PCMCIA/Flash memory power supply
BP5310

The BP5310 is a DC-DC converter for supplying power to PCMCIA flash memory. From a power supply (+5V) for PCMCIA operations, the IC supplies a voltage for programming operations (+12V).

●Applications

Personal computers, CD-ROM players, portable information devices, and other PCMCIA-slot equipped devices

●Features

1) Designed to provide power for PCMCIA / flash memory programming operations (output voltage = 12V ± 5%; output current = 120mA)
2) The 5V operating voltage is same as the IC memory card operating voltage.
3) Built-in short-circuit protection circuit.
4) Compact 9-pin SIL package.
5) Surface mounting is possible because parts are concentrated on one side.

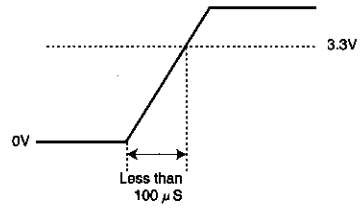
●Absolute maximum ratings

Parameter	Symbol	Limits	Unit
Input voltage	Vin	7	V
Operating temperature	Topr	0~60	℃
Storage temperature	Tstg	−30~85	℃

●Electrical characteristics (unless otherwise noted, Ta=25℃, V_{CTL}=5V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions	
Input voltage	Vin	4.75	5.00	5.25	V		
Output current	Iout	—	—	120	mA		
Output voltage	Vout	11.4	12.0	12.6	V	Vin=4.75~5.25V Iout=0~120mA	
Ripple noise voltage	ν 1	—	100	200	mV_{P-P}	Vin=5V, Iout=60mA	*1
Efficiency	η	65	73	—	%	Vin=5V, Iout=60mA	
ON/OFF CTL voltage when ON	V_{CTL}	3.3	—	—	V	Vin=5V, Vout≧11.4V	*2
ON/OFF CTL voltage when OFF	V_{CTL}	—	—	0.4	V	Vin=4.75~5.25V	
ON/OFF CTL sink current when ON	I_{SINK}	—	0.8	1.3	mA	Vin=5V V_{CTL}=3.3V	*3
ON/OFF CTL source current when OFF	I_{SOURCE}	—	1.0	1.5	mA	Vin=5V V_{CTL}=0.4V	*4

*1 Measured with a band width of 20 MHz.
*2 Ensure that the HIGH signal of the CTL pin (pin 8) rises in less than 100 μs to the level at which the output turns on.



*3 When the HIGH signal is applied to the CTL pin, a current flows into the CTL pin for a short period until the output rises. Little current flows thereafter.

*4 When the LOW signal is applied to the CTL pin to turn OFF the output, a current flows into the CTL pin for a short period until the output drops to 0 V. Ensure that the control circuit can sink this current.

●Measurement circuit

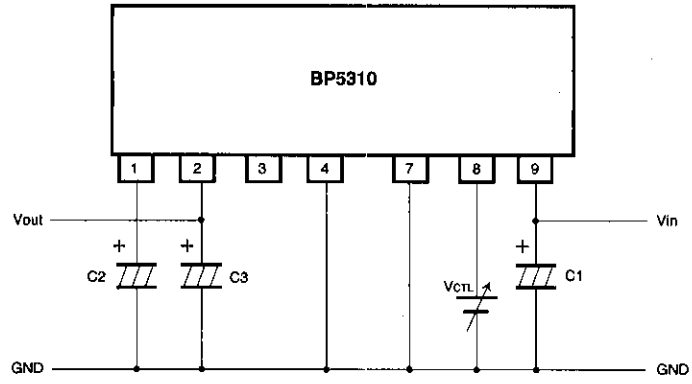


Fig. 1

C1 : 100 μF / 16V (NICHICON PL-series or equivalent)
C2 : 47 μF / 35V (NICHICON PL-series or equivalent)
C3 : 2.2 μF (Al electrolytic capacitor)

●Pin descriptions

Pin No.	Pin name	Function
1	Co	Output smoothing capacitor connection pin;connect a low-impedance capacitor with a recommended capacitance of 47 μF between this pin and GND
2	Vout	Output pin; connect an output capacitor with a recommended capacitance of 2.2 μF between this pin and GND
3	TP	Test pin; use this internally connected pin in OPEN mode
4, 7	GND	Ground pin
8	V_{CTL}	Output ON/OFF control pin; output starts when the pin is HIGH level, and stops at LOW level
9	Vin	Input pin; connect a low-impedance capacitor with a recommended capacitance of 100 μF between this pin and GND

●Operation notes

- Place I/O external capacitors as near as possible to the connection pins. In particular, make sure to minimize the impedance between the input-side capacitor (C1) and pin 9.
  (Reference value: A length less than 50mm for a copper foil of 1.0mm wide and 35 μm thickness.)
- Avoid frequent switching using the ON/OFF CTL pin (four times per second at the maximum).

●Application example

(1) Flash memory that requires 5V for reading

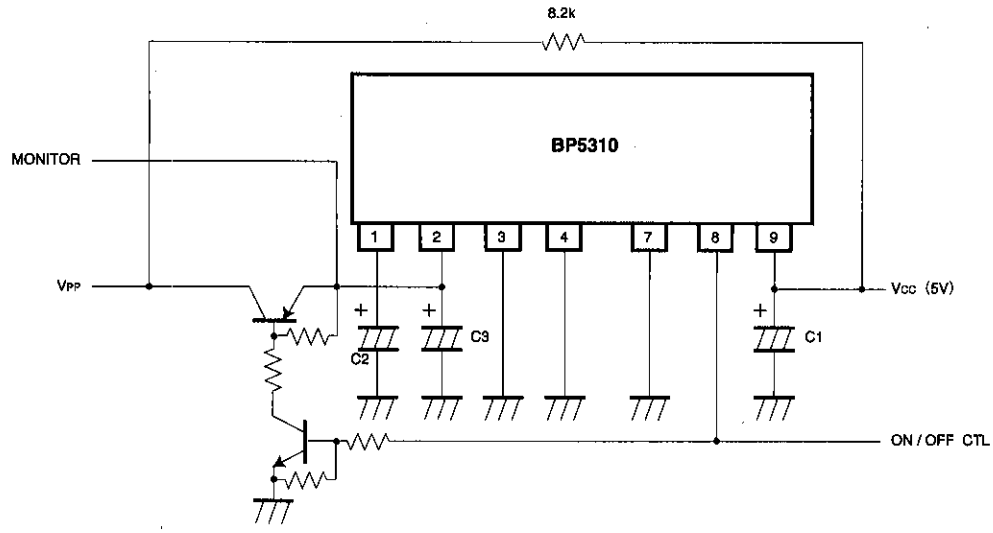


Fig. 2

●Application example

(2) Pull-down of V_{PP}

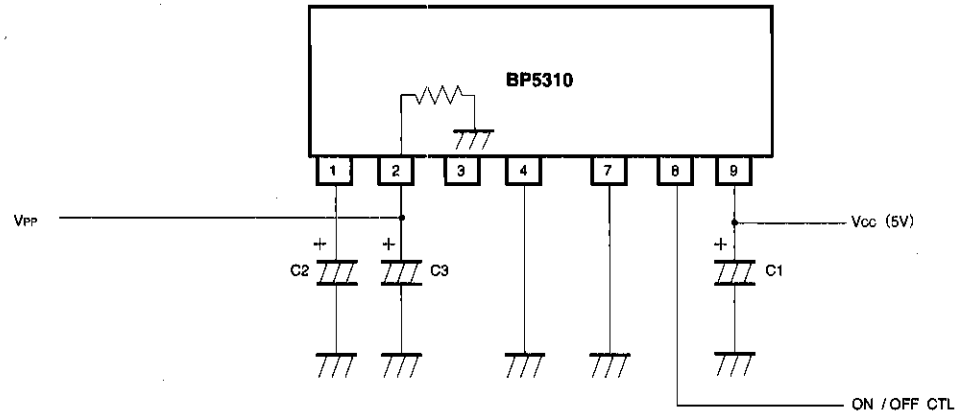


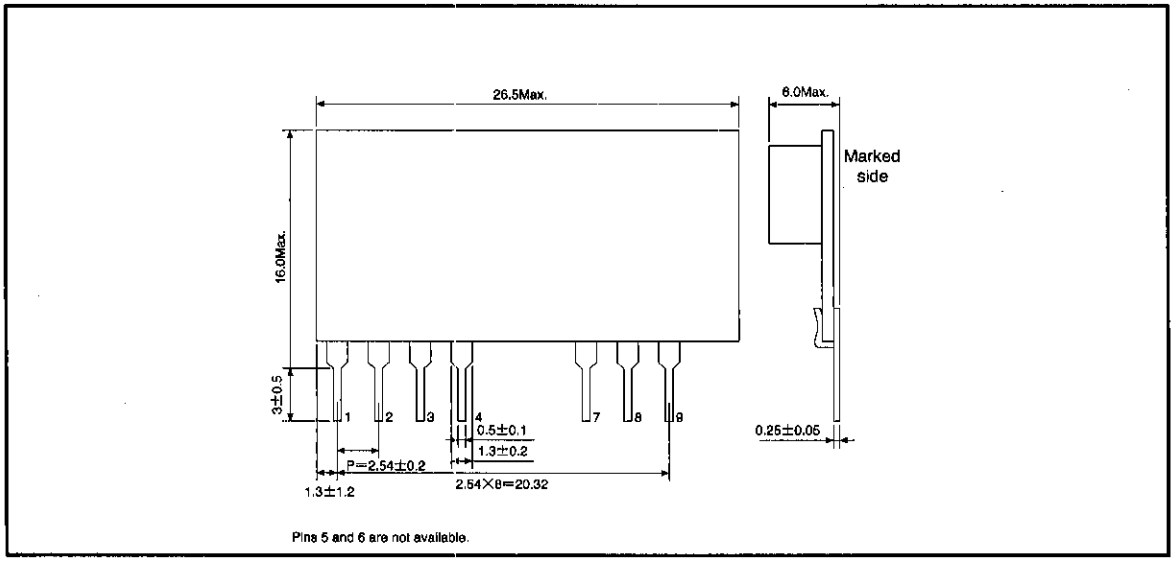
Fig. 3

The OFF output is pulled down through an effective resistance of 30kΩ.

●Operation notes

The module has a built-in short-circuit protection circuit. Short-circuiting is assumed if the output voltage does not reach 4.2V (typical) in 40ms (typical), and the protection circuit starts to operate. When setting the output capacitor, we recommend considering the capacitance within the IC card and making the output voltage to reach 8V or more in less than 20ms.

●External dimensions (Units: mm)



Notes

- The contents described in this catalogue are correct as of March 1997.
- No unauthorized transmission or reproduction of this book, either in whole or in part, is permitted.
- The contents of this book are subject to change without notice. Always verify before use that the contents are the latest specifications. If, by any chance, a defect should arise in the equipment as a result of use without verification of the specifications, ROHM CO., LTD., can bear no responsibility whatsoever.
- Application circuit diagrams and circuit constants contained in this data book are shown as examples of standard use and operation. When designing for mass production, please pay careful attention to peripheral conditions.
- Any and all data, including, but not limited to application circuit diagrams, information, and various data, described in this catalogue are intended only as illustrations of such devices and not as the specifications for such devices. ROHM CO., LTD., disclaims any warranty that any use of such device shall be free from infringement of any third party's intellectual property rights or other proprietary rights, and further, assumes absolutely no liability in the event of any such infringement, or arising from or connected with or related to the use of such devices.
- Upon the sale of any such devices; other than for the buyer's right to use such devices itself, resell or otherwise dispose of the same; no express or implied right or license to practice or commercially exploit any intellectual property rights or other proprietary rights owned or controlled by ROHM CO., LTD., is granted to any such buyer.
- The products in this manual are manufactured with silicon as the main material.
- The products in this manual are not of radiation resistant design.

The products listed in this catalogue are designed to be used with ordinary electronic equipment or devices (such as audio-visual equipment, office-automation equipment, communications devices, electrical appliances, and electronic toys). Should you intend to use these products with equipment or devices which require an extremely high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers, or other safety devices) please be sure to consult with our sales representatives in advance.

- Notes when exporting
  - It is essential to obtain export permission when exporting any of the above products when it falls under the category of strategic material (or labor) as determined by foreign exchange or foreign trade control laws.
  - Please be sure to consult with our sales representatives to ascertain whether any product is classified as a strategic material.