TS3310 Product Brief

A True 150-nA I_Q, 0.9-3.6V_{IN}, Selectable 1.8-5V_{OUT}, Instant-ON™ Boost Converter

FEATURES

- Ultra-Efficient Boost Converter:
  - Active-mode, No-load Supply Current: 150nA
  - Efficiency: Up to 92%
  - Input Voltage Range: 0.9V-3.6V
  - Delivers up to 35 mA at 3V_{STORE} from 1.2V_{IN}
  - Single-inductor, Discontinuous-Conduction Mode Operation
  - No External Schottky Diode Required
- Pin-Selectable Output Voltages:
  - 1.8V, 2.1V, 2.5V, 2.85V, 3.0V, 3.3V, 4.1V, and 5.0V
- Output Power Good Indicator
- User-enabled Secondary Output Load Switch
- 10-Pin, Low-profile, 2mm x 2mm TDFN Package

APPLICATIONS

Coin Cell-Powered Portable Equipment
Single Cell Li-ion or Alkaline Powered Equipment
Solar or Mechanical Energy Harvesting
Wireless Microphones
Wireless Remote Sensors
RFID Tags
Blood Glucose Meters
Personal Health-Monitoring Devices
ZigBee Radio Devices

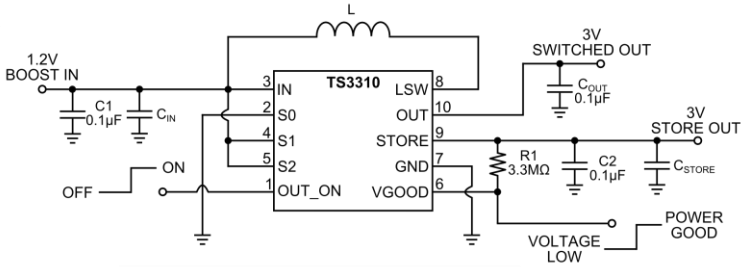
DESCRIPTION

The TS3310 is a low power boost converter with an industry-leading low quiescent current of 150nA, enabling ultra long battery life in systems operating from a variety of battery sources. The TS3310 boosts input voltages from 0.9V-3.6V to one of eight user-selectable output voltages ranging from 1.8V to 5.0V. The TS3310 includes two outputs: (a) an always-on primary output and (b) a user-enabled, load-switched secondary output designed to power burst-on loads operating at low duty cycles. The TS3310 external component count includes 1 inductor and 3 capacitors – design of its boost regulator does not require an external rectifier diode, thereby saving additional system cost. The TS3310 operates in discontinuous conduction mode with an on-time proportional to 1/VIN, thereby limiting the maximum input current by the selection of the inductor value, ensuring the boost start-up current does not cause the input source to sag.

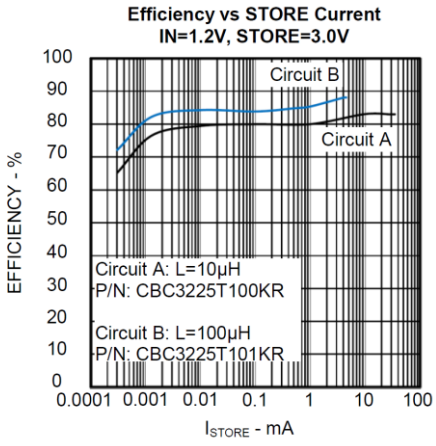
The extremely low quiescent current combined with a secondary output load switch makes the TS3310 an ideal choice for applications where a burst-on load can be periodically powered from the switched output. In this way, the burst-on load is disconnected from the output storage capacitor when it is turned off, preventing the burst-on load's leakage current from discharging the output storage capacitor.

The TS3310 is fully specified over the -40°C to +85°C temperature range and is available in a low-profile, thermally-enhanced 10-pin 2x2mm TDFN package with an exposed back-side paddle.

TYPICAL APPLICATION CIRCUIT



	CIRCUIT A	CIRCUIT B
L	10µH PN: CBC3225T100KR	100µH PN: CBC3225T101KR
C_{IN} / C_{STORE}	10µF	1µF



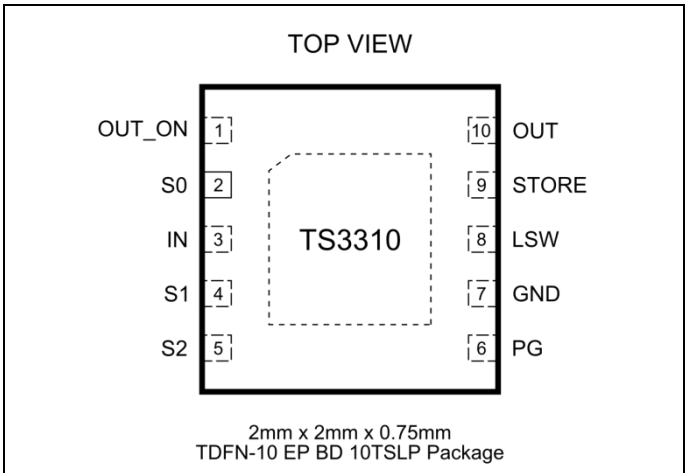
ABSOLUTE MAXIMUM RATINGS

IN to GND ..... -0.3V to +6.0V
STORE to GND ..... -0.3V to +6.0V
OUT to GND ..... -0.3V to +6.0V
LSW to GND ..... -0.3V to +6.0V
OUT_ON, S0, S1, S2 to GND ..... -0.3V to +6.0V
VGOOD to GND ..... -0.3V to +6.0V
LSW to GND ..... -0.3V to +6.0V

Continuous Power Dissipation (T_A = +70°C)
10-Pin TDFN22EP
(Derate at 13.48mW/°C above +70°C) 1078mW
Operating Temperature Range ..... -40°C to +85°C
Junction Temperature ..... +150°C
Storage Temperature Range ..... -65°C to +150°C
Lead Temperature (Soldering, 10s) ..... +300°C

Electrical and thermal stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other condition beyond those indicated in the operational sections of the specifications is not implied. Exposure to any absolute maximum rating conditions for extended periods may affect device reliability and lifetime.

PACKAGE/ORDERING INFORMATION



ORDER NUMBER	PART MARKING	CARRIER	QUANTITY
TS3310ITD1022T	AAW	Tape & Reel	-----
TS3310ITD1022TP		Tape & Reel	3000

Lead-free Program: Touchstone Semiconductor supplies only lead-free packaging.

Consult Touchstone Semiconductor for products specified with wider operating temperature ranges.