3A, 1.2MHz, 5.5V Synchronous Step-Down Converter

Features

- Input Voltage Range from 2.5V to 5.5V
- Output Current Capability up to 3A
- COT control for ultrafast transient response
- 100% Duty Cycle for Lowest Dropout
- HS / LS Ron: 80mΩ (typ.)/ 55mΩ (typ.)
- Operation Switching Frequency: 1.2MHz (typ.)
- Automatic Pulse Skipping Mode for Power Saving (PS1000A/C)
- Forced Continuous Conduction Mode (PS1000B/D)
- 0.6V±1% Voltage Reference
- PS1000A/B: Internal Soft Start Time 1.5ms (typ.)
- PS1000C/D: Internal Soft Start Time 0.75ms (typ.)
- HS/ LS Over-Current Protection
- Negative Over-Current Protection (PS1000B/D)
- Input Under-Voltage Lockout Protection
- Output Under-Voltage Protection
- Over-Temperature Protection
- Support Power Good Indicator
- Independent Enable Control
- Internal Discharge Resistance
- Ceramic Capacitor Stable
- WDFN2x2-8 and WDFN2x2-8S Packages Available
- RoHS Compliant and Halogen Free

General Description

The PS1000 is a high efficiency synchronous buck converter. Device integrates low R_{DS_ON} MOSFETs for achieving high efficiency and output current is up to 3A. Input voltage ranges from 2.5V to 5.5V and reference voltage is 0.6V.

The PS1000 adopts internally compensated constant-on-time (COT) control that provides very fast transient response with few external components. The PS1000 provides two operation mode. For light load high efficiency application, the PS1000A/C supports pulse-skipping mode (PSM). For good line/load regulation and low output ripple applications, the PS1000B/D supports forced continuous conduction mode (FCCM). In CCM operation, PS1000 remains in nearly constant switching frequency.

The PS1000 provides an adjustable output voltage through an external resistor divider. An internal soft-start circuit limits the inrush current during startup. A power good indicator and enable control is built in the PS1000. Device integrates protection including both FETs (HS/LS) cycle-by-cycle current limit, input under-voltage lockout (UVLO), output under-voltage (UVP), over-temperature protection (OTP) and output over-voltage protection (OVP). The PS1000 is available in WDFN2x2-8 and WDFN2x2-8S packages.