

TDA21472 OptiMOS™ Powerstage

DC-DC converter voltage regulator

Features

- Co-packaged driver, Schottky diode, and high-side and low-side MOSFETs
- 5-mV/A on-chip MOSFET current sensing with temperature compensated reporting
- Input voltage (VIN) range of 4.25 V to 16 V
- VCC and VDRV supply of 4.25 V to 5.5 V
- Output voltage range from 0.25 V up to 5.5 V
- Output current capability of 70 A
- Operation up to 1.5 MHz
- VCC/VDRV under voltage lockout (UVLO)
- 8-mV/°C temperature analog output
- Thermal shutdown and fault flag
- Cycle-by-cycle over current protection with programmable threshold and fault flag
- MOSFET phase fault detection and flag
- Auto-replenishment of bootstrap capacitor
- Deep-sleep mode for power saving
- Compatible with 3.3-V tri-state PWM input
- Body-Braking load transient support
- Small 5 mm x 6 mm x 1 mm PQFN package
- Lead free RoHS compliant package

Description

The TDA21472 power stage contains a low quiescent-current synchronous buck gate-driver IC co-packaged with Schottky diode, and high-side and low-side MOSFETs. The package is optimized for PCB layout, heat transfer, driver/MOSFET control timing, and minimal switch node ringing when layout guidelines are followed. The gate driver and MOSFET combination enables higher efficiency at the lower output voltages required by cutting edge CPU, GPU and DDR memory designs.

The TDA21472 internal MOSFET current sense algorithm with temperature compensation achieves superior current sense accuracy versus best-in-class controller-based inductor DCR sense methods. Protection includes cycle-by-cycle over current protection with programmable threshold, VCC/VDRV UVLO protection, phase fault detection, IC temperature reporting and thermal shutdown. The TDA21472 also features auto-replenishment of the bootstrap capacitor to prevent over-discharging. The TDA21472 features a deep-sleep power saving mode, which greatly reduces the power consumption when the multiphase system enters PS3/PS4 mode.

Operation at switching frequency as high as 1.5 MHz enables high performance transient response, allowing reduction of output inductance and output capacitance while maintaining industry leading efficiency.

The TDA21472 is optimized for CPU core power delivery in server applications. The ability to meet the stringent requirements of the server market also makes it ideally suited for powering GPU and DDR memory designs.

Potential applications

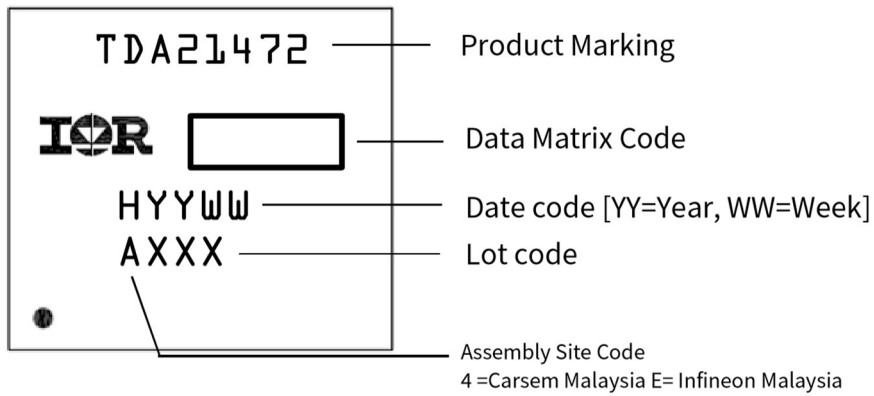
- CPUs
- GPUs
- DDR memory arrays

Product validation

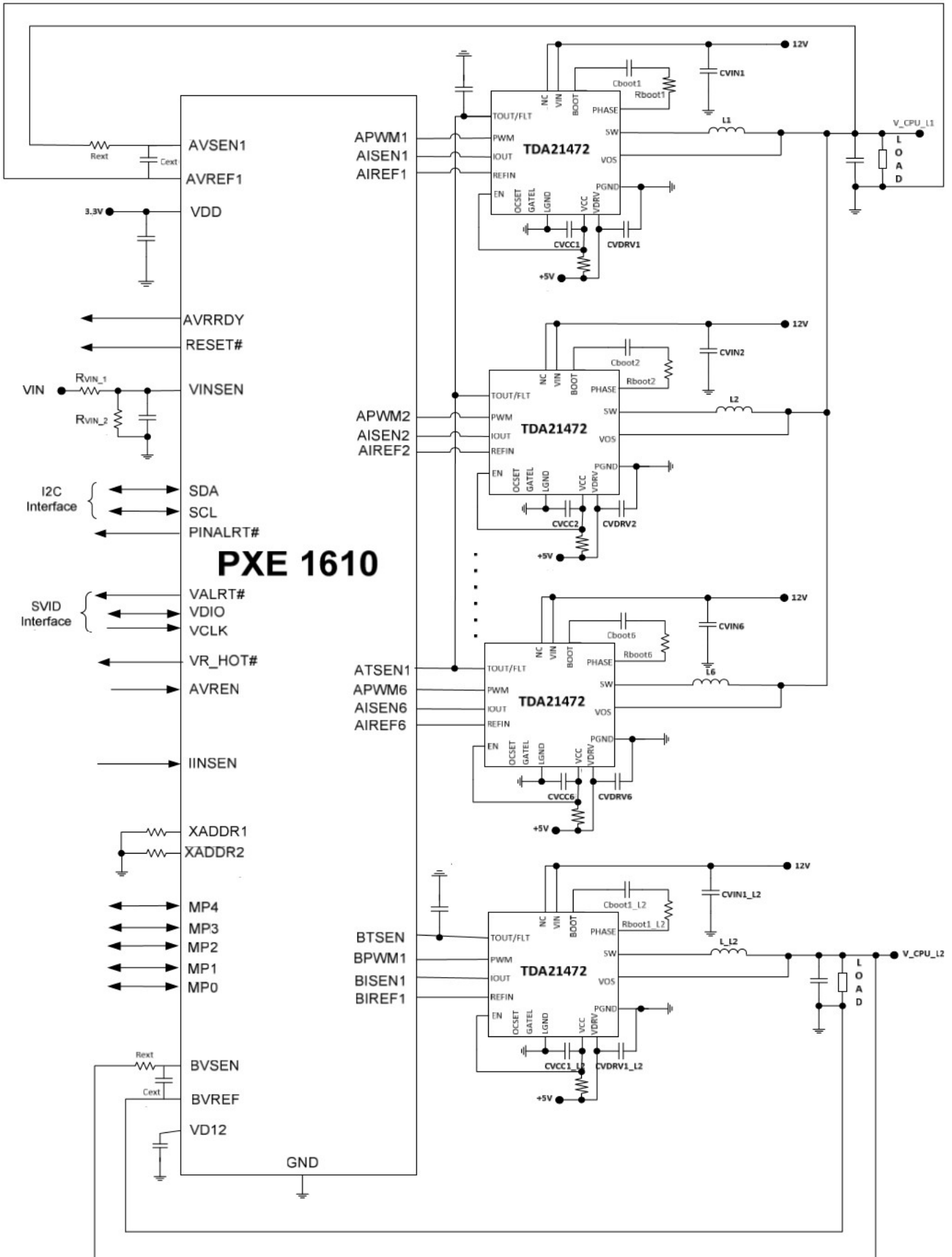
Qualified for industrial applications according to the relevant tests of JEDEC47/20/22

Product identification and ordering information

Part Number	Temp Range	Package	Marking
TDA21472	-40°C to 125°C	PQFN 5mm x 6 mm	TDA21472



Typical application diagram



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