
PowIRstage®	IR3555M, IR3556M, IR3557M, IR3578M*, IR3579M*	PQFN-32 (6.0x6.0 mm ²)
DrBlade™ 2	TDA21320, TDA21321	LG-WIQFN-38 (6.6x4.5 mm ²)

* exposed top

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