

## DDR Termination Regulator

### Features

- Support and DDR I (1.25V<sub>VTT</sub>), DDR II (0.9 V<sub>VTT</sub>), DDR III (0.75 V<sub>VTT</sub>), and DDR IIIL (0.675V<sub>VTT</sub>) Requirements
- Input Voltage Range: 3V to 5.5V
- V<sub>VTT\_IN</sub> Voltage Range: 1.2V to 3.6V
- Requires Only 20μF Ceramic Output Capacitance
- V<sub>VTT</sub> Pulled Low by 2kΩ Resistor in Stand-By Mode (G2998 version)
- V<sub>VTT</sub> Tri-State in Stand-By Mode (G2999 version)
- Integrated Divider Tracks 1/2 V<sub>VDDQ</sub> for Both V<sub>VTT</sub> and V<sub>VREF</sub>
- Remote Sensing (V<sub>VTT</sub>S)
- ±20mV Accuracy for V<sub>VTT</sub>
- ±30mV Accuracy for V<sub>VREF</sub>
- Built-In Soft-Start
- Over Current Protection
- Thermal Shutdown Protection
- MSOP-8 and SOP-8(Thermal Pad) Package

### Applications

- DDR I/II/III/IIIL Memory Termination
- SSTL-2, SSTL-18
- HSTL Termination

### General Description

The G2998/G2999 is a 3A sink/source tracking termination regulator. It is specifically designed for low-cost/

low-external component count systems. The G2998/G2999 maintains a high speed operational amplifier that provides fast load transient response and only requires 20μF (2 × 10μF) of ceramic output capacitance. The G2998/G2999 supports remote sensing functions and all features required to power the DDR I / DDR II / DDR III / DDR IIIL V<sub>VTT</sub> bus termination according to the JEDEC specification. In addition, the G2998/ G2999 also has an Enable (EN) pin that provides Suspend to RAM (STR) functionality. When EN is pulled low, V<sub>VREF</sub> will remain active, but V<sub>VTT</sub> output will be turned off and discharged to the ground through internal MOSFETs in G2998 version and V<sub>VTT</sub> output will be in tri-state in G2999 version. A power saving advantage can be obtained in this mode through lowering the quiescent current to 150μA @ V<sub>VCC</sub>=3.3V.

The G2998/G2999 is available in the MSOP-8 and SOP-8 package with the Thermal pad.

### Ordering Information

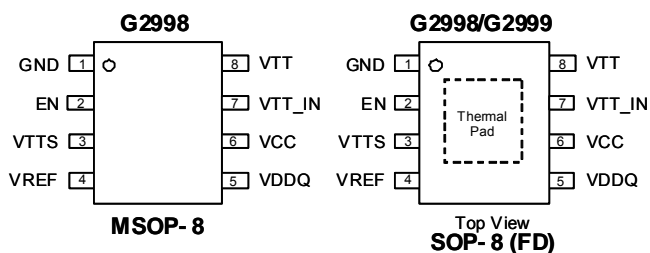
ORDER NUMBER	MARKING	TEMP. RANGE	PACKAGE (Green)
G2998P81U	G2998	-40°C~85°C	MSOP-8
G2998F11U	G2998	-40°C~85°C	SOP-8 (FD)
G2999F11U	G2999	-40°C~85°C	SOP-8 (FD)

Note: P8: MSOP-8 F1: SOP-8 (FD)

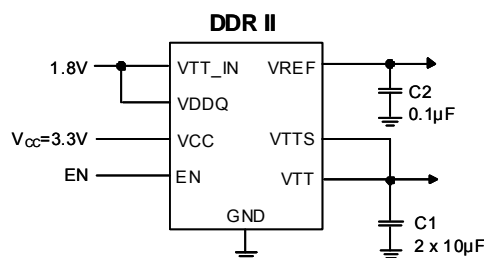
1: Bonding Code

U: Tape & Reel

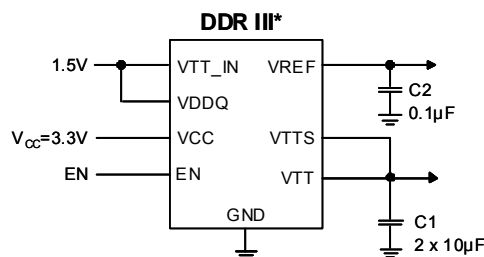
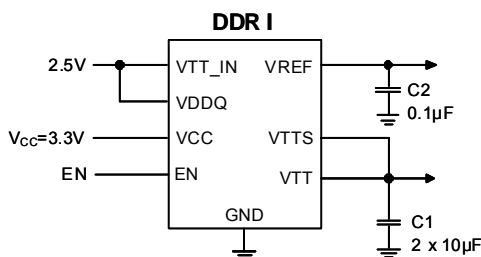
### Pin Configuration



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



### Typical Application Circuit



\* Recommended V<sub>VCC</sub> = 3.3V