

3V to 65V, 5.5A Synchronous Step-Down Silent Switcher with 9 μ A Quiescent Current

FEATURES

- ▶ **Silent Switcher® Architecture, Ultralow EMI Emissions**
- ▶ **High Efficiency at High Frequency**
 - ▶ Up to 94.5% at 400kHz, 24V_{IN} to 5V_{OUT}
 - ▶ Up to 93% at 1MHz, 24V_{IN} to 5V_{OUT}
- ▶ **Pin Selectable Adjustable, Fixed 3.3V and 5V Output**
- ▶ **Ultralow Quiescent Current Burst Mode Operation**
 - ▶ 9 μ A IQ Regulating 24V_{IN} to 5V_{OUT}
- ▶ **On-the-Fly Mode Change Among Burst, Pulse Skip and Forced Continuous Mode**
- ▶ **Burst and Pulse Skipping Modes to Enable Enhanced Light-Load Efficiency**
- ▶ **Built-in Output-Voltage Monitoring and Die Temperature Monitoring with PG/T_J**
- ▶ **99% Duty-Cycle Operation**
- ▶ **200kHz to 3MHz Adjustable Switching Frequency with External Clock Synchronization**
- ▶ 70V Transient-Input Tolerant
- ▶ Internal Compensation
- ▶ Programmable Soft-Start and Tracking
- ▶ Built-in Hiccup Mode Overload Protection
- ▶ Safely Tolerates Inductor Saturation in Overload
- ▶ Small 17-Lead 3mm × 4mm QFN

APPLICATIONS

- ▶ General Purpose Step-Down
- ▶ Automotive and Industrial Supplies

SIMPLIFIED APPLICATION DIAGRAM

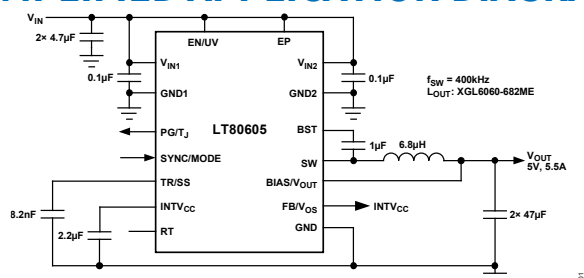


Figure 1. Typical Application Circuit

GENERAL DESCRIPTION

The LT80605 step-down regulator features the Silent Switcher® architecture to minimize EMI emissions while delivering high efficiency at frequencies up to 3MHz. Assembled in a 3mm x 4mm QFN, the monolithic construction with integrated power switches and inclusion of all necessary circuitry yields a solution with a minimal PCB footprint. An ultralow 9 μ A quiescent current with the output in full regulation enables applications requiring highest efficiency at light loads. The device features a SYNC/MODE pin that selects among Burst Mode, pulse skipping, or forced continuous mode (FCM), and also allows synchronization to an external clock. Soft-start and tracking functionality are accessed through the TR/SS pin. An accurate enable threshold can be set using the EN/UV pin and a resistor at the RT pin programs switch frequency. In addition, the device features a PG/T_J pin that can be used either to monitor the status of output voltage or die temperature. The die temperature monitor allows to directly measure the silicon die temperature, enabling a robust, reliable power supply design.

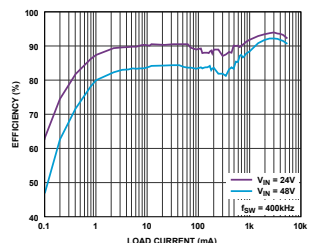


Figure 2. Efficiency vs. Load Current

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