

## General-purpose DC/DC Converter

### MB39A138

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

#### Ultra-rapid response, High efficiency

1ch	Buck	B/B	Boost	Inv	FET
20A	SCP	OTP	OVP	OCP	UVP

#### Description

MB39A138 is a 2ch DC/DC buck converter equipped with a bottom detection comparator and N-ch/N-ch synchronous rectification. It supports low on-duty operation to allow stable output of low voltages when there is a large difference between input and output voltages. MB39A138 realizes ultra-rapid response and high efficiency with built-in enhanced protection features.

The MB39A138 is suitable for the power supply of the core circuit which is 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: 6V to 24V
- High efficiency of power conversion: 96% (max.)
- Adjustable frequency setting by an external resistor: 310kHz / 465kHz
- High accuracy reference voltage:  $\pm 1.0\%$
- Output voltage setting range: 0.7V to 5.2V / 2.0V to 5.2V
- Adjustable output voltages setting by the external control
- Built-in diode for boot strap
- Built-in soft-start circuit independent of loads
- Synchronous rectification type output driver for N-ch MOS FET
- Supporting FUJITSU ASIC (CS201series, CS201series)
- Standby current: 0  $\mu$ A (typ)
- Built-in discharge control circuit

#### Application

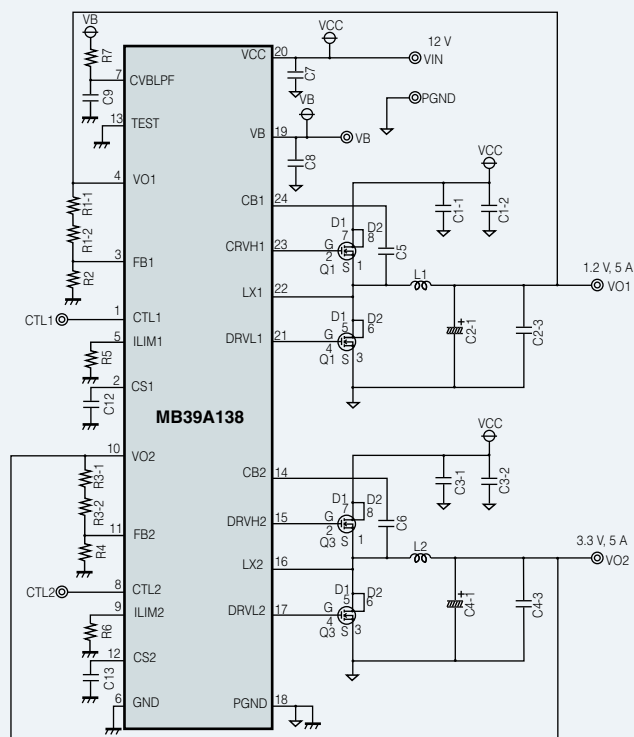
- Digital TV, Photocopiers, Projectors, STB
- Blu-ray, DVD players/recorders, Various other advanced devices

TSSOP24



(0.65mm Lead Pitch)

#### Application circuit example



## DC/DC Converter with Switching FET + LDO

### MB39C022 Series

### 1-channel DC/DC Buck Converter IC + 1-channel Low-Noise LDO

#### For Portable Devices with digital circuits and with analog circuits

1ch	Buck	B/B	Boost	Inv	FET
0.6A	SCP	OTP	OVP	OCP	UVP

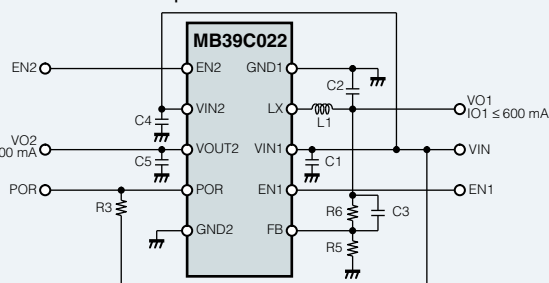
#### Description

An optimal IC for power management systems in portable devices with one built-in channel of DC/DC step-down converter for digital circuits and one built-in channel of low-noise LDO for analog circuits. Two power management systems in a 10-pin package of 3.0mm x 3.0mm. The built-in switching FET enable the construction of a power management system at a low BOM cost. There are four variations of the fixed output voltage in the LDO block.

#### Features

- Power supply voltage range: 2.5V to 5.5V  
Supporting 1-cell Li-ion Battery
- Function of DC/DC circuit:  
PFM/PWM mode: Improving efficiency under light load  
Current mode: High-speed load response
- Output voltage/current of DC/DC block:  
Voltage setting range: 0.8V to 4.5V  
Current: 300mA (Max.)
- Output voltage/current of LDO block:  
Output voltage (fixed): 3.3V (MB39C022G)  
2.85V (MB39C022J)  
1.8V (MB39C022L)  
1.2V (MB39C022N)  
Current: 300mA (Max.)
- Power on Reset (POR)
- Package: SON-10  
3.0mmx3.0mmx0.75mm (lead pitch 0.5mm)

#### Application circuit example



SON10



#### Application

- Portable applications
- GPS, PND
- MP3, PMP
- Portable TV, USB dongle (CMMB, DVB-T, DMB-T)
- SMART-PHONE, etc.

# DC/DC Converter with Switching FET

## MB39C006A

3.2MHz/2MHz, Output Current 800mA(max), 1-channel DC/DC Buck Converter IC

### Internal FET, High efficiency

1ch	Buck	B/B	Boost	Inv	FET
0.8A	SCP	OTP	OVP	OCP	UVP

#### Description

MB39C006A is a current mode 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

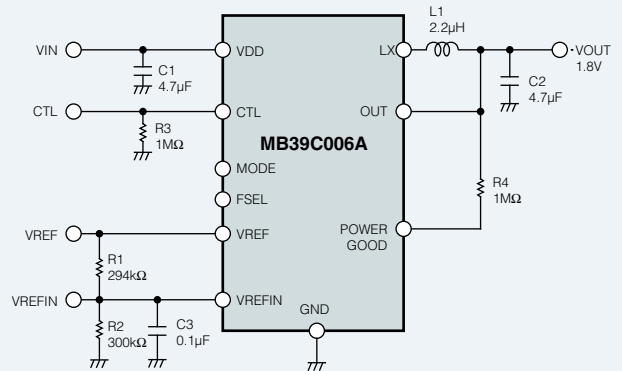
- PFM/PWM function
- High efficiency: 96% (max)
- Power supply voltage range: 2.5V to 5.5V
- Output voltage range: 0.45V to 3.6V
- Output current (DC/DC): 800mA (max)
- Operating frequency: 2.0MHz or 3.2MHz
- POWERGOOD Function

#### Application

- Surveillance camera, photograph printer etc.
- Portable device such as 1-seg TV & 3-seg Radio etc.
- DVD Recorder, Hard Disk Recorder etc.



#### Application circuit example



► Application : P3,4,5

## MB39C007

Output Current 800mA(max), 2-channel DC/DC Buck Converter IC built-in Voltage Detection

### Internal FET, High efficiency

2ch	Buck	B/B	Boost	Inv	FET
0.8A	SCP	OTP	OVP	OCP	UVP

#### Description

MB39C007 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

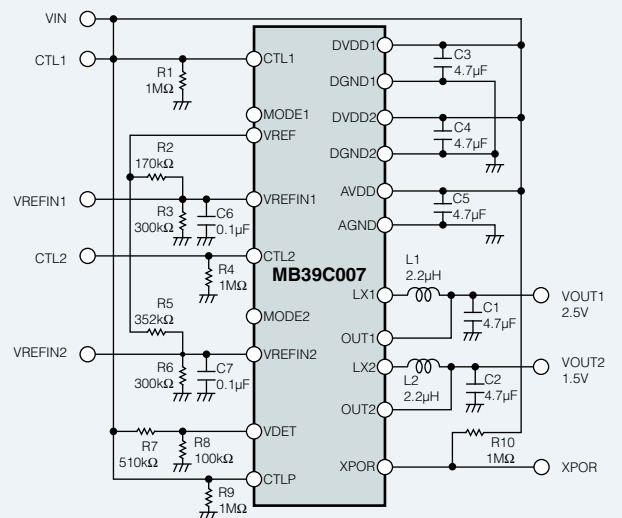
- PFM/PWM function
- High efficiency: 96% (max)
- Power supply voltage range: 2.5V to 5.5V
- Output voltage range: 0.45V to 3.9V
- Output current (DC/DC): 800mA/ch (max)
- Operating frequency: 2.0MHz

#### Application

- Portable device, DVD recorder
- IP-Phone, Equipment of PLC etc.



#### Application circuit example



► Application : P3,4,5