ALPHA & OMEGA SEMICONDUCTOR

AOZ73004CQI

NVIDIA OpenVReg Compliant Controller
Multiphase Controller with PWMVID Interface

General Description

The AOZ73004CQI is a high performance multiphase buck controller designed in compliance with NVIDIA OpenVReg specifications. It provides one output rail and supports PWMVID interface.

AOS offers a novel AOS Advanced Transient Modulator (A^2TM). It combines an advanced variable frequency hysteretic peak current mode control with proprietary phase current sensing scheme for fast transient response and low system cost. The control loop enhances light-load efficiency by seamlessly entering DCM mode of operation. Autonomous Phase Management also assures the optimized efficiency and power loss during light load with single phase DCM mode.

The AOZ73004CQI provides complete protection including UVP, OVP, thermal warning, cycle-by-cycle current limit. AOZ73004CQI also offers real time telemetry information via IMON pin for output currents.

The AOZ73004CQI features an external reference input and PWMVID dynamic output voltage control, in which the output voltage is regulated and tracks the external input reference voltage. The PWMVID duty cycle determines the variable output voltage at REFIN, Vmin is the zero percent duty cycle voltage value. Vmax is the one hundred percent duty cycle voltage value.

AOZ73004CQI can be paired and supports multi-sourced industry standard DrMOS. AOZ73004CQI is offered in compact 4mm x 4mm 32-pin QFN package.

Features

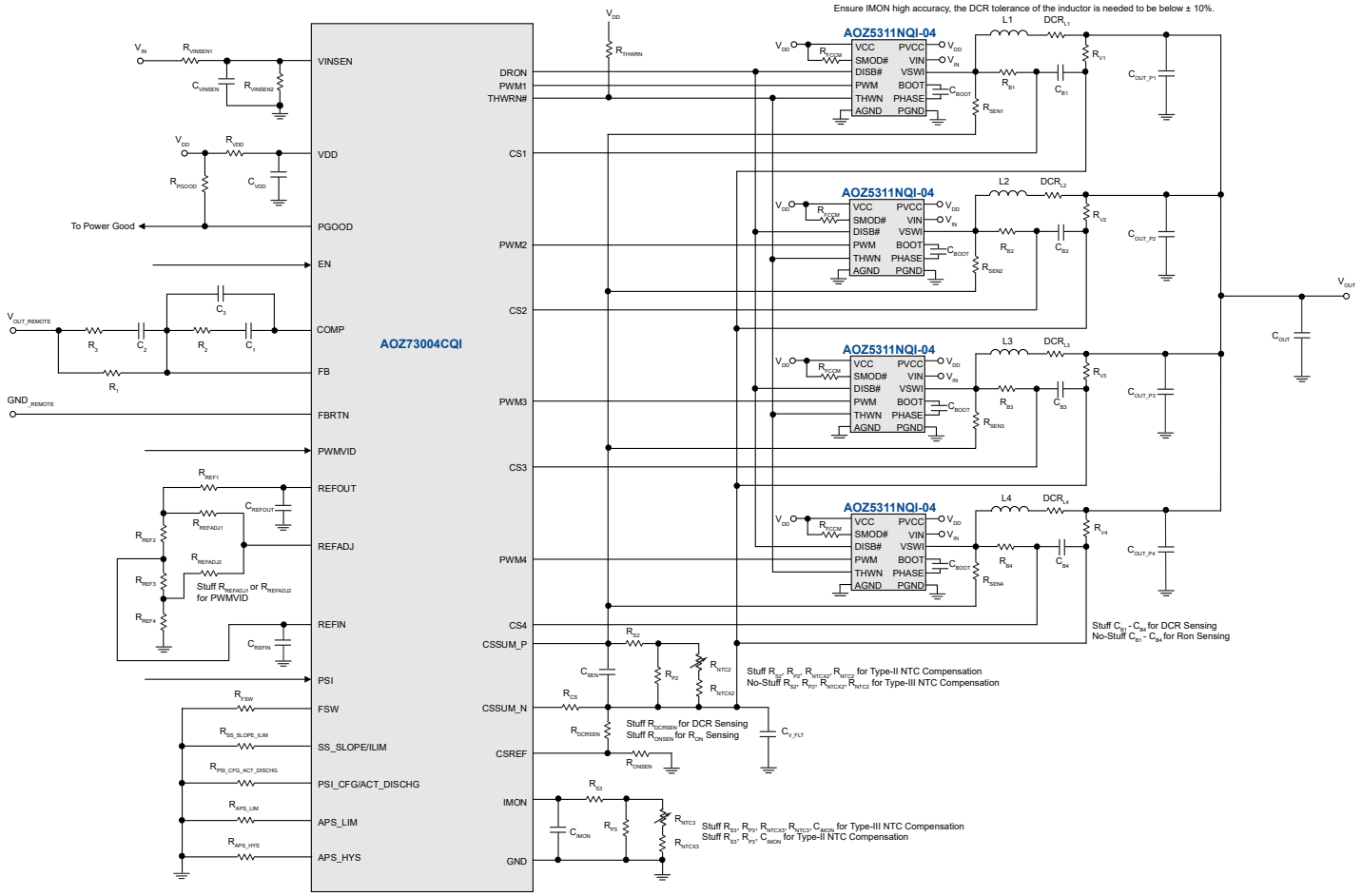
- Compliant with NVIDIA OVR-4-22 specifications
- Supports up to 4 phase
- 2.7V to 20V VIN input supply voltage
- 300kHz to 1MHz programmable switching frequency
- High performance operational error amplifier
- Differential remote sensing to achieve 1% regulated VOUT accuracy
- Supports multi-sourced industry standard DrMOS
- Proprietary, high performance AOS Advanced Transient Modulator (A^2TM) control scheme:
  - Variable frequency hysteretic peak current mode control gives fast transient response
  - Dynamic phase-to-phase current balancing
  - Excellent phase current sensing
  - Seamless CCM to DCM control to maximize efficiency
- Supports DCR or R_{ON_LG} sensing current balance
- Automatic Phase Shedding (APS) with user settable thresholds
- Power Saving Interface (PSI)
- Supports Diode Emulation Mode (DEM)
- PWMVID interface
- Output Under-Voltage Protection (UVP)
- Output Over-Voltage Protection (OVP)
- Cycle-by-Cycle current limit
- Thermal Warning (THWRN)

Applications

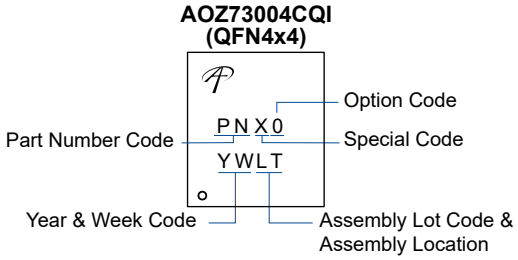
- GPU and CPU power
- Graphic cards
- Desktop and notebook applications

GREEN Product

Typical Application



Part Marking



Part Number	Description	Code
AOZ73004CQI	Green Product	ENC0

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2. A critical component in any component of a life support, device, or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.