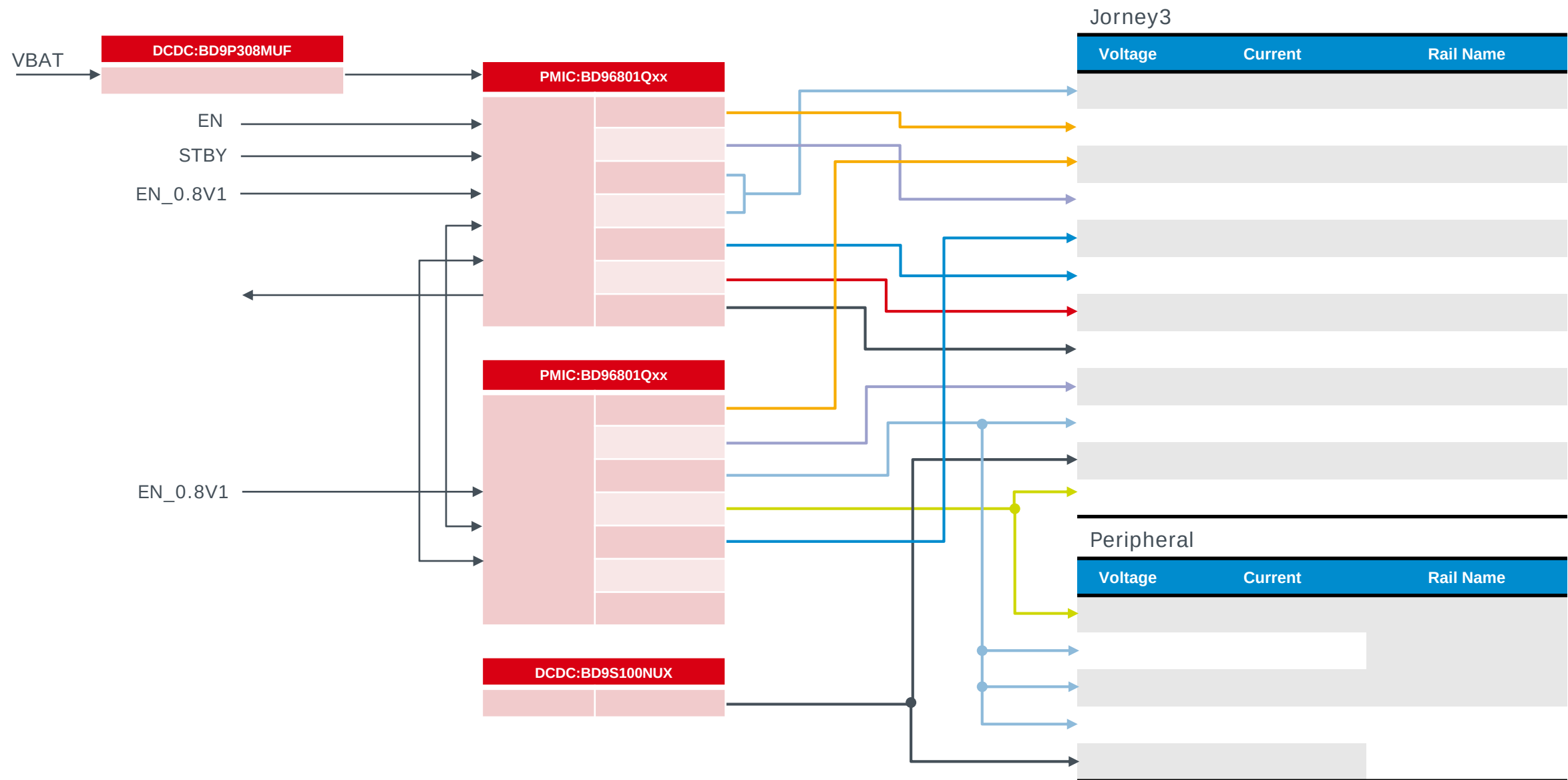


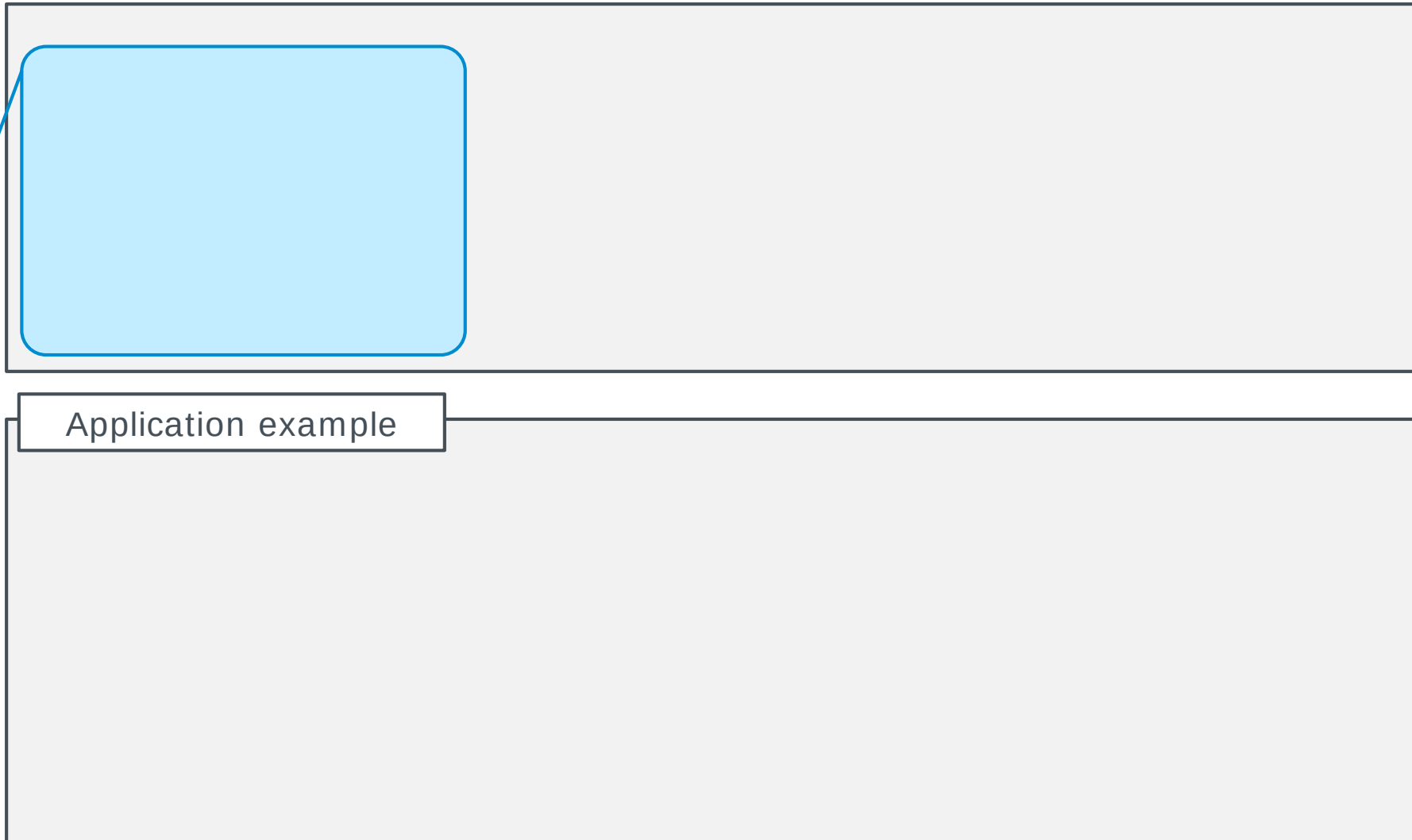




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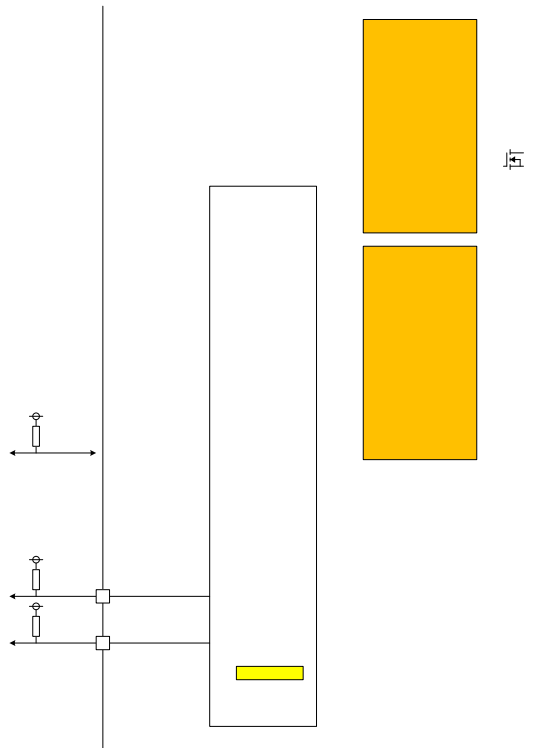
Any SoC can be supported by combining the three ICs of Main PMIC, Sub PMIC, and Driver MOS.



Input voltage range :2.7V

BD96802 can be applied to supply core power of various SoCs by using multi-phase and Driver MOS.
Furthermore, it can be used in combination with the Main PMIC BD96801.
Integrated Buck DCDC2ch(5A×2ch or 20A×2ch)

Application Circuit



0.5 V to 3.3 V
FET: 5A
Driver MOS I: 20A

0.5 V to 3.3 V
FET: 5A
Driver MOS I: 20A

Features

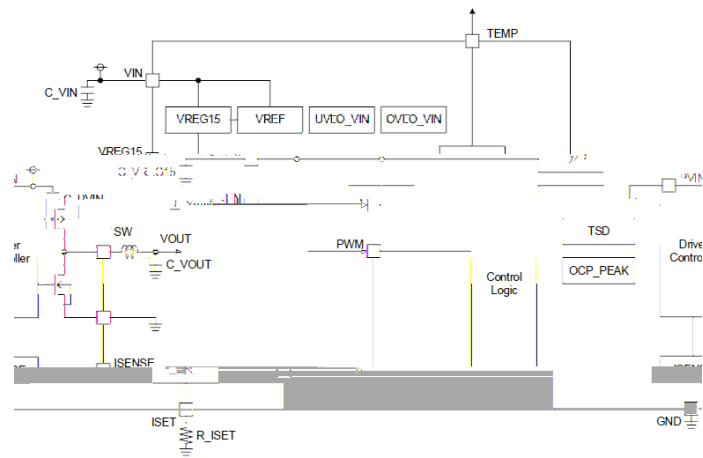
- Built-in 5A MOSFETs or External Driver MOS selectable for Buck1 and Buck2.
- Programmable power sequencer by OTP/I2C/EEPROM
- Switching Frequency selectable (2.25/4MHz)
- Built-in protection (UVLO,OCP,OVP,UVP,TSD)
- Built-in detection (OVD,UVD, Thermal Warming)
- Built-in SYNC function (SYNC)
- Internal Spread Spectrum OSC
- Sequence linkage with BD96801 is possible
- ASIL-D support

Key specifications

Input voltage range	: 2.7V	5.5V
Operating temperature range	: -40°C	125°C
Output voltage DC accuracy	: ±1.2 %	

Package

UQFN40FV5050 5.0mm x 5.0mm 1.0mm



Input voltage range	:2.7V	5.5V
Operating temperature range	:-40 °C	125 °



Type		Buck						
Series		BD9Pxx5xxx-C		BD9P2x6xxx-C		BD9Pxx8xxx-C	BD9Pxx9xxx-C	BD9PAxxxxxx-C
Built-in FET		Nch/Nch						
VIN		3.5V to 40V		3.5V to 40V			3.0V to 36V	3.0V to 36V
freq		2.2MHz		440kHz		2.2MHz	2.0MHz/400kHz	2.0MHz
Icc(typ)		10μA		10μA			5μA (T.B.D.)	50μA (T.B.D.)
*SSCG								
Vout		0.8V to 8.5V	3.3V to 5V	0.8V to 8.5V	3.3V to 5V	0.8V to 8.5V	0.8V to 9.0V	0.8V to 9.0V
Nano Pulse Control™								
Output Current	1A	BD9P105EFV-C BD9P105MUF-C	BD9P135EFV-C BD9P155EFV-C BD9P135MUF-C BD9P155MUF-C			BD9P108MUF-C	⚡ BD9P109NUF-C	
	2A	BD9P205EFV-C BD9P205MUF-C	BD9P235EFV-C BD9P255EFV-C BD9P235MUF-C BD9P255MUF-C	BD9P206EFV-C	BD9P236EFV-C BD9P256EFV-C	BD9P208MUF-C	⚡ BD9P209NUF-C	
	3A / 3.5A	BD9P305EFV-C (2.2MHz/440kHz Selectable)				BD9P308MUF-C (2.2MHz/440kHz Selectable)	⚡ BD9P309NUF-C (3A) ✗BD9P409MFF-C (3.5A)	
	6A					BD9P608MFF-C (2.2MHz/440kHz Selectable)	⚡ BD9P609MFF-C	
	10A							⚡ BD9PA00EFV-C ✗ BD9PA01MFF-C

BD9P108/208/308MUF-C

Nano Pulse Control™

Integrated N-channel and N-channel power MOSFET

Spread spectrum function

Integrated RESET function

External synchronization

Built-in phase compensation

Soft start function : 3.0ms (for 2.2MHz)

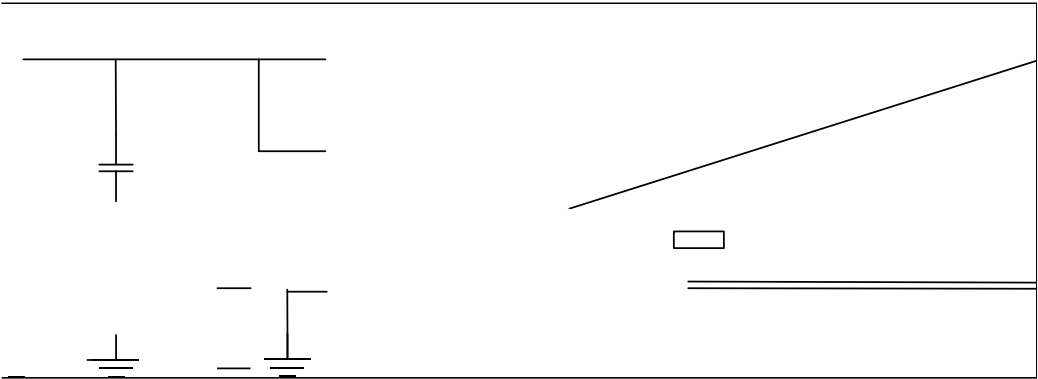
Selectable light load mode (LLM) or Forced PWM mode

Selectable output current (BD9P108MUF-C, BD9P208MUF-C)

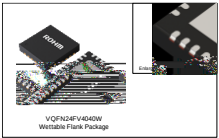
Selectable switching frequency (BD9P308MUF-C)

OCP, SCP, TSD, OVP, UVLO

AEC-Q100 qualified



Input voltage range	z 3.5V to 40V (Maximum rating : 42V) Start up is over 4.0V
Output voltage	: 0.8V to 8.5V
Output current	
BD9P108	: 1.0A (Max)/0.5A (Max)
BD9P208	: 2.0A (Max)/1.5A (Max)
BD9P308	: 3.0A (Max)
Switching frequency	
BD9P108/BD9P208	: 2.2MHz
BD9P308	: 2.2MHz /440kHz
Reference accuracy	: ± 1.75% (-40° C to +125° C) : ± 1.5% (-30° C to +105° C)
Circuit current (No switching)	: 15µA (Typ)
Consumption current from VIN during operation	: 20µA (Typ, VIN=12V, VOUT=5V, No load)
Shut down current	: 2.1µA (Typ)
Operating temperature	: -40° C to +125° C



VQFN24FV4040
4.0 × 4.0 × 1.0 (Max)

BD9P608MFF-C

Nano Pulse Control™

Integrated N-channel and N-channel power MOSFET

Spread spectrum function

Integrated RESET function

External synchronization

Built-in phase compensation

Soft start function : 3.0ms (f = 2.2MHz)

Selectable light load mode (LLM) or Forced PWM mode

Selectable switching frequency

OCP, SCP, TSD, OVP, UVLO

AEC-Q100 qualified

Input voltage range : **3.5V** to 36V (Maximum rating : 42V)
Start up is over 4.0V

Output current : 6.0A (Max)

Output voltage : 0.8V to 8.5V

Switching frequency : **2.2MHz/440kHz**Reference : $\pm 1.75\%$ (-40°C to +125°C): $\pm 1.5\%$ (-30°C to +105°C)

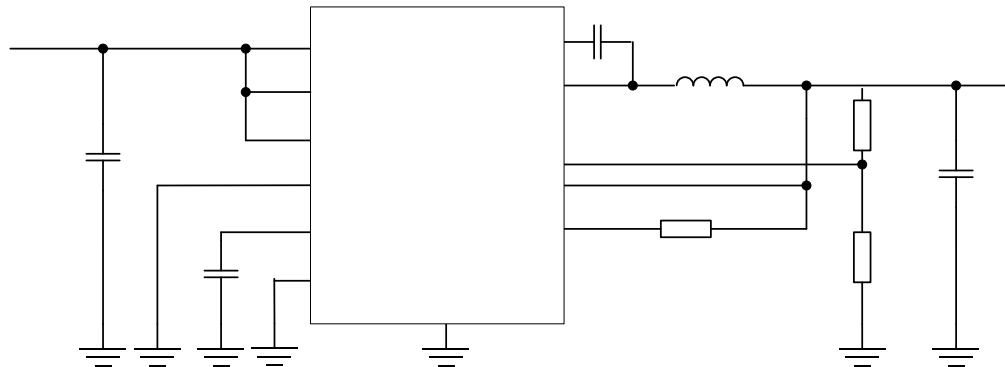
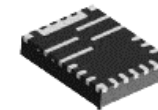
Circuit current (No switching) : 20μA (Typ)

Consumption current from VIN during operation

: 20μA (Typ, VIN=12V, VOUT=5V, No load)

Shut down current : 2.1μA (Typ)

Operating temperature : -40°C to +125°C



BD9S000/100/109NUX-C

Integrated P-channel and N-channel power MOSFET

Efficiency Optimized for 100mA to 300mA(over 80%)

Forced PWM mode

Available in a Small VSON package (2mm x 2mm)

Space Saving

Integrated Power Good function

Built-in phase compensation

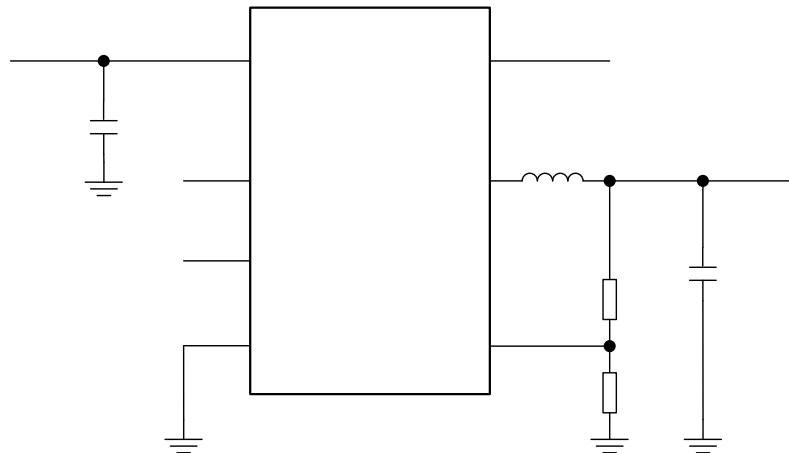
Adjustable soft start function

Output discharge function

(the discharge resistances and pin configuration are different between BD9S100NUX-C and BD9S109NUX-C)

OCP, SCP, TSD, OVP, UVLO

AEC-Q100 qualified



Input voltage range : 2.7V to 5.5V (Maximum rating : 7V)

Output voltage range : 0.8V to VIN

Reference voltage : 0.8V $\pm$ 1.5%

Output current

BD9S000NUX-C : 0.6A (Max)

BD9S100NUX-C : 1.0A (Max)

BD9S109NUX-C : 1.0A (Max)

Switching frequency : 2.2MHz $\pm$ 10%

Pch FET ON resistance

BD9S000NUX-C : 270m Ω (Typ)

BD9S100NUX-C : 270m Ω (Typ)

BD9S109NUX-C : 150m Ω (Typ)

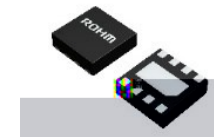
Nch FET ON resistance

BD9S000NUX-C : 180m Ω (Typ)

BD9S100NUX-C : 180m Ω (Typ)

BD9S109NUX-C : 95m Ω (Typ)

Operating temperature : -40°C to +125°C



VSON008X2020

2.0 × 2.0 × 0.6 (Max)

Cluster, meter panel, Car infotainment
Automotive equipment
Consumer power supply

BD9S201/209NUX-C

Integrated P-channel and N-channel power MOSFET
Efficiency Optimized for 500mA to 1000mA (over 80%)
Forced PWM mode

Available in a Small VSON package (2mm x 2mm)

Space Saving

Integrated Power Good function

Built-in phase compensation

Adjustable soft start function

Output discharge function

(the discharge resistances and pin configuration are different
between BD9S201NUX-C and BD9S209NUX-C)

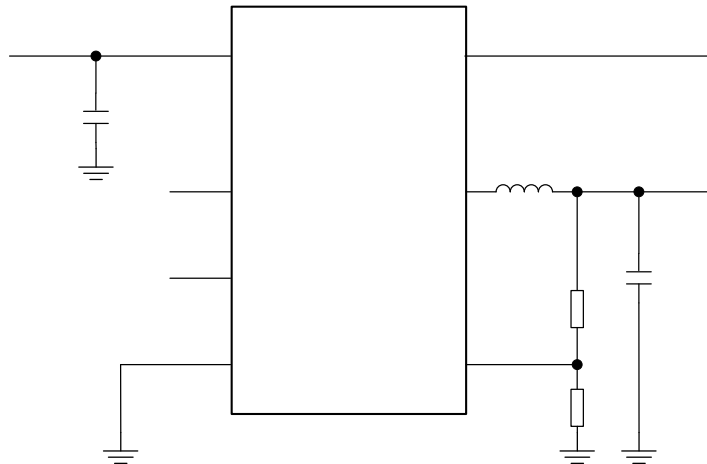
OCP, SCP, TSD, OVP, UVLO

AEC-Q100 qualified

Input voltage range	: 2.7V to 5.5V (Maximum rating : 7V)
Output voltage range	: 0.8V to VIN
Reference voltage	: 0.8V $\pm$ 1.5%
Output current	: 2.0A (Max)
Switching frequency	: 2.2MHz $\pm$ 10%
Pch FET ON resistance	: 150m Ω (Typ)
Nch FET ON resistance	: 95m Ω (Typ)
Operating temperature	: -40°C to +125°C



VSON008X2020
2.0 $\times$ 2.0 $\times$ 0.6 (Max)



Cluster, meter panel, Car infotainment
Automotive equipment
Consumer power supply

BD9S303MUF-C

Nano Pulse Control™

QuiCur™

Improvement for load transient response can achieve less COUT

Quick load transient response can be achieved on
the condition of GAIN=Hi

Spread spectrum function

Built-

Input voltage range : 2.7V to 5.5V (Maximum rating : 7V)

Output voltage range : **0.6V** to VIN x 0.75VReference voltage : **0.6V ± 1.5%**

Output current : 3.0A (Max)

Switching frequency : 2.2MHz ± 10%

Circuit current (No switching) : 22μA (Typ)

Consumption current from VIN during operation

: 44μA (Typ, VIN=5V, VOUT=1.2V, No load)

Pch FET ON resistance : 65mΩ (Typ)

Nch FET ON resistance : 43mΩ (Typ)

Operating temperature : -40° C to +125° C

