



Analog, Mixed Signal and Power Management

# MC34704

## Multi-channel PMIC for multimedia microprocessors

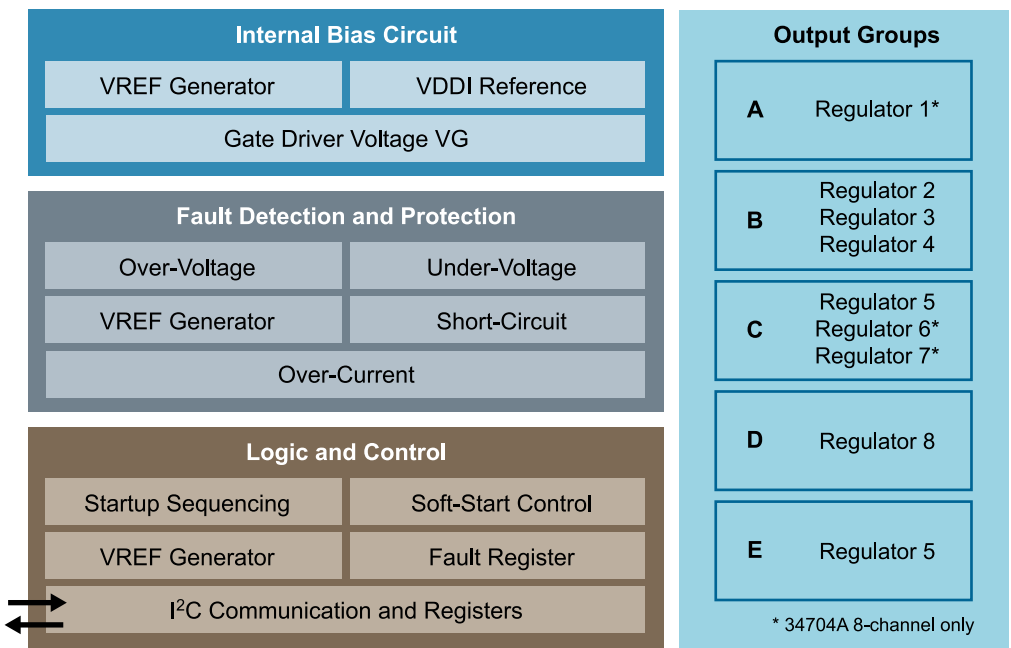
### Choose between five or eight independent output voltages

The MC34704 is a multi-channel power management IC (PMIC) used to address power management needs for various multimedia application microprocessors. Its ability to provide either five or eight independent regulator output voltages with a single input power supply (2.7V and 5.5V), together with its high efficiency, makes it ideal for portable devices powered by Li-Ion or Li-Polymer batteries or for USB-powered devices.

The MC34704 features eight (version A) or five (version B) buck and boost DC/DC switching regulators, with up to  $\pm 2$  percent output voltage accuracy. It provides dynamic voltage scaling on all regulators and is capable of operating at a switching frequency of up to 2 MHz. The device utilizes I<sup>2</sup>C programmability.

The MC34704 is housed in a 7 mm x 7 mm, Pb-free, QFN56 package. The PMIC is designed to reduce external component size and to implement full, space-efficient power management solutions.

MC34704 Functional Internal Block Diagram



## Parametric Table

Part Number	Buck-Boost Regulators	Supply Current Range	Supply Voltage Range	Features	Interface and Input Control	Temperature Ranges	Package
MC34704AEP	Boost	5V @ 500 mA	2.7V to 5.5V	Output under-voltage & over-voltage protection, over-current limit detection and short circuit protect	I <sup>2</sup> C	-20°C to +85°C	7 x 7 mm 56-pin QFN exposed pad
	Buck-boost	3.3V @ 500 mA					
	Buck	1.2V @ 500 mA					
	Buck	1.8V @ 300 mA					
	Buck-boost	3.3V @ 500 mA					
	Boost	15V @ 60 mA					
	Inverting boost	-7V @ 60 mA					
	Boost	15V @ 30 mA					
MC34704BEP	Buck-boost	3.3V @ 500 mA	2.7V to 5.5V	Output under-voltage & over-voltage protection, over-current limit detection and short circuit protect	I <sup>2</sup> C	-20°C to +85°C	7 x 7 mm 56-pin QFN exposed pad
	Buck	1.2V @ 500 mA					
	Buck	1.8V @ 300 mA					
	Buck-boost	3.3V @ 500 mA					
	Boost	15V @ 30mA					

### MC34704 Key Features

- Eight DC/DC (34704A) or five DC/DC (34704B) switching regulators with up to ±2 percent output voltage accuracy
- Dynamic voltage scaling on all regulators
- Selectable voltage mode control or current mode control on REG8
- I<sup>2</sup>C programmability
- Output under-voltage and over-voltage detection for each regulator
- Over-current limit detection and short-circuit protection for each regulator
- Thermal limit detection for each regulator, except REG7
- Integrated compensation for REG1, REG3, REG6, and REG8
- 5 μA maximum shutdown current (All regulators are off, 5.5V VIN)
- True cutoff on all of the boost and buck-boost regulators

### Development Tools

Part Number	Description
KIT34704AEPEVBE	Power management IC evaluation board
KIT34704BEPEVBE	Power management IC evaluation board

### Documentation

Document Number	Document Type	Description
MC34704	Data Sheet	Presents the specifications of this product
AN1902	Application note	Describes quad flat pack no-lead (QFN) package
SG1002	Selector Guide	Analog and power management device comparison

### MC34704 Applications

Well-suited for power supply designs in:

- Portable media players
- Smart phones
- Wireless PDAs
- Portable navigation devices
- Security or digital still cameras
- Remote controls
- Laser printers or fax machines
- Mobile gaming consoles
- Small appliances
- Point-of-sale terminals

### Learn More:

For more information, visit [www.freescale.com/analog](http://www.freescale.com/analog) and select Power Management > Switching Regulators.