



Achieve Fast Transient Performance with MPS's Latest 12V-to-Load Multi-Phase Solution

Datacenter applications use powerful CPU, GPU, and ASIC SoCs that consume significant amounts of current. They range from tens to thousands of amperes, and often fluctuate rapidly based on their specific power demand. Existing design challenges are only growing as technology and consumer demands accelerate. These challenges include large output impedance, and increasing amounts of space occupied by bulky decoupling capacitors such as POSCAPs. Due to this, the multi-phase voltage regulator that traditionally supplies such loads is reaching the limits of its performance.

MPS's latest multi-phase solution utilizes a trans-inductor to achieve an extremely fast transient response that can match the demands of the load in both amperage and bandwidth, without sacrificing the device's total efficiency (see Figure 1).

For its power stage, this solution features MPS's [Intelli-Phase™ technology](#). This monolithic half-bridge power stage can handle up to 80A per package. It also provides a number of other features and benefits:

- Wide operating input range
- Accu-Sense™ current sense
- Temperature sense
- Accepts a tri-state PWM signal
- Current limit protection, over-temperature protection (OTP), and fault reporting

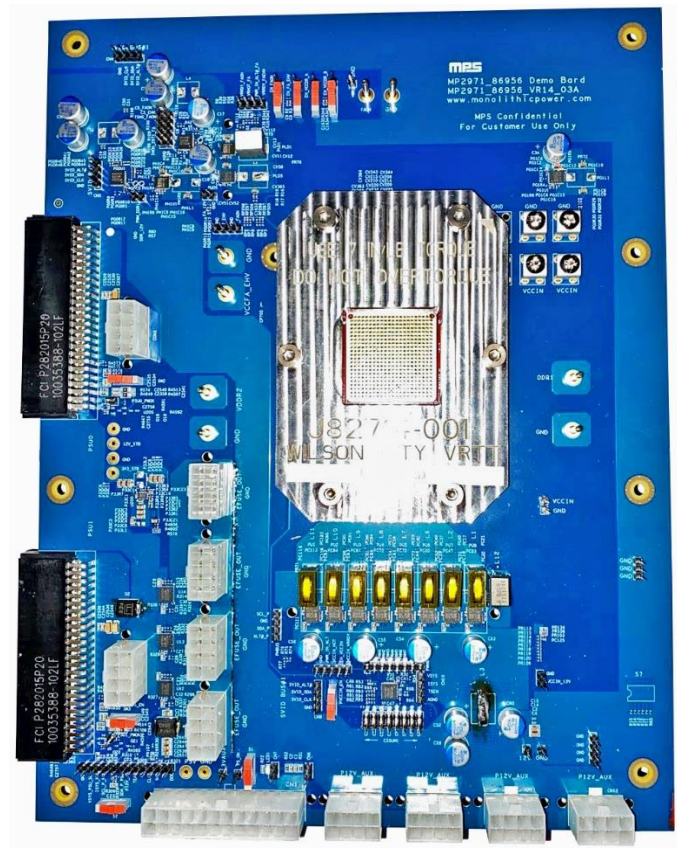


Figure 1: 12V-to-Load Solution Demo Board

This demo features MPS's next generation of [controllers](#), with all the features and benefits plus new improvements to keep up with ever-changing industry and use case demands (see Figure 2). Auto-phase shedding improves overall efficiency and thermal management. Because it requires fewer external components than a conventional analog controller, this part simplifies the design process and simultaneously minimizes board space and BOM cost. Key advantages of this multi-phase, dual-output digital controller include:

- Intel VR14 compliant, backwards compatible with VR13.HC/VR13
- PMBus/I²C compliant, SVID, AVSBus or PVID high-speed bus
- Built-in NVM to store custom configurations
- Automatic loop compensation
- Overshoot reduction with nonlinear control
- Flexible phase assignment for dual rails
- Phase-to-phase active current balancing with programmable offsets for thermal balance
- Digital load-line regulation
- Intelli-Phase™ MOSFET fault type detection auto-records to the NVM
- Supports overclocking mode
- Line-float detection
- Best-in-class monitoring and protection features
- Enhanced PMBus password protection for improved security

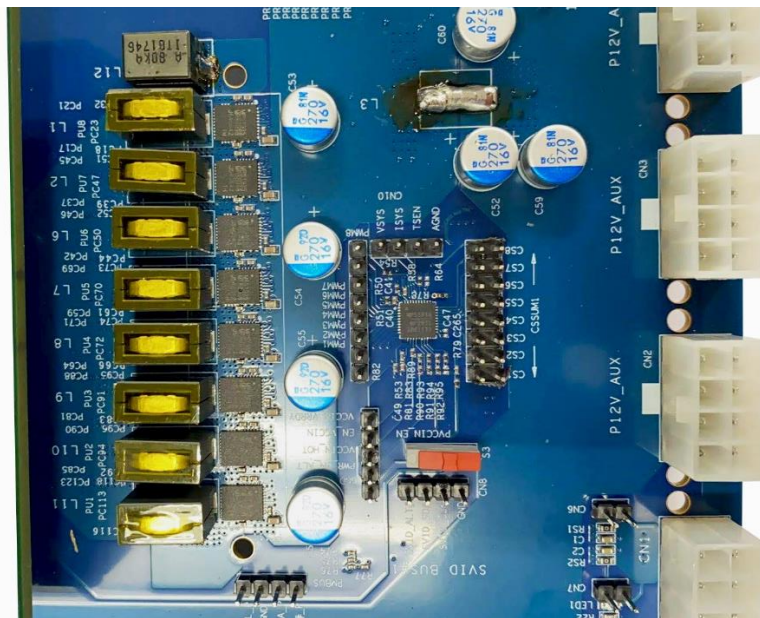


Figure 2: Close-Up of MPS's Latest Multi-Phase Solution with Trans-Inductors

MPS offers customers the ability to increase efficiency, achieve very fast transient performance, and save on both cost and space. Because no bulky output capacitors are required, our parts are available in an ultra-small package size to minimize footprint on the PCB.

To learn more about specific advantages and product offerings, check out our [telecom and server power solutions](#).