

TPS54010:

2.2 - 4 V, 14-A Output Synchronous Buck PWM Switcher with Integrated FETs (Swift™)

Product Feature Sheet

Features

- Separate low-voltage power bus
- 8 mΩ MOSFET switches for high efficiency at 14-A continuous output
- Adjustable output voltage down to 0.9 V
- Externally compensated with 1% internal reference accuracy
- Fast transient response
- Wide PWM frequency: adjustable 280 kHz to 700 kHz
- Load protected by peak current limit and thermal shutdown
- Integrated solution reduces board area and total cost

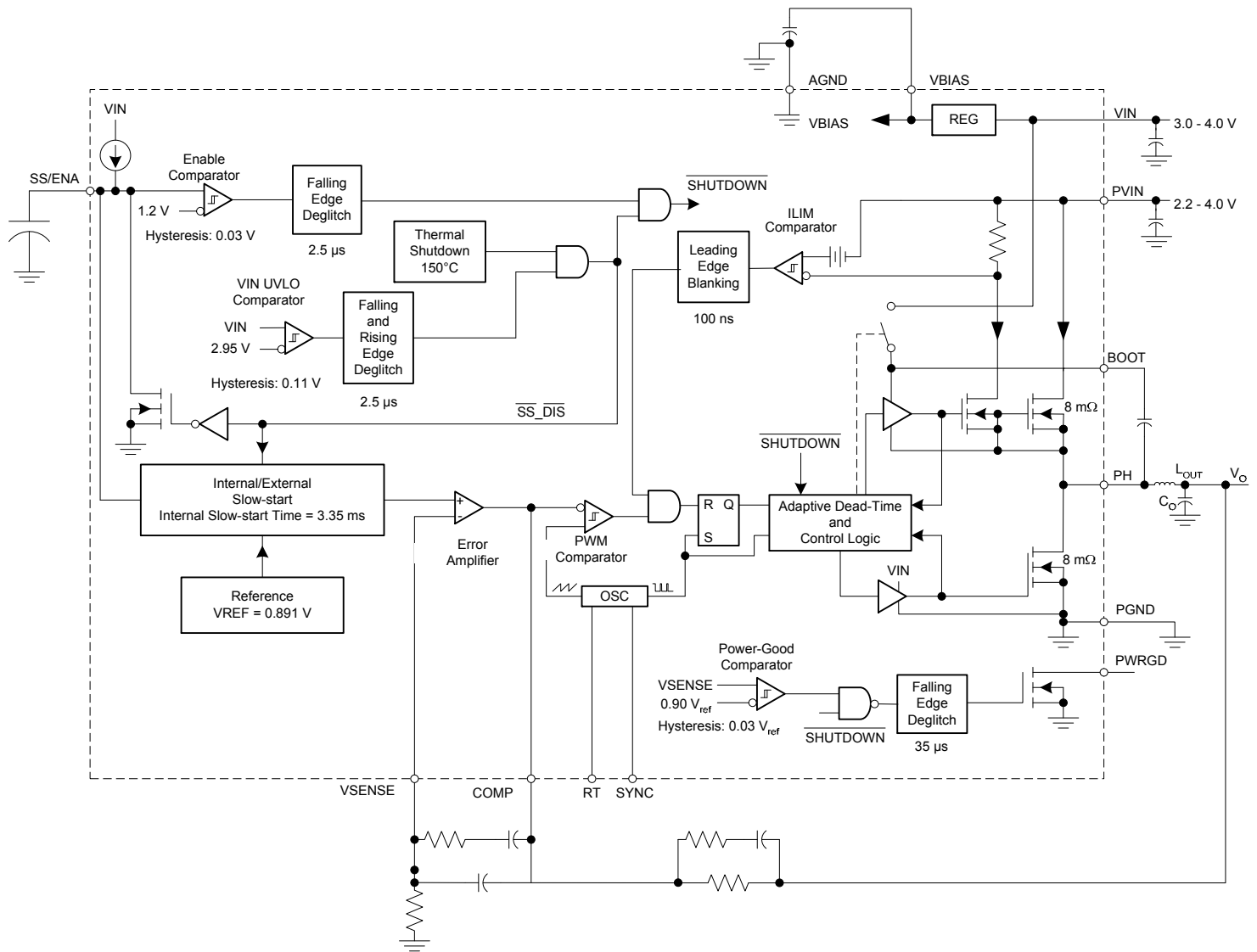
Device Overview

As a member of the SWIFT™ family of dc/dc regulators, the TPS54010 low-input voltage, high-output currents synchronous buck PWM converter integrates all required active components. Included on the substrate with the listed features are a true, high performance, voltage error amplifier that enables maximum performance under transient conditions and flexibility in choosing the output filter L and C components; an undervoltage-lockout circuit to prevent start-up until the VIN input voltage reaches 3 V; an internally and externally set slowstart circuit to limit in-rush currents; and a power-good output useful for processor/logic reset, fault signaling, and supply sequencing.

Absolute Maximum Ratings:

V _I Input Voltage Range	SS/ENA, SYNC	-0.3 V to 7 V
V _I Input Voltage Range	RT	-0.3 V to 6 V
V _I Input Voltage Range	VSENSE	-0.3 V to 4 V
V _I Input Voltage Range	PVIN, VIN	-0.3 V to 4.5 V
V _I Input Voltage Range	BOOT	-0.3 V to 10 V
V _O Output Voltage Range	VBIAS, COMP, PWRGD	-0.3 V to 7 V
V _O Output Voltage Range	PH	-0.6 V to 6 V
V _O Source Current	PH	Internally Limited
V _O Source Current	COMP, VBIAS	6 mA
I _S Sink Current	PH	25 A
I _S Sink Current	COMP	6 mA
I _S Sink Current	SS/ENA, PWRGD	10 mA
Voltage Differential	AGND to PGND	± 0.3 V
T _J Operating Junction Temperature Range		-40 °C to +125 °C
T _{stg} Storage Temperature Range		-65 °C to +150 °C
Lead Temperature 1, 6 mm (1/16 inch) From Case For 10 Seconds		300 °C
Electrostatic Discharge (ESD) Ratings	Human Body Model (HBM)	1.5 kV
Electrostatic Discharge (ESD) Ratings	CDM	750 V

Functional Block Diagram



Typical Applications

- Low-voltage, high density systems with power distributed at 2.5 V, 3.3 V available
- Point of load regulation for high-performance DSPs, FPGAs, ASICs, and microprocessors
- Broadband, networking, and optical communications infrastructure

Packaging

The TPS54010 is available in a thermally enhanced 28-pin TSSOP (PWP) PowerPAD™ package, which eliminates bulky heatsinks.