FEATURES

- 6-phase & 8-phase dual output PWM Controller
- Phases are flexibly assigned between Loops 1 & 2
- Intel® VR12, AMD® 3.4MHz SVI/PVI & Memory modes
- Overclocking & Gaming Mode with Vmax setting
- Switching frequency from 200kHz to 1.2MHz per phase
- IR Efficiency Shaping Features including Variable Gate Drive and Dynamic Phase Control
- Programmable 1-phase or 2-phase for Light Loads and Active Diode Emulation for Very Light Loads
- IR Adaptive Transient Algorithm (ATA) on both loops minimizes output bulk capacitors and system cost
- Auto-Phase Detection with auto-compensation
- Per-Loop Fault Protection: OVP, UVP, OCP, OTP, CFP
- I2C/SMBus/PMBus system interface for telemetry of Temperature, Voltage, Current & Power for both loops
- Non-Volatile Memory (NVM) for custom configuration
- Compatible with IR ATL and 3.3V Tri-state Drivers
- +3.3V supply voltage; -20ºC to 85ºC ambient operation
- Pb-Free, RoHS, 7x7 48-pin & 8x8 56-pin QFN, MSL2 package

APPLICATIONS

- Intel ® VR12 & AMD® SVI & PVI based systems
- DDR Memory with Vtt tracking
- Overclocked & Gaming platforms

DESCRIPTION

The IR3536A and IR3538A are dual-loop digital multi-phase buck controllers. The IR3536A drive up to 6 phases and the IR3538A drives up to 8 phases. The IR3536A and IR3538A are fully Intel® VR12 and AMD® SVI/PVI compliant on both loops and provide a Vtt tracking function for DDR memory.

The IR3536A and IR3538A include the IR Efficiency Shaping Technology to deliver exceptional efficiency at minimum cost across the entire load range.
IR Variable Gate Drive optimizes the MOSFET gate drive voltage based on real-time load current. IR Dynamic Phase Control adds/drops phases based upon load current.
The IR3536A and IR3538A can be configured to enter 1-phase operation and active diode emulation mode automatically or by command.

IR's unique Adaptive Transient Algorithm (ATA), based on proprietary non-linear digital PWM algorithms, minimizes output bulk capacitors.

The I2C/PMBus interface can communicate with up to 16 IR3536A and IR3538A based VR loops. Device configuration and fault parameters are easily defined using the IR Intuitive Power Designer (DPDC) GUI
and stored in on-chip NVM.

The IR3536A and IR3538A provides extensive OVP, UVP, OCP and OTP fault protection and includes thermistor based temperature sensing with VR_HOT signal.

NVM storage saves pins and enables a small package size. The IR3536A and IR3538A also include numerous features like register diagnostics for fast design cycles and platform differentiation, truly simplifying
VRD design and enabling fastest time-to-market with its "set-and-forget" methodology.

PIN DIAGRAM

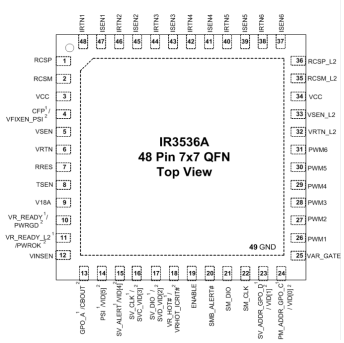


Figure 1: IR3536A Package Top View

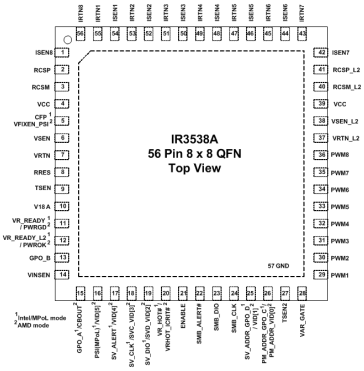


Figure 2: IR3538A Package Top View

ORDERING INFORMATION

IR353□AM □□□□□□□□

- **P/PBF** – Lead Free
- **TR** – Tape & Reel / **TY** - Tray
- **yy** – Configuration File ID
- **xx** – Customer ID
- Package Type (QFN)
- **Part –**
  - **6**: IR3536A
  - **8**: IR3538A

Package	Packing Qty	Part Number	Programming
QFN	TR=3000 TY=2600	**IR3536AMTRPBF** **IR3536AMTYPBF**	Default
QFN	TR=3000 TY=2600	**IR3538AMTRPBF** **IR3538AMTYPBF**	Default
QFN	TR=3000	**IR3536AMxxyyTRP**[1]	Customer Configuration
QFN	TR=3000	**IR3538AMxxyyTRP**[1]	Customer Configuration

Notes:

1. Customer Specific Configuration File, where xx = Customer ID and yy = Configuration File (Codes assigned by IR Marketing).

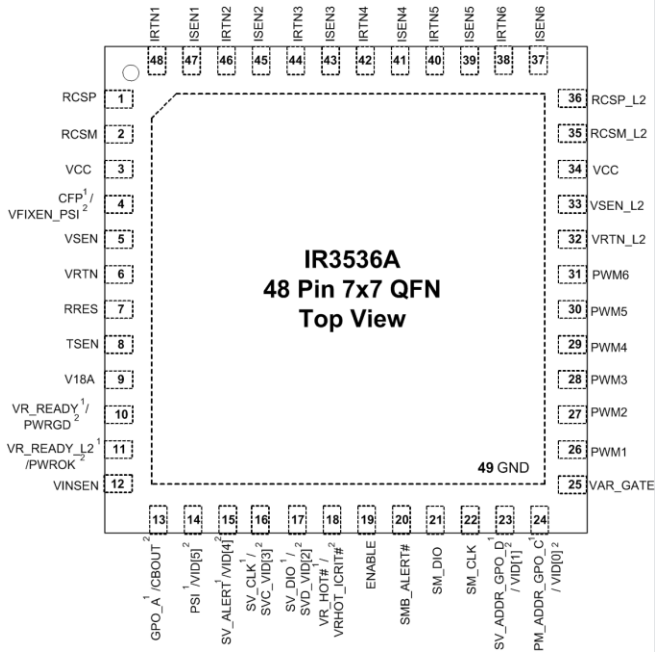


Figure 3: IR3536A Package Top View, Enlarged

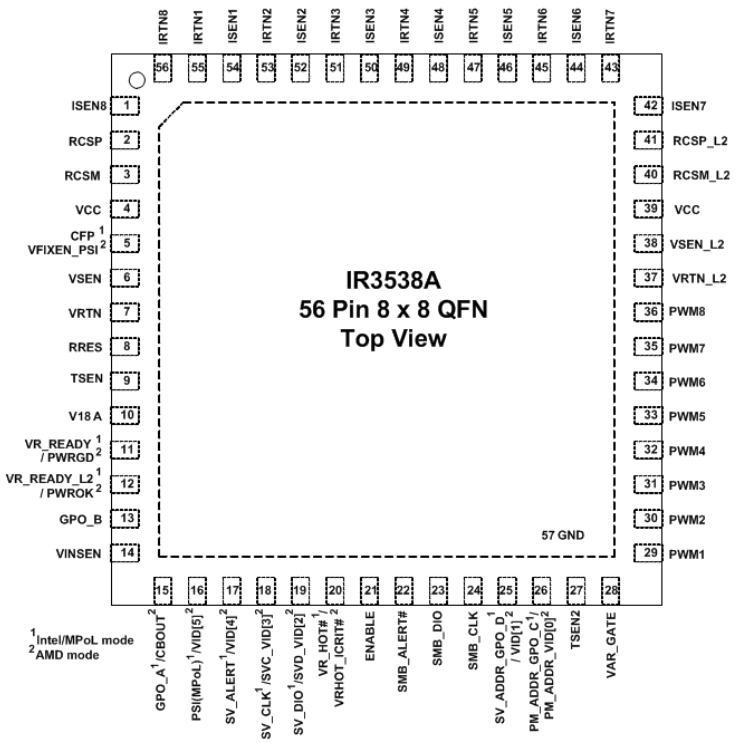


Figure 4: IR3538A Package Top View, Enlarged

FUNCTIONAL BLOCK DIAGRAM

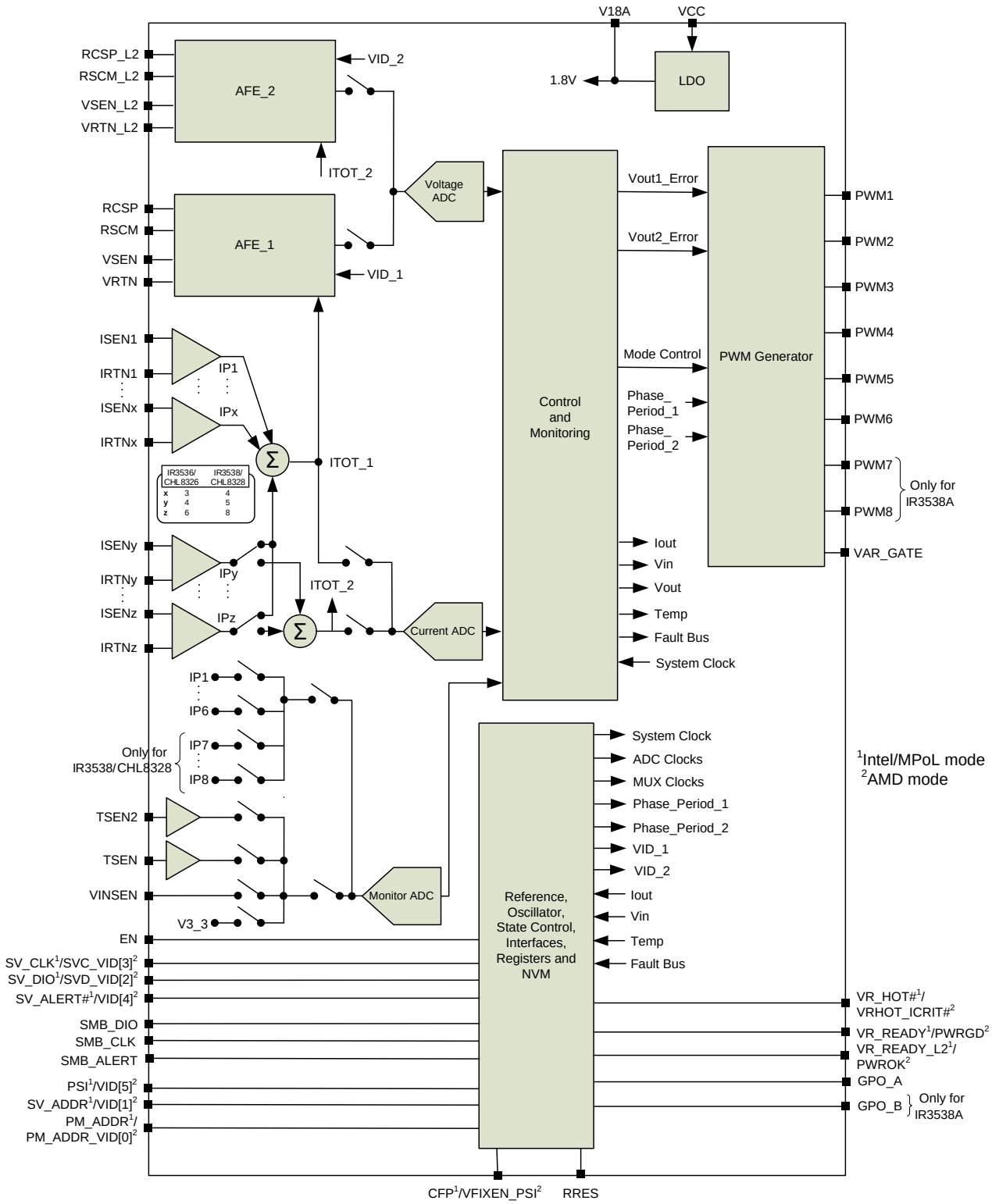


Figure 5: IR3536A / IR3538A Functional Block Diagram