



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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FEATURES

- 5-phase & 8-phase dual output PWM Controller with phases flexibly assigned between Loops 1 & 2
- Dynamic voltage control by 2-bit parallel interface with Gamer Mode override and Vmax setting
- Input Voltage Management for up to 3 Input Voltages
- I_{CRITICAL} Monitor and Phase Current Capture Mode
- Phase Switching frequency from 200kHz to 1.2MHz
- CHiL Efficiency Shaping Features including Variable Gate Drive, Dynamic Phase Control
- Programmable 1-phase or 2-phase for Light Loads and Active Diode Emulation for Very Light Loads
- CHiL Adaptive Transient Algorithm (ATA) minimizes output bulk capacitors and system cost
- Designed for use with coupled inductors
- Per-Loop Fault Protection: OVP, UVP, OCP, OTP
- I2C/SMBus/PMBus system interface for telemetry of Temperature, Voltage, Current & Power for both loops
- Non-Volatile Memory (NVM) for custom configuration
- Compatible with CHiL ATL and 3.3V tri-state Drivers
- +3.3V supply voltage; 0°C to 85°C ambient operation
- Pb-Free, RoHS, 6x6 40pin & 8x8 56pin QFN packages

DESCRIPTION

The CHL8225/8 are dual-loop digital multi-phase buck controllers. The CHL8225 drives up to 5 phases and the CHL8228 drives up to 8 phases. They feature Input Voltage Management allowing up to 3 input voltages to be monitored to ensure adequate power is delivered to the load. Dynamic voltage control is provided by 4 registers which are programmed through I2C/SMBus/PMBus and then selected using a 2-bit parallel bus for fast access.

The CHL8225/8 NVM saves pins and enables a small package size.

The CHL8225/8 includes the CHiL Efficiency Shaping Technology to deliver exceptional efficiency at minimum cost across the entire load range. CHiL Variable Gate Drive optimizes the MOSFET gate drive voltage as a function of real-time load current. CHiL Dynamic Phase Control adds and drops phases based upon load current. The CHL8225/8 can be configured to enter 1-phase operation and active diode emulation mode based upon load current or by command.

CHiL's unique Adaptive Transient Algorithm (ATA), based on proprietary non-linear digital PWM algorithms, minimizes output bulk capacitors. In addition, a coupled inductor mode, with phases added/dropped in pairs enables further improvement in transient response and form factor.

The I2C/PMBus interface can communicate with up to 16 CHL8225/8 based VR loops. Device configuration and fault

parameters are easily defined using the CHiL Intuitive Power Designer (IPD) GUI and stored in on-chip NVM.

The CHL8225/8 provides extensive OVP, UVP, OCP and OTP fault protection and includes thermistor based temperature sensing with VRHOT signal.

The CHL8225/8 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.

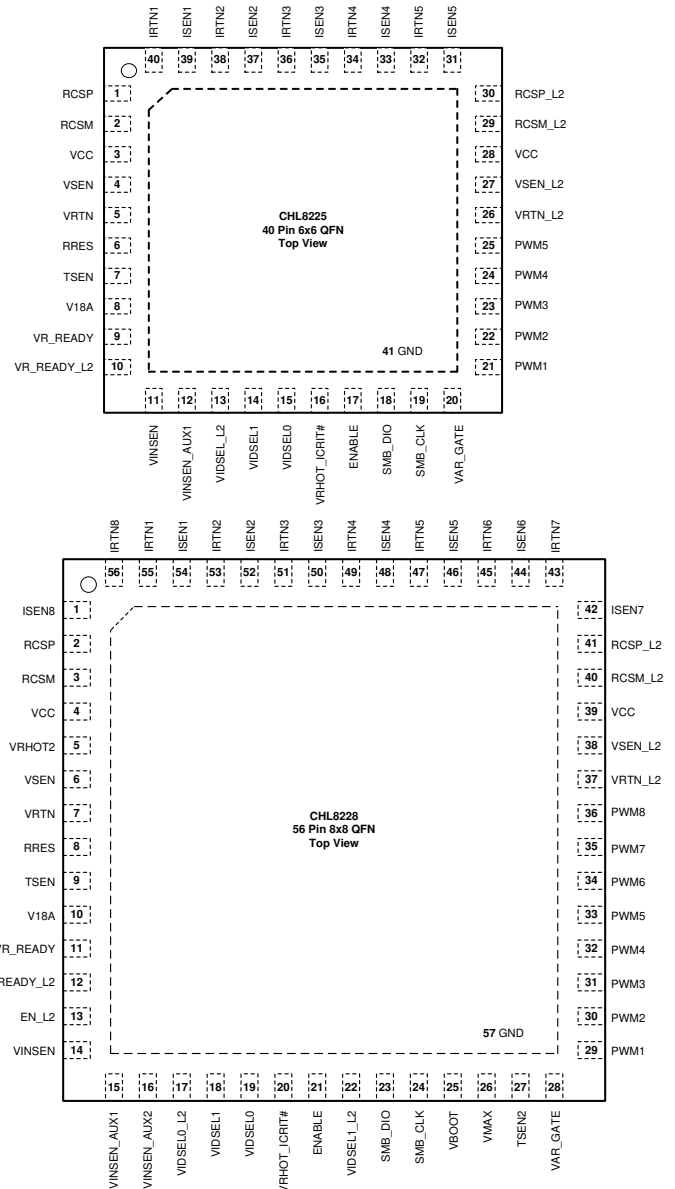
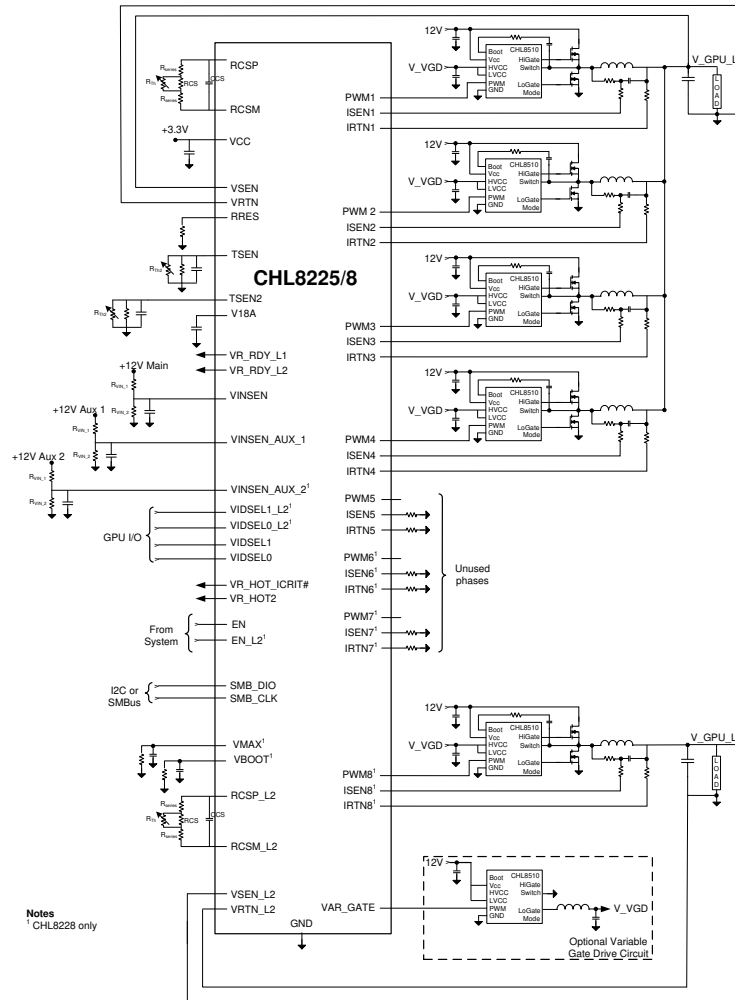


Figure 1: CHL8225 & CHL8228 Packages

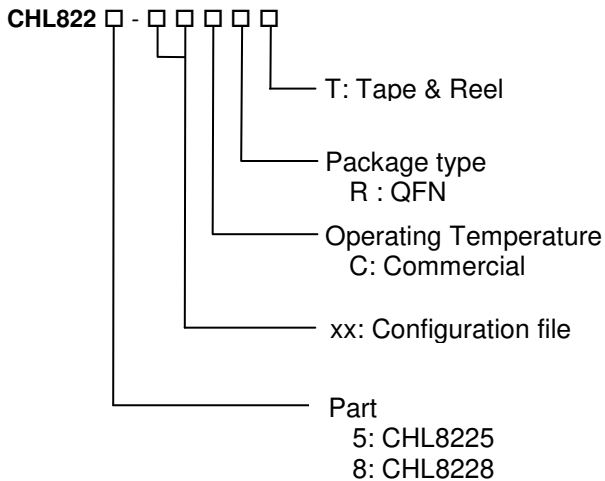
APPLICATIONS

- Multiphase GPU systems

TYPICAL APPLICATIONS BLOCK DIAGRAM



ORDERING INFORMATION



Package	Tape & Reel Qty	Part Number
QFN	3000	CHL8225-00CRT ¹
QFN	3000	CHL8225-xxCRT ²
QFN	3000	CHL8228-00CRT ¹
QFN	3000	CHL8228-xxCRT ²

Notes

- 1 For unprogrammed/default parts, use configuration file 00. Unprogrammed parts will not start up until programmed in order to insure a safe power up.
- 2 -xx indicates a customer specific configuration file.