

# 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 =  $12V \pm 5\%$ ; 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

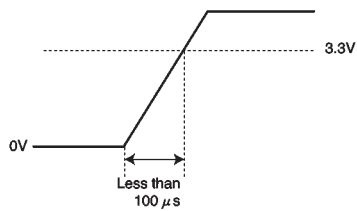
| Parameter             | Symbol    | Limits  | Unit |
|-----------------------|-----------|---------|------|
| Input voltage         | $V_{IN}$  | 7       | V    |
| Operating temperature | $T_{opr}$ | 0~+60   | °C   |
| Storage temperature   | $T_{stg}$ | -30~+85 | °C   |

●Electrical characteristics (unless otherwise noted,  $T_a = 25^\circ\text{C}$ ,  $V_{\text{CTL}} = 5\text{V}$ )

| Parameter                          | Symbol              | Min. | Typ. | Max. | Unit              | Conditions   |
|------------------------------------|---------------------|------|------|------|-------------------|--|
| Input voltage                      | $V_{\text{IN}}$     | 4.75 | 5.00 | 5.25 | V                 |  |
| Output current                     | $I_{\text{OUT}}$    | —    | —    | 120  | mA                |  |
| Output voltage                     | $V_{\text{OUT}}$    | 11.4 | 12.0 | 12.6 | V                 | $V_{\text{IN}}=4.75\sim 5.25\text{V}$<br>$I_{\text{OUT}}=0\sim 120\text{mA}$ |
| Ripple noise voltage               | $\nu$ 1             | —    | 100  | 200  | mV <sub>P-P</sub> | $V_{\text{IN}}=5\text{V}$ , $I_{\text{OUT}}=60\text{mA}$ *1                  |
| Efficiency                         | $\eta$              | 65   | 73   | —    | %                 | $V_{\text{IN}}=5\text{V}$ , $I_{\text{OUT}}=60\text{mA}$                     |
| ON/OFF CTL voltage when ON         | $V_{\text{CTL}}$    | 3.3  | —    | —    | V                 | $V_{\text{IN}}=5\text{V}$ , $V_{\text{OUT}}\geq 11.4\text{V}$ *2             |
| ON/OFF CTL voltage when OFF        | $V_{\text{CTL}}$    | —    | —    | 0.4  | V                 | $V_{\text{IN}}=4.75\sim 5.25\text{V}$  |
| ON/OFF CTL sink current when ON    | $I_{\text{SINK}}$   | —    | 0.8  | 1.3  | mA                | $V_{\text{IN}}=5\text{V}$<br>$V_{\text{CTL}}=3.3\text{V}$ *3                 |
| ON/OFF CTL source current when OFF | $I_{\text{SOURCE}}$ | —    | 1.0  | 1.5  | mA                | $V_{\text{IN}}=5\text{V}$<br>$V_{\text{CTL}}=0.4\text{V}$ *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  $100\ \mu\text{s}$  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

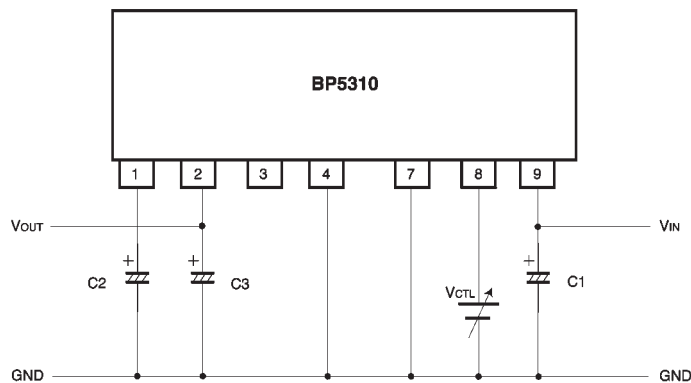


Fig. 1

C1 :  $100\ \mu\text{F} / 16\text{V}$  (NICHICON PL-series or equivalent)

C2 :  $47\ \mu\text{F} / 35\text{V}$  (NICHICON PL-series or equivalent)

C3 :  $2.2\ \mu\text{F} / 35\text{V}$  (Al electrolytic capacitor)



(2) Pull-down of  $V_{P-P}$

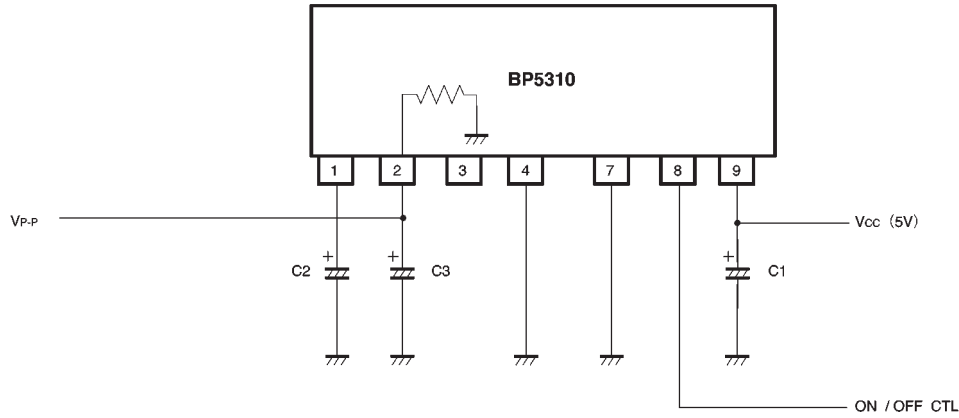


Fig. 3

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

(3) 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 out-

put 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)

