TPS650352-Q1 Automotive Camera PMIC

1 Features

- Qualified for automotive applications
- Systematic capability of up to ASIL D and SIL 3 targeted
- Hardware integrity up to ASIL B and SIL 2 targeted
- Advanced diagnostics and protection
- AEC-Q100 grade 1 qualified
  - -40°C to +125°C ambient operating temperature range
- Three step-down converters:
  - BUCK1 V_{IN} range from 4.0V to 18.3V
  - BUCK1 V_{OUT} range from 2.5V to 4.0V
  - BUCK1 output current up to 1500mA
  - BUCK2 and BUCK3 V_{IN} range from 2.5V to 5.5V
  - BUCK2 and BUCK3 V_{OUT} range from 0.9V to 1.9V
  - BUCK2 output current up to 1200mA
  - BUCK3 output current up to 1200mA
  - Spread-spectrum clock (SSC) generation for reduced EMI
  - 2.3MHz forced fixed switching frequency PWM operation
- One low dropout (LDO) regulator:
  - V_{IN} range from 2.5V to 5.5V
  - V_{OUT} range from 1.8V to 3.3V
  - Low noise and high PSRR
  - Adjustable output voltage through I^2C
  - Up to 300mA output current
- 3.0mm × 3.5mm 22-pin WQFN with wettable flanks

2 Applications

- Automotive camera modules
  - Surround view camera modules
  - Rear view camera modules
  - Driver monitor camera modules
  - Power over coax (POC) camera modules
  - E-mirror camera modules
  - Front view camera modules

3 Description

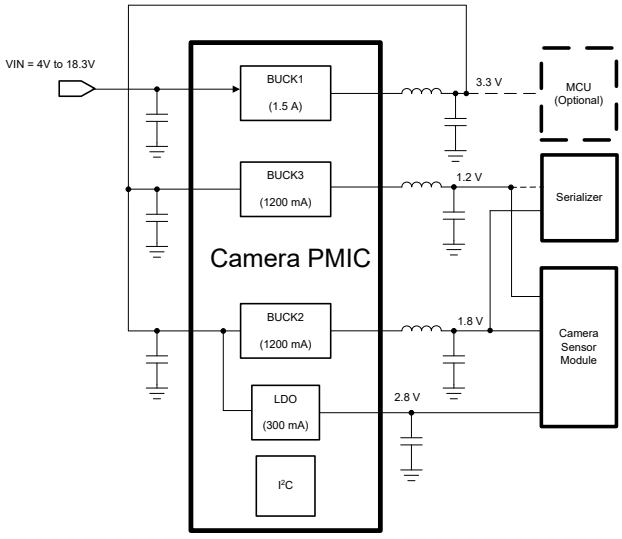
The TPS650352-Q1 device is a highly integrated power management IC for automotive camera modules. This device combines three step down converters and one low-dropout (LDO) regulator. The BUCK1 step-down converter has an input voltage range up to 18.3V for connections to Power over Coax (PoC). All converters operate in a forced fixed-frequency PWM mode. The LDO can supply 300mA and operate with an input voltage range from 2.5V to 5.5V. The step-down converters and the LDO have separate voltage inputs that enable maximum design and sequencing flexibility.

The TPS650352-Q1 is available in a 22-pin WQFN package (3.0mm × 3.5mm).

Package Information

PART NUMBER	PACKAGE(1)	BODY SIZE (NOM)
TPS650352-Q1	WQFN (22)	3.00mm × 3.50mm

(1) For all available packages, see the orderable addendum at the end of the data sheet.



TPS650352-Q1 Application Circuit

4 Device and Documentation Support

4.1 Device Support

4.1.1 Third-Party Products Disclaimer

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4.2 Receiving Notification of Documentation Updates

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4.3 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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4.4 Trademarks

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4.5 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.

4.6 Glossary

TI Glossary	This glossary lists and explains terms, acronyms, and definitions.

5 Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

DATE	REVISION	NOTES
November 2024	*	Initial Release

6 Mechanical, Packaging, and Orderable Information

The following pages include mechanical, packaging, and orderable information. This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser-based versions of this data sheet, refer to the left-hand navigation.

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