



MPQ70160FS

MPSafe™ ASIL-D, 6.5V, 6 Buck Converters PMIC with Dual 4A, Dual 3A and Dual 1A for Automotive ADAS AEC-Q100 Qualified

PRELIMINARY SPECIFICATIONS SUBJECT TO CHANGE

DESCRIPTION

The MPQ70160FS is a power management IC designed to operate from 5V buses to power a variety of ADAS SOC's.

Six integrated buck converters power a variety of target rails. Constant frequency peak current mode control offers fast transient performance with stable frequency. 2MHz fixed switching frequency during CCM mode greatly reduces external inductor and capacitor value. Full protection features include UVLO, OCP, OVP and thermal shutdown.

With the integration of sophisticated functional safety features such as a built-in self-testing (BIST), and diagnostic, this ASIL-certified device supports applications with a high automotive safety integrity level up to ASIL-D. It is developed under MPS' advanced MPSafe™ Functional Safety Product Development process, which has been independently certified to meet ISO26262 guidelines.

A configurable watchdog is implemented in the MPQ70160FS with window and question-answer modes.

The PMBus interface with PEC and integrated multi-page OTP memory allow for a high degree of configurability.

The MPQ70160FS is available in 32 pin QFN 5mmx5mm package.

APPLICATIONS

- Automotive Advanced Driver Assistance Systems (ADAS) SOC
- Infotainment SOC
- General Purpose secondary regulation

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FEATURES

- **Designed for Automotive Applications**
 - Operation Input Voltage 2.7V to 5.5V
 - Junction Temperature Operation from -40°C to +150°C
- **Reduces board size and BOM**
 - 2x 4A Buck – can multiphase operation
 - 2x 3A Buck – can multiphase operation
 - 2x 1A Buck – can multiphase operation
 - Integrated and Adjustable compensation network
 - Adjustable output voltage regulation
 - PMBus/I2C Compliant interface with PEC
- **Optimized for EMC/EMI**
 - 180° phase shift between Buck1/3/6 and Buck2/4/5
 - Frequency Spread Spectrum
- **Additional Features**
 - Multi-Page One-Time Programmable (MOTP) Memory
 - Independent Voltage Supervisor
 - Programmable sequencing
 - Power Good Output and ALERT Indicator
 - Hiccup Over Current Protection
 - Hiccup Over/Under Voltage Protection
 - Thermal Warning and Shutdown
 - QFN-32 (5mmx5mm) Package
 - Available Wettable Flank
 - AEC-Q100 Grade-1
- **Functional Safety**
 - External Voltage Monitor
 - EN Sequence Output
 - Fail-Safe State Machine
 - Built-in Self-Test(BIST)
 - Clock Monitor
 - Window or Question-Answer Watchdog
 - Protected Memory and Registers
 - Hardware capability to ASIL D
 - Documents available for ISO26262 system design



Developed for Functional Safety
Applications: ISO26262 Compliant

