

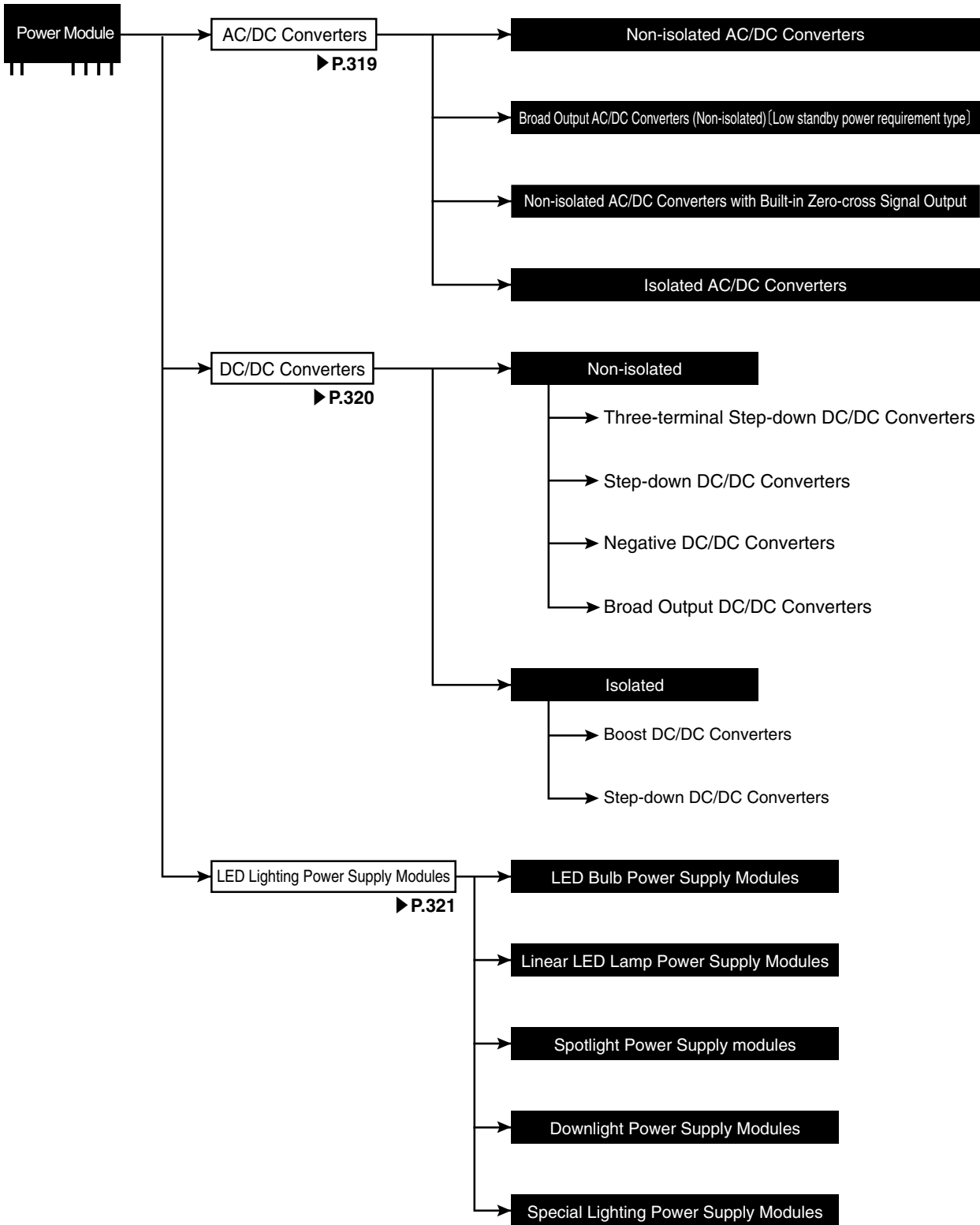


Power Modules

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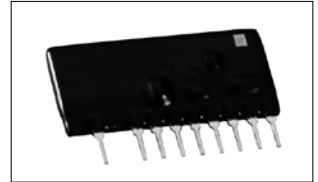
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Power Module Selection Guide



AC/DC Converters

- **No transformer (Non-isolation)**
Few external components required, simplifying the DC power supply.
- **Reduces the size and weight of the power supply unit (Non-isolation type)**
Footprint and weight reduced to 1/4th and 1/30th the value, respectively, compared to transformer-equipped power supplies.
- **Wider input voltage range**
- **For industrial equipment, lighting fixtures, and home electronics**



Quick Reference

Non-isolated AC/DC Converters

Part No.	Input voltage (V)	Output voltage (V)	Output current (mA)	Dimensions (mm)	Package*	
BP5038A1	113 to 170 (AC conversion 80 to 120Vac)	+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	
☆BP5044-12		113 to 170 (AC conversion 80 to 120Vac)	+12	140	28.2×17.8×12.0	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				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	113 to 195 (AC conversion 80 to 138Vac)	+24	200	35.0×19.5×9.1	SIP12	
BP5034D5		+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	-113 to -170 (AC conversion 80 to 120Vac)	-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		90	26.1×15.2×7.2	SIP9		
BP5090-12		-113 to -170 (AC conversion 80 to 120Vac)	-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				800	35.0×22.0×11.5	SIP12
BP5068A24	600			34.5×21.5×11.3	SIP12	
BP5075-12	-113 to -187 (AC conversion 80 to 133Vac)	-12	100	20.5×19.5×10.7	SIP7	
BP5041A5	226 to 358 (AC conversion 160 to 253Vac)	+5	100	32.5×19.3×11.5	SIP10	
BP5041A		+12	100	32.5×19.3×11.5	SIP10	
BP5048		300	34.5×19.1×9.2	SIP12		
BP5041B15		80	32.5×19.3×11.5	SIP10		
BP5047B15		150	32.5×19.1×10.1	SIP10		
BP5048-15		200	34.5×19.1×9.2	SIP12		
☆BP5078-15	180 to 390 (AC conversion 127 to 276Vac)	+15	200 (Built in ON/OFF Function)	34.5×19.1×10.0	SIP12	
BP5726-15	120 to 239 (AC conversion 85 to 170Vac)	+24	427	22.5×27.1×7.8	SIP7	
	240 to 390 (AC conversion 170 to 276Vac)		800			
BP5047A24	240 to 358 (AC conversion 176 to 253Vac)		150	34.5×19.1×9.2	SIP12	
BP5048-24	249 to 358 (AC conversion 176 to 253Vac)		200	34.5×19.1×9.2	SIP12	
BP5045A5	-113 to -390 (AC conversion 80 to 276Vac)	-5	200	28.2×17.9×10.1	SIP10	
BP5045A	-240 to -420 (AC conversion 170 to 300Vac)	-12	200	28.2×17.9×10.1	SIP10	
BP5053-12			200	28.2×17.9×10.1	SIP10	
BP5055-12			250	28.2×17.9×9.9	SIP10	
	-420 to -600 (AC conversion 300 to 425Vac)	130				

Broad Output AC/DC Converters (Non-isolated) (Low standby power requirement type)

Part No.	Input voltage (V)	Output voltage (V)	Output electric power (W)	Dimensions (mm)	Package*
☆BP5059	113 to 374 (AC conversion 80 to 264Vac)	12 to 20	3.6	21.0×11.5×4.6	SIP11

Non-isolated AC/DC Converters with Built-in Zero-cross Signal Output

Part No.	Input voltage (V)	Output voltage (V)	Output current (mA)	Dimensions (mm)	Package*
BP5011	-85 to -170 (AC conversion 60 to 120Vac)	-5	200	35.1×17.4×8.1	SIP13
BP5013	-113 to -170 (AC conversion 80 to 120Vac)	-12 to -30	12W MAX	38.5×23.2×11.2	SIP14
BP5014	-113 to -170 (AC conversion 80 to 120Vac)	-5	500	37.5×21.5×10.0	SIP12

Isolated AC/DC Converters

Part No.	Input voltage (V)	Output voltage (V)	Output current (mA)	Dimensions (mm)	Package*
BP5710-1	120 to 162 (AC conversion 85 to 115Vac)	+12	350	35.0×24.0×14.9	SIP11
BP5716	113 to 170 (AC conversion 80 to 120Vac)	+12	1000	24.0×25.5×10.1	SIP8
BP5718A12	113 to 195 (AC conversion 80 to 138Vac)	+12	1000	32.5×21.5×9.3	SIP11
BP5722A12	217 to 405 (AC conversion 154 to 286Vac)	+12	1000	32.5×21.5×9.3	SIP11
BP5723-33	113 to 374 (AC conversion 80 to 264Vac)	+3.3	3000	38.5×21.5×10.9	SIP11
BP5720-5	113 to 374 (AC conversion 80 to 264Vac)	+5.0	500	35.5×20.5×10.0	SIP12

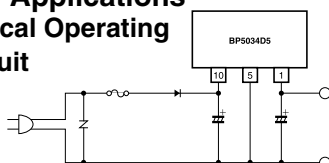
Part No.	Input voltage (V)	Output electric power (W)	Switching method	Dimensions (mm)	Package*
BP5725	119 to 405 (AC conversion 85 to 286Vac)	6	PWM (light load compatible)	22.5×24.0×7.8	SIP7
BP5729	120 to 372 (AC conversion 85 to 264Vac)	12 / 24	quasi-resonance	37.4×24.3×9.3	SIP12
BP5728	113 to 405 (AC conversion 80 to 286Vac)	6 / 12	PWM (light load compatible)	18.8×19.5×9.9	SIP6
BP5717	113 to 195 (AC conversion 80 to 138Vac)	18	quasi-resonance	37.4×24.3×9.3	SIP12

☆ : Under development

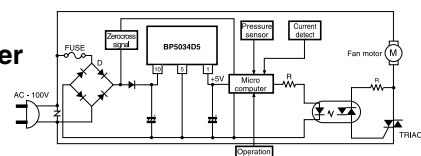
* : Original power module package used

Typical Applications

Typical Operating Circuit

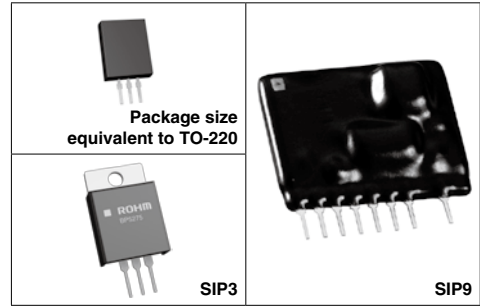


Typical Supply for Vacuum Cleaner



DC/DC Converters

- **High efficiency**
High energy conversion factor (85 to 93%) contributes to compact, power-saving supplies.
- **Few external parts**
Because the external part is only two condensers, it can compose a powersupply circuit easily.
- **Internal output switch**
Enables full use of power saving feature.
- **Wider input voltage range**
Can operate with unregulated mains. (BP5220A/5221A : 8 to 38V)
- **Universal**
Wide applicability (i.e. output switches, protection circuits, output voltage regulators)
- **Small footprint**
SIP package requires less mounting space. (Board footprint: 65mm²)



* Because there is a product which doesn't have some of these features and characteristic, too, confirm details with each specification.

Quick Reference

• 3-terminal DC/DC Converters (Non-isolated)

- Non need external parts. (Incorporates input and output Capacitor and Inductor)
- Pin compatible with Three-terminal LDO.

Part No.	Input voltage(V)	Output voltage(V)	Output current1 (mA)	Output current2 (mA) ²	Output voltage accuracy(%)	STBY terminal	Dimensions (mm)	Package*
New BP5290-18	8 to 30	+1.8	1000	—	±50mV	None	12.5×22.0×4.5	Package size equivalent to TO-220
New BP5290-33	8 to 30	+3.3	1000	—	±2.0%	None	12.5×22.0×4.5	
New BP5290-50	8 to 30	+5.0	1000	—	±2.0%	None	12.5×22.0×4.5	
New BP5290-12	15 to 30	+12.0	1000	—	±2.0%	None	12.5×22.0×4.5	
BP5275-18	4.0 to 14	+1.8	500	800	±50mV	None	13.8×23.0×5.2	SIP3
BP5275-25	4.0 to 14	+2.5	500	800	±2.0%	None	13.8×23.0×5.2	SIP3
BP5275-33	4.5 to 14	+3.3	500	800	±2.0%	None	13.8×23.0×5.2	SIP3
BP5275-50	6.0 to 14	+5.0	500	800	±2.0%	None	13.8×23.0×5.2	SIP3
BP5277-33	8 to 32	+3.3	500	800	±2.0%	None	16.3×26.4×6.2	SIP3
BP5277-50	8 to 32	+5.0	500	800	±2.0%	None	16.3×26.4×6.2	SIP3
BP5277-90	12 to 32	+9.0	500	800	±2.0%	None	16.3×26.4×6.2	SIP3
BP5277-12	15 to 32	+12	500	800	±2.0%	None	16.3×26.4×6.2	SIP3
BP5277-13	16.5 to 32	+13	500	800	±2.0%	None	16.3×26.4×6.2	SIP3
BP5277-15	19 to 32	+15	500	800	±2.0%	None	16.3×26.4×6.2	SIP3

* 1 The maximum output current when the module is not fixed to the heatsink.
* 2 The maximum output current when the module is fixed to the heatsink.

• Step-down DC/DC Converters (Non-isolated)

Part No.	Input voltage (V)	Output voltage (V)	Output current (mA)	Dimensions (mm)	Package*
BP5224-33	7 to 18	+3.3	300	17.8×18.1×9.7	SIP6
BP5223	8 to 18	+5	150	17.0×16.8×10.4	SIP5
BP5220A	8 to 38	+5	1000	28.0×19.5×12.0	SIP9
BP5221A	8 to 38	+5	500	28.0×19.5×12.0	SIP9
BP5225	10 to 26.4	+5	150	17.0×16.8×9.7	SIP5
BP5222A	15 to 38	+12	500	28.0×19.5×12.0	SIP9
BP5226-18	20 to 46	+18	500	34.0×17.4×8.1	SIP12

• Negative DC/DC Converters (Non-isolated)

Part No.	Input voltage(V)	Output voltage(V)	Output current(mA)	Dimensions (mm)	Package*
BP5122	8 to 20	-12	100	26.7×19.5×12.7	SIP9

• Broad Output DC/DC Converters (Non-isolated)

- The output voltage can be controlled with the PWM signal or the DC signal. This product is best to control a motor and so on.

Part No.	Input voltage(V)	Output voltage(V)	Output current(mA)	Output(ch)	Dimensions (mm)	Package*
BP5811	19 to 21	0 to 19	300	1	27.7×16.0×7.6	SIP9

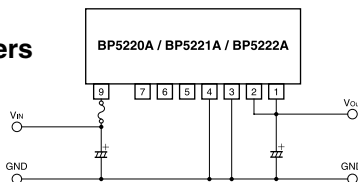
• Isolated DC/DC Converters

Part No.	Input voltage(V)	Output voltage(V)	Output current(mA)	Isolation Voltage(V)	Dimensions (mm)	Package*
☆ BP5512A	4.5 to 6.5	+5	200	AC2300	28.2×21.4×17.2	SIP7
BP5324A	4.5 to 5.5	+12	250	AC500	38.5×27.0×13.6	SIP12
BP5510-24	10.8 to 13.2	+24	200	AC500	32.6×24.2×13.6	SIP11

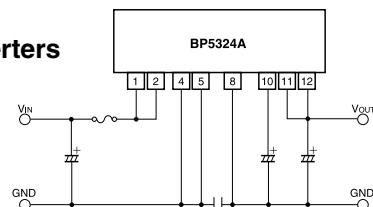
☆ : Under development * : Original power module package used

Typical Applications (Basic)

• Step-down DC/DC Converters (Non-isolated)

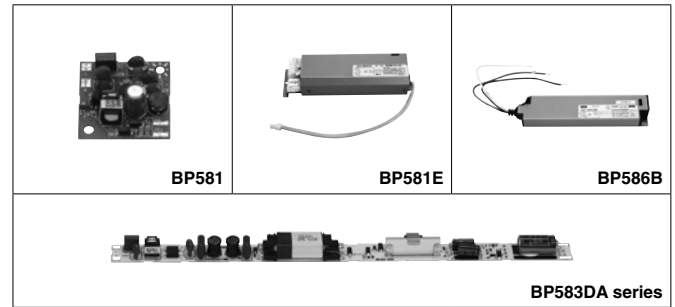


• Isolated DC/DC Converters



LED Lighting Power Supply Modules

- It can supply stable output current even if the LED's Vf is varied.
- It can supply stable output current even if the ambient temperature of a power supply rises by flash of the LED.
- It can compose a power supply easily because it have a built-in transformer or coil and few of external components are necessary.
- It has small, light, and thin package so that it can contribute to save spaces.



Quick Reference

LED Bulb Power Supply Modules

Part No.	Input Voltage (V)	Output Power (W)	LED Current (mA)	LED Vf Range (V)	Efficiency	PFC	Dimming	Dimension (mm)
New BP581A	90 to 110	2.2	80	24 to 31	85%	—	No	31.5×17.0×20.8
New BP595E	90 to 110	3.6	140	24 to 32	80%	○	No	31.5×20.2×17.7
New BP595A	90 to 110	3.9	140	24 to 31	80%	○	No	35.2×20.2×17.7
☆BP582B	190 to 264	8.4	200	32 to 42	83%	○	No	42.9×42.5×21.8

Linear LED Lamp Power Supply Modules

Part No.	Input Voltage (V)	Output Power (W)	LED Current (mA)	LED Vf Range (V)	Efficiency	PFC	Dimming	Dimension (mm)
BP581C	90 to 264	21.8	400	44 to 54	90%	○	No	215.0×16.0×15.8
New BP583DA1	90 to 264	15.5	285	44 to 54	90%	○	No	252.0×16.0×14.3
New BP583DA2	90 to 264	18	330	44 to 54	90%	○	No	252.0×16.0×14.3
New BP583DA3	90 to 264	20.7	380	44 to 54	90%	○	No	252.0×16.0×14.3
New BP583DA4	90 to 264	17.1	315	44 to 54	90%	○	No	252.0×16.0×14.3
New BP583AA1	90 to 264	24.5	250	91 to 98	90%	○	No	295.0×17.0×14.3
New BP583AA2	90 to 264	22.5	230	91 to 98	90%	○	No	295.0×17.0×14.3
☆BP586E	90 to 264	11.5	130	82 to 95	92%	○	No	205.0×18.5×10.5
☆BP586F	90 to 264	33.3	350	45 to 95	(T.B.D)	○	No	(T.B.D)
☆BP587A	90 to 264	66.5	350	45 to 95	(T.B.D)	○	No	(T.B.D)
New BP584E	90 to 264	22.1	280	70 to 88	86%	○	No	195.0×44.0×26.0 Metal case

Spotlight Power Supply modules

Part No.	Input Voltage (V)	Output Power (W)	LED Current (mA)	LED Vf Range (V)	Efficiency	PFC	Dimming	Dimension (mm)
☆BP587C	90 to 242	20	400	46 to 54	88%	○	No	164.0×34.5×24.8
☆BP587C-1	90 to 242	30	250	104 to 122	90%	○	No	164.0×34.5×24.8
New BP586A	90 to 242	7.2 to 42.0	600	12 to 70	90%	○	No	171.0×61.0×29.4

Downlight Power Supply Modules

Part No.	Input Voltage (V)	Output Power (W)	LED Current (mA)	LED Vf Range (V)	Efficiency	PFC	Dimming	Dimension (mm)
BP581D	90~110	2.2	90	20 to 28	82%	—	No	35.0×35.0×16.0
BP581E	90~110	6.5	90	62 to 77	89%	—	No	35.0×35.0×17.0
New BP585C	90~110	6.6	150	34 to 56	89%	—	No	22.0×36.0×20.0
New BP585D	90~110	12.8	225	45 to 70	90%	—	No	22.0×42.0×21.7
BP5892	90 to 110	6.3	88	67 to 77	88%	—	No	53.0×17.5×16.0
New BP583F	90 to 110	9.3	135	65 to 72	86%	—	No	66.0×42.0×19.1
☆BP585E	90 to 242	9.8	120	69 to 81	88%	○	No	34.5×70.0×25.8
☆BP585F	90 to 242	20	300	55 to 65	87%	○	No	90.0×87.0×24.8
☆BP586A-1	90 to 242	3.6 to 30.0	300	40 to 100	88%	○	No	224.0×69.0×49.0 Metal case
New BP586A-2	90 to 242	7.2 to 42.0	600	40 to 70	89%	○	No	224.0×69.0×49.0 Metal case
New BP586B	90 to 242	3.6 to 50.4	1050	12 to 48	90%	○	PWM	224.0×69.0×49.0 Metal case
☆BP586A-3	90 to 242	10.8 to 63.0	900	40 to 70	90%	○	No	224.0×69.0×49.0 Metal case
☆BP586C	90 to 242	9.4 to 78.0	780	40 to 100	90%	○	No	297.0×78.5×47.5 Metal case

Special Lighting Power Supply Modules

Part No.	Input Voltage (V)	Output Power (W)	LED Current (mA)	LED Vf Range (V)	Efficiency	PFC	Dimming	Dimension (mm)
☆BP584F	90 to 242	7.2 to 30.0	600	12 to 50	84%	○	PWM	200.0×36.0×31.0 Resin case
New BP595F	90 to 242	16.0	165	91 to 98	82%	○	PWM	345.0×28.0×22.0 Resin case
New BP597F	90 to 242	7.2 to 19.8	600	12 to 33	82%	○	PWM	200.0×36.0×31.0 Resin case

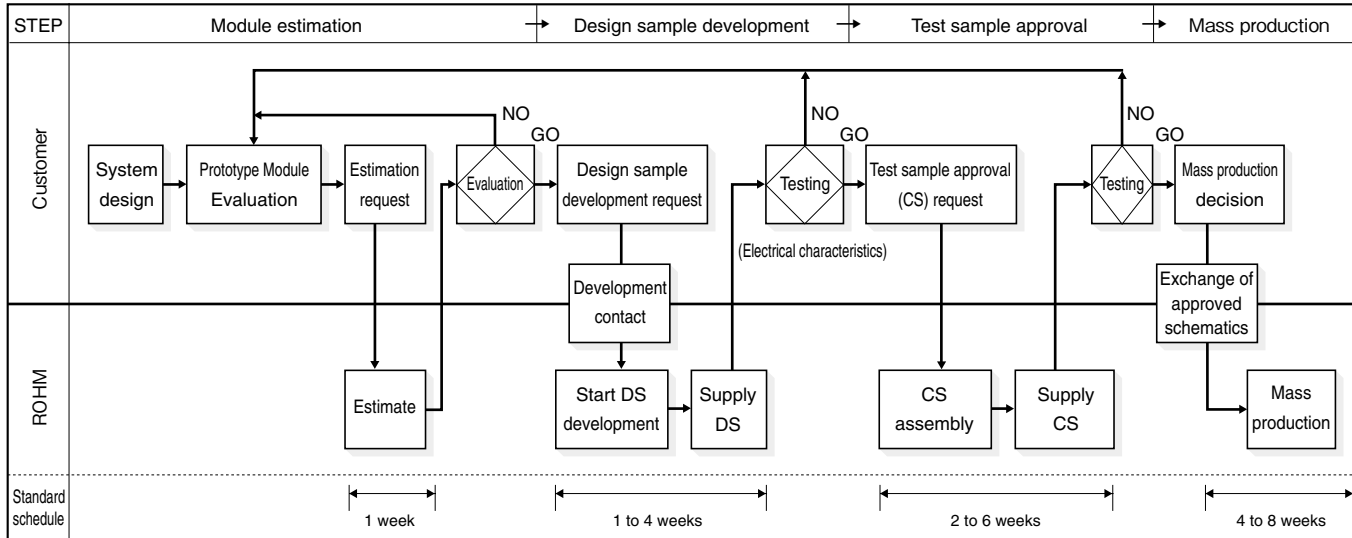
☆ : Under development

Custom Modules

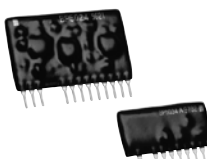
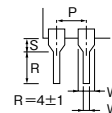
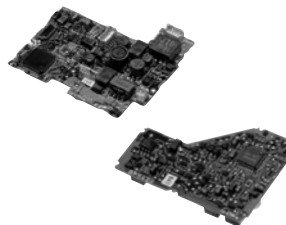
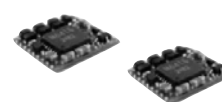
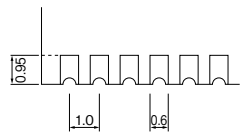
ROHM Power Modules Offer Many Advantages

- **Broad lineup**
 - A wide number of C1s are available, from standard types to ASICs.
 - All onboard discrete components produced in-house.
- **Highly reliable**
 - ROHM 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.
- **Short turnaround time**
 - Rapid development response
Samples received within 7 days
 - Superior manufacturing system
From material input to product shipment in 3 days

Quick Development Flowchart

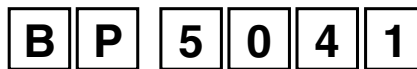


Available Package Types

Package type	Terminal size(mm)	Board length(mm)	Board width(mm)	Features												
	 <table border="1"> <tr> <td>P</td> <td>2.54</td> <td>1.8</td> </tr> <tr> <td>S</td> <td>(1.7)</td> <td>(1.6)</td> </tr> <tr> <td>W1</td> <td>0.5±0.1</td> <td>0.4±0.1</td> </tr> <tr> <td>W2</td> <td>1.3±0.2</td> <td>1.1±0.2</td> </tr> </table>	P	2.54	1.8	S	(1.7)	(1.6)	W1	0.5±0.1	0.4±0.1	W2	1.3±0.2	1.1±0.2	14Min. to 65Max.	7Min. to 38Max.	Compact designs with epoxy-coated packages for high reliability operation in industrial and automotive applications.
P	2.54	1.8														
S	(1.7)	(1.6)														
W1	0.5±0.1	0.4±0.1														
W2	1.3±0.2	1.1±0.2														
		10Min. to 90Max.	7Min. to 70Max.	Available in the BW series. Typical applications include motherboards that utilize ROHM's composite assembly technology for additional space savings.												
		7Min. to 20Max.	7Min. to 20Max.	Tray delivery facilitates automatic mounting. Ultra-high densities possible.												

Part No. Explanation

- When ordering, specify the part number.
- Check each code against the table shown below.
- Fill in from the left, leaving any extra boxes empty on the right.



Part No.

BW	Glass epoxy substrate, chip components, terminalless
BX	Glass epoxy substrate, chip components, w/terminals
BP	General purpose, custom design acceptable
BK	Thin glass epoxy substrate, on-chip COM, MCM

Notes

- 1) The information contained in this document is provided as of 1st. October, 2013.
- 2) The information contained herein is subject to change without notice. Before you use our Products, please contact our sales representative (as listed below) and verify the latest specifications.
- 3) Although ROHM is continuously working to improve product reliability and quality, semiconductors can break down and malfunction due to various factors. Therefore, in order to prevent personal injury or fire arising from failure, please take safety measures such as complying with the derating characteristics, implementing redundant and fire prevention designs, and utilizing backups and fail-safe procedures. ROHM shall have no responsibility for any damages arising out of the use of our Products beyond the rating specified by ROHM.
- 4) Examples of application circuits, circuit constants and any other information contained herein are provided only to illustrate the standard usage and operations of the Products. The peripheral conditions must be taken into account when designing circuits for mass production.
- 5) The technical information specified herein is intended only to show the typical functions of and examples of application circuits for the Products. ROHM does not grant you, explicitly or implicitly, any license to use or exercise intellectual property or other rights held by ROHM or any other parties. ROHM shall have no responsibility whatsoever for any dispute arising out of the use of such technical information.
- 6) The Products are intended for use in general electronic equipment (i.e. AV/OA devices, communication, consumer systems, gaming/entertainment sets) as well as the applications indicated in this document.
- 7) The Products specified in this document are not designed to be radiation tolerant.
- 8) For use of our Products in applications requiring a high degree of reliability (as exemplified below), please contact and consult with a ROHM representative: transportation equipment (i.e. cars, ships, trains), primary communication equipment, traffic lights, fire/crime prevention, safety equipment, medical systems, servers, solar cells, and power transmission systems.
- 9) Do not use our Products in applications requiring extremely high reliability, such as aerospace equipment, nuclear power control systems, and submarine repeaters.
- 10) ROHM shall have no responsibility for any damages or injury arising from non-compliance with the recommended usage conditions and specifications contained herein.
- 11) ROHM has used reasonable care to ensure the accuracy of the information contained in this document. However, ROHM does not warrant that such information is error-free and ROHM shall have no responsibility for any damages arising from any inaccuracy or misprint of such information.
- 12) Please use the Products in accordance with any applicable environmental laws and regulations, such as the RoHS Directive. For more details, including RoHS compatibility, please contact a ROHM sales office as listed below. ROHM shall have no responsibility for any damages or losses resulting non-compliance with any applicable laws or regulations.
- 13) When providing our Products and technologies contained in this document to other countries, you must abide by the procedures and provisions stipulated in all applicable export laws and regulations, including without limitation the US Export Administration Regulations and the Foreign Exchange and Foreign Trade Act.
- 14) This document, in part or in whole, may not be reprinted or reproduced without prior consent of ROHM.

[Compliance to RoHS Directive]

All of the products comply with the RoHS Directive.
With the exception of specific exemptions granted under the RoHS Directive and naturally occurring impurities, the products conforms to control limits on the six substances regulated by the RoHS Directive (lead, cadmium, mercury, hexavalent chromium, PBB, and PBDE). Indicates that the product's terminals and electrodes contain no lead. The products internal components other than those specifically exempted under the RoHS Directive. It should not be construed as guarantee of compliance with laws and regulations enacted by EU member states in response to the RoHS Directive.

[Viewing the catalog]

■ **New** indicates new product.

■ ☆ indicates product under development.