Complete DDR, DDRII and DDRIII Memory Solution Synchronous Buck PWM Controller, 3A LDO, Buffered Reference

Features

●***Synchronous Buck Controller (VDDQ)***

- **Ultra-High Efficiency**
- **No Current-Sense Resistor (Lossless I_{LIMIT})**
- **Quasi-PWM with 100ns Load-Step Response**
- **1.8V(DDRII) /1.5V(DDRIII) Fixed or Adjustable to 2.5V(DDR) or 0.75V to 3.6V Adjustable Output Range**
- **2V to 24V Battery Input Range**
- **400kHz Switching Frequency**
- **OVP & UVP of VDDQ Output**
- **Drives Large Synchronous-Rectifier FETs**
- **Power-Good Indicator**

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

- **Support DDR (1.25 VTT) , DDR II (0.9 VTT) and DDRIII(0.75 VTT) Requirements**
- **VLDOIN Voltage Range: 1.2V to 3.6V**
- **Requires Only 20µF Ceramic VTT Output Capacitance**
- **Supports High-Z in S3 and Soft-Off in S5**
- **Integrated Divider Tracks 1/2 VDDQSNS for Both VTT and VTTREF**
- **Remote Sensing (VTTSNS)**
- **±20mV Accuracy for VTT and VTTREF**
- **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 0.75V**
- **1.8V and 2.5V I/O Supply**

General Description

The G5616 is intended for DDR/SSTL-2, D-DRII/SSTL-18 and DDRIII memory systems. It integrates a synchronous buck PWM controller with a 3-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 G5616 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 3A 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 20µF (2x10µF) of ceramic output capacitance. The G5616 supports remote sensing functions and all features required to power the DDR /DDRII /DDRIII VTT bus termination according to the JEDEC specification. In addition, the G5616 includes integrated sleep-state controls placing VTT in High-Z in S3 (suspend to RAM) and soft-off for VTT and VTTREF in S5 (Shutdown).

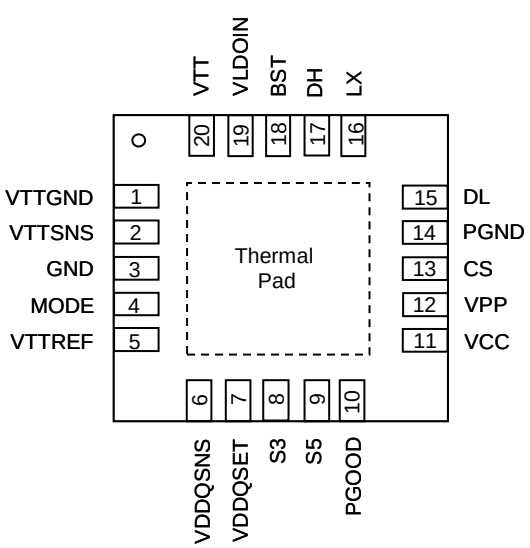
The G5616 provides OVP, UVP, over current and thermal shutdown protection functions and is available in a 20-pin 3X3 TQFN package and 24-pin 4X4 TQFN includes over voltage protection.

Ordering Information

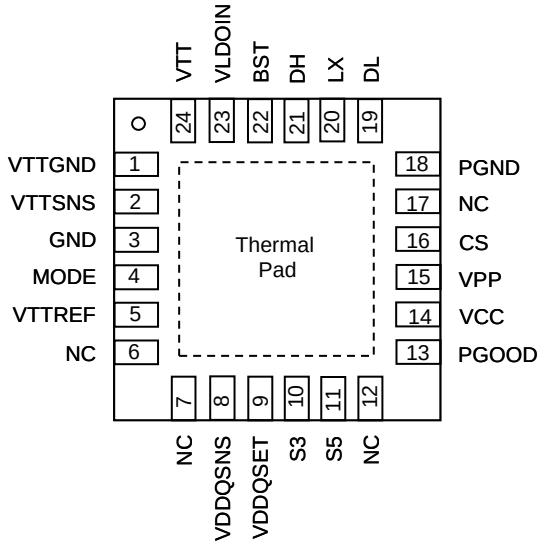
ORDER NUMBER	MARKING	TEMP. RANGE	PACKAGE (Green)
G5616RZ1U	5616	-40°C to +85°C	TQFN3X3-20
G5616R51U	5616	-40°C to +85°C	TQFN4X4-24

Note: RZ: TQFN3X3-20 R5: TQFN4X4-24
1: Bonding Code
U : Tape & Reel

Pin Configuration



G5616 TQFN3X3-20



G5616 TQFN4X4-24

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