Complete DDR2, DDR3 and DDR3L Memory Solution Synchronous Buck PWM Controller, 2A LDO, Buffered Reference

Features

●*Synchronous Buck Controller (VDDQ)*

- **Ultra-High Efficiency at Light and Heavy Load with Auto-skip Function**
- **No Current-Sense Resistor (Lossless I_{LIMIT})**
- **Quasi-PWM with 100ns Load-Step Response**
- **0.7V to 1.8V Adjustable Output Range**
- **3V to 28V Battery Input Range**
- **0.8% Vref Accuracy**
- **Supports Soft-off in S4/S5 States**
- **Selectable 300k/400kHz Switching Frequency**
- **OVP & UVP of VDDQ Output**
- **Drives Large Synchronous-Rectifier FETs**
- **Power-Good Indicator**

●*2-A LDO (VTT), Buffered Reference (VTTREF)*

- **VLDOIN Voltage Range: 1.2 V to 3.6 V**
- **Requires Only 10µF Ceramic VTT Output Capacitance**
- **Supports High-Z in S3 and Soft-Off in S4/S5**
- **Integrated Divider Tracks 1/2 VDDQSNS for Both VTT and VTTREF**
- **Remote Sensing (VTTSNS)**
- **±20mV VTT and 0.8% VTTREF Accuracy**
- **10mA Buffered Reference (VTTREF)**
- **Built-In Soft-Start to Reduce the VLDOIN Surging Current**
- **Over Current Protection of VTT Output**
- **Thermal Shutdown Protection**

Applications

- **Notebook Computers**
- **CPU Core Supply**
- **Chipset/RAM Supply as Low as 0.7V**

General Description

The G5316 is intended for DDR2, DDR3 and DDR3L memory systems. It integrates a synchronous buck PWM controller with a 2-A sink-source linear regulator and buffered reference.

The PWM controller uses constant on-time control scheme to handle wide input/output voltage ratios with ease and provides 100ns “instant-on” response to load transients while maintaining a relatively constant switching frequency. The G5316 achieves high efficiency at a reduced cost by eliminating the current-sense resistor found in traditional current-mode PWMs. Efficiency is further enhanced by an ability to drive very large synchronous rectifier MOSFETs. Single-stage buck conversion allows these devices to directly step down high-voltage batteries for the highest possible efficiency.

The 2A sink/source tracking termination regulator is specifically designed for low-cost/ low-external component count systems. The regulator contains a high speed operational amplifier that provides fast load transient response with only 10µF of ceramic output capacitance. The G5316 supports remote sensing functions and all features required to power the DDR2 /DDR3 /DDR3L VTT bus termination according to the JEDEC specification. In addition, the G5316 includes integrated sleep-state controls placing VTT in High-Z in S3 (suspend to RAM) and soft-off for VTT and VTTREF in S4/S5 (Shutdown).

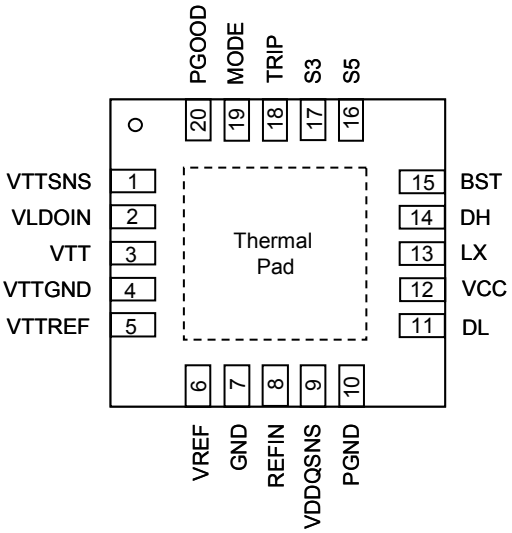
The G5316 provides OVP, UVP, over current and thermal shutdown protection functions and is available in a 20-pin 3X3 TQFN package.

Ordering Information

ORDER NUMBER	MARKING	TEMP. RANGE	PACKAGE (Green)
G5316RZ1U	5316	-40°C to +85°C	TQFN3X3-20
G5316RZ1D	5316	-40°C to +85°C	TQFN3X3-20

Note: RZ: TQFN3X3-20
1: Bonding Code
U & D : Tape & Reel

Pin Configuration



G5316 TQFN3X3-20

Note: Recommend connecting the Thermal Pad to the Ground for excellent power dissipation.