FEATURES

- 8-phase single or 6+2 dual loop configurable PWM Controller
- 8-bit PVID, PWM VID or I2C setpoint control on loop 1
- Serial I2C setpoint control on optional loop 2
- Programmable Constant Current Protection
- Dead-phase Protection and Flag
- Min/Max Telemetry registers and real-time monitoring via I2C (I_{IN}, V_{IN}, I_{OUT}, V_{OUT}, Temp)
- Programmable 1-phase or 2-phase for Light Loads and Active Diode Emulation for Very Light Loads
- IR Adaptive Transient Algorithm (ATA) minimizes output bulk capacitors and system cost
- IR Efficiency Shaping Features including Variable Gate Drive and Dynamic Phase Control
- Auto-Phase Detection with auto-compensation
- Protection: OVP, UVP, OC Warn, OCP, OT Warn, OTP
- Multiple Time Programming (MTP) with integrated charge pump for easy custom configuration
- Compatible with IR ATL and 3.3V tri-state Drivers
- 200kHz to 2MHz switching frequency per phase
- +3.3V supply voltage; -40°C to 85°C Ambient
- Pb-Free, Halogen Free, RoHS, 7x7mm, 56-pin, 0.4mm pitch QFN

APPLICATIONS

- Supports Phase Redundant based Server systems
- Server & Desktop CPU
- High Performance Graphics Processors

DESCRIPTION

The IR3595 is an 8-phase digital multi-phase buck controller that can be configured in either a single loop or dual loop mode with a feature set optimized to support redundant power supply systems and high performance graphic processors.

The IR3595 allows system voltage setpoint programming either through the 8-bit parallel VID, nVIDIA's PWM VID control, or via I2C control.

The IR3595 includes IR's Efficiency Shaping Technology which incorporates IR's Variable Gate Drive, Dynamic Phase Control (adds/drops phases based upon load current), and active diode emulation mode.

IR's unique and proprietary digital Adaptive Transient Algorithm (ATA) minimizes output bulk capacitors and improves transient response.

The I2C interface can communicate with up to 127 IR3595-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 IR3595 extensive fault protection includes output OV, UV and OC protection, 2 thermistor based OT protection inputs with a VRHOT signal output, and an Over Current warning flag.

ORDERING INFORMATION

Base Part Number	Package Type	Standard Pack		Orderable Part Number
		Form	Quantity	
IR3595	QFN 7 mm x 7 mm	Tape and Reel	3000	IR3595MxxyyTRP[2]
IR3595	QFN 7 mm x 7 mm	Tape and Reel	3000	IR3595MTRPBF[1]
IR3595	QFN 7 mm x 7 mm	Tray	2600	IR3595MTYPBF[1]

Notes:

1. Unprogrammed/blank parts will not start up until programmed in order to ensure a safe power up.

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