

## FEATURES

- 8-phase single output PWM Controller
- Intel® VR12 and VR12.5 modes & Memory VR mode
- Overclocking & Gaming Mode
- PVI and SVI GPU VR modes
- Switching frequency from 200kHz to 2MHz per phase
- IR Efficiency Shaping Features including Variable Gate Drive, Dynamic Phase Control and Automatic Power State Switching
- Programmable 1-phase or 2-phase operation for Light Loads and Active Diode Emulation for Very Light Loads
- IR Adaptive Transient Algorithm (ATA) minimizes output bulk capacitors and system cost
- Auto-Phase Detection with auto-compensation
- Fault Protection: OVP, UVP, OCP, OTP, CFP
- I2C/SMBus/PMBus system interface for telemetry of Temperature, Voltage, Current & Power
- Multiple Time Programming (MTP) with integrated charge pump for easy custom configuration
- Compatible with IR ATL and 3.3V tri-state Drivers
- +3.3V supply voltage; -20°C to 85°C ambient operation
- Pb-Free, RoHS, 6x6mm 48-pin, 0.4mm pitch QFN

## APPLICATIONS

- Intel® VR12 and VR12.5 based systems
- Overclocked & Gaming platforms

## DESCRIPTION

The IR3563A is a single-loop digital multi-phase buck controller that controls up to 8 phases. The IR3563A is fully Intel® VR12 and VR12.5 compliant.

The IR3563A includes IR's 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's Dynamic Phase Control adds/drops phases based upon load current. The IR3563A 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 IR3563A-based VR loops. Device configuration and fault parameters are easily defined using the IR Digital Power Design Center (DPDC) GUI and stored in on-chip MTP. MTP storage saves pins and enables a small package size.

The IR3563A provides extensive OVP, UVP, OCP and OTP fault protection and includes thermistor based temperature sensing with VRHOT signal.

The IR3563A also includes numerous features like register diagnostics for fast design cycles and platform differentiation, simplifying VRD design and enabling fastest time-to-market with its "set-and-forget" methodology.

## BASIC APPLICATION

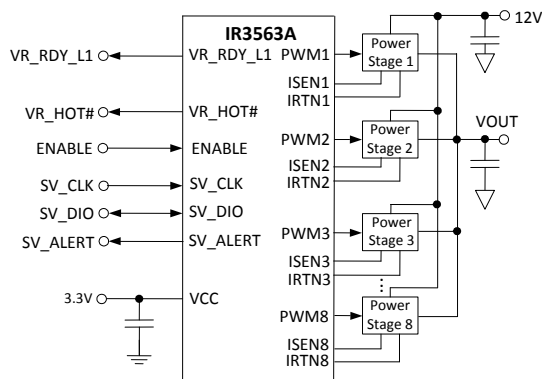


Figure 1: IR3563A Basic Application Circuit

## PIN DIAGRAM

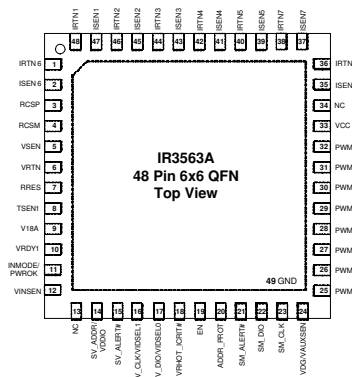
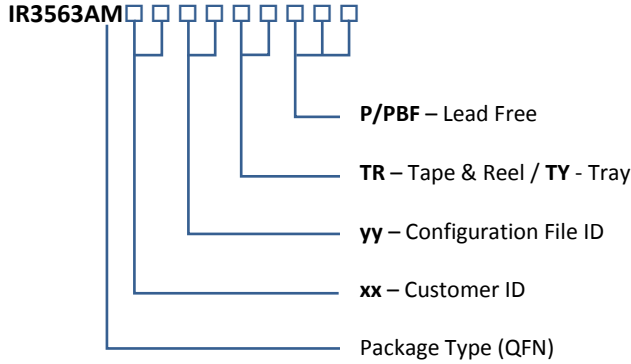


Figure 2: IR3563A Package Top View

**ORDERING INFORMATION**



Package	Packing Qty	Part Number	Programming
QFN	3000	<b>IR3563AMTRPBF</b>	Default
QFN	3000	<b>IR3563AMxxyyTRP<sup>1</sup></b>	Customer Configuration

**Notes:**

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

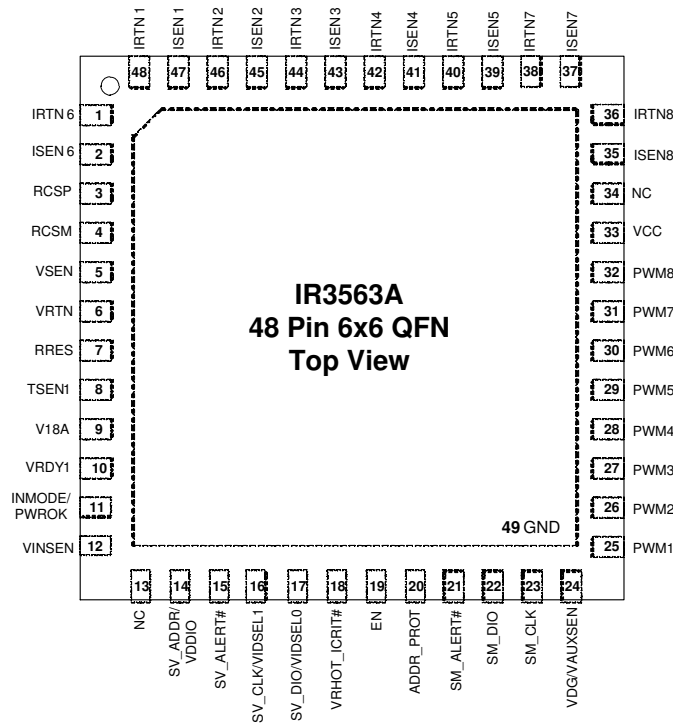


Figure 3: IR3563A Pin Diagram Enlarged

**TYPICAL APPLICATION DIAGRAM**

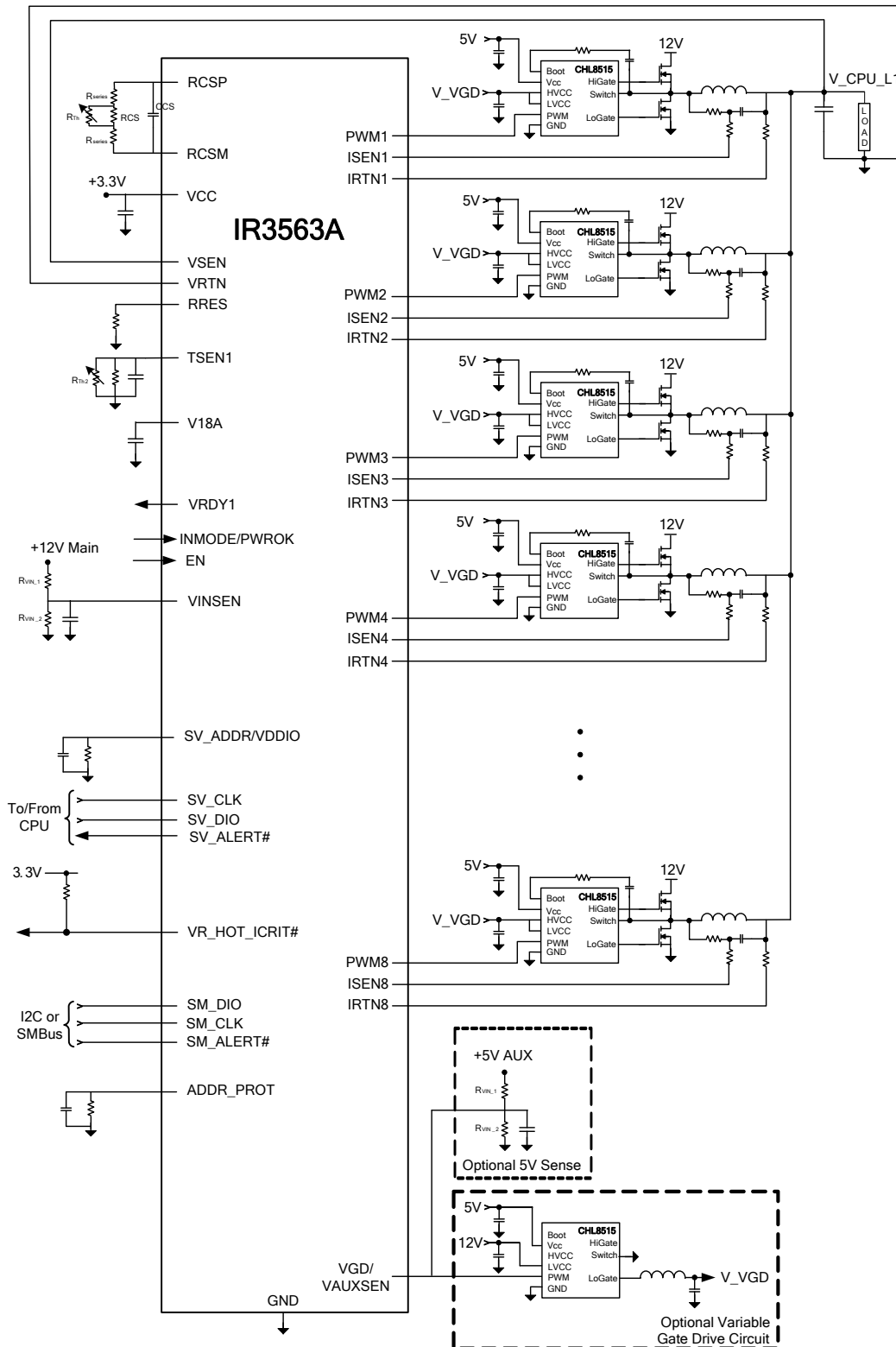


Figure 4: VR using IR3563A Controller and CHL8505 MOSFET Drivers in 8-phase Configuration

Data and specifications subject to change without notice.  
This product will be designed and qualified for the Consumer market.  
Qualification Standards can be found on IR's Web site.

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**IR** Rectifier

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