Power Management ICs

Fujitsu Microelectronics

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Fujitsu Microelectronics Limited
Pursuing high reliability and advanced functions, Fujitsu offers you the latest power management ICs to meet your different needs with the extensive product line-up.

The latest trend in electronic devices is that a product should feature compact design, high performance and low-power consumption. In response to this trend, Fujitsu provides various types of power management ICs featuring low-power consumption, low-voltage operation, high precision, multiple channels, etc. From regulator IC featuring low-voltage operation, multiple channels, high efficiency and built-in FET, to reset IC with low-power consumption, high-precision voltage detection, and power-switching IC having low on-state resistance, our extensive product line-up can surely fulfill your diversified requirements.

**SEEDS and NEEDS.**

Fujitsu's Power Management ICs select from Application, Category

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Provided for different digital appliances from PC, cellular phones and communication networks to digital TV, digital cameras and DVC, Fujitsu power management IC combine state-of-the-art semiconductor design and production technology, system technology and application technology, and have risen to prominence as core technology of digital appliances.

Combining the above advanced technology, Fujitsu offers power management IC featuring high performance, advanced functions and user-friendliness.

**Lineup from Application**

**Notebook computer power management IC**
- MB3782
- MB3800
- MB39A135
- MB39A136
- MB39A130A

**Mobile phone power management IC**
- MB3771
- MB3773
- MB3793

**Portable device power management IC (GPS/PND/PMP)**
- MB39C006A
- MB39C014
- MB39C015
- MB39C0316

**IP telephone power management IC**
- MB3900
- MB39A114
- MB39A126
- MB39A125
- MB39A134

**Game machines power management IC**
- MB39A104
- MB39A106
- MB39A106
- MB39A116A

**Printer power management IC**
- MB39C011A
- MB39C015

**Recommended devices**
- MB39A116A
- MB39A104
- MB39A106
- MB39A106
- MB39A116A
- MB39A116A
- MB39A135
- MB39A136

**Application example**

AC/DC

- LCD panel
- Solution chip
- Backlight driver
- Invert
- Boost

Switch

1cell-Li-ion battery

Charger

PND: Personal Navigation Device, PMP: Portable Media Player
**Digital TV power management IC**

- MB3800
- MB3775
- MB3779
- MB39C011A
- MB39A104
- MB3889
- MB39A136

**Recommended devices**
- MB39A106
- MB39A116A
- MB39A130A
- MB39A135

**DDR2 SDRAM**

- MB39A135

**Core I/O**

- MB39A136

**System LSI**

- MB39C313
- MB39C307A

**Flash memory**

- MB39A135

**Li-ion battery**

- MB39C306

**For LCD panel**

- MB39C306

**DSC/DVC power management IC**

- MB3785A
- MB39A108
- MB39A102
- MB39A115
- MB39A103
- MB3825A
- MB393C06
- MB39A110
- MB3883
- MB39C309

**Application example**

- 3.6V
- 1.8V
- 1.2V
- 3.9V
- 3.5V
- 3.3V
- 12V

**LED backlight**

- MB39C306

**AFE**

- MB39C306

**AC/DC**

- MB39C306

**CCD**

- MB39C306

**Image processing engine**

- MB39C306

**PMU:** Power Management Unit

**GPU:** Graphic Processing Unit

**Charger**

- MB39C306

**Battery**

- MB39C306

**Chipset**

- MB39C306

**For 1-Seg TV and Mobile TV**

- Li-ion battery
  - 3.5V to 4.2V

- MB39C015

- MPU/SoC
  - 1.2V

- DAC
  - 2.8V

- USB

- MB39A135

- Recommended devices
  - MB39C006A
  - MB39C014
  - MB39C007
  - MB39C015
  - MB39C316

**Recommended device**

- MB39A106

**For MID (Mobile Internet Device) / UMPC (Ultra Mobile PC)**

- AC adapter
  - 5.5V to 12.6V

- 1.05V/3.5A

- 1.8V/2.5A

- 0.9V/1.5A

- 5.0V/2.0A

- 3.3V/4.5A

- MB39C306

- Battery
  - 5.0V system

- MB39C306

- Charger
  - 3.3V system

- MB39C306

- I/O controller
  - 5.0V system

- MB39C306

- DDR2
  - Application 5V-1

- MB39C306

- Application 3.3V-1

- MB39C306

- Image processing engine
  - MB39C306

- 5V-2

- MB39C306

- GPU
  - MB39C306

- PMU: Power Management Unit

**Recommended devices**

- MB39A102
- MB39A103
- MB39A110
- MB3883
- MB39C309

**For HDD/DVD Recorder**

- MB39A135

- Motor
  - 4.2V

- 4.8V

- 4.2V

- 3.2V

- 3.2V

- 1.6V

- 1.2V

- 2.5V

- 2.5V

- 2.5V

- 2.5V

- 2.5V

- 2.5V

- MB3800
- MB39C011A
- MB39A106
- MB39A130A

**Recommended devices**

- MB3800
- MB39A106
- MB39A130A
- MB39A135

**For Security Camera**

- AC/DC
  - 2.5V to 6V

- MB39C306

- 1.2V

- 1.8V

- 1.2V

- 3.9V

- 3.6V

- 7.5V

- 3.5V

- MB39C306

- USB

- MB39C306

- CCD

- AFE

**PMU:** Power Management Unit

**GPU:** Graphic Processing Unit

**For LCD panel**

- MB39A136

**For 5V-2**

- MB39A105

**For Security Camera**

- MB39A123
- MB39A112

**Recommended devices**

- MB3800
- MB3775
- MB3778
- MB39A104
- MB39A116A
- MB39A130A
- MB39A135

**For LCD panel**

- MB39A135

**For 5V-1**

- MB39A123
- MB39A112

**Recommended devices**

- MB39C308

**For Security Camera**

- MB39C308

**For LCD panel**

- MB39C308

**For LCD panel**

- MB39C308

**For LCD panel**

- MB39C308

**For LCD panel**

- MB39C308
Fujitsu provides various power management IC covering a vast range of specifications: the number of output channels ranges from 1 to 8 and the input voltage from 1.7V to 25V.

### General-purpose DC/DC Converter

#### MB39A135

**Nch/Nch Synchronous Rectification 1-channel DC/DC Buck Converter IC**

**Substantial protective functions**

- **Description**
  - MB39A135 is a Current mode Nch/Nch synchronous rectification 1-channel DC/DC buck converter IC. This IC has realized the high-speed response, high efficiency and low ripple voltage by a current mode system. It supports ceramic capacitors. It is suitable for set miniaturization by using small package and compact coil design enabled by adopting high frequency operation.

- **Features**
  - Wide range of power supply voltage: 4.5V to 25V
  - Selectable fixed PWM mode or automatic PFM/PWM mode
  - High frequency operation: 100kHz to 1.0MHz
  - Any output voltage setting by external resistor
  - Requires no flyback diode
  - Built-in soft-start circuit / Built-in soft-stop circuit
  - Substantial protective functions

- **Application**
  - Digital TV, Digital AV devices etc.

#### MB39A136

**Nch/Nch Synchronous Rectification 2-channel DC/DC Buck Converter IC**

**Substantial protective functions**

- **Description**
  - MB39A136 is a Current mode Nch/Nch synchronous rectification 2-channel DC/DC buck converter IC. This IC has realized the high-speed response, high efficiency and low ripple voltage by a current mode system. It supports ceramic capacitors. It is suitable for set miniaturization by using small package and compact coil design enabled by adopting high frequency operation.

- **Features**
  - Wide range of power supply voltage: 4.5V to 25V
  - Selectable fixed PWM mode or automatic PFM/PWM mode
  - High frequency operation: 100kHz to 1.0MHz
  - Any output voltage setting by external resistor
  - Requires no flyback diode
  - Built-in soft-start circuit / Built-in soft-stop circuit
  - Substantial protective functions

- **Application**
  - Digital TV, Digital AV devices etc.
MB39C011A  Nch/Pch Synchronous Rectification 2-channel DC/DC Buck Converter IC

**P/N synchronous, Pch asynchronous**

- **Description**
  MB39C011A is a PWM-type Nch/Pch synchronous rectification 2-channel DC/DC buck converter IC. It has a wide power supply voltage range and supports ceramic capacitors.

- **Features**
  - Wide range of power supply voltage: 4.5V to 17V
  - High frequency operation: 100kHz to 2.0MHz
  - Any output voltage setting by external resistor
  - Built-in soft-start circuit
  - Supporting ceramic condensers

- **Application**
  - For various electronic devices including digital AV devices

---

MB39A104  Pch Asynchronous Rectification 2-channel DC/DC Buck Converter IC

**Asynchronous, Overcurrent protection**

- **Description**
  MB39A104 is a PWM-type Pch asynchronous rectification 2-channel DC/DC buck converter IC with overcurrent protection circuit (requiring no current sense resistor). Operating at high frequency reduces the value of coil.

- **Features**
  - Power supply voltage range: 7V to 19V
  - Reference voltage: 5.0V±1%
  - Error amplifier threshold voltage: 1.24V±1%
  - High-frequency operation capability: 1.5MHz (max)
  - Built-in standby function: 0µA (Typ)
  - Built-in soft-start circuit independent of loads
  - Built-in totem-pole type output for P-ch MOS FET

- **Application**
  - LCD monitor / panel
  - ADT, modem, etc.
  - IP phone
  - IP phone
  - Video capture etc.

---

MB39A130A  Nch/Nch Synchronous Rectification 1-channel DC/DC Buck Converter IC

**Ultra-rapid response, High efficiency**

- **Description**
  MB39A130A is a 1ch DC/DC buck converter equipped with a bottom detection comparator and Nch/Nch synchronous rectification. It supports low on-duty operation, enabling stable low voltage output when there is a large difference between input and output voltages. It achieves ultra-rapid response and high efficiency with sufficient internal protection function, and is suitable for the power supply of a core circuit having low voltage and large current, such as the ASIC and FPGA made by 45nm or 65nm process technology.

- **Features**
  - Wide range of power supply voltage: 4.5V to 25V
  - High frequency operation: 250kHz to 2.6MHz
  - Any output voltage setting by external resistor
  - Built-in soft-start circuit
  - Supporting ceramic condensers

- **Application**
  - Digital TV, Photocopiers, Projectors, STB
  - Blu-ray, DVD player/recorders, Various other advanced devices

---

MB39A112  3ch DC/DC Buck Converter IC

**2.6MHz operation / 3ch**

- **Description**
  MB39A112 is a PWM-type 3-channel DC/DC buck converter IC. 3 channels are installed in the TSSOP20 package. It is capable of implementing an efficient high frequency DC/DC converter.

- **Features**
  - Wide range of power supply voltage: 7V to 25V
  - High frequency operation: 250kHz to 2.6MHz
  - Any output voltage setting by external resistor
  - Built-in soft-start circuit
  - Supporting ceramic condensers

- **Application**
  - IP-STB, Surveillance camera, ADSL Modem etc.
MB39C014 | 3.2MHz/2MHz, Output Current 800mA(max), 1-channel DC/DC Buck Converter IC

**Internal FET, High-speed response**

**Description**
MB39C014 is a PWM-type 1-channel DC/DC buck converter IC. The selection of operation frequency is possible at 3.2MHz or 2MHz. This IC has realized the high-speed response, high efficiency and low ripple voltage by a current mode system. This product has built-in phase-compensation circuit and soft-start circuit, contributes to the reduction in total area including external parts.

**Features**
- High efficiency: 96% (max)
- Power supply voltage range: 2.5V to 5.5V
- Output voltage range: 0.45V to 3.6V
- Output current (DC/DC): 800mA (max)
- Operating frequency: 2.0MHz or 3.2MHz
- POWERGOOD Function

**Application**
- Surveillance camera, photograph printer etc.
- Portable device, DVD recorder
- IP-Phone, Equipment of PLC etc.

---

MB39C015 | Output Current 800mA(max), 1-channel DC/DC Buck Converter IC built-in Voltage Detection

**Internal FET, High-speed response**

**Description**
MB39C015 is a 2-channel DC/DC buck converter IC built-in voltage detection. This IC has realized the high-speed response, high efficiency and low ripple voltage by a current mode system. A power supply starting sequence can be constituted using a voltage detection circuit and a soft-start circuit.

**Features**
- High efficiency: 96% (max)
- Power supply voltage range: 2.5V to 5.5V
- Output voltage range: 0.45V to 3.9V
- Output voltage range: 0.45V to 3.6V
- Output current (DC/DC): 800mA (max)
- Operating frequency: 2.0MHz

**Application**
- Portable device, Hard Disk Recorder etc.

---

**Lineup of General-purpose DC/DC Converter**

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of channels</th>
<th>Switching frequency (max/kHz)</th>
<th>Power supply voltage range V</th>
<th>Output voltage range V</th>
<th>Switching FET</th>
<th>Topology</th>
<th>Package</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>MB39A104</td>
<td>1</td>
<td>200</td>
<td>±0.3 to ±1.8</td>
<td>400</td>
<td>--</td>
<td>Buck</td>
<td>SOP16</td>
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<td>MB39A105</td>
<td>2</td>
<td>1000</td>
<td>±1.0 to ±1.8</td>
<td>400</td>
<td>--</td>
<td>Boost</td>
<td>SSOP16</td>
<td>--</td>
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<td>Boost</td>
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<td>±1.0 to ±1.8</td>
<td>400</td>
<td>--</td>
<td>Boost</td>
<td>SSOP16</td>
<td>--</td>
</tr>
<tr>
<td>MB39A122</td>
<td>2</td>
<td>1000</td>
<td>±1.0 to ±1.8</td>
<td>400</td>
<td>--</td>
<td>Boost</td>
<td>SOP16</td>
<td>--</td>
</tr>
<tr>
<td>MB39A123</td>
<td>2</td>
<td>1000</td>
<td>±1.0 to ±1.8</td>
<td>400</td>
<td>--</td>
<td>Boost</td>
<td>SSOP16</td>
<td>--</td>
</tr>
<tr>
<td>MB39A124</td>
<td>2</td>
<td>1000</td>
<td>±1.0 to ±1.8</td>
<td>400</td>
<td>--</td>
<td>Boost</td>
<td>SOP16</td>
<td>--</td>
</tr>
<tr>
<td>MB39A125</td>
<td>2</td>
<td>1000</td>
<td>±1.0 to ±1.8</td>
<td>400</td>
<td>--</td>
<td>Boost</td>
<td>SSOP16</td>
<td>--</td>
</tr>
</tbody>
</table>

For various types of power supplies such as LCD backlight, car navigation devices, audio devices, game consoles and portable devices.

* φ: Recommended, φ: Possible with the addition of outside parts.

---

**Lineup of DC/DC Converter with Switching FET**

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of channels</th>
<th>Switching frequency MHz</th>
<th>Power supply voltage range V</th>
<th>Output current (max) mA</th>
<th>Switching FET</th>
<th>Topology</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB39C014</td>
<td>1</td>
<td>3.2/2 (Fixed)</td>
<td>±2.0 to ±3.6</td>
<td>800</td>
<td>--</td>
<td>Buck</td>
<td>SDN10</td>
</tr>
<tr>
<td>MB39C015A</td>
<td>1</td>
<td>3.2/2 (Fixed)</td>
<td>±2.0 to ±3.6</td>
<td>800</td>
<td>--</td>
<td>Buck</td>
<td>SDN10</td>
</tr>
<tr>
<td>MB39C015B</td>
<td>2</td>
<td>2 (Fixed)</td>
<td>±2.0 to ±3.6</td>
<td>800</td>
<td>--</td>
<td>Buck</td>
<td>SDN10</td>
</tr>
<tr>
<td>MB39C016</td>
<td>2</td>
<td>2 (Fixed)</td>
<td>±2.0 to ±3.6</td>
<td>800</td>
<td>--</td>
<td>Buck</td>
<td>SDN10</td>
</tr>
<tr>
<td>MB39C017</td>
<td>2</td>
<td>2 (Fixed)</td>
<td>±2.0 to ±3.6</td>
<td>800</td>
<td>--</td>
<td>Buck</td>
<td>SDN10</td>
</tr>
</tbody>
</table>

Suitable for internal power supply in portable devices such as cellular phones, PDA, and in DVD, HDD, etc.
**Power Management IC for Portable Products**

**MB39C018**

1-channel DC/DC Buck Converter IC built-in Bypass FET

**Description**

MB39C018 is a 1-channel DC/DC buck converter IC for RF Power Amplifier. This IC has realized the high-speed response, high efficiency and low ripple voltage by a current mode system. Output Current realizes large current (max. 800mA).

**Features**

- High efficiency: 96% (max)
- Power supply voltage range: 2.5V to 5.5V
- Output range: 0.8V to 3.6V
- Output current (DC/DC): 800mA (max)
- Built-in Switching FET, Bypass FET (max. 1A)
- Operating frequency: 2.0MHz

**Application**

- Power Amplifier for the 3G Cellular Phones

**System configuration of Cellular phones**

**DC/DC Converter for RF Power Amp.**

**MB39C313**

4-channel DC/DC Converter IC for LCD Panel

**Description**

MB39C313 is a 4-channel system power management IC. It consists of 2ch DC/DC converter and 2ch charge pump type DC/DC converter.

**Features**

- Power supply voltage range: 8V to 14V
- Structure: CH1/CH2: voltage mode DC/DC converter included switching FET, CH3/CH4: charge pump with output voltage feedback
- Built-in soft-start circuit independent of loads
- Excellent line regulation with the feed-forward method (Vlogic, Vs)
- Built-in sequence comparator for rising
- Frequency setting by input pin: 500kHz / 750kHz

**Application**

- Large size LCD panel

**System configuration of LCD panel**

---

**Supporting 1-cell Li-ion Battery**

**Application**

Power supply voltage range: 2.5V to 5.5V

**Features**

- Output Current realizes large current (max. 800mA)

**MB39C316**

Power Management IC for Mobile Terminals 3-channel DC/DC Converter + 4-channel LDO

**Description**

MB39C316 is a power management IC equipped with 3ch DC/DC converter and the 4ch linear regulator (LDO). MB39C316 operate in the range of power supply voltage with 1-cell Li-ion power by converter and the 4ch linear regulator (LDO). MB39C316 is a power management IC equipped with 3ch DC/DC converter and the 4ch linear regulator (LDO).

**Application**

- Mobile WiMAX terminals
- Portables Products such as PDA
- Large size LCD panel

**System configuration of Mobile Terminals**

---

**DC/DC Converter for LCD Panels**

**MB39C313**

4-channel DC/DC Converter IC for LCD Panel

**Description**

MB39C313 is a 4-channel system power management IC. It consists of 2ch DC/DC converter and 2ch charge pump type DC/DC converter.

**Features**

- Power supply voltage range: 8V to 14V
- Structure: CH1/CH2: voltage mode DC/DC converter included switching FET, CH3/CH4: charge pump with output voltage feedback
- Built-in soft-start circuit independent of loads
- Excellent line regulation with the feed-forward method (Vlogic, Vs)
- Built-in sequence comparator for rising
- Frequency setting by input pin: 500kHz / 750kHz

**Application**

- Large size LCD panel

**System configuration of LCD panel**

---

**Power Management IC for Portable Products**

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of channels</th>
<th>Switching frequency MHz</th>
<th>Power supply voltage V</th>
<th>Output features</th>
<th>Pin name</th>
<th>Switching FET</th>
<th>Bypass FET (Typ) V</th>
<th>Package</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB39C018</td>
<td>1</td>
<td>2 (fixed)</td>
<td>2.5 -4.0</td>
<td>&gt;3.5 to 5.5</td>
<td>800</td>
<td>0.3</td>
<td>80</td>
<td>QFN24</td>
<td>Current mode system, synchronous rectification, output short-circuit protection, over-temperature protection, over-current protection, under-voltage lockout protection</td>
</tr>
</tbody>
</table>

---

**Lineup of DC/DC Converter for LCD Panels**

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of channels</th>
<th>Switching frequency MHz</th>
<th>Power supply voltage V</th>
<th>Reference voltage</th>
<th>Topology</th>
<th>Over-current protection A</th>
<th>Package</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB39C013</td>
<td>4</td>
<td>500/750</td>
<td>8.0 to 14</td>
<td>1.20/1.30</td>
<td>1.20/1.30</td>
<td>50A</td>
<td>TSSOP28</td>
<td>TSSOP28</td>
</tr>
<tr>
<td>MB39C3107A</td>
<td>6</td>
<td>600</td>
<td>4.5 to 6.0 or 5.5 to 7.7</td>
<td>1</td>
<td>1</td>
<td>10</td>
<td>UCSP</td>
<td>UCSP</td>
</tr>
</tbody>
</table>
**System power management IC for DSC**

**MB39C309**
- **Description**: MB39C309 is a 7-channel DC/DC converter IC with two buck converter circuits, two boost converter circuits, a inverter circuit, two buck boost converter circuits. DO1 to DO6 channels adopt the current mode built in the phase compensation circuit. Highly effective in a high frequency can be achieved in all channel with internal Switching FETs. In addition, MB39C309 is able to reduce the number of parts, as the two channel series regulator is built in this IC. The MB39C309 is suitable for power supply of high performance portable instruments powered by a 1-cell Li-ion rechargeable battery.

**Features**
- Control function of DC/DC converter
- All 7-channels with internal Switching FETs
- Current mode buck-conversion: (CH1,2)
- Boost-conversion: (CH3,6)
- Overvoltage protection: (CH7: OVP)
- Overcurrent protection circuit (LDO1,2)
- Built-in the output setting resistors (DD1 to 3,6)
- Oscillation frequency: 1.5MHz

**Application**
- Digital still camera

**MB39A123**
- **Description**: MB39A123 is a 6-channel DC/DC converter IC using pulse width modulation (PWM), as the two channel series regulator is built in this IC. The MB39A123 is highly effective in a high frequency can be achieved in all channel with internal Switching FETs. The MB39A123 is suitable for power supply of high performance portable instruments powered by a 1-cell Li-ion rechargeable battery.

**Features**
- Control function of DC/DC converter
- All 6-channels with internal Switching FETs
- Current mode buck-conversion: (CH1,2)
- Buck-boost(H-bridge) conversion(CH3,6)
- Over-temperature protection (OTP)
- Overvoltage protection (OVP)
- Undervoltage lockout circuit (UVLO)
- Built-in the output setting resistors (CH1 to 6)
- Oscillation frequency: 1.5MHz

**Application**
- Digital still camera

---

**MB39C306**
- **Description**: MB39C306 is a 7-channel DC/DC converter IC with two buck converter circuits, two boost converter circuits, a inverter circuit, two buck boost converter circuits. CH1 to CH6 channels adopt the current mode built in the phase compensation circuit. Highly effective in a high frequency can be achieved in all channel with internal Switching FETs. The MB39C306 is suitable for power supply of high performance portable instruments powered by a 1-cell Li-ion rechargeable battery.

**Features**
- Control function of DC/DC converter
- All 7-channels with internal Switching FETs
- Current mode buck-conversion: (CH1,2)
- Buck-boost(H-bridge) conversion(CH3,6)
- Boost-conversion(CH4)
- Invert-conversion(CH5)
- Overvoltage protection (OVP)
- Oscillation frequency: 1.5MHz

**Application**
- Digital video camera

---

**Lineup of DC/DC Converter for DSC/DVC**

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of channels</th>
<th>Switching frequency (max)kHz</th>
<th>Power supply voltage 1 (V)</th>
<th>Reference voltage accuracy %</th>
<th>Package</th>
<th>Control function</th>
<th>Synchronous rectification</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB376A</td>
<td>4</td>
<td>1000</td>
<td>+5.5 to +18</td>
<td>±1</td>
<td>LQFP48</td>
<td>Buck/Boost</td>
<td>No available</td>
<td></td>
</tr>
<tr>
<td>MB31A102</td>
<td>4</td>
<td>1000</td>
<td>+5.5 to +11</td>
<td>±1</td>
<td>BCC32, TSSOP30</td>
<td>Buck/Boost</td>
<td>No available</td>
<td></td>
</tr>
<tr>
<td>MB31A103</td>
<td>4</td>
<td>1000</td>
<td>+7.6 to +11</td>
<td>±1</td>
<td>BCC32, TSSOP30</td>
<td>Buck/Boost</td>
<td>No available</td>
<td></td>
</tr>
<tr>
<td>MB31A110</td>
<td>4</td>
<td>2000</td>
<td>+5.5 to +11</td>
<td>±1</td>
<td>TSSOP30</td>
<td>Buck/Boost</td>
<td>No available</td>
<td></td>
</tr>
<tr>
<td>MB31A106</td>
<td>5</td>
<td>2000</td>
<td>+7.6 to +11</td>
<td>±1</td>
<td>BCC32, TSSOP30</td>
<td>Buck/Boost</td>
<td>No available</td>
<td></td>
</tr>
<tr>
<td>MB31A112</td>
<td>5</td>
<td>2000</td>
<td>+7.6 to +11</td>
<td>±1</td>
<td>BCC32, TSSOP30</td>
<td>Buck/Boost</td>
<td>No available</td>
<td></td>
</tr>
<tr>
<td>MB31A112</td>
<td>5</td>
<td>2000</td>
<td>+10.8 to +12</td>
<td>±1</td>
<td>LQFP48</td>
<td>Buck/Boost</td>
<td>No available</td>
<td></td>
</tr>
<tr>
<td>MB31A112</td>
<td>5</td>
<td>2000</td>
<td>+10.8 to +12</td>
<td>±1</td>
<td>BCC48</td>
<td>Buck/Boost</td>
<td>No available</td>
<td></td>
</tr>
<tr>
<td>MB31A112</td>
<td>5</td>
<td>2000</td>
<td>+10.8 to +12</td>
<td>±1</td>
<td>BCC48</td>
<td>Buck/Boost</td>
<td>No available</td>
<td></td>
</tr>
<tr>
<td>MB31A112</td>
<td>5</td>
<td>2000</td>
<td>+10.8 to +12</td>
<td>±1</td>
<td>BCC48</td>
<td>Buck/Boost</td>
<td>No available</td>
<td></td>
</tr>
</tbody>
</table>

For portable devices such as DSC and DVC.

* * : Recommended | O : Possible with the addition of outside parts
### MB39A134 – DC/DC Converter IC for Charging Li-ion Battery

**Description**
MB39A134 is a DC/DC converter IC for charging Li-ion battery, which is suitable for buck-conversion, and uses pulse width modulation (PWM) for controlling the output voltage and current independently.

**Features**
- Power supply voltage range: 8V to 25V
- Support 2, 3, and 4 Cell battery pack
- Topology: Pch/Diode, asynchronous rectification
- AC adapter voltage detection function (ACOK terminal)
- Output voltage setting accuracy: ±0.7% (Ta=-10°C to +85°C)
- Charging current can be set without externally attached resistor
- High accuracy current detection amplifier (+1% (4A input voltage difference 100mV))

**Application**
- Charging device in products such as Notebook PC

### Lineup of Charge Control

<table>
<thead>
<tr>
<th>Model</th>
<th>Switching frequency</th>
<th>Power supply voltage</th>
<th>Output voltage</th>
<th>Accuracy %</th>
<th>Ta=25°C</th>
<th>Available</th>
<th>Package</th>
<th>TOTopology</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB39A114</td>
<td>500</td>
<td>±8 to ±25</td>
<td>16.8</td>
<td>±0.8</td>
<td>±0.1</td>
<td>SSOP24</td>
<td>Buck</td>
<td>4-cell, parallel charging, dynamically controlled charging</td>
<td></td>
</tr>
<tr>
<td>MB39A116</td>
<td>±8 to ±25</td>
<td>±8 to ±0.8</td>
<td>±0.1</td>
<td>±0.7</td>
<td>±0.3</td>
<td>SSOP24</td>
<td>Buck</td>
<td>4-cell, dynamically controlled charging</td>
<td></td>
</tr>
<tr>
<td>MB39A118</td>
<td>±8 to ±25</td>
<td>±8 to ±0.8</td>
<td>±0.1</td>
<td>±0.7</td>
<td>±0.3</td>
<td>SSOP24</td>
<td>Buck</td>
<td>4-cell, dynamically controlled charging</td>
<td></td>
</tr>
<tr>
<td>MB39A120</td>
<td>±8 to ±25</td>
<td>±8 to ±0.8</td>
<td>±0.1</td>
<td>±0.7</td>
<td>±0.3</td>
<td>SSOP24</td>
<td>Buck</td>
<td>4-cell, dynamically controlled charging</td>
<td></td>
</tr>
<tr>
<td>MB39A122</td>
<td>±8 to ±25</td>
<td>±8 to ±0.8</td>
<td>±0.1</td>
<td>±0.7</td>
<td>±0.3</td>
<td>SSOP24</td>
<td>Buck</td>
<td>4-cell, dynamically controlled charging</td>
<td></td>
</tr>
<tr>
<td>MB39A124</td>
<td>±8 to ±25</td>
<td>±8 to ±0.8</td>
<td>±0.1</td>
<td>±0.7</td>
<td>±0.3</td>
<td>SSOP24</td>
<td>Buck</td>
<td>4-cell, dynamically controlled charging</td>
<td></td>
</tr>
<tr>
<td>MB39A134</td>
<td>±8 to ±25</td>
<td>±8 to ±0.8</td>
<td>±0.1</td>
<td>±0.7</td>
<td>±0.3</td>
<td>SSOP24</td>
<td>Buck</td>
<td>4-cell, dynamically controlled charging</td>
<td></td>
</tr>
<tr>
<td>MB39A136</td>
<td>±8 to ±25</td>
<td>±8 to ±0.8</td>
<td>±0.1</td>
<td>±0.7</td>
<td>±0.3</td>
<td>SSOP24</td>
<td>Buck</td>
<td>4-cell, dynamically controlled charging</td>
<td></td>
</tr>
<tr>
<td>MB39A138</td>
<td>±8 to ±25</td>
<td>±8 to ±0.8</td>
<td>±0.1</td>
<td>±0.7</td>
<td>±0.3</td>
<td>SSOP24</td>
<td>Buck</td>
<td>4-cell, dynamically controlled charging</td>
<td></td>
</tr>
<tr>
<td>MB39A140</td>
<td>±8 to ±25</td>
<td>±8 to ±0.8</td>
<td>±0.1</td>
<td>±0.7</td>
<td>±0.3</td>
<td>SSOP24</td>
<td>Buck</td>
<td>4-cell, dynamically controlled charging</td>
<td></td>
</tr>
</tbody>
</table>

### Power Voltage Monitoring Applications

**MB3793** is a power voltage monitoring IC with dual-system watchdog timer. A reset signal is output at transient power cut-off or power fail. When the power resumes, the IC outputs a power-on reset signal to MPU to monitor power voltage. Using this IC in an MCU system can provide such system with a fail-safe function.

**Features**
- Detection voltage: 4.5V±2% (3.7V/3.4V)±20% (2.7V/2.7V) Type
- Precise detection of power voltage fall: ±2.5%
- Detection voltage with hysteresis
- Internal dual-input watchdog timer
- Watchdog-timer halt function (by inhibition pin)
- Independently-set watchdog and reset times

**Application**
- Arcade Amusement
- PBX and base stations
- Vending machines etc.

### Lineup of Power Voltage Monitoring Application

<table>
<thead>
<tr>
<th>Model</th>
<th>Function</th>
<th>Detection voltage</th>
<th>Power supply voltage</th>
<th>Package</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB3771</td>
<td>Power supply voltage monitor</td>
<td>Voltages other than 4.2V optionally available</td>
<td>±0.8 to ±1.2</td>
<td>SOP8</td>
<td>–</td>
</tr>
<tr>
<td>MB3773</td>
<td>MP3 power voltage monitor</td>
<td>Voltages other than 4.2V optionally available</td>
<td>±0.8 to ±1.2</td>
<td>SOP8</td>
<td>–</td>
</tr>
<tr>
<td>MB3793-XX</td>
<td>Power supply voltage monitor</td>
<td>Voltages other than 4.2V optionally available</td>
<td>±0.8 to ±1.2</td>
<td>SOP8</td>
<td>–</td>
</tr>
</tbody>
</table>

*Used in power supplies for various applications, including automobiles, hot water systems, copiers, VCRs, hard disk drives, general OA equipment, measuring instruments, and pachinko/pinball machines.*
MB39C308 6ch DC/DC Buck Converter IC for LPIA Platform

High efficiency
- MB39C308 is a 6ch DC/DC buck converter LSI supporting the 2008 version of LPIA platform. This LSI supplies power to the system (*), memory, and chips in UMPCs, and minimizes the PCB area of power solution. The increased efficiency of power supply of this LSI can contribute to extending the UMPC’s battery life.
- Various applications, such as wireless LAN

Features
- Intel conformity (LPIA)
- Current mode topology with Nch/Nch synchronous rectification
- High efficiency: 90% (max)
- Power supply voltage range: 5.5V to 12.6V
- Preset output voltage
- Integrated FET Driver for external MOS FETs (2ch)
- Internal switching FET (4ch)

Application
- Ultra Mobile PC (UMPC)
- Mobile Internet Device (MID)
- Mobile equipment

DC/DC Converter for UMPC

Lineup of AC/DC Converter

Lineup of Power Management Switches

RoHS Compliance Information

Lead (Pb) Free Version
Fujitsu LSI products are compliant with RoHS Directive, and observe the standards of lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE).

An RoHS-compliant product is indicated by trailing characters “E1” in its part number.
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Example: MB39C015 evaluation board  Example: MB39C015 connection diagram

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Example: MB39C015 evaluation board Example: MB39C015 connection diagram

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