

Product Overview

NCV97311A: Automotive Battery-Connected Low-Iq Multi-Output Power Management Unit with 3 Buck Regulators

For complete documentation, see the data sheet.

The NCV97311A is a 3-output regulator consisting of a low-Iq battery-connected 3 A, 2 MHz non-synchronous switcher and two low-voltage 1.5 A, 2 MHz synchronous switchers; all using integrated power transistors.

The high-voltage switcher is capable of converting a 4.1 V to 18 V battery input to a 5 V or 3.3 V output at a constant 2 MHz switching frequency, delivering up to 3 A. In overvoltage conditions up to 37 V, the switching frequency folds back to 1 MHz; in load dump conditions up to 45 V the regulator shuts down.

The output of the battery-connected buck regulator serves as the low voltage input for the 2 downstream synchronous switchers.

Each downstream output is adjustable from 1.2 V to 3.3 V, with a 1.5 A average current limit and a constant 2 MHz switching frequency. Each switcher has an independent enable and reset pin, giving extra power management flexibility.

For low-Iq operating mode, the low-voltage switchers are disabled and the standby rail is supplied by a low-Iq LDO (up to 150 mA) with a typical Iq of 30 uA. The LDO regulator is in parallel to the high-voltage switcher, and is activated when the switcher is forced in standby mode.

All 3 SMPS outputs use peak current mode control with internal slope compensation, internally-set soft-start, battery undervoltage lockout, battery overvoltage protection, cycle-by-cycle current limiting, hiccup mode short-circuit protection and thermal shutdown. An error flag is available for diagnostics.

Features

- 5.0 V and 3.3 V Versions Available
- Low Quiescent Current in Standby Mode
- Programmable Spread Spectrum for EMI Reduction
- 2 Microcontroller-Enabled Low Voltage Synchronous Buck Converters
- Large Conversion Ratio of 18 V to 3.3 V Battery Connected Switcher
- Wide Input of 4.1 to 45 V with Undervoltage Lockout (UVLO)
- Fixed Frequency Operation Adjustable from 2.0 to 2.6 MHz
- Internal 1.5 ms Soft-starts
- Cycle-by-cycle Current Limit Protections
- Hiccup Overcurrent Protections (OCP)

For more features, see the data sheet

Applications

- Infotainment
- Instruments clusters
- Body Electronics
- Telematics
- ECU

End Products

- Automotive

Part Electrical Specifications

Product	Pricing (\$/Unit)	Compliance	Status	Topology	Control Mode	V _{CC} Min (V)	V _{CC} Max (V)	V _O Typ (V)	I _O Typ (A)	Efficiency (%)	f _{sw} Typ (kHz)	Package Type
NCV97311MW33AR2G	1.2904	AEC Qualified PPAP Capable Pb-free Halide free	Active									QFNW-32
NCV97311MW50AR2G	1.2904	AEC Qualified PPAP Capable Pb-free Halide free	Active									QFNW-32

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