# PCMCIA / flash memory power supply

## BP5315

The BP5315 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). Compact and thin surface-mounted package with embossing tape for automatic mounting.

●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 and thin SMD package.
5) Supplied with embossing tape for automatic mounting by the mounter.

●Absolute maximum ratings

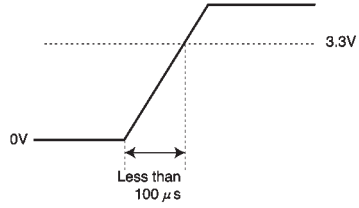
| Parameter | Symbol | Limits | Unit |
|---|---|---|---|
| Input voltage | $V_{IN}$ | 7 | V |
| Operating temperature | Topr | 0～+60 | ℃ |
| Storage temperature | Tstg | −30～+85 | ℃ |

●Electrical characteristics (unless otherwise noted, Ta = 25°C and $V_{CTL}$ = 5V)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions | |
|---|---|---|---|---|---|---|---|
| Input voltage | $V_{IN}$ | 4.75 | 5.00 | 5.25 | V | | |
| Output current | $I_{OUT}$ | — | — | 120 | mA | | |
| Output voltage | $V_{OUT}$ | 11.4 | 12.0 | 12.6 | V | $V_{IN}$=4.75～5.25V<br>$I_{OUT}$=0～120mA | |
| Ripple noise voltage | $\nu$ 1 | — | 100 | 200 | $mV_{P-P}$ | $V_{IN}$=5V, $I_{OUT}$ =60mA | ∗1 |
| Efficiency | $\eta$ | 65 | 77 | — | % | $V_{IN}$=5V, $I_{OUT}$ =60mA | |
| ON/OFF CTL voltage when ON | $V_{CTL}$ | 3.3 | — | — | V | $V_{IN}$=5V, $V_{OUT}$≧11.4V | ∗2 |
| ON/OFF CTL voltage when OFF | $V_{CTL}$ | — | — | 0.4 | V | $V_{IN}$=4.75～5.25V | |
| ON/OFF CTL sink current when ON | $I_{SINK}$ | — | 0.8 | 1.3 | mA | $V_{IN}$=5V<br>$V_{CTL}$=3.3V | ∗3 |
| ON/OFF CTL source current when OFF | $I_{SOURCE}$ | — | 1.0 | 1.5 | mA | $V_{IN}$=5V<br>$V_{CTL}$=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 $\mu$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 0V. Ensure that the control circuit can sink this current.

●Measurement circuit

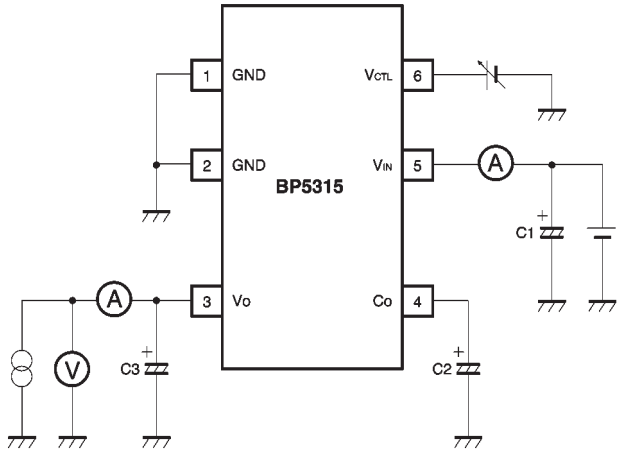



Fig. 1

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

●Pin descriptions

| Pin No. | Pin name | Function |
|---|---|---|
| 1, 2 | GND | Ground |
| 3 | $V_{OUT}$ | Output; connect an output capacitor with a recommended capacitance of 2.2 μF between this pin and GND |
| 4 | Co | Output smoothing capacitor connection; connect a low-impedance capacitor with a recommended capacitance of 47 μF between this pin and GND |
| 5 | $V_{IN}$ | Input; connect a low-impedance capacitor with a recommended capacitance of 100 μF between this pin and GND |
| 6 | $V_{CTL}$ | Output ON/OFF control; output starts when the pin is HIGH level, and stops at LOW level |

●Application examples

(1) Flash memory that requires 5V for reading

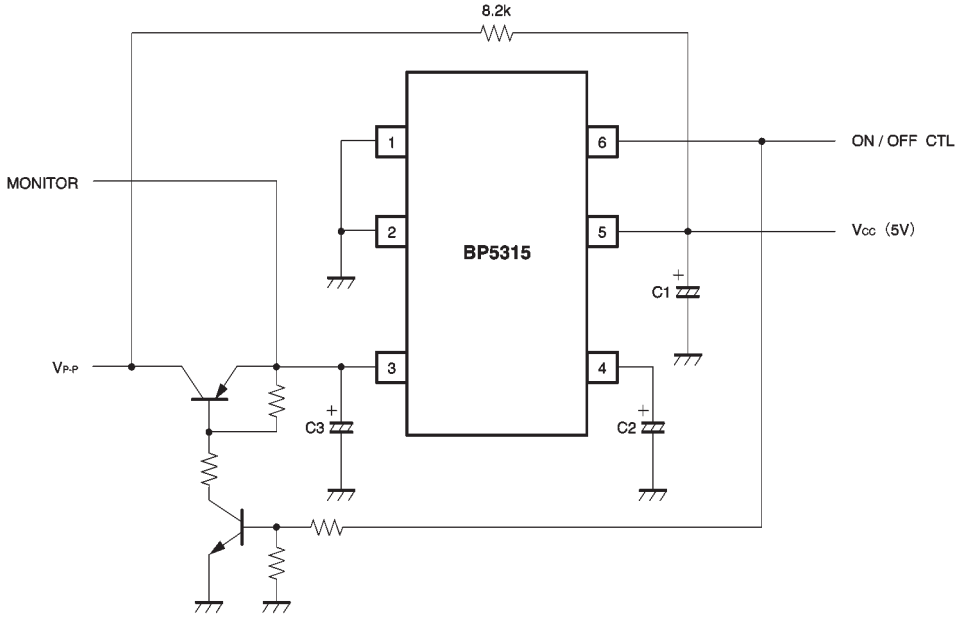



Fig.2

●Operation notes

(1) 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 5. A length less than 50mm is recommended for a copper foil of 1.0mm wide and 35µm thick.

(2) Avoid frequent switching using the ON/OFF CTL pin (five times per second at the maximum).

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

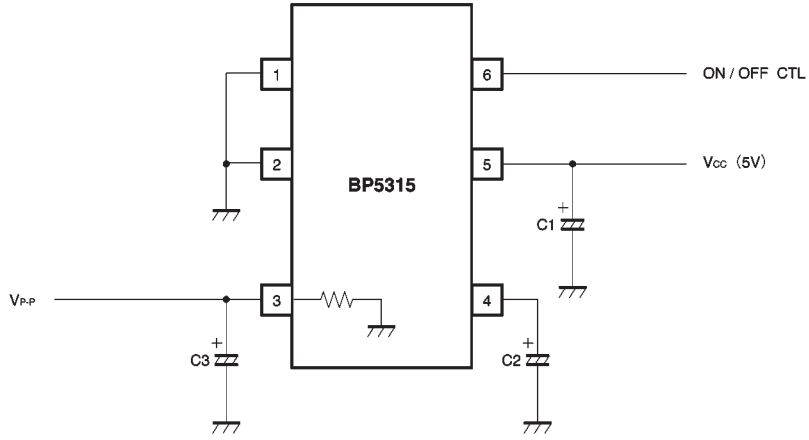


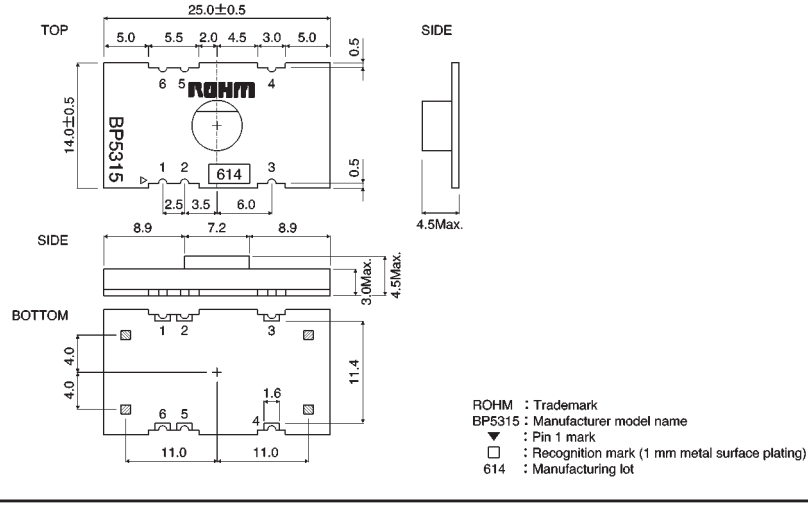

Fig.3

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

●Operation notes

(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 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)




- The soldering used inside the unit is equivalent to H63 solder, so it will remelt during reflow. Be sure not to subject the unit to any vibrations when passing through the reflow furnace.