MIC7400/MIC7401

I²C Configurable Power Management IC (PMIC)

Summary

The MIC7400/7401 is a powerful, highly-integrated, configurable, power-management IC (PMIC) featuring high-speed I²C interface with an internal EEPROM. The device has five 3A synchronous buck regulators with high-speed adaptive on-time control, supporting even the challenging ultra-fast transient requirement for Core supplies. One boost regulator provides a flash-memory programming supply that delivers up to 200 mA of output current. The boost is equipped with an output disconnect switch that opens if a short-to-ground fault is detected. All switchers provide light-load efficiency with HyperLight Load® mode for buck and PFM mode for boost.

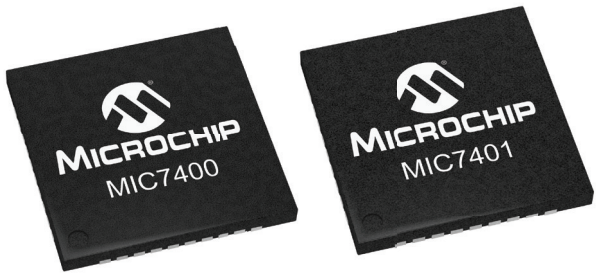
The device offers two distinct modes of operation "stand-by mode" and "normal mode" intended to provide an energy optimized solution suitable for portable handheld and infotainment applications. The MIC7401 also includes a global enable pin to shutdown the device for additional power savings.

In normal mode, the programmable switching converters can be configured to support a variety of start-up sequencing, timing, soft-start ramp, output voltage levels, current limit levels, and output discharge for each channel.

In stand-by mode, activated either by I²C or the external STBY pin, the PMIC can be configured in a low-power state by either disabling an output or by changing the output voltage to a lower level.

An internal EEPROM enables a single-chip solution across many platforms by allowing the designer to customize the PMIC for their design. Modifications can be made without the need to re-approve a new PMIC, saving valuable design resources and time.

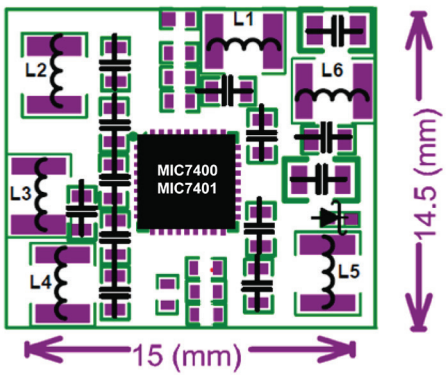
The MIC7400/7401 supplies are designed for use with inexpensive small value inductors and capacitors enabling a total solution size of 15 × 14.5 mm and less than 1 mm height.



Applications

- Client/enterprise Solid State Drives (SSD)
- Consumer/in-vehicle infotainment systems
- Multimedia/computing devices
- Security cameras
- Applications/graphics processors

Board Space Required



Benefits	Features
Ultra-Small Solution	■ High-density five-channel, independent, 3A synchronous buck regulators ■ One-channel independent 200 mA boost regulator ■ I²C interface up to 3.4 MHz ■ 4.5 × 4.5 × 0.85 mm FQFN package
High Performance	■ 93% peak efficiency ■ 1.5% output accuracy over line/load/temperature ■ Fast transient response
Low-Cost Solution	■ Higher integration of functions eliminates need for additional ICs ■ Use of low-cost passives allowed ■ Minimal external components
Flexibility	■ Integrated EEPROM for stored configurations and multi-channel power rails sequencing provide an ideal solution for powering application processors from any vendor

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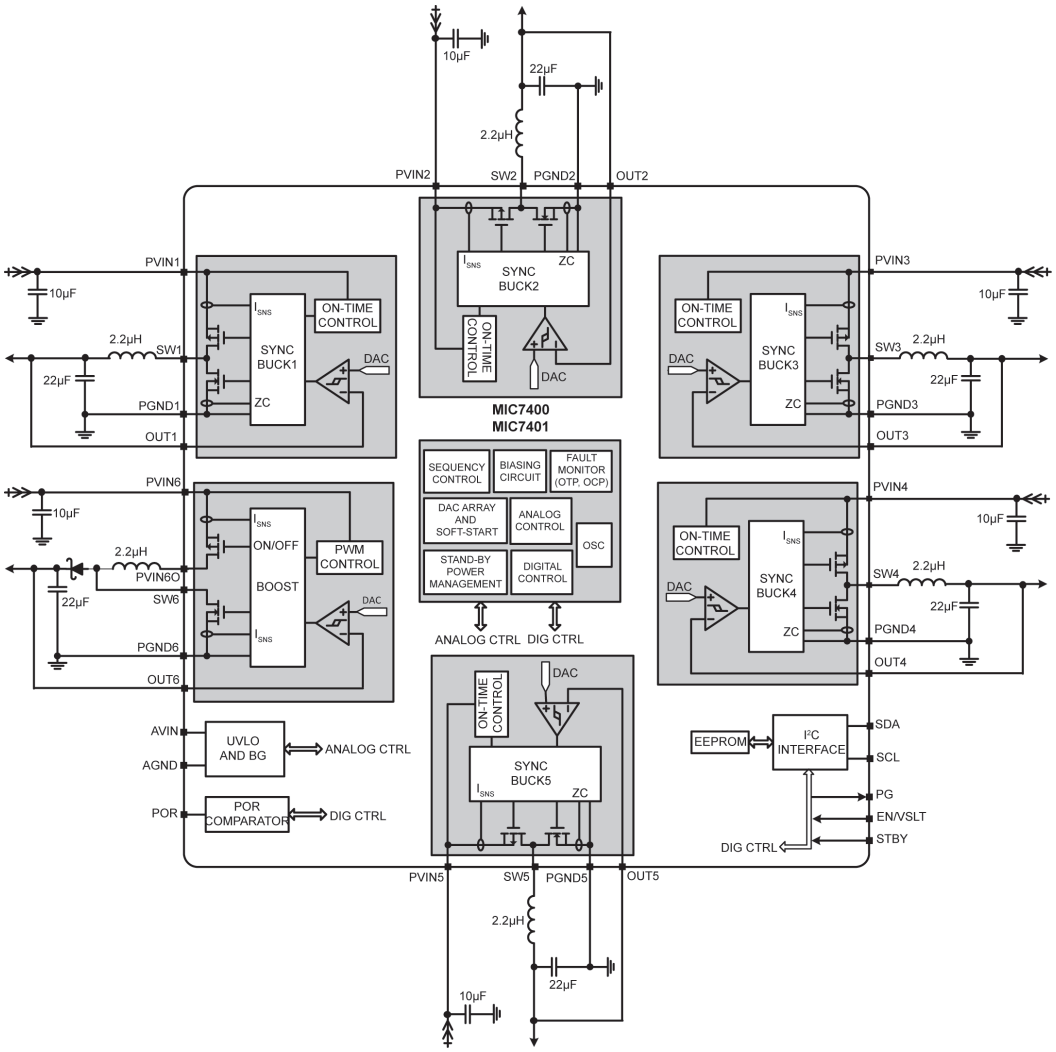

Ordering Information

Part Number	Marking	Output Voltages	Features	Package
MIC7400YFL	7400	1.8V, 1.1V, 1.8V, 1.05V, 1.25V, 12V	STBY – Active Low Falling Edge (Default)	36-pin 4.5 × 4.5 mm FQFN
MIC7400-XXXXTFL(1)	XXXX 7400	Configurable	Configurable	36-pin 4.5 × 4.5 mm FQFN
MIC7401YFL	7401	1.8V, 1.1V, 1.8V 1.05V, 1.25V, 12V	STBY – Active Low Falling Edge (Default) Global EN Pin	36-pin 4.5 × 4.5 mm FQFN
MIC7401-XXXXYFL(1)	XXXX 7401	Configurable	Configurable	36-pin 4.5 × 4.5 mm FQFN

Note 1: Contact factory

MICROCHIP

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