

## **HOT-SWAP N+1 REDUNDANT XPHASE™ CONTROL IC**

### **DESCRIPTION**

The IR3510 Hot-Swap N+1 Redundant X-Phase™ Controller combines input isolation control for hot-swappable applications, X-Phase™ VRM/VRD control and active output ORing control for N+1 redundant applications. It interfaces directly with microcontroller and X-Phase™ phase ICs to provide a full-featured and flexible solution for powering high-end CPUs and servers.

The IR3510 continuously monitors the 12V input current and VRM output voltage. Once the input current exceeds the programmable threshold, it goes into current limit mode and turns off the input MOSFETs after the OC delay times out. It immediately turns off the input MOSFETs when an over voltage (OV) condition is detected on the VRM output. It also has UVLO for both the 12V input and the supply voltage to the VRM.

The IR3510 has built-in active ORing control function for N+1 redundant applications. When the VRM output voltage is higher than the output voltage bus, it turns on the ORing MOSFETs; When the VRM output is sinking current from the output voltage bus, it turns off the ORing MOSFETs.

The IR3510 works with existing X-Phase™ phase ICs to provide a full-featured multiphase VRM solution, including soft-start, voltage regulation, constant current limit, remote sense and open sense leads protection.

The IR3510 interfaces with system logic to receive “ENABLE”, “VSET” which is the analog reference voltage for controlling VRM output voltage, constant current limit “OCPSET” and OVP limit “OVPSET”. It sends back to the system; load current “IO”, VRM status “VRRDY”, ORing MOSFETs status “ORING” and input fault “IOCD”.

### **FEATURES**

- Input isolation MOSFET control for hot-swap, input OCP and output OVP
- Programmable input OCP limit and delay
- Input isolation MOSFET short detection
- Integrated Charge Pump drives input isolation MOSFETs and output ORing MOSFETs
- Programmable 150KHz to 1MHz oscillator
- Programmable two-stage soft-start
- Analog voltage setting for output voltage control, OVP limit and OCP limit
- True remote voltage sense with open-sense-lead protection
- Programmable output impedance
- Gain adjustable analog load current report with thermal compensation capability
- Average Current Mode control improving current sharing between paralleled modules
- Constant output current limit
- Compatible with existing IR3086A and IR3088A Phase ICs
- ORing control with adjustable reverse current cut-off threshold
- Input Fault, VRRDY and ORing status indications
- Operation from 12V input with 9V Under-Voltage Lockout
- 6.8V Bias Voltage provides system reference
- 32-lead MLPQ 5x5mm package