

### DSP-based PFC for Power Factors close to Unity, including Low Voltage DC Power Supply and MCU



The AMG-PS132 is a universal DSP-based PFC solution with switching-mode power supply to be used in applications requiring power factor values close to unity and a highly efficient DC power supply. Typical application areas for the AMG-PS132 are high power motors and lighting systems. The power factor controller (PFC) is based on boost topology and is fully software controlled by the DSP. The device includes an AVR<sup>®</sup> compatible MCU with peripherals. The PFC algorithm is initially loaded from the MCU into the DSP. PFC parameters can also be changed during run time. The IC contains an auxiliary switching-mode power supply in flyback topology with current feedback. It is designed to supply external circuitry with a highly stable low voltage.

### Highlights

- Independent DSP based PFC regulation engine (values >0.99)
- 8-bit AVR<sup>®</sup> compatible MCU
- Secondary SMPS controller for auxiliary low voltage generation

### Example Application Circuit

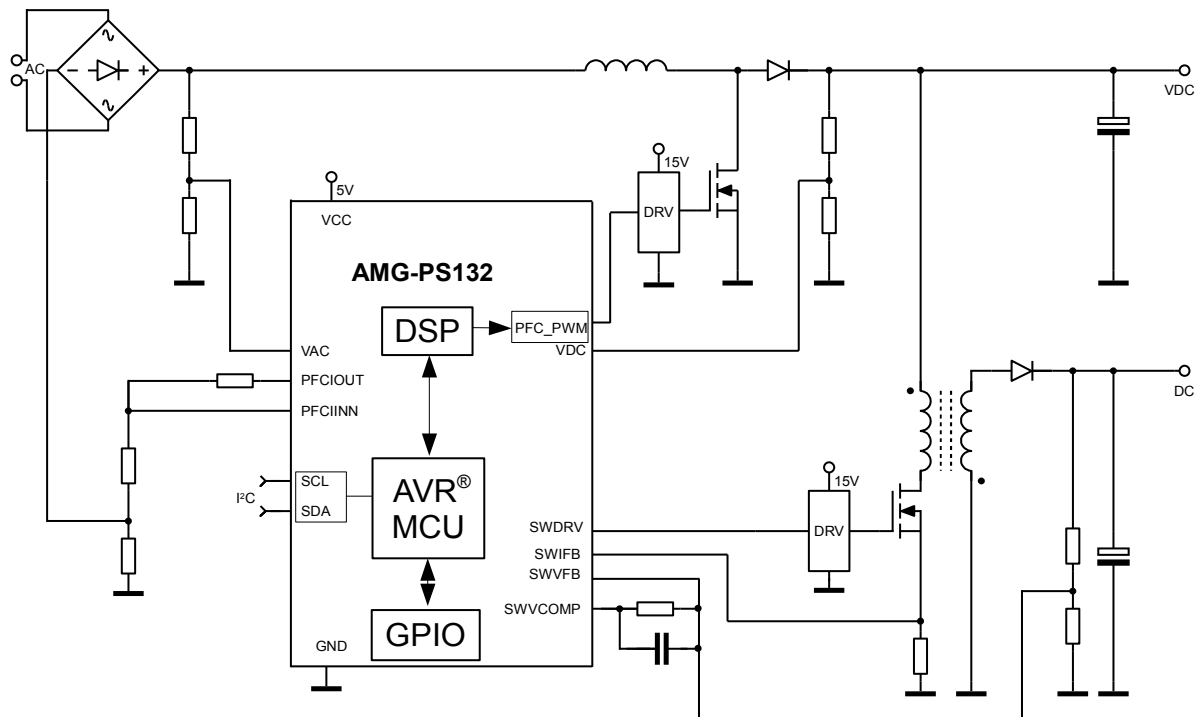


Figure 1: Simplified example application circuit.

## Features

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### PFC

- Fully reconfigurable digitally controlled power factor controller in CMOS technology
- On-chip AC phase-locked sinusoidal 45Hz to 65Hz oscillator for mains noise rejection
- High accuracy through on-chip 10-bit ADC and dedicated RISC processor
- Achievable high efficiency (>95%) and power factor (>0.99)
- Broad range of user selectable PWM frequency (15kHz to 200kHz)
- Low EMC filter requirements due to use of spread-spectrum PWM
- Two-wire interface to load software
- Supports 90V to 275V; 50/60Hz mains standards
- On-chip PLL with 1% RC reference oscillator to generate 64MHz clock signal
- On-chip over-current and short-circuit protection, brown-out control
- Ambient temperature range: -25°C to 85°C
- Package: TQFP64 10x10 (smaller packages in evaluation)

### Switching-mode Power Supply Controller

- Current-mode switching power supply controller in CMOS technology
- Immediate response to low-frequency AC line swings
- Output voltage and current levels determined by external components only
- Energy saving cycle-skipping mode for operation with low levels of output power
- On-chip reference voltage source

### AVR® compatible MCU

- 32k EEPROM, 1k SRAM
- 3 Timers, Uart, SPI, I<sup>2</sup>C compatible
- 10-bit 2Msps ADC
- GPIO
- JTAG

### Available options

- On-chip gate drivers
- OTP or EEPROM

## Ordering Information

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- AMG-PS132-ITQ64T

## Development Tools

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- Application notes: AMG-AN-PS132
- Evaluation board
- GUI for easy parameter change
- Debug Adapter

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