



G5198

Off-Line Digital Green-Mode Quasi-Resonant PWM Controller

DIGITAL PWM IC

1.0 General Description

The G5198 is a high performance AC/DC power supply controller which uses digital control technology to build peak current mode PWM flyback power supplies. The device operates in quasi-resonant mode to provide high efficiency along with a number of key built-in protection features while minimizing the external component count, simplifying EMI design and lowering the total bill of material cost. The G5198-03 can operate at peak power mode with momentary peak power higher than the maximum continuous output power without design cost and size increase. The G5198 removes the need for secondary feedback circuit while achieving excellent line and load regulation. It also eliminates the need for loop compensation components while maintaining stability over all operating conditions. Pulse-by-pulse waveform analysis allows for a fast dynamic load response for both one-time and repetitive load transients. The built-in power limit function enables optimized transformer design for a wide input voltage range. GlobalSemi's innovative proprietary technology ensures that power supplies built with the G5198 can achieve both highest average active efficiency and less than 50 mW no-load power consumption in 20W output power range, and have fast yet smooth start-up with a wide range of capacitive loads with output voltage up to 12V and above, and are ideal for network and monitor adapter applications.

Applications

- Power adapters for network devices, ultrabooks and which requiring peak power capability
- Universal input AC/DC adapters(15W-40W)

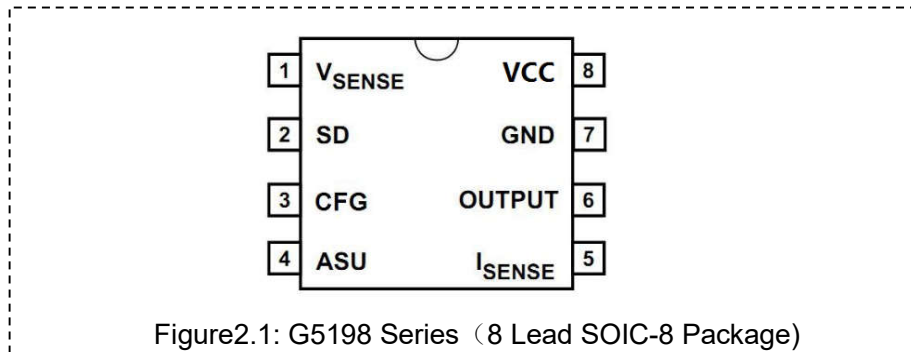
Features

- ◆ No-load power consumption < 50 mW at 230 VAC along with fast dynamic load response
- ◆ Tight constant-voltage and constant-current regulation across line and load range
- ◆ Tight constant-voltage regulation across line and load range (G5198-03)
- ◆ Peak power mode provides momentary peak power higher than the maximum continuous output power without design cost and size increase (G5198-03)
- ◆ Primary-side feedback eliminates opto-isolators and simplifies design
- ◆ Adaptively controlled soft-start enables fast and smooth start-up for a wide range of capacitive loads (from 330uF to 6000uF) with output voltage of 12V and above
- ◆ Proprietary optimized 80 kHz maximum PWM switching frequency with quasi-resonant operation achieves best size, efficiency and common mode noise
- ◆ User-configurable 5-level cable drop compensation provides design flexibility
- ◆ No external loop compensation components required
- ◆ Complies with EPA 2.0 energy-efficiency specifications with ample margin
- ◆ Built-in single-point fault protection features: output short-circuit protection, output over-voltage protection, over-current protection and current-sense-resistor fault protection
- ◆ Dedicated pins for external over-temperature protection and accurate over-voltage protection
- ◆ No audible noise over entire operating range



2.0 Products Information

2.1 Pin configuration



| Pin# | Name | I/O | Description |
|------|--------------------|--------------|--|
| 1 | V _{SENSE} | Analog Input | Sense signal input from auxiliary winding. This provides the secondary voltage feedback used for output regulation.. |
| 2 | SD | Analog Input | External shutdown control. Used for external over-temperature protection (OTP) by connecting an NTC resistor from this pin to Ground. |
| 3 | CFG | Analog Input | Used to provide accurate over-voltage protection during normal operation by sensing output voltage via auxiliary winding. |
| 4 | ASU | Output | Control signal for active start-up device (BJT or depletion mode NFET). |
| 5 | I _{SENSE} | Analog Input | Primary current sense. Used to configure external cable drop compensation (CDC) (-03 version) and for cycle-by-cycle peak current control and limit. |
| 6 | OUTPUT | Output | Gate drive for external MOSFET switch. |
| 7 | GND | Ground | Ground. |
| 8 | VCC | Power Input | Power supply for the controller during normal operation. The controller will start up when VCC reaches 14.0 V (typical) and will shut down when the VCC voltage drops below 6.5 V (typical). A decoupling capacitor of 0.1 μF or so should be connected between the VCC pin and GND. |

