

FEATURES

- Intel VR11.1, VR11.0 compliant Digital PWM Controller for multi-phase power conversion
- High performance, easy-to-use digital close loop feedback using no external components
- Minimizes output bulk capacitors with Adaptive Digital Control to regulate load transients
- Selectable from 2, 3 and 4 phase operation
- 200kHz to 1MHz configurable switching frequency, accuracy better than 5%
- Configurable Load Line from 0 to 1.5mΩ
- Differential DCR current sensing
- Digital phase current balancing, DC and transients
- Configurable soft-start
- Digitally adjustable fault detection and protection: OVP, UVP, OCP
- SMBus interface for configuring and monitoring
- +3.3V supply voltage.
- 0°C to 85°C operation
- PSI compliant to improve light load efficiency
- Highly accurate IMON output
- Compatible with many external MOSFET drivers - ODB type, Tri-state type and CHiL proprietary fast Tri-level

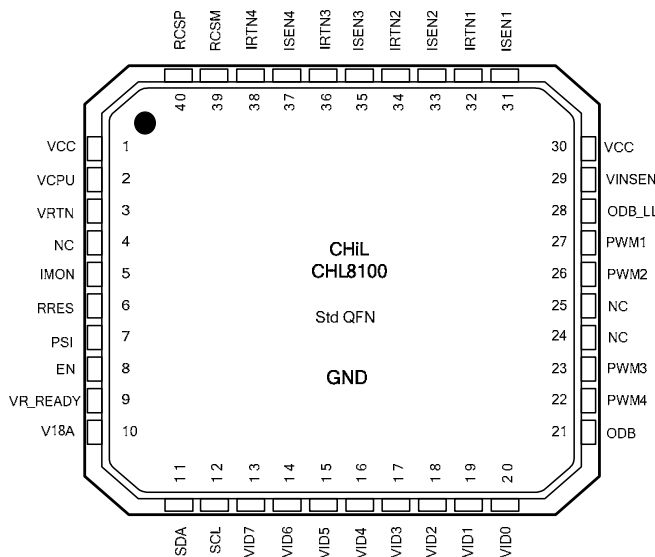


Figure 1. CHL8100 QFN Package

DESCRIPTION

The CHL8100 is a digital mixed-signal multiphase synchronous buck controller designed to power high performance microprocessors. It supports core voltage and load requirements for INTEL® VR11.1 and VR11.0 processors. This controller IC is intended for VR designs using up to four interleaved synchronous buck phases and capable of delivering up to 150A. The switching frequency of each phase can be digitally configured from 200 kHz up to 1 MHz.

The CHL8100 utilizes non-volatile memory (NVM) to store device operating parameters in registers. Designers can access, modify and store the parameters in the registers using the CHiL Intuitive Power Designer (IPD) GUI via the industry standard SMBUS interface. This reduces design effort and provides flexibility in optimizing the VR design for size, cost and efficiency. It also reduces the number of package pins and external passives resulting in cost and board space savings.

CHiL's unique Dynamic Digital Control minimizes the VR output bulk capacitors while ensuring the processors are provided with the required tightly regulated core voltage under all conditions. Fast response to load transients is achieved by advanced proprietary non-linear digital PWM control techniques. The controller incorporates accurate phase current balancing and supports configurable over-current protection. The CHL8100 includes VR11.1 features such as a fully compliant Power Status Indicator (PSI) mode for improved light load efficiency and accurate current monitor output (IMON).

The CHL8100 also provides configurable OVP, OCP, and output UVP fault protection. These and other parameters are easily defined using the CHiL IPD which allows design engineers to simply input their calculated design values following a set-and-forget approach.

APPLICATIONS

- Multiphase synchronous buck converter for desktop computers using Intel® VR11.x microprocessors
- High efficiency and compact VRM
- High current DC/DC Converters

FUNCTIONAL BLOCK DIAGRAM

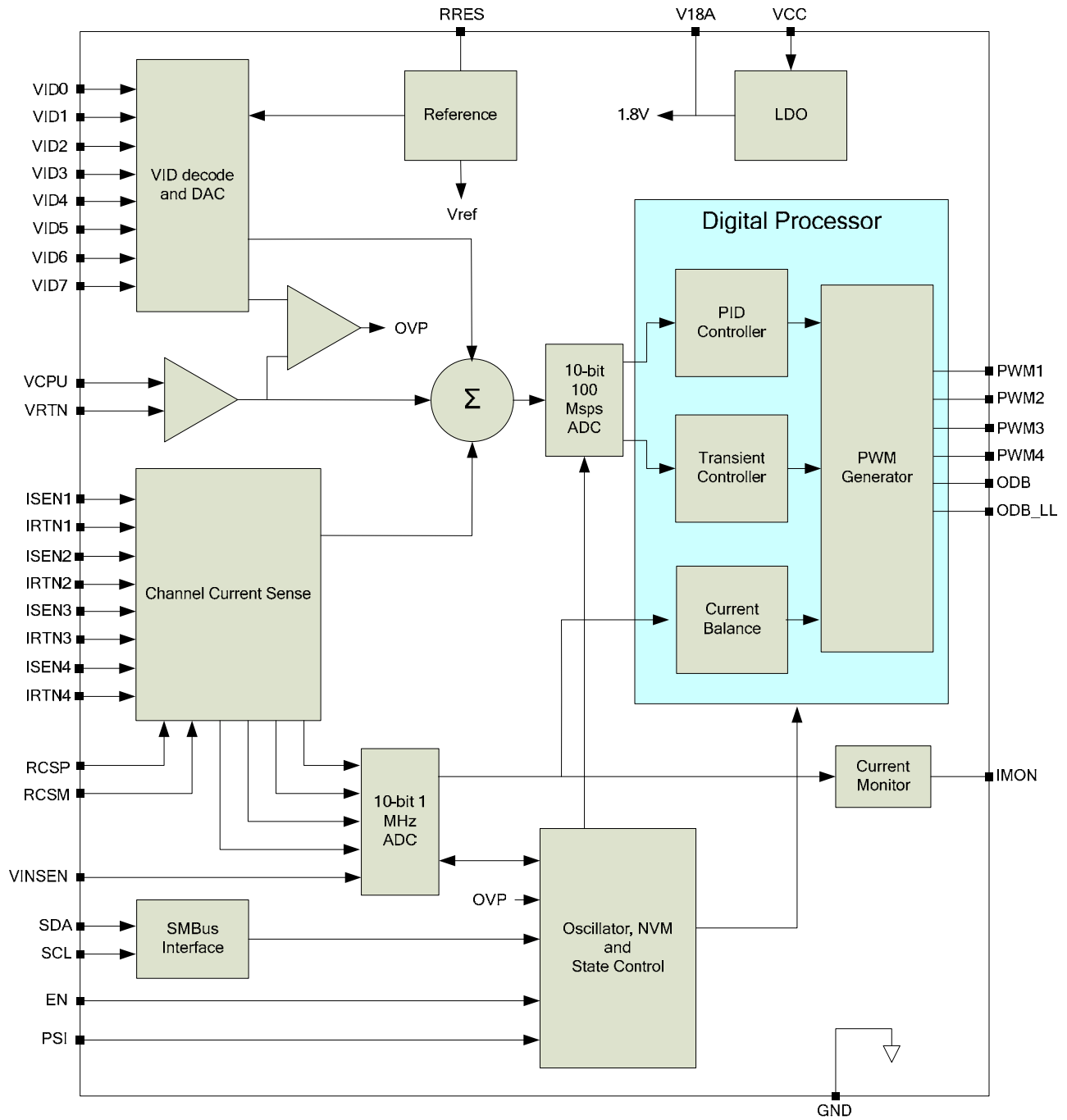


Figure 2 . Simplified Block Diagram