IR35212 dual output digital multi-phase controller

6+1-phase dual loop voltage regulator

Features

- Low quiescent power output 6+1 phase PWM controller
- Intel® VR13 rev 1.1 , VR12.5 rev1.5, VR12 rev 1.7, IMVP8 rev 1.2 and memory VR modes
- Switching frequency from 200 kHz to 2 MHz per phase
- Infineon efficiency shaping features including dynamic phase control and automatic power state switching
- Programmable 1 or 2-phase operation for light loads and active diode emulation for very light loads
- Digitally programmable load line - no external components are needed to set the load line
- Infineon Adaptive Transient Algorithm (ATA) on both loops minimizes output bulk capacitors and system cost
- Auto-phase detection with PID coefficient auto-scaling
- Fault protection: OVP, UVP, OCP, OTP, CFP, cycle-by-cycle current limit
- I2C/SMBus/PMBus system interface for reporting of temperature, voltage, current and power telemetry for both loops
- Multiple Time Programming (MTP) with up to 27 writes for the USER section
- Compatible with industry standard 3.3 V tri-state drivers
- +3.3 V supply voltage; -40°C to 85°C ambient operation
- Pb-Free, RoHS, 6x6 mm 48-pin, 0.4 mm pitch QFN

Description

The IR35212 is a dual loop, digital, multi-phase buck controller designed for CPU and DDR voltage regulation, and is fully compliant with Intel® VR13, VR12.5, VR12 & IMVP8.

The IR35212 includes Infineon's efficiency shaping technology to deliver exceptional efficiency at minimum cost across the entire load range. Infineon's dynamic phase control adds/drops phases based upon load current. The IR35212 can be configured to enter 1 or 2-phase operation and active diode emulation mode automatically or by command.

The IR35212 offers digitally programmable load line thereby eliminating the need for any external load line setting component. The controller is designed to work with integrated and DCR current sense power stages and provides accurate input and output current reporting.

Infineon's unique Adaptive Transient Algorithm (ATA), based on proprietary non-linear control algorithms provides excellent transient response with reduced output capacitance. The controller also supports programmable cycle-by-cycle current limit per phase for superior dynamic current limiting.

The device configuration can be easily defined using the Infineon PowIRCenter GUI and is stored in the on-chip memory.

The IR35212 provides extensive OVP, UVP, OCP, OTP and CFP fault protection. The controller requires the fewest possible external components and supports a clean interface with the power stages resulting in a simplified Bill Of Materials (BOM).

Potential applications

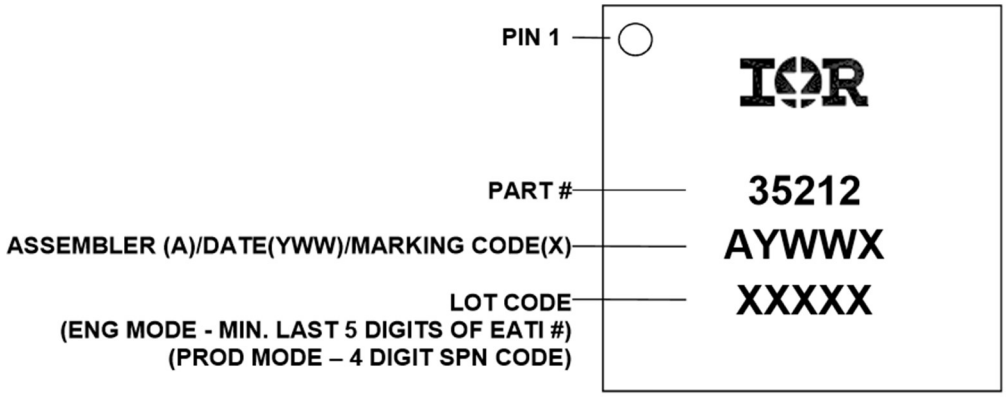
- Intel® VR13, VR12.5, VR12 and IMVP8 based systems
- Servers and high end desktop CPU VRs
- Memory VR

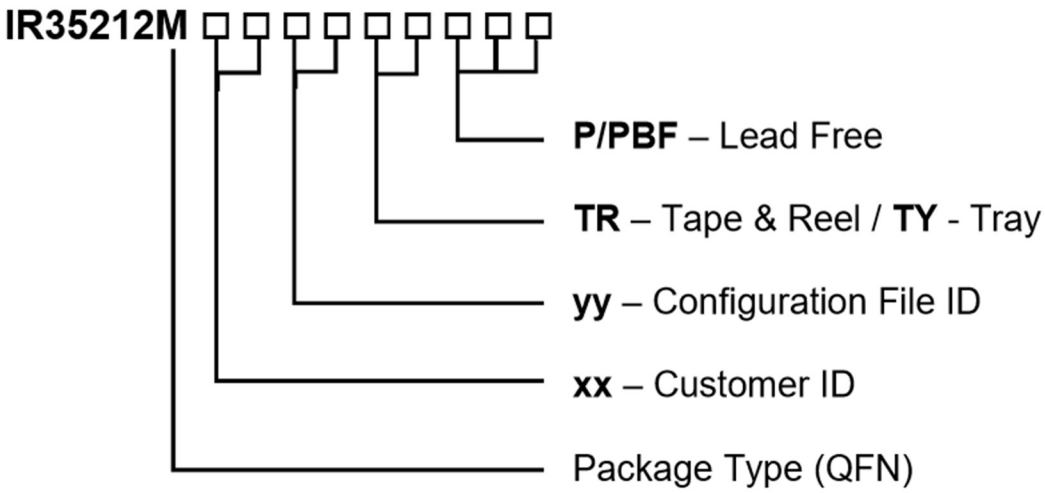
Product validation

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

Product identification and ordering information

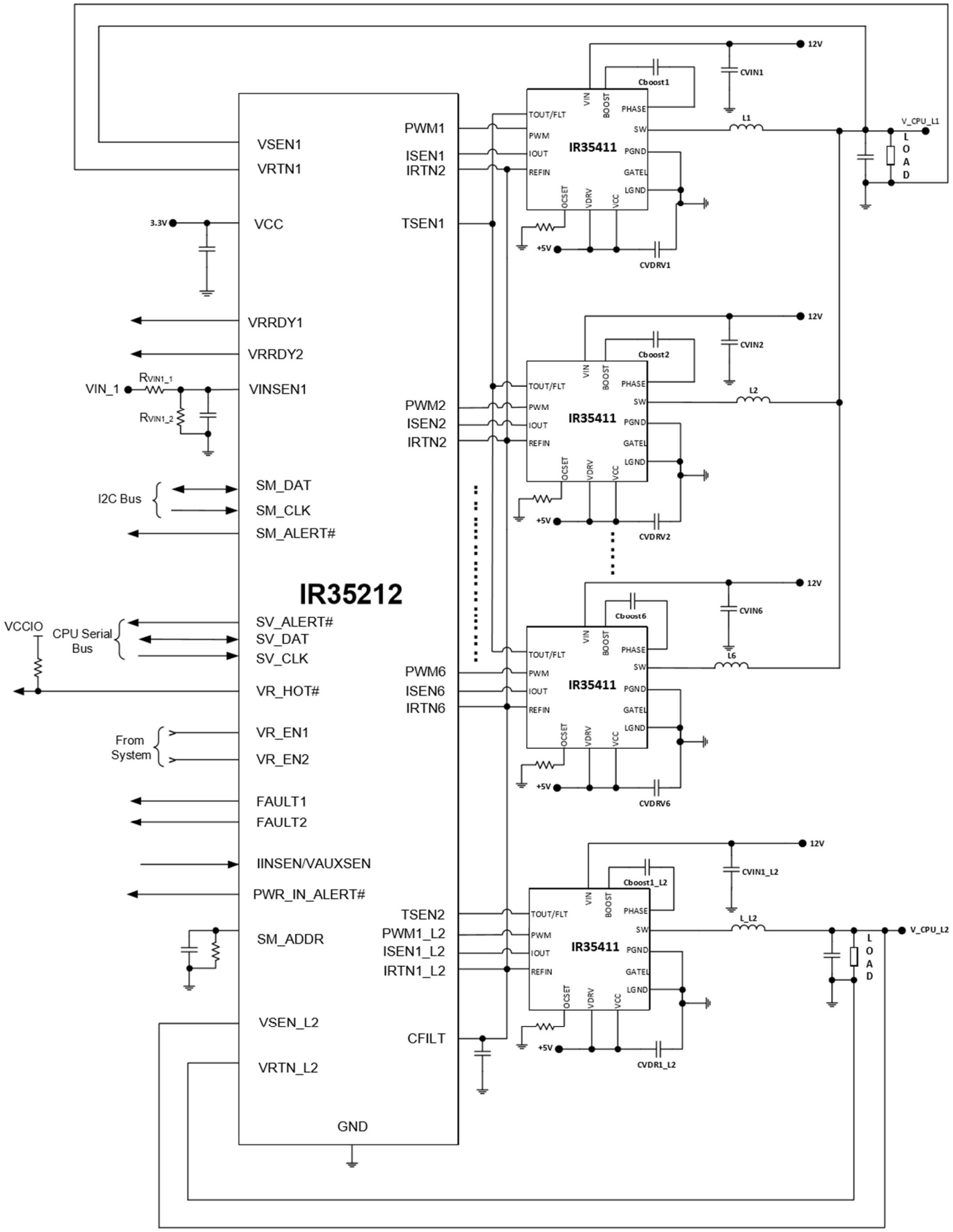
Part number	Package type	Standard pack form and quantity		Marking
IR35212	48-pin, QFN 6 mm x 6 mm	Tape and reel	3000	IR35212MxxyyTRP[1]
IR35212	48-pin, QFN 6 mm x 6 mm	Tape and reel	3000	IR35212MTRPBF
IR35212	48-pin, QFN 6 mm x 6 mm	Tray	4900	IR35212MTYPBF





[1] Customer specific configuration file, where xx = customer ID and yy = configeration file (codes assigned by Infineon marketing).

Typical application diagram



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Do you have a question about this document?
Email: erratum@infineon.com

Document reference
IR35212 data brief

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