

TDM22544D & TDM22545D

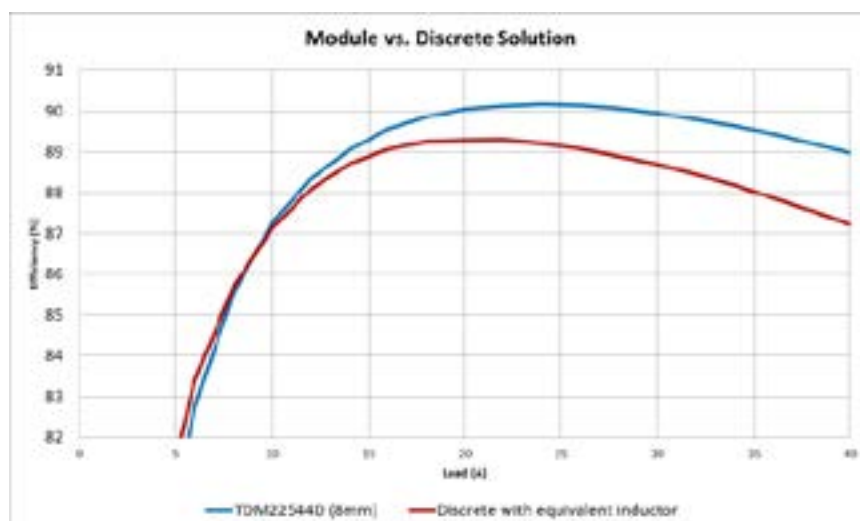
OptiMOS™ dual-phase power module 120 A

TDM22544D and TDM22545D expand Infineon's dual-phase power module family with two OptiMOS™ 6 power stages integrated with inductors and capacitors on a single substrate. This level of integration allows two phases of a multiphase buck regulator to be deployed in a 40% lower area compared to equivalent discrete solutions.

Infineon's dual-phase power modules utilize a proprietary inductor-on-top design for improved thermal and electrical performance yielding superior energy efficiency. This design minimizes current conduction loss while maximizing head-conduction to the top surface from the key heat-generating areas of the power stage below it, through the inductor.

Integrated power modules isolate the switch-node from the motherboard, improving signal integrity by eliminating switching voltages from the motherboard and protecting sensitive signals from noise-coupling. Integrating the switch-node also minimizes its parasitic impedances enabling more efficient operation at higher switching frequencies. Infineon dual-phase modules offer efficiency improvements up to 2% pt. or more compared to an equivalent discrete solution.

Moreover, with the switch-nodes isolated, the module can now be located under the processor. This minimizes the power distribution network (PDN) losses as the high current flows vertically through the thickness of the motherboard, instead of laterally traversing the package to the core. This reduces motherboard power losses by 90% or more.



Key features

- 5.3uF input capacitors
- Bootstrap capacitors
- 70 A per phase thermally managed
- 120 A per phase peak
- 4.25 V to 16 V input voltage
- Current sensing and reporting at 8 uA/A
- 8 mV / C temperature analog output
- 0.225 V to 3 V output voltage range
- Operation up to 2 MHz
- Cycle-by-cycle over current protection (OCP) and flag

Key benefits

- High power density solution (>1A/mm²)
- Best-in-class TCO
- Simpler construction for high volume manufacturing
- Ease of use
- Improved thermal management and system efficiency
- Improved signal integrity
- Minimized PDN losses

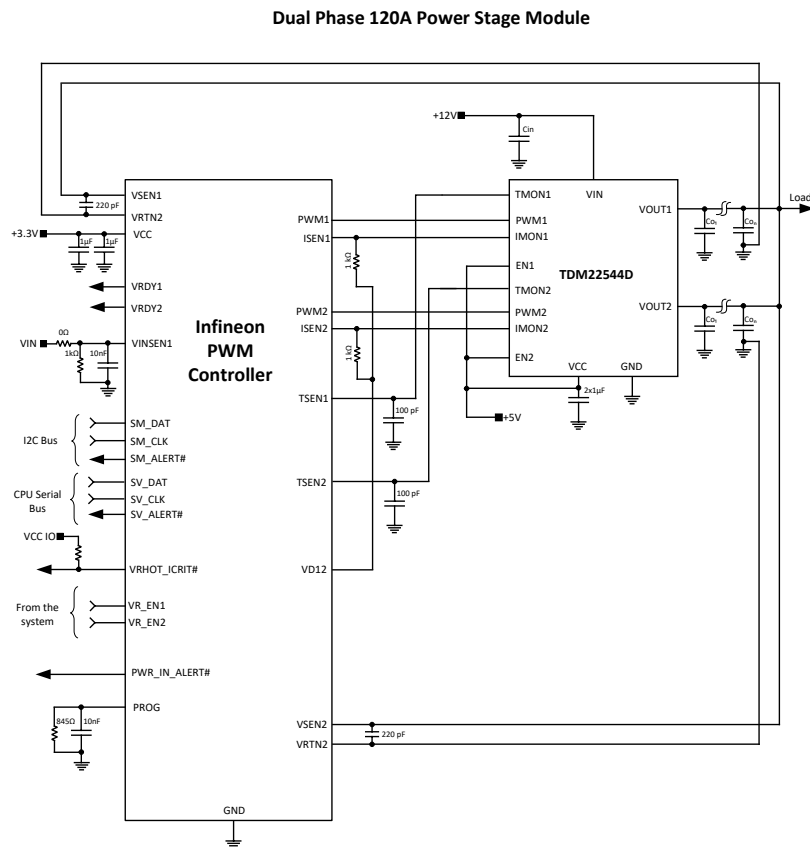
Potential applications

- Artificial intelligence accelerator cards
- CPU power
- FPGA power
- Telcom / datacenter

Powering a sustainable AI

Infineon’s OptiMOS™ dual-phase power modules are critical to meet the power demands of high-power GPU systems by providing high power density and best in class efficiency without compromising signal integrity. By locating modules close to the processor and reducing PDN losses, achieving >2000 A becomes feasible. Improving power efficiency at the core yields significant energy savings at scale. Since typical deployments consist of ~100,000 processors, saving 130 W/processor translates into megawatts for a datacenter. This means millions of dollars saved over the system’s lifetime.

Solution block diagram



Published by
Infineon Technologies AG
Am Campeon 1-15, 85579 Neubiberg
Germany

© 2023 Infineon Technologies AG.
All rights reserved.

Public

Document number:
B112-11470-V1-7600-EU-EC
Date: 11/2024

Please note!
This Document is for information purposes only and any information given herein shall in no event be regarded as a warranty, guarantee or description of any functionality, conditions and/or quality of our products or any suitability for a particular purpose. With regard to the technical specifications of our products, we kindly ask you to refer to the relevant product data sheets provided by us. Our customers and their technical departments are required to evaluate the suitability of our products for the intended application.

We reserve the right to change this document and/or the information given herein at any time.

Additional information
For further information on technologies, our products, the application of our products, delivery terms and conditions and/or prices, please contact your nearest Infineon Technologies office (www.infineon.com).

Warnings
Due to technical requirements, our products may contain dangerous substances. For information on the types in question, please contact your nearest Infineon Technologies office.

Except as otherwise explicitly approved by us in a written document signed by authorized representatives of Infineon Technologies, our products may not be used in any life-endangering applications, including but not limited to medical, nuclear, military, life-critical or any other applications where a failure of the product or any consequences of the use thereof can result in personal injury.



Scan QR code and explore offering
www.infineon.com