

## Power Management Fact Sheet

# MC34700

## 9.0V to 18V quad-output power supply

### Overview

The MC34700 is a 9.0V to 18V quad-output integrated MOSFET power supply that is ideal for power designs in space-constrained applications. This power management IC contains three step-down switching regulators and one low-dropout linear regulator, making it a compact, simple-to-use and flexible general-purpose power product for a variety of power design requirements.

### Four Power Rails from One Control IC

Four output rails can be generated from a single control IC, supplying power for such components as microprocessors, microcontrollers, memory, small motors and LCD panels. The switching regulators utilize voltage-mode control with external compensation, allowing flexibility in optimizing the performance of the MC34700 for the needs of a given application. Each output channel features a separate enable input, providing control over the power-up sequencing characteristics of all four output power rails.

### Wide Operating Range

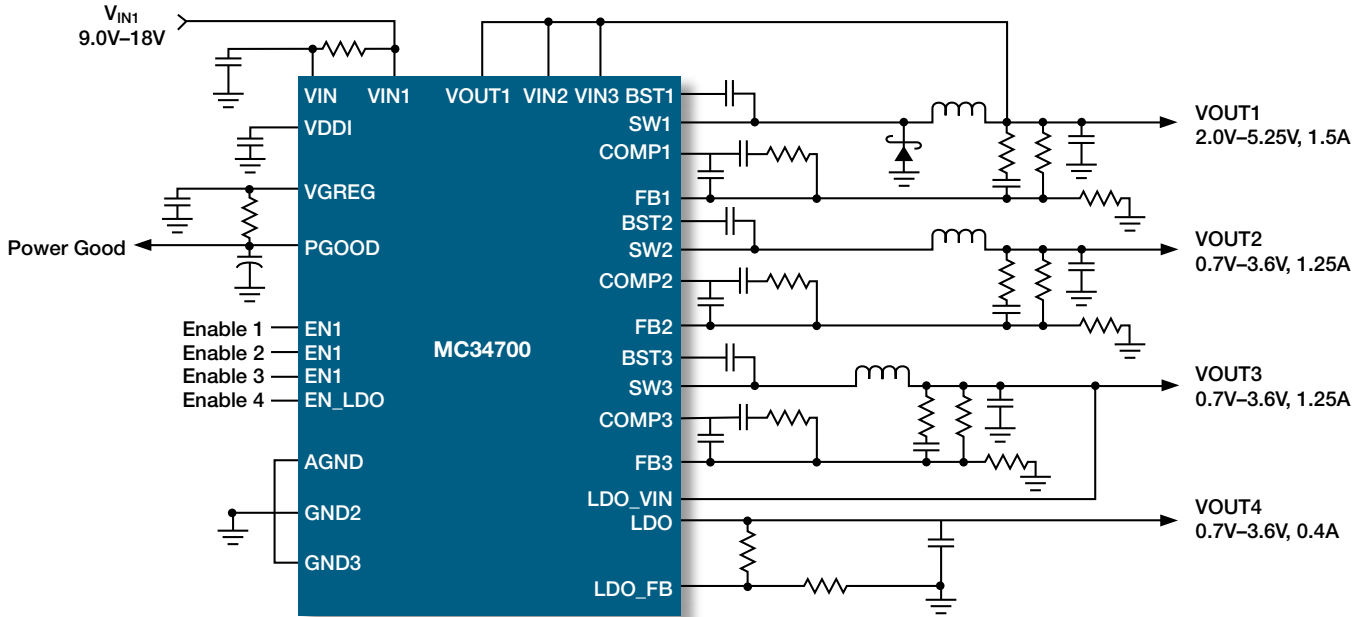
Channel 1 of the MC34700 can operate from an input voltage of 9.0V to 18V, while channels 2, 3 and 4 operate from an input voltage of 1.5V to 6.0V. Channels 2 and 3 can derive their input supplies from the output of channel 1 or from an external bias voltage. Channel 4 can derive its input supply from any of the outputs of channels 1 through 3, or from an external bias voltage.

The MC34700 features a power-good output, in addition to overvoltage, undervoltage, overcurrent and overtemperature protection, ensuring robust and reliable operation and exceptional fault tolerance. In addition to the internal power MOSFETs, the MC34700 features a fixed 800 kHz switching frequency and internal soft-start, enabling rapid power supply design and development. This frees the power designer from the burden of choosing power MOSFETs, optimizing switching frequencies or programming soft-start times.

### Applications

- Set-top boxes
- Cable modems
- Point-of-sale terminals
- Laser printers
- Inkjet printers
- Scanners
- Televisions
- Small appliances
- Telecom line cards
- DVD players

## MC34700 Simplified Application Diagram



### Features

- Three switching regulators: two synchronous and one non-synchronous
- One low dropout linear regulator
- Output current capability:
  - 1.5A continuous on channel 1
  - 1.25A continuous on channels 2 and 3
  - 400 mA continuous on channel 4
- Internal power MOSFETs on all channels
- Voltage feedforward on channel 1
- $\pm 1.5\%$  output voltage accuracy on all channels
- Cycle-by-cycle current limit and short-circuit protection
- Fixed 800 kHz switching frequency
- Internal soft-start
- Overvoltage and undervoltage protection
- Overtemperature protection
- Open-drain power-good output signal
- Separate active high enable input for each channel

### Parametric Table

| Performance                    | Typical Values  |
|--------------------------------|---|
| Voltage Regulators             | 3 Buck DC/DC, 1 Linear  |
| Output Voltages                | VOUT1 = 2.0V to 5.25V; VOUT2 = 0.7V to 3.6V; VOUT3 = 0.7V to 3.6V; LDO = 0.7V to 3.6V |
| Output Currents                | IOUT1 = 1500mA; IOUT2 and IOUT3 = 1250mA; LDO = 400mA                                 |
| PWM                            | 800 KHz   |
| ESD                            | 2 KV  |
| Control/Communication          | Parallel  |
| Operating Voltage              | VIN1 = 9-18V; VIN2, VIN3, LDO_VIN = 1.5-6V  |
| Temp. Ranges (T <sub>A</sub> ) | -40°C to +85°C  |

### Orderable Parts

| Part Number    | Description                               |
|----------------|---|
| MC34700EP/R2   | 9.0-18V, 4-ch. multi-purpose power supply |
| KIT34700EPEVBE | Evaluation board                          |

### Documentation

| Document Number | Document Type    | Description                                   |
|-----------------|------------------|---|
| MC34700         | Data Sheet       | Electrical specifications for this product    |
| SG1002          | Selector Guide   | Analog and power management device comparison |
| AN3592          | Application Note | Low power management unit with MC34700        |
| AN1902          | Application Note | Quad Flat No-Lead (QFN)                       |

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