Solution brief

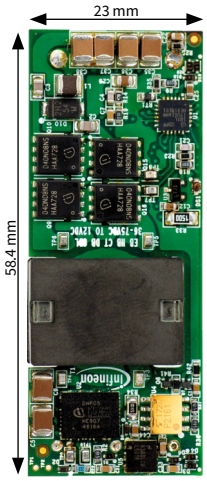
48–12 V fully regulated isolated 1/8th brick module using digital control

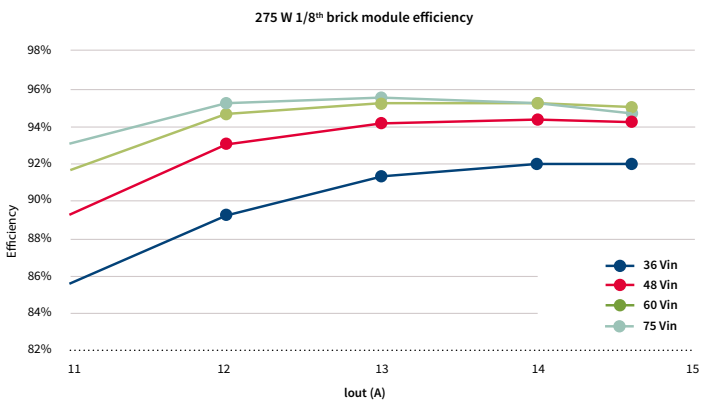
36-75 V input , 12 V output, 275 W, 1/8th brick with PMBus interface

The 275 W isolated 1/8th digital brick converter is a new generation of digitally controlled power module solution from Infineon, designed to support telecom 12 V_{DC} intermediate bus applications. The output is fully isolated from the input, allowing versatile polarity configurations and grounding connections to the input and output terminals. This demonstration design implements secondary side digital control and half-bridge with SR in center-tap topology to deliver 12 V/275 W of output power and operates across a wide input voltage 36–75 V with an impressive 95.5 percent efficiency. The achieved power density is 21 W/cm^3 (350 W/in^3), which is enabled by XDPP1100* digital controller in a 4x4 mm VQFN package and DHP1050N10N5, an integrated half-bridge power stage.

This design showcases world's smallest fully programmable digital power controller XDPP1100* device from Infineon Technologies. This controller offers highly integrated digital control solution with superior AFE, digital state-machine and Arm® Cortex® M0 combined in a single chip. It also includes PMBus interface for system configuration, control and monitoring. The XDPP1100* allows firmware based optimization of various parameters such as dynamic dead time to enhance efficiency over full load/temperature range.

This design also features DHP1050N10N5, a 100 V/5 mΩ power stage solution with integrated high-side and low-side MOSFETs in a single package, EiceDRIVER™ dual gate driver, and best-in-class OptiMOS™ 5 family.





*Prototype

www.infineon.com/ref-275w-hbct-xdpp1100

Key features

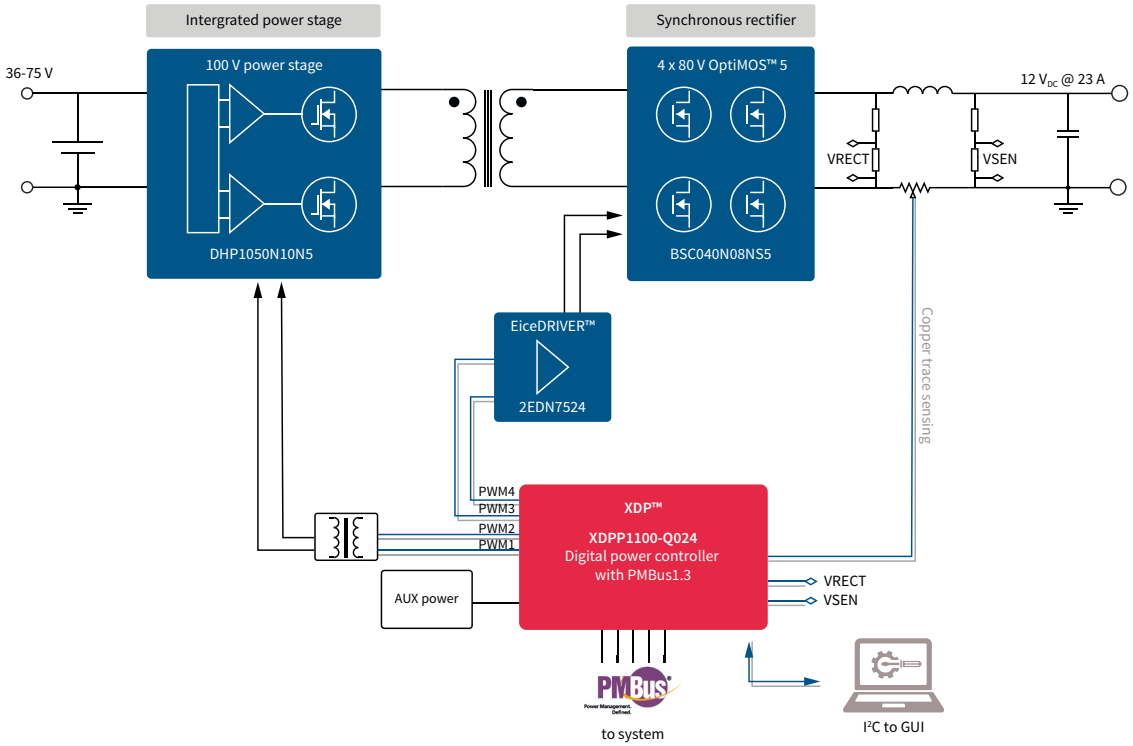
- Secondary side voltage mode control with digital implementation
- Fully programmable digital control based on 32-bit, Arm® Cortex®-M0
- Pre-bias start-up
- Fast Feed forward regulation to manage line transients
- 95.5% peak efficiency
- System configuration, monitor and control with PMBus 1.3 compliant
- Implements active current sharing
- Output voltage accuracy +/-1%
- Industry-leading power density for telecom and datacom: 350 W/in^3
- Telecom temperature range: -40°C – 125°C

Key benefits

- Configurable with GUI support
- Allows FW based customization
- Accurate V/I/Temp telemetry for protection and advance system control
- Optimized compacted power stage
- Increase overall reliability
- High power density and reduced BOM with component integration
- Pre-programmed control providing the fastest time-to-market
- Provides future proof optimal solution via PMBus adjustments

High efficiency DC/DC 1/8th digital brick module

Isolated half-bridge and SR implementation



Ordering information

Design block	Digital power controller with PMBus	Integrated primary side power stage	EiceDRIVER™ secondary side dual MOSFET driver	Synchronous rectifier OptiMOS™ 5
Package	24-VQFN	36-PQFN	WSON-8-2	SuperSO8
Product	XDPP1100-Q024*	DHP1050N10N5	2EDN7524G	BSC040N08NS5
Specifications	› 6x digital PWMs › 2x VADC, 1x IADC, Temp ADC › Max frequency 2 MHz › ARM® Cortex® M0 with 100 MHz 32-bit, 64 kB OTP, 80 kB ROM, 64 kB RAM	› 2x100 V 5 mΩ MOSFET › 100 V half-bridge driver › 120 V on-chip bootstrap diode › Support up to 1 Mhz frequency › 7.5x6 mm PQFN	› Dual low-side driver › 5 A of sourcing and sinking current › 17 ns propagation delay › <2 ns delay matching	› 80 V 4 mΩ › 37 nC $Q_{g(sync)}$ › SuperS08 package

*Prototype

**Some of the products may not be visible on our website. Please contact Infineon sales for more details.

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