2009

Product Catalog

ROHM SEMICONDUCTOR

Modules (Sub Systems)

Power Modules

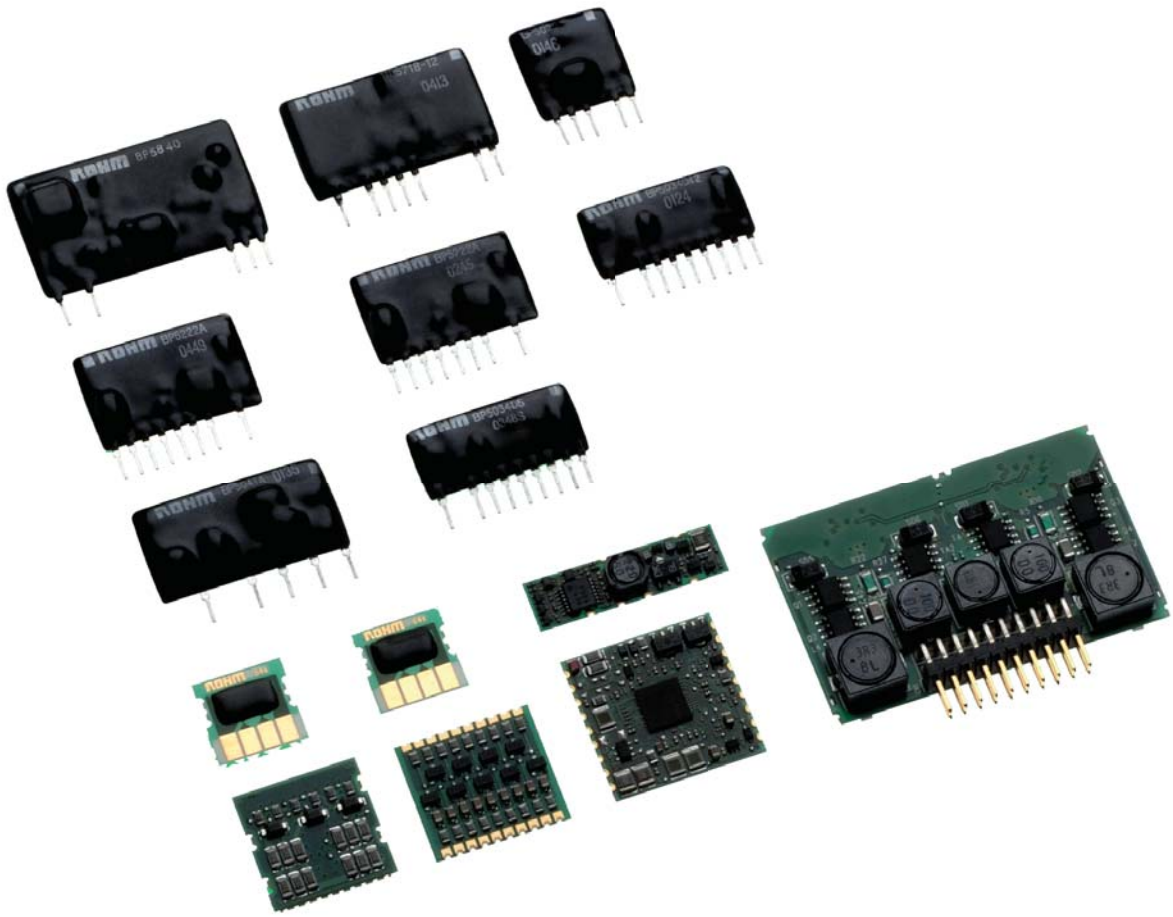
Pb Free ROHM Electronic Components

RoHS Directive Compliance

ROHM Co.,Ltd.

Power Modules

Extensive design resources and a strong manufacturing base (most of the components used in our power modules are produced in-house) ensure prompt delivery and high reliability.



Contents

Power Module Lineup

Non-isolated AC/DC Converters (P.5)

Part No.	Input Voltage(V)	Output Voltage(V)	Output Current(mA)	Dimensions(mm)	Package
BP5038A1	DC:113 to 170 AC:80 to 120 *	+5	30	18.0 × 16.8 × 9.1	SIP6
BP5063-5			200	28.2 × 17.9 × 9.1	SIP10
BP5038A		+12	30	18.0 × 16.8 × 9.1	SIP6
BP5033-12			100	28.2 × 15.5 × 10.5	SIP10
BP5037B12			200	28.2 × 16.8 × 9.0	SIP10
BP5039B12			300	35.0 × 18.0 × 9.1	SIP12
BP5067-12			350	34.5 × 20.0 × 9.9	SIP12
BP5037B15		+15	170	28.2 × 16.8 × 9.0	SIP10
BP5039-15			200	35.0 × 19.5 × 9.1	SIP12
BP5067-15			300	35.0 × 22.0 × 9.2	SIP12
BP5039A		+24	200	35.0 × 19.5 × 9.1	SIP12
BP5034D5	DC:113 to 195 AC:80 to 138 *	+5	100	28.2 × 15.7 × 10.0	SIP10
BP5034D12		+12	100	28.2 × 15.7 × 10.0	SIP10
BP5034D15		+15	80	28.2 × 15.7 × 10.0	SIP10
BP5034B20		+20	70	28.2 × 15.7 × 10.0	SIP10
BP5034D24		+24	50	28.2 × 15.7 × 10.0	SIP10
BP5075-5	DC:–113 to –170 AC:80 to 120 *	-5	120	20.5 × 19.5 × 10.7	SIP7
BP5035A5			200	28.2 × 17.9 × 9.1	SIP10
BP5061-5			350	34.5 × 19.1 × 9.1	SIP12
BP5062A5			500	34.5 × 21.5 × 10.9	SIP12
BP5065C		-12	90	26.1 × 15.2 × 7.2	SIP9
New **BP5090-12**			200	26.5 × 21.5 × 10.0	SIP8
BP5061			300	35.0 × 19.1 × 9.1	SIP12
BP5062A			500	34.5 × 21.5 × 9.9	SIP12
BP5068A			800	34.5 × 21.5 × 11.3	SIP12
BP5068-15		-15	800	35.0 × 22.0 × 11.5	SIP12
BP5068A24		-24	600	34.5 × 21.5 × 11.3	SIP12
BP5041A5	DC:226 to 358 AC:160 to 253 *	+5	100	32.5 × 19.3 × 11.5	SIP10
BP5041A		+12	100	32.5 × 19.3 × 11.5	SIP10
BP5048			300	35.0 × 22.0 × 9.2	SIP12
BP5041B15	DC:180 to 390	+15	80	32.5 × 19.3 × 11.5	SIP10
BP5047B15			150	32.5 × 19.1 × 10.1	SIP10
BP5048-15	DC:226 to 358 AC:160 to 253 *		200	35.0 × 22.0 × 9.2	SIP12
BP5726-15			800	22.5 × 27.1 × 7.8	SIP7
BP5047A24		+24	150	34.5 × 19.1 × 9.2	SIP12
BP5048-24			200	35.0 × 22.0 × 9.2	SIP12
BP5045A5	DC:–113 to –390 AC:80 to 276 *	-5	200	28.2 × 17.9 × 10.1	SIP10
BP5045A		-12	200	28.2 × 17.9 × 10.1	SIP10
BP5053-12	DC:–240 to –390 AC:170 to 276 *		200	28.2 × 17.9 × 10.1	SIP10
BP5055-12	DC:–240 to –420, AC:170 to 300V * DC:–420 to –600, AC:300 to 425V *		250 130	28.2 × 21.5 × 9.9	SIP10

Non-isolated AC/DC Converter (Dual Output) (P.5)

Part No.	Input Voltage(V)	Output Voltage(V)	Output Current(mA)	Dimensions(mm)	Package
BP5081B15	DC:113 to 170 AC:80 to 120 *	+5	350	40.5 × 21.5 × 12.4	SIP14
		+15	80		

Isolated AC/DC Converters (P.6)

Part No.	Input Voltage(V)	Output Voltage(V)	Output Current(mA)	Dimensions(mm)	Package
BP5710-1	DC:120 to 162,AC:85 to 115 *	+12	350	35.0 × 24.0 × 14.9	SIP11
New **BP5716**	DC:113 to 170,AC:80 to 120 *	+12	1000	24.0 × 25.5 × 10.1	SIP8
BP5718A12	DC:113 to 195,AC:80 to 138 *	+12	1000	32.5 × 21.5 × 9.3	SIP11
BP5722A12	DC:217 to 405,AC:154 to 286 *	+12	1000	32.5 × 21.5 × 9.3	SIP11
BP5723-33	DC:113 to 405,AC:80 to 286 *	+3.3	3000	38.5 × 21.5 × 10.9	SIP11

Isolated AC/DC Converters (P.6)

Part No.	Input Voltage(V)	Output Power(W)	Dimensions(mm)	Package
BP5725	DC:119 to 405,AC:85 to 286＊	6	22.5 × 24.0 × 7.8	SIP7
New **BP5729**	DC:120 to 372,AC:85 to 264＊	24	37.4 × 24.3 × 9.3	SIP12

＊：Converted AC voltage

Step-down DC/DC Converters (P.7)

Part No.	Input Voltage(V)	Output Voltage(V)	Output Current(A)	Dimensions(mm)	Package
BP5223	8 to 18	+5.0	0.15	17.0 × 16.8 × 10.4	SIP5
BP5224-33	7 to 18	+3.3	0.3	17.8 × 18.1 × 9.7	SIP6
BP5225	10 to 26.4	+5.0	0.15	17.0 × 16.8 × 9.7	SIP5
BP5220A	8 to 38	+5.0	1.0	28.0 × 19.5 × 12.0	SIP9
BP5221A	8 to 38	+5.0	0.5	28.0 × 19.5 × 12.0	SIP9
BP5222A	15 to 38	+12.0	0.5	28.0 × 19.5 × 12.0	SIP9
BP5226-18	20 to 46	+18.0	0.5	34.0 × 17.4 × 8.1	SIP12

Step-up DC/DC Converters (P.7)

Part No.	Input Voltage(V)	Output Voltage(V)	Output Current(A)	Dimensions(mm)	Package
BP5122	8 to 20	–12	0.1	26.7 × 19.5 × 12.7	SIP9

Isolated DC/DC Converter (P.7)

Part No.	Input Voltage(V)	Output Voltage(V)	Output Current(A)	Dimensions(mm)	Package
BP5324A	4.5 to 5.5	+12	0.25	38.5 × 27.0 × 13.6	SIP12

Variable output DC/DC Converters (P.7)

Part No.	Input Voltage(V)	Output Voltage(V)	Output Current(A)	Output(ch)	Dimensions(mm)	Package
BP5811	19 to 21	0 to 19	0.3	1	27.7 × 16.0 × 7.6	SIP9

High-power LED Drivers for Lighting (P.9)

Part No.	Input Voltage(V)	Output Voltage(V)	Output Current(mA)	Number of LEDs	Dimensions(mm)	Package
BP5843A	DC:113 to 170 AC:80 to 120 ＊	2.5 to 12	250 to 350	1 to 3	32.9 × 25.0 × 15.1	SIP11
New **BP5842A**		2.5 to 4	700 to 960	1	32.9 × 25.0 × 15.1	SIP11
New **BP5845W**		15 to 36	250 to 360	6 to 9	46.0 × 22.2 × 18.3	DIP16

＊：Converted AC voltage

Memory modules (P.10)

ROHM offers a lineup of read-write modules in various memory capacities (1kbit to 64kbit) in the COB (Chip-On-Board) package.

Custom modules (P.11)

ROHM custom modules ensure compatibility with a wide range of applications, from automotive systems and industrial equipment to audio/visual devices. A number of package types are offered, including SMD, coated, and flexible, allowing selection of the optimal solution to fit set needs.

Non-isolated AC/DC Converters

Saves energy and reduces set size

Summary

Configure a DC voltage source from a commercial power supply using just a few external parts. No transformers are necessary, saving energy while reducing size and standby power consumption. Universal compatibility: 100-120VAC, 220-230VAC, 100-230VAC.

Features

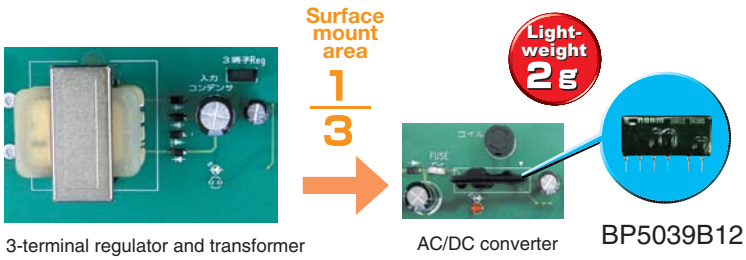
- Compact, low profile
- Easy to use
- Energy-saving

Applications

- Household appliances
- Sensor power supplies
- LED drivers

No transformer configuration reduces both size and weight

ROHM AC/DC converters eliminate the need for a transformer, reducing size and weight while saving energy.

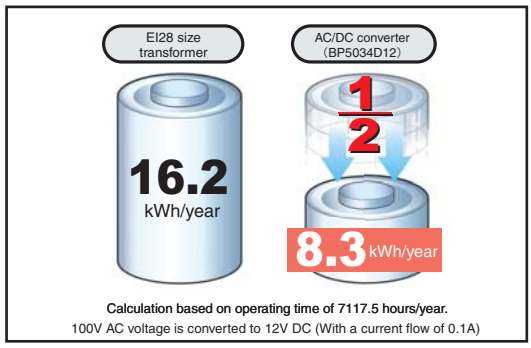


3-terminal regulator and transformer

AC/DC converter

Reduced standby power consumption

No transformer required, significantly reducing standby power consumption.

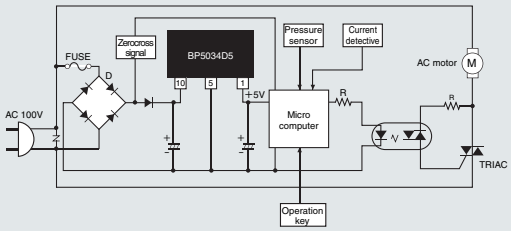


Ideal for compact microcontrollers

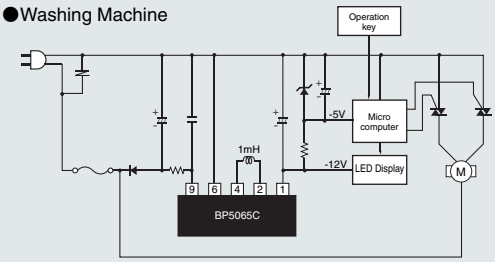
Most electronic equipment are comprised of a combination of microcontroller and motor, heater, or starter. ROHM AC/DC converters contribute to smaller power supply designs by eliminating the transformer, which normally takes up most of the space. Compatible with input voltages throughout the world.

Transformerless AC/DC Converter Applications

●Vacuum Cleaner



●Washing Machine



Isolated AC/DC Converters

High Efficiency, Energy Saving

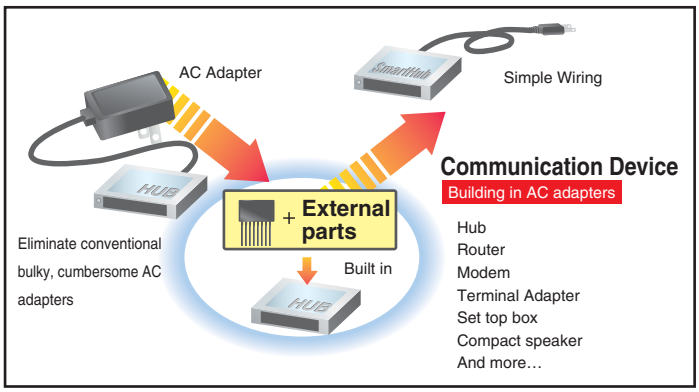
Summary
Easily configure DC output from a commercial power supply with ROHM isolated AC/DC converters.

Features
- Energy saving
- High voltage
- Wide input

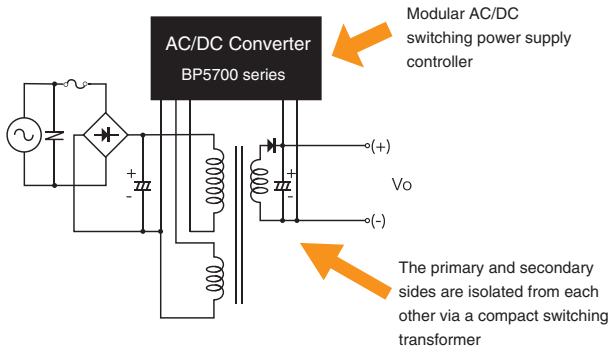
Applications
- Household appliances
- Communication equipment
- Battery chargers

Built-in AC adapter

The built-in AC adapter makes it possible to eliminate the heavy AC adapter normally used, which is often bigger than the set itself, reducing clutter.



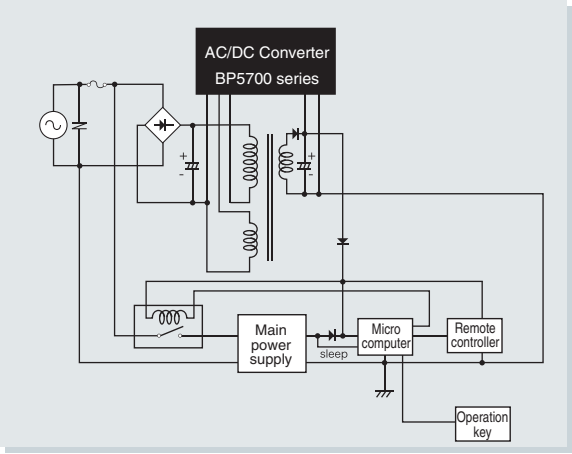
Isolated AC/DC Switching Power Supply



● Please note that external constants have been intentionally omitted. Please consult a ROHM representative for additional details.

Optimized for remote control equipment

It is important to minimize standby power consumption in audio-visual devices, air conditioners, water heaters, video intercoms and other home appliances in order to cut costs and lessen the burden on the environment.
This can be easily achieved using ROHM AC/DC converters.



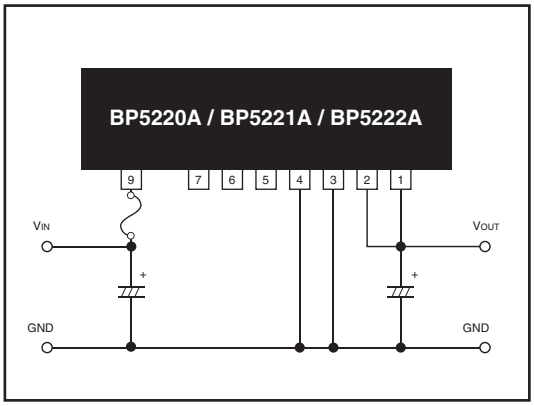
DC/DC Converters

Step-down

Summary
Configure an efficient step-down power supply by simply adding an electrolytic capacitor.
Helps reduce set power consumption.

Features
- Compact
- No heat sink required
- ON/OFF operation

Applications
- Digital consumer electronics
- Household appliances
- Industrial devices

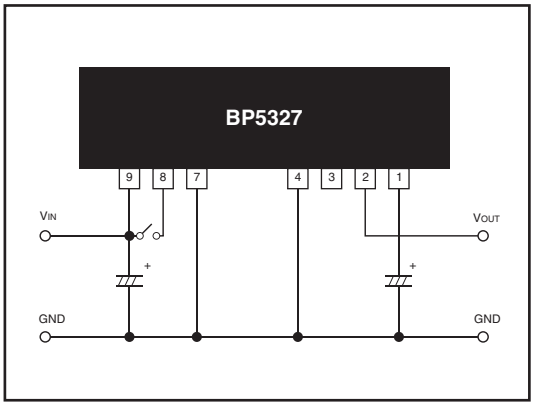


Step-up

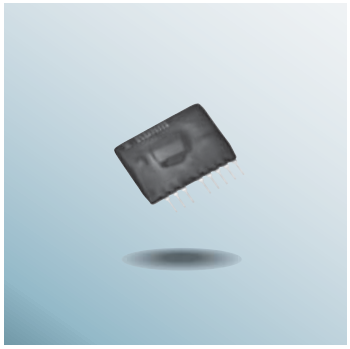
Summary
Configure an efficient step-up power supply by simply adding an electrolytic capacitor.
Ideal for LCD power supplies.

Features
- Compact
- ON/OFF operation

Applications
- LCD power supplies
- Tuner power supplies



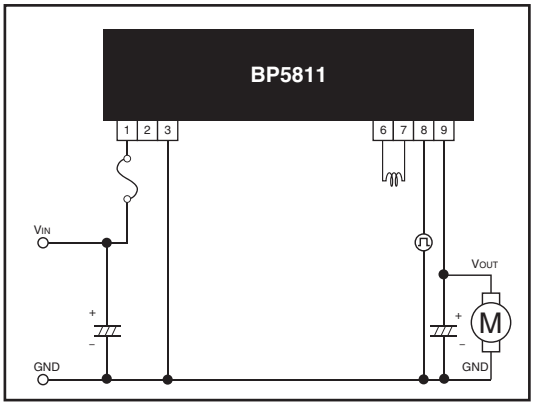
Variable Output



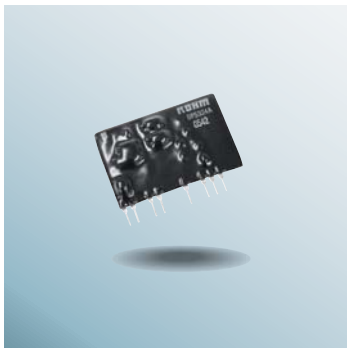
Summary
Variable output voltage (via external signal).
Optimized for DC motor control.

Features
- Compact
- Variable output

Applications
- Refrigerators
- Air conditioners
- DC motors



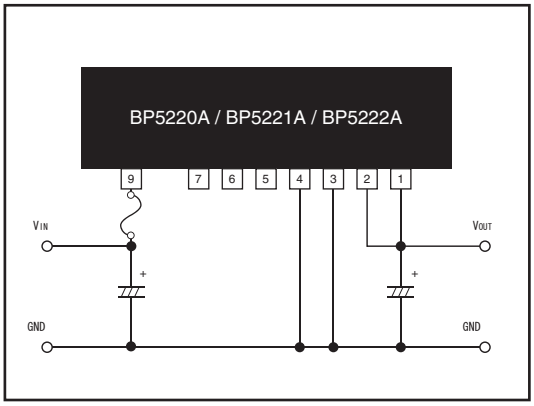
Isolated



Summary
Isolated format ideal for industrial devices.
Converter with built-in transformer

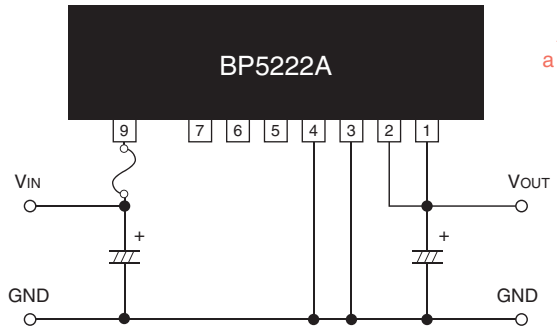
Features
- Isolated

Applications
- Industrial devices



Easily configure an efficient regulator circuit

Application Circuit Example



As easy to use as
a 3-terminal regulator

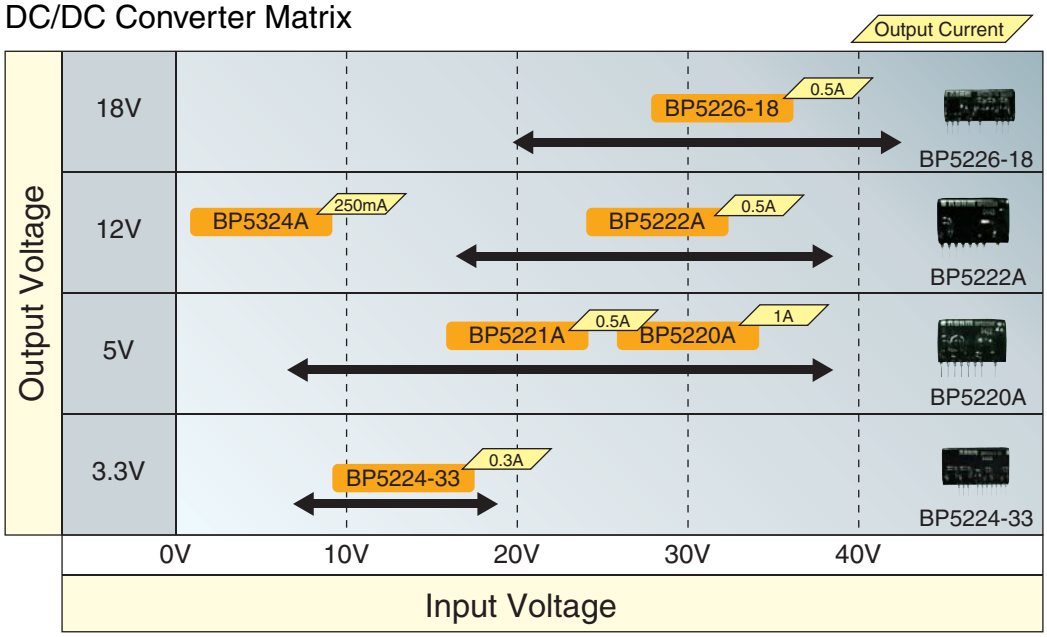
High efficiency
Compact
No need for radiation designs

BP5222A
12V 0.5A output regulator

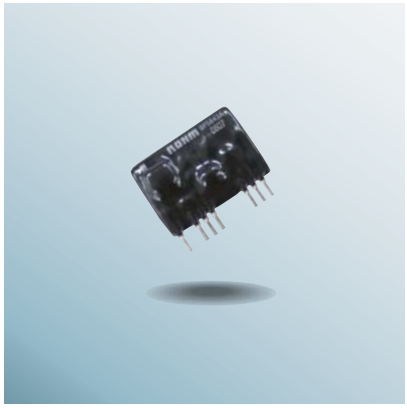
Input voltage	15 to 38V
Output voltage	12V
Max. output current	0.5A
Conversion efficiency	90%
Dimensions	28.0×19.5×12.0mm

Standard Compact High Efficiency DC/DC Converters

DC/DC Converter Matrix



High-power LED Drivers for Lighting



Easy to use +
Stable current supply

Summary

High power LED drivers featuring highly precise constant current output.

Features

- High precision
- Constant current output
- Isolated

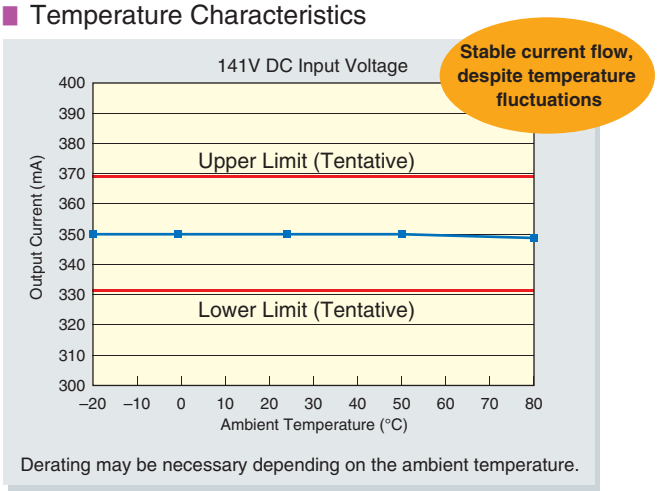
Applications

- LED illumination solutions of all types, including stage, landscaping, residential, building, and emergency lighting.

Stable, easy-to-use LED drivers

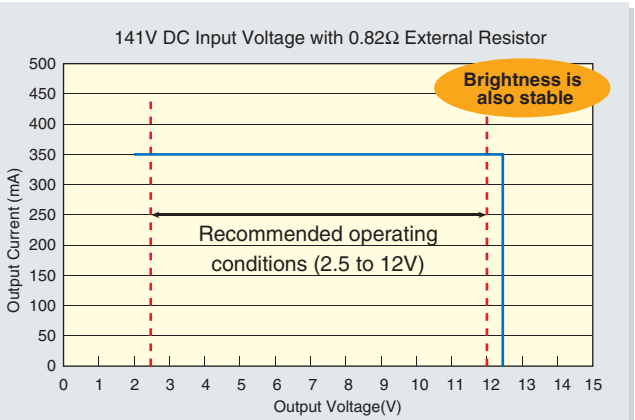
Ensures continuous constant current output, even during temperature fluctuations, for stable lighting

Temperature Characteristics



Derating may be necessary depending on the ambient temperature.

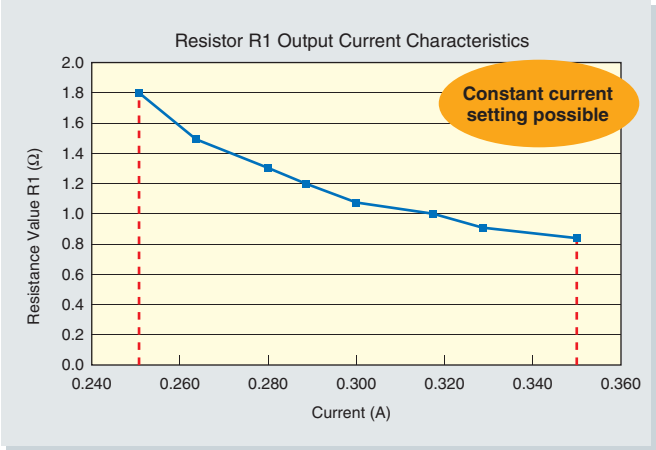
Constant Current Output



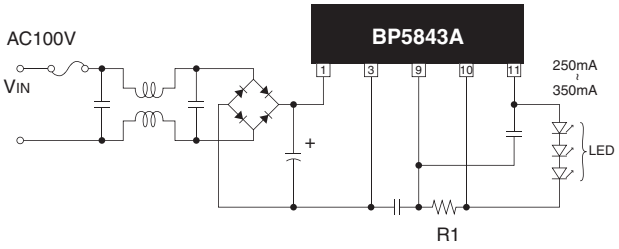
Adjustable Brightness Control

Vary the LED current between 250 to 350mA by selecting the appropriate external resistor.

Current Settings



Application Circuit



Memory Modules

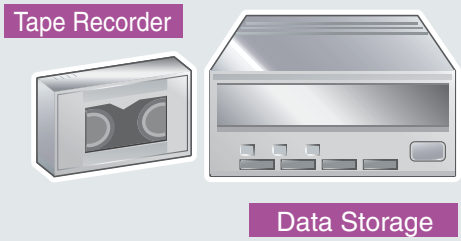
What is a memory module?

A memory module is memory integrated into a device for internal reading/writing of information/data.

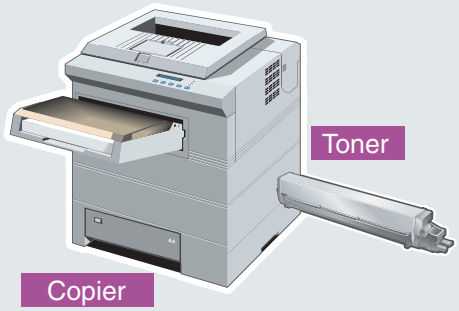
Applications

●Index (search recorded data)
●Tape length / type

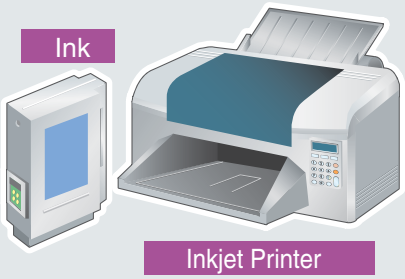
●Index (file search)
●Usage history / tape length / type



●Remaining ink / color / quality / re-use



●Remaining ink / color / quality



Lineup

BK01□□ series

Serial two-wire system Standard type

Serial 2-wire System	I²C BUS compatible *2	Product thickness 1.95mm	High-grade terminal *1				
Memory Capacity	1k	2k	4k	8k	16k	32k	64k

BK02□□ series

Serial two-wire system Thin type

Serial 2-wire System	I²C BUS compatible *2	Product thickness 1.2mm	High-grade terminal *1		
Memory Capacity	2k	4k	16k	32k	64k
	Under development		Under development		

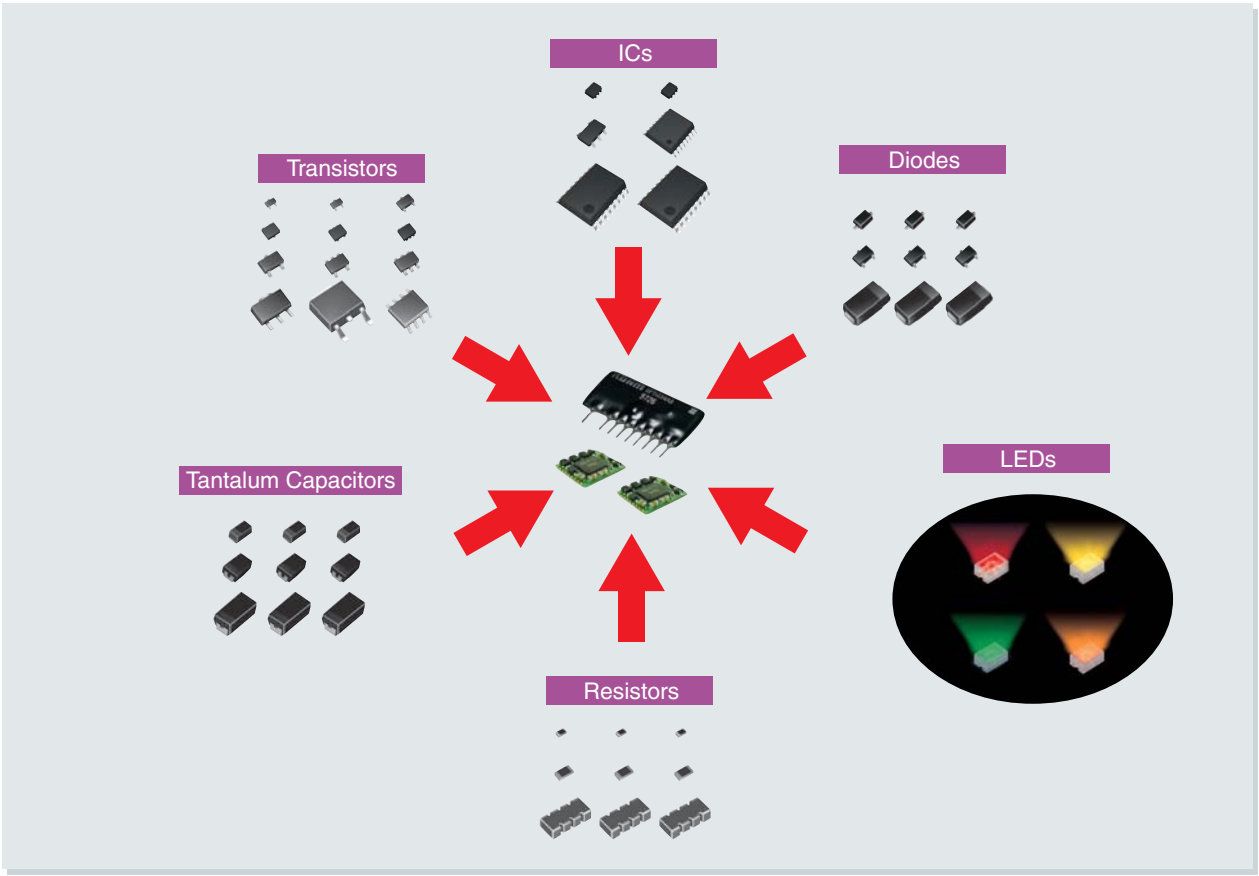
BK03□□series

Serial three-wire system Standard type

Serial 2-wire System	I²C BUS compatible *2	Product thickness 1.95mm	High-grade terminal *1		
Memory Capacity	1k	2k	4k	8k	16k

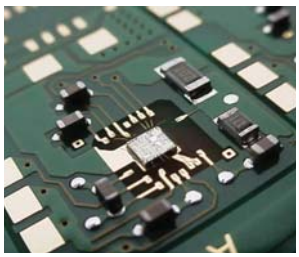
*1 : Optional. *2 : I²C-bus is a registered trademark of Philips.

Custom Modules

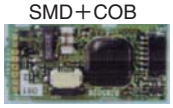


Custom Custom Module Technologies

COB Technology

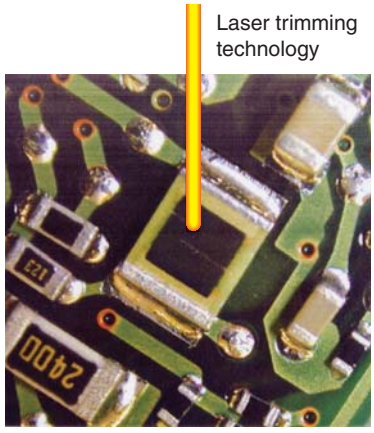


SMD+COB



Coating Technology

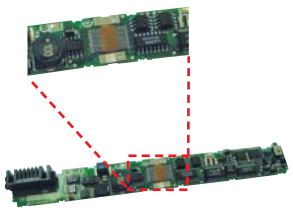
Laser Trimming

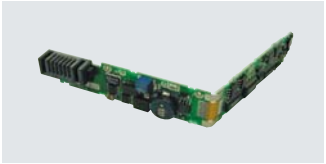


- Auto-adjustable (Customizable performance)
- High reliability (Vibration testing eliminates resistance variations)

Flexible Module

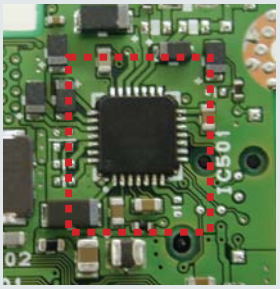
BB Bridge





Modularization

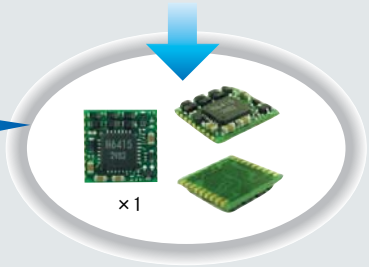
Modular Type 1: Auto-mount-compatible SMD Function Module



COB package and 0603 size help reduce size and thickness.

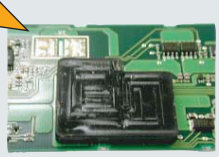
Mounting area 1/3

Standardized auto-mountable SMD module



Modular Type 2: Coated Module

Partial coating also possible



Coated module

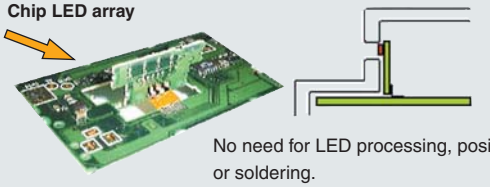
Key Benefits	
	Keeps out water, dust
	Prevents shorts due to foreign matter
	Protects parts (from impact)

Modular Type 3: Flexible Module

1. Fits in small spaces

2. Connects to sub-boards

Chip LED array



No need for LED processing, positioning, or soldering.
Position multiple boards simultaneously.

Key Benefits	
	Compatible with small spaces
	No need for connector
	Zero contact resistance (due to solder connection)

Automotive Systems

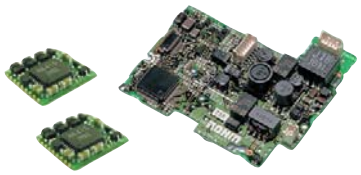
Thermal cycling: 2,000cyc | Laser trimming technology | In-house components

- ECUs
- ABS circuits
- Fuel control circuits
- Door lock control circuits
- Indicator circuits
- AC control circuits

Digital / AV Equipment

High density | Surface mount | In-house ICs

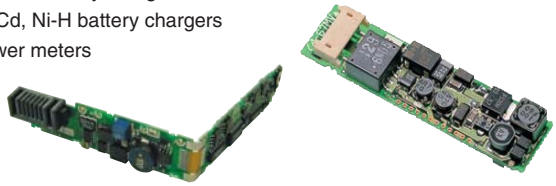
- PC LCD power supplies
- PC battery chargers
- CD-ROM power supplies
- Image processing circuits
- PC control circuits
- DSCs



Battery Circuits

Flexible circuit board | Coated | In-house ICs

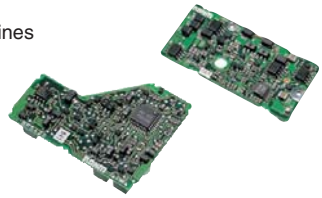
- Lithium battery protection circuits
- Lithium battery chargers
- Ni-Cd, Ni-H battery chargers
- Power meters



Industrial Devices

Laser trimming technology | High density | In-house ICs

- Gaming control boards/power supplies
- LCD power supplies
- Power supplies for vending machines
- Air conditioning control circuits
- Inverter control circuits
- Switching regulators
- Boiler control circuits
- Sensor modules

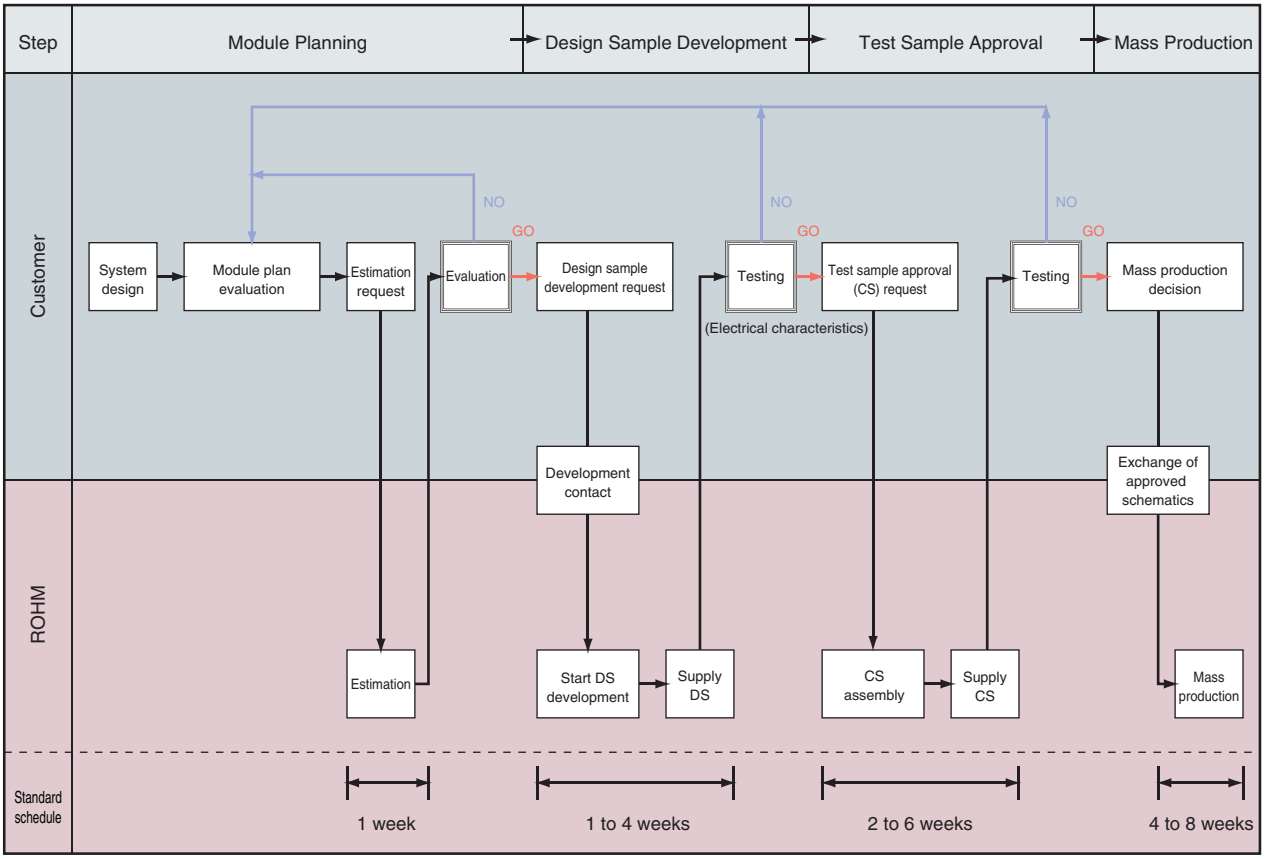


Custom Module Flowchart

ROHM Power Modules offer many advantages

1. Broad Lineup
   An abundant supply of LSIs are available, from standard ICs to ASICs.
   All onboard discrete components produced in-house.
2. Short Turnaround Time
   Rapid development response
   Samples received within 7 days
   Superior manufacturing system
   3 days from material input to product shipment
3. High Reliability
   ROHM's Power Modules have found widespread use in the automotive industry (i.e. airbags, ABS, AT control).
   Each unit is vibration tested in order to prevent failures due to loose contact.
   All products must pass a 2,000 cycle thermal shock test.

Rapid Development Flowchart



Note: Extra time may be required for assembly when using customized materials.

Developing Custom Products

In addition to the power modules listed in this catalog, ROHM can also provide custom power modules conforming to customer specifications for form, function, and characteristics. Proprietary development techniques and expertise enable us to develop fully customized power modules in a short period of time.
To request a custom module, please fill out this form and send it to a ROHM sales office.

1) Custom Power Module Request

Applications （ ）

Development Schedule

Design Sample (Month Day pcs)
Pre-production Sample (Month Day pcs)
Mass Production (Time Limit : pcs／month)

Electrical Characteristics

Input Voltage（ V） to （ V）
Output 1 Output Voltage（ V） Output Current（ mA）
Ripple Voltage（ mVp-p）
Output 2 Output Voltage（ V） Output Current（ mA）
Ripple Voltage（ mVp-p）
Output 3 Output Voltage（ V） Output Current（ mA）
Ripple Voltage（ mVp-p）
Output 4 Output Voltage（ V） Output Current（ mA）
Ripple Voltage（ mVp-p）
Additional Functions/Characteristics
（ ）

Form

With Lead Frame SIL L（ ）× H（ ）× T（ ）mm
DIL L（ ）× W（ ）× H（ ）mm

Without Lead Frame L（ ）× W（ ）× T（ ）mm

2) Custom Hybrid IC Request

Applications （ ）

Development Schedule

Design Sample (Month Day pcs)
Pre-production Sample (Month Day pcs)
Mass Production (Time Limit : pcs／month)

Please provide us with the following three items:

- Circuit schematics
- Parts tables
- Dimensions

ROHM Sales Offices

Contact us for further information about the products.

San Diego	+1-858-625-3630	**United Kingdom**	+44-1-908-272400	**Tianjin**	+86-22-23029181	**Xiamen**	+86-592-238-5705
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Boston	+1-978-371-0382	**Espoo**	+358-9725-54491	**Hangzhou**	+86-571-87658072	**Hong Kong**	+852-2-740-6262
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