

## 1300 W Unregulated 8:1 intermediate bus converter with digital control

### Features

- 1300 W<sup>1</sup> 8:1 unregulated IBC module
- Input voltage range: 40 V to 60 V
- Non-isolated design with a fixed 8:1 ratio
- 1300 W thermal design power (TDP) with 2 x TDP pulse capability
- PMBus® digital control for monitoring and configuration
- Built with Infineon's OptiMOS™ technology for enhanced reliability
- Utilizes Infineon's proprietary hybrid switched-capacitor (HSC) topology
- Supports parallel operation and current sharing for scalability
- Enables vertical power delivery with Infineon's high-density second-stage power modules
- Features overvoltage protection (OVP)
- Includes undervoltage lockout protection (UVLO)
- Equipped with overcurrent protection (OCP)
- Incorporates overtemperature protection (OTP)
- Includes thermal shutdown capability
- Single PCB design enhances reliability
- Optimized for conduction cooling with low thermal impedance
- Designed for thermally demanding environments
- Lead-free, RoHS compliant package
- Soldering method: lead-free SMD reflow
- Compact dimensions: 41.8 mm x 18.8 mm x 7.7 mm
- Industry standard footprint

### Potential applications

- AI and data center applications
- Accelerator boards
- Server boards

### Product validation

- Qualified for industrial applications by appropriate tests according to IPC9592.

### Description

TDM4218U108 is a high-performance 1300 W<sup>1</sup> unregulated intermediate bus converter (IBC) module specifically designed for AI accelerator cards and advanced computing platforms. Utilizing Infineon's patented hybrid switched-capacitor topology, this module delivers superior power density in an industry-standard 41.8 × 18.8 × 7.7 mm footprint.

Operating from a 40 V – 60 V input voltage range, this non-isolated 8:1 fixed-ratio converter efficiently converts 48 V backplane voltage to a 6 V intermediate rail, enabling vertical power delivery architecture and enhancing overall system efficiency. The design minimizes power distribution losses while optimizing board space utilization, and seamlessly integrates with Infineon's second-stage high-density power modules including TDM22544D, TDM22545D and TDM22545T for optimized end-to-end system performance.

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<sup>1</sup> At nominal line 54 V and proper thermal management

# TDM4218U108



## 1300 W Unregulated 8:1 intermediate bus converter with digital control

The regulator module incorporates PMBus® digital interface providing configurable protection features and comprehensive telemetry capabilities, ensuring suitability for mission-critical applications requiring superior reliability and continuous operation. Integrated protection features include customizable overvoltage protection, undervoltage lockout, overcurrent protection, and overtemperature protection with real-time monitoring.

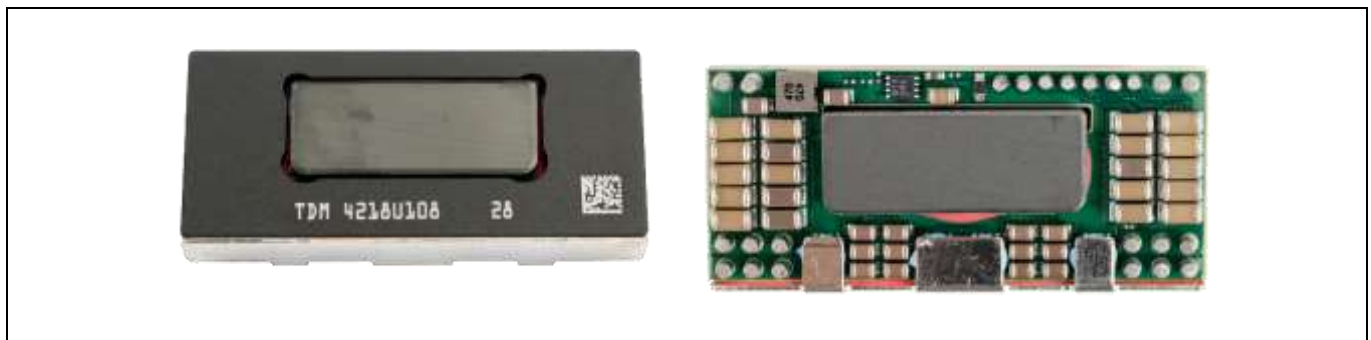
Engineered for thermally challenging environments and featuring Infineon's OptiMOS™ technology for enhanced reliability, TDM4218U108 operates across an extended temperature range of -40°C to +125°C. The module supports conduction-cooled cold plate mounting for superior thermal management and offers scalable N-phase parallel operation. Combined with reduced component stress through the advanced HSC architecture, this ensures robust performance in space-constrained, high-power density applications. Top-side cooling is supported through liquid cooling systems via flat thermal plate interface or custom designed heatsink.

Constructed on a single high-power PCB incorporating a proprietary planar transformer structure, the TDM4218U108 ensures maximum reliability through optimized assembly and reduced component count. Plated copper pin connections deliver optimal power distribution network (PDN) performance for hybrid converter architectures. The RoHS-compliant, lead-free package is qualified for SMD reflow soldering, ensuring manufacturing compatibility while delivering the robustness required for next-generation AI and computing infrastructure applications.

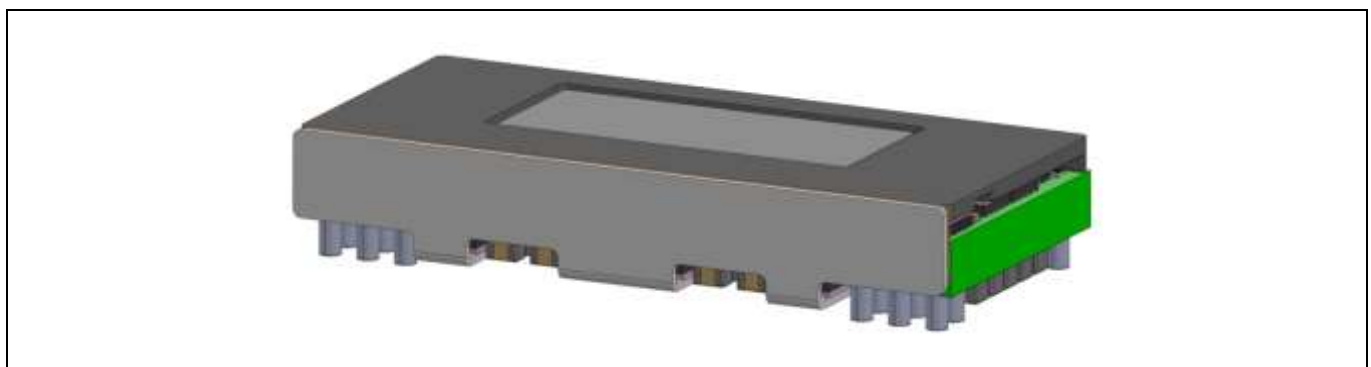
### Ordering information

Table 1 Ordering information

Part number	Temp. range	Package	Orderable part number
TDM4218U108	-40°C to 125°C	41.8 mm x 18.8 mm x 7.7 mm	TDM4218U108



TDM4218U108 top and bottom picture



TDM4218U108 3D model



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1 Functional block diagram

# 1 Functional block diagram

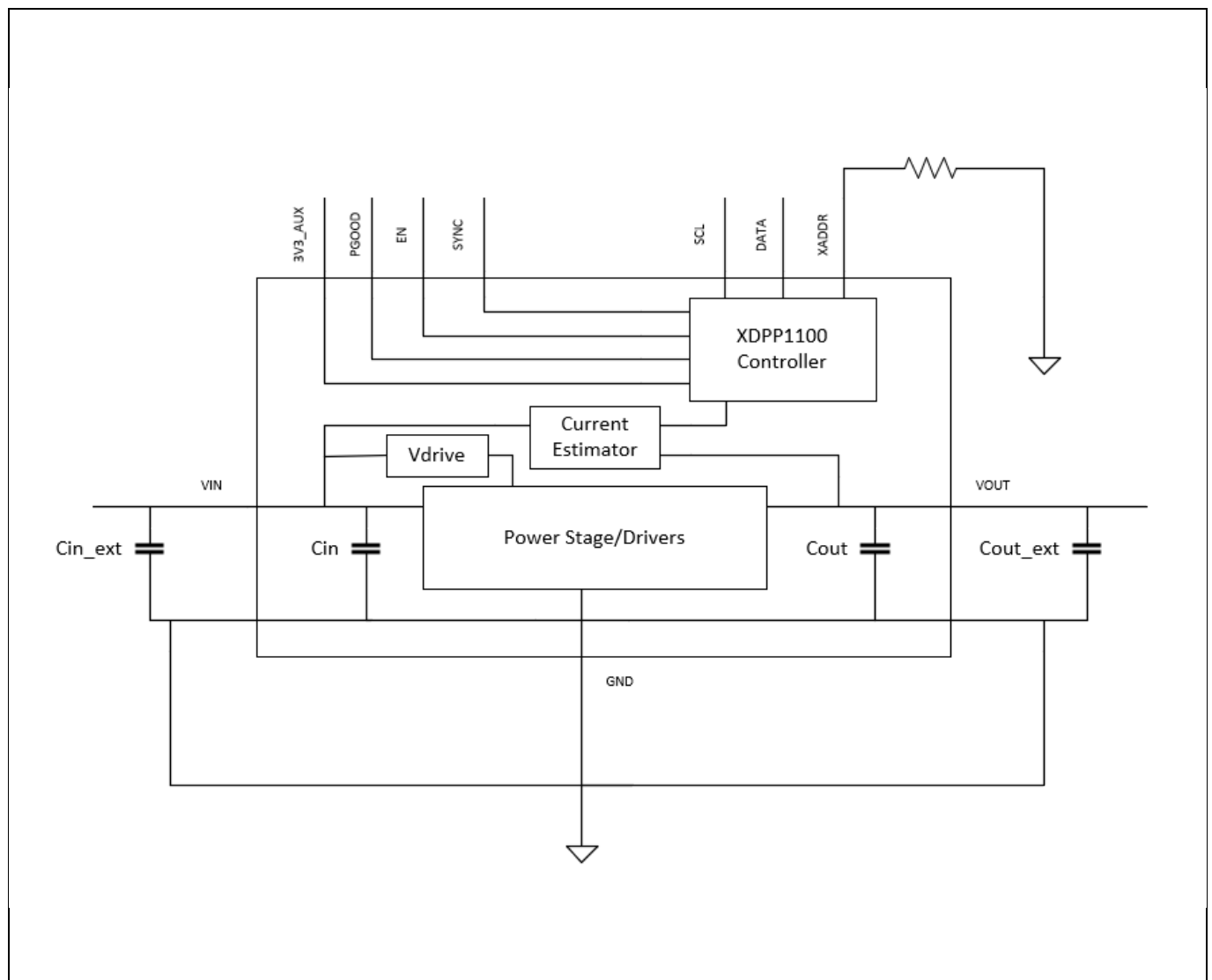


Figure 1 TDM4218U108 block diagram

2 Pin description

2 Pin description

2.1 Pinout

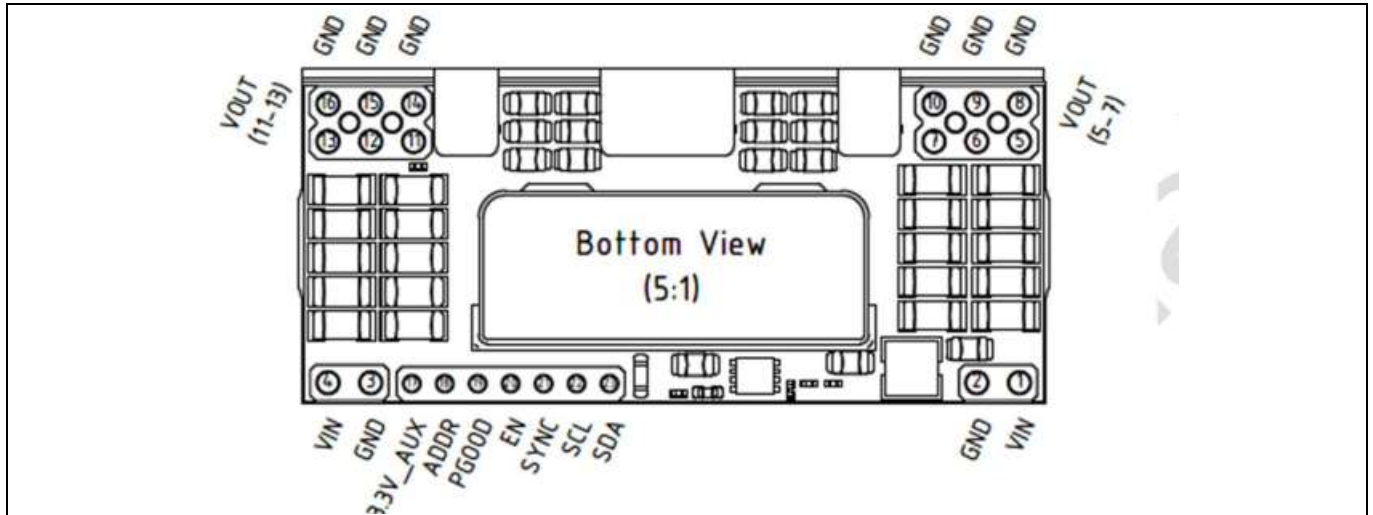


Figure 2 Pinout numbering

I = Input, O = Output,

Table 2 Pin descriptions

Pin no.	Name	Pin type	Buffer type	Function
1, 4	VIN	POWER	-	40 V to 60 V high current input voltage connection.
2, 3, 8, 9, 10, 14, 15, 16	GND	POWER	-	Power ground.
5, 6, 7, 11, 12, 13	VOUT	POWER	-	Output pins of the converter.
17	3.3V	POWER	-	3.3 V power supply input for the controller XDPP1100. Connect 1 $\mu$ F capacitor from 3.3 V to GND.
18	XADDR	I	+3.3 V logic	PMBus <sup>®</sup> address configure.
19	PGOOD	O	+3.3 V logic	PGOOD function, open drain (OD) output
20	EN	I	+3.3 V logic	Enable control: - Drive/pull high (> 2) or Floating to enable - Drive/pull low (< 1) to disable
21	SYNC	I/O		Synchronize pin. When multiphase system is required this pin needs to be connected between all the phases.
22	SCL	I/O	+3.3 V logic	I2C serial clock line.
23	SDA	I/O	+3.3 V logic	I2C serial data line.

### 3 Package information

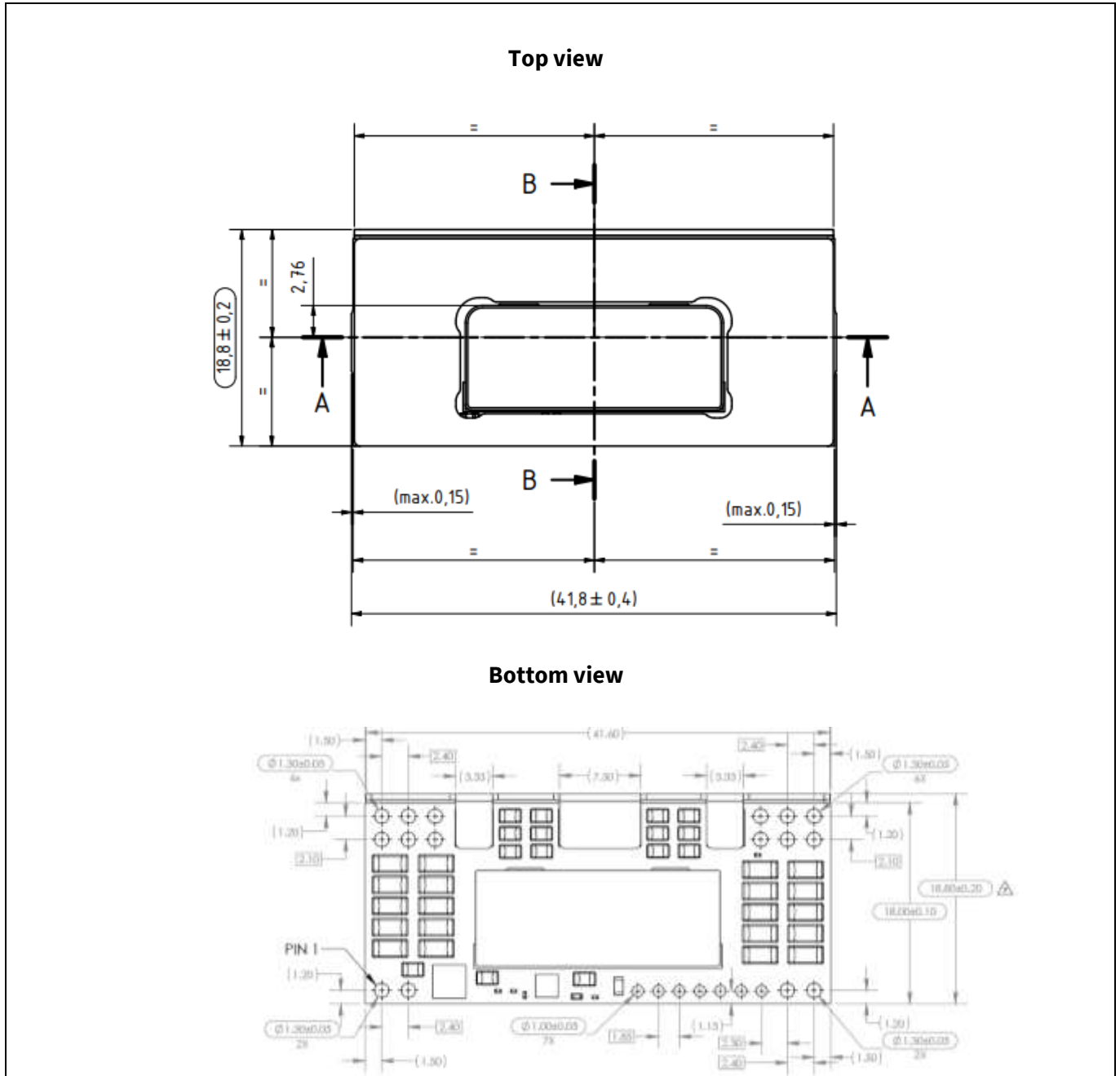


Figure 3 Package dimensions (all dimensions in mm)

#### Green product (RoHS compliant)

To meet the worldwide customer requirements for environmentally friendly products and to be compliant with government regulations the device is available as a green product. Green products are RoHS-Compliant (i.e. Pbfree finish on leads and suitable for Pb-free soldering according to IPC/JEDEC J-STD-020).

Further information on packages: <https://www.infineon.com/packages>

**Revision history**

**Revision history**

<b>Document revision</b>	<b>Date</b>	<b>Description of changes</b>
Rev 1.0	2026-03-16	Initial release

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**Email:**

[erratum@infineon.com](mailto:erratum@infineon.com)

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