Power Solutions for eCall Applications

Save board space with innovative and high-efficient DC/DC converters and battery management solutions

What is eCall?
An emergency call (eCall) system is intended to bring rapid assistance to drivers in the event of a serious road accident. It is able to contact the emergency service number directly from a vehicle and communicate a minimum set of data to a local emergency agency, including location, time and vehicle description. This feature can speed emergency response time by 40% in urban areas and by 50% in rural areas.

Battery Management Application Features and Benefits
- Simple battery protection (no microcontroller needed)
- Automated balancing for 2s systems
- Low-cost chargers support Li-Ion and LiFePO4 battery chemistries
- High-voltage rating, robust solutions with safety features
- AEC-Q100 qualification

DC/DC Application Features and Benefits
- Simple and low-cost design
- Out of AM radio range switching frequency (above 2MHz)
- Synchronous DC/DC regulators (FET and diode integrated)
- Low quiescent current (5 to 25µA and nano Ampere range)
- Innovative packaging technologies
- AEC-Q100 qualification

Product Highlights

WEBENCH® tools allow users to easily select, create, simulate and export their custom designs to their exact requirements. Learn more at ti.com/webench

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DC/DC Product Highlights

**TPS62130A-Q1/TPS62150A-Q1: 3 to 17VIN 3A/1A Buck Converter in 3x3 QFN**

The TPS62130A-Q1 and TPS62150A-Q1 device is an easy-to-use synchronous buck converter optimized for applications with high power density. A high switching frequency of typically 2.5MHz allows the use of small inductors and provides fast transient response as well as high output-voltage accuracy.

**Applications:**
- eCall power supply
- ADAS (radar, camera supply)

**Features:**
- Adjustable soft-start
- Power good output
- 100% duty cycle

**TPS62160-Q1/TPS62170-Q1: 3 to 17VIN 1A/0.5A Buck Converter in 2x2 WSON**

The TPS62160-Q1 is an easy to use synchronous buck converter optimized for applications with high power density. A high switching frequency of typically 2.5MHz allows the use of small inductors and provides fast transient response as well as high output voltage accuracy by utilization of the DCS-Control™ topology.

**Applications:**
- Camera/video modules
- eCall power supply

**Features:**
- Support high-output capacitance
- Power good output
- DCS-Control topology

**TPS661175-Q1: 2.9 to 18VIN 3A Boost Converter in 14xHTSSOP**

The TPS661175-Q1 is a monolithic switching regulator with integrated 3A, 40V power switch. It can be configured in several standard switching regulator topologies, including boost, SEPIC and flyback. The switching frequency of PWM is either set by an external resistor or an external clock signal. The user can program the switching frequency from 200kHz to 2.2MHz.

**Applications:**
- Car infotainment (audio supply)
- eCall power supply

**Features:**
- Overcurrent limit protection
- User defined soft-start
- Synchronous external switching frequency

**TPS63020-Q1: 1.8 to 5.5VIN 4A Buck-Boost Converter in 3x4 VSON**

The buck-boost converter is based on a fixed frequency, pulse-width-modulation (PWM) controller using synchronous rectification to obtain maximum efficiency. At low load currents, the converter enters Power Save mode to maintain high efficiency over a wide load current range.

**Applications:**
- Car infotainment
- eCall power supply

**Features:**
- Dynamic input current limit
- Smart power good
- Power Save mode

Battery Management Product Highlights

**bq29700:**

The bq29700 is an advanced single cell battery protection device providing full fledge protection by accurate monitor and trigger threshold. Protection features include: overcurrent protection during high discharge/charge current operation, short circuit protection, and battery overcharge/undercharge conditions.

**Applications:**
- Any and all single cell (1S) applications
- eCall

**Features:**
- Advanced low power (4µA) and shutdown mode (100µA)
- Up to ±5mV accuracy in overcurrent protection
- Small package form factor (1.5 mm x 1.5 mm)
- 100% duty cycle

**bq29209-Q1:**

The bq29209-Q1 device is a secondary overvoltage protection IC for 2-series cell Li-Ion battery packs that incorporate a high-accuracy precision overvoltage detection circuit and automatic cell imbalance correction. The voltage of each cell is compared to a factory programmed internal reference voltage.

**Applications:**
- eCall
- Telematics control unit

**Features:**
- 2-series cell secondary protection
- Automatic cell imbalance correction with external enable control
- ±30mV enable, 0mV disable thresholds
- Overvoltage protection threshold: 4.30V

**bq24081-Q1:**

The bq24081-Q1 is a highly integrated single cell Li-Ion linear charger device targeted at space-limited charge applications. It offers integrated power FET, current sensor, high accuracy current and voltage regulation, charge status, and charge termination in a single device. An external resistor sets the magnitude of the charge current.

**Applications:**
- eCall
- Vehicle GPS tracking

**Features:**
- Precharge conditioning with safety timer
- Charge and power-good status output
- Automatic sleep mode for low-power consumption

**bq25071-Q1:**

The bq25071-Q1 is a highly integrated single cell LiFePO4 linear charger targeted at space limited applications. The 30V input rating supports low-cost unregulated adapters. A 50mA LDO is integrated into the IC to supply low power external circuitry.

**Applications:**
- eCall
- Telematics control unit

**Features:**
- Single-cell LiFePO4 charging algorithm
- 30V input rating, with 10.5V overvoltage protection (OVP)
- 50mA integrated low dropout linear regulator (LDO)
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