

CSD965206B, Dual-Phase 6V Vin Smart Power Stage With 120A Peak Current, 40A RMS Current Capability per Phase

1 Features

- Dual-phase smart-power stage
- Operating VIN input voltage: 4.0V to 8V
- Operating VDD/VDRV bias: 4.5V to 5.5V
- Exceptional per-phase current handling:
 - Peak current: 120A for 500µs
 - RMS current: 40A RMS
- Integrated current sensing with 5.0µA/A gain
- Switching frequency up to 2.0MHz
- Internal zero-cross detector and discontinuous conduction (DCM) mode
- Compatible with 3.3V and 5.0V logic levels
- Self-protection for internal MOSFETs
 - Cycle-by-cycle sourcing/sinking current limit
 - Thermal shutdown
 - Boot capacitor recharge
 - Undervoltage lock-out (UVLO) for VDD, VDRV, BOOT
- Integrated capacitors for VIN, VDRV, and BOOT improve PCB layout immunity
- Operating temperature (T_J): -40°C to +125°C
- Thermally enhanced 5.25mm × 5.00mm package

2 Applications

- High-performance processor power
- Enterprise data centers
 - CPU
 - GPU
 - xPU
 - SoC
 - ASIC power

3 Description

The CSD965206B smart power stage device is designed specifically for high-power multiphase synchronous buck converter applications. CSD965206B provides two phases of up to 120A peak and 40A RMS current capability per-phase, making the device excellent for high-density designs.

A highly-integrated and monolithic design reduces application board layout restrictions, simplifying the overall system design. The device integrates inductor current sensing with a current gain of 5µA/A, as well as on-die temperature sensing, to provide accurate monitoring of system performance.

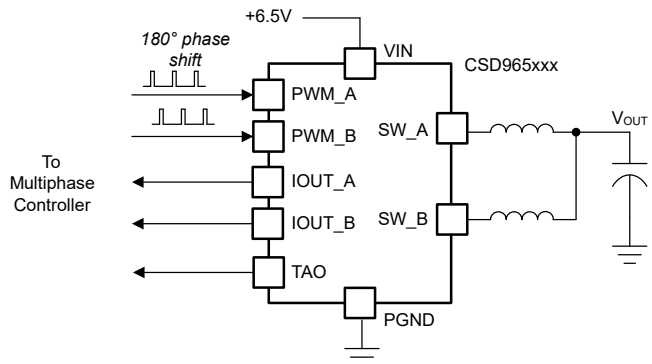
CSD965206B features a comprehensive set of self-protections. The device is packaged in an industry standard 5.25mm × 5.00mm common footprint package. The thermally enhanced package provides peak performance for top-side cooled applications.

The CSD965206B smart power stage device is fully compatible with TPS537xx multiphase controller devices.

Package Information

PART NUMBER	Drawing ⁽²⁾	TEP	PACKAGE SIZE ⁽¹⁾
CSD965206B	VDD	Yes	5.25 × 5.0 × 1.0mm

- (1) The package size (length × width × height) is a nominal value and includes pins, where applicable.
 (2) Thermally enhanced package



Simplified Application



4 Device and Documentation Support

TI offers an extensive line of development tools. Tools and software to evaluate the performance of the device, generate code, and develop solutions are listed below.

4.1 Receiving Notification of Documentation Updates

To receive notification of documentation updates, navigate to the device product folder on [ti.com](https://www.ti.com). Click on *Notifications* to register and receive a weekly digest of any product information that has changed. For change details, review the revision history included in any revised document.

4.2 Support Resources

[TI E2E™ support forums](#) are an engineer's go-to source for fast, verified answers and design help — straight from the experts. Search existing answers or ask your own question to get the quick design help you need.

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4.3 Trademarks

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4.4 Electrostatic Discharge Caution



This integrated circuit can be damaged by ESD. Texas Instruments recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

4.5 Glossary

[TI Glossary](#) This glossary lists and explains terms, acronyms, and definitions.

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