

### Applications

- Telecom/Datacom equipment
- Servers & Storage equipment
- POL power converters for memory, DSP, ASIC, FPGA

### Features

- Output voltage range: 0.5V to +8V
- 80 kHz to 980 KHz switching frequency
- “Dual-loop” Operation
  - Supports two independent outputs at different voltage levels with single phase control for each output
- “Single-loop” Operation
  - Supports a single output with one or two phases
  - Capable of current sharing between phases and frequency sync with other controllers in the Di-POL product family
- Digital voltage control loop with Proportional, Integral, and Derivative (PID) compensation at 100ps PWM resolution
- PMBus™ compliant serial interface
  - Voltage set and adjustment
  - Query voltage, current, temperature faults
  - Sequencing, margining, open-loop tracking
  - Fault response
- Extensive fault detection and handling capability (two user configurable output pins per loop)
  - Input Under-/Over-voltage
  - Output Under-/Over-voltage
  - High side short
  - Peak, Average, and Constant Current Limit Protect
  - Internal/External Temperature Alert/Shutdown Limits
  - Phase Sync Reference Detect/Lock
  - PMBus™ Protocol Violation
  - Calibration Range and Time-Out
- On-chip non-volatile memory (NVM) to store custom configurations with background integrity check for registers & NVM
- Supports both DCR and RDSon current sense topologies with digital temperature compensations
- Compatible with both tri-state and non-tri-state FET drivers
- Resistor-based PMBus™ address
- Single-pin current sharing capability
- Soft-start into prebiased load
- Single +5.0V supply operation
- RoHS compliant 40-lead QFN plastic package

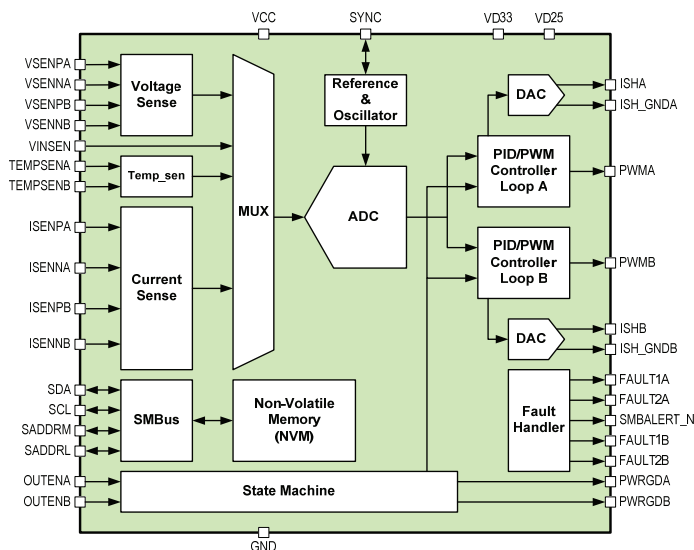
### Description

The Primarion Di-POL™ PX7522 Power IC is a highly configurable Digital Point-of-Load (POL) Controller with two loops and two PWM outputs for use in high current buck converter topologies with either DCR or RDSon current sense applications. For the DCR current sense, the output range is from 0.5V to  $[V_{CC} - 0.9V]$  and for the RDSon current sense, the output range is from 0.5V to 8V. In dual-loop mode, the PX7522 supports two independent outputs with single phase control for each output. In single-loop mode, the PX7522 can provide a single output rail with up to two phases. Chip-to-chip current sharing with up to four phases can be interleaved synchronously for multiphase operation. The PX7522 provides PMBus™ POL power regulation and supports current sharing to balance the power supply currents.

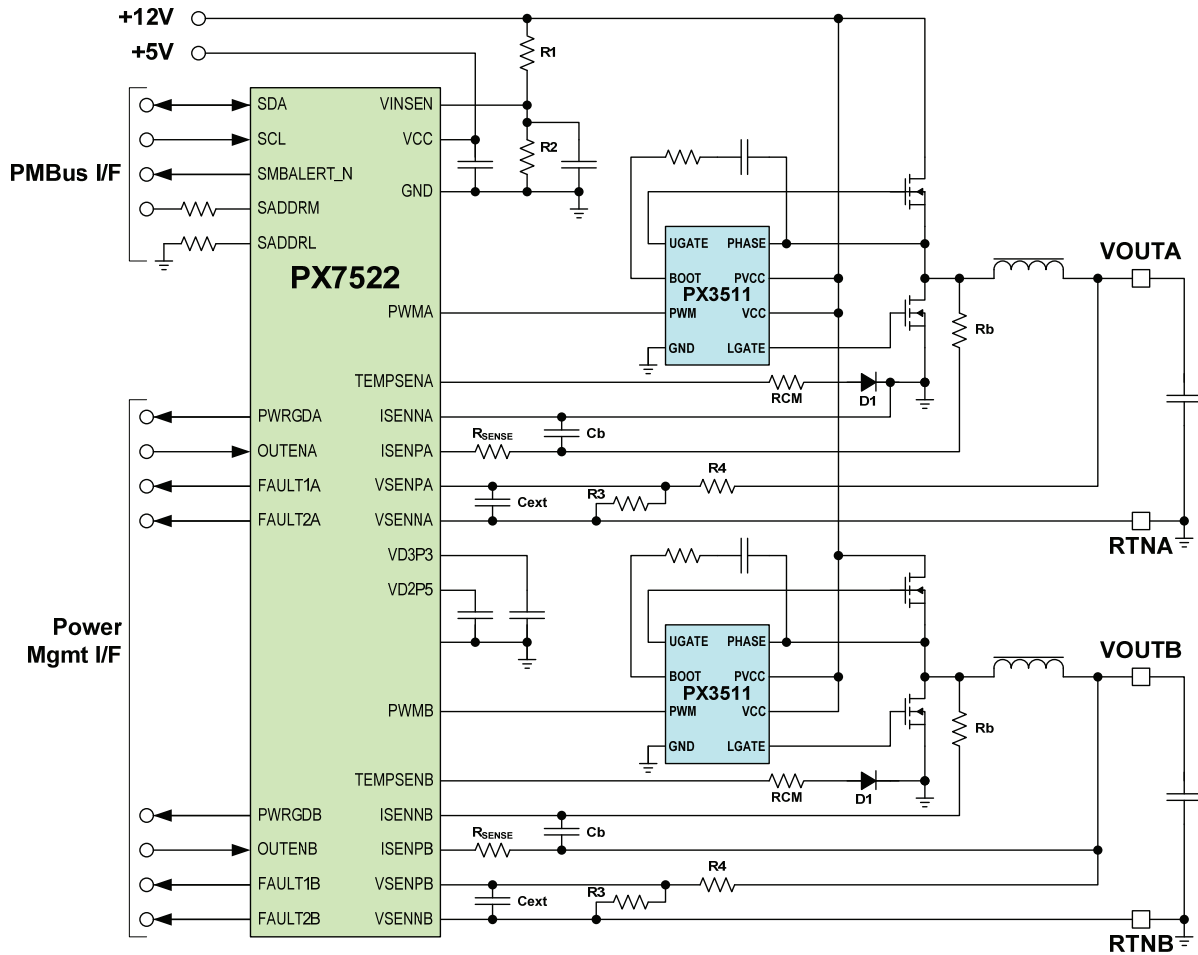
The PX7522 utilizes digital technology to implement all control functions, providing the ultimate in flexibility and stability. The PX7522 incorporates an industry standard PMBus™ serial interface for real-time system control. Through the serial interface, the power supply designer can quickly optimize designs while monitoring system performance without having to make any hardware adjustments.

The PX7522 provides superior accuracy through internal calibration that measures and corrects current sense error sources upon startup. The PX7522 has programmable current sense temperature compensation that allows the designer to tailor the response for best accuracy over temperature. Superior accuracy reduces component count and solution cost.

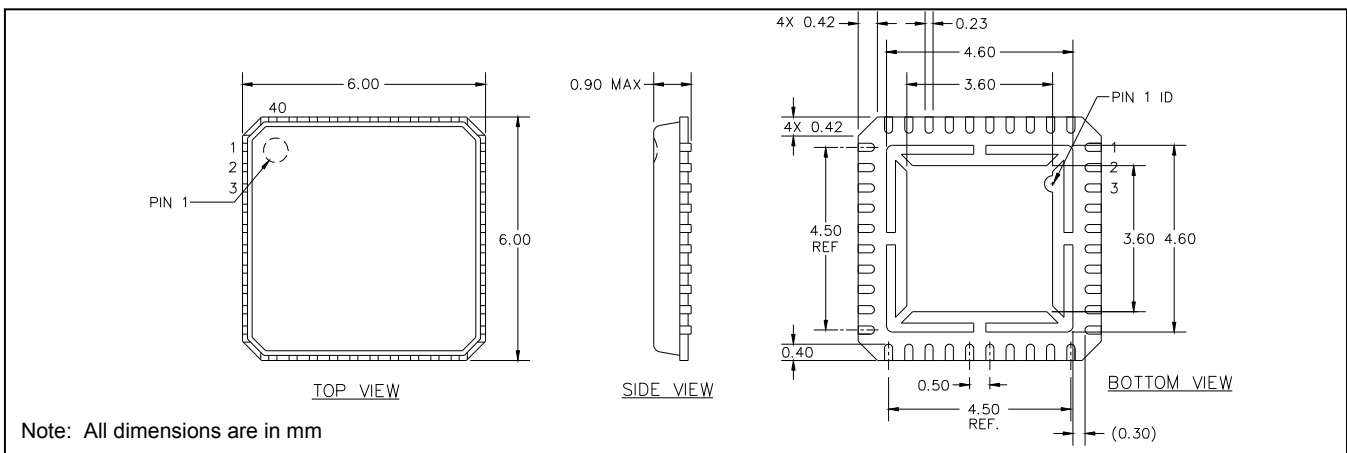
### Block Diagram



Typical Dual-loop Application with Loop A (RDSon) Current Sense & Loop B (DCR) Current Sense



Physical Characteristics (40-lead 6mm X 6mm QFN)



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 2780 Skypark Drive, Suite 100, Torrance, CA 90505 1-310-602-5500 Fax 1-310-602-5559 • [www.primarion.com](http://www.primarion.com)