

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 = $12V \pm 5\%$; 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 and thin SMD package.
- 5) Supplied with embossing tape for automatic mounting by the mounter.

●Absolute maximum ratings

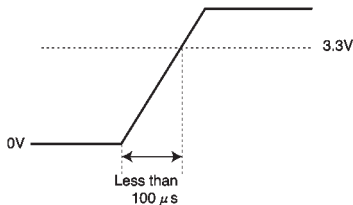
Parameter	Symbol	Limits	Unit
Input voltage	V_{IN}	7	V
Operating temperature	T_{opr}	0~+60	°C
Storage temperature	T_{stg}	-30~+85	°C

●Electrical characteristics (unless otherwise noted, Ta = 25°C and VCTL = 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	mVp-p	VIN=5V, IOUT=60mA *1
Efficiency	η	65	77	—	%	VIN=5V, IOUT=60mA
ON/OFF CTL voltage when ON	VCTL	3.3	—	—	V	VIN=5V, VOUT≥11.4V *2
ON/OFF CTL voltage when OFF	VCTL	—	—	0.4	V	VIN=4.75~5.25V
ON/OFF CTL sink current when ON	ISINK	—	0.8	1.3	mA	VIN=5V VCTL=3.3V *3
ON/OFF CTL source current when OFF	ISOURCE	—	1.0	1.5	mA	VIN=5V VCTL=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 0V. Ensure that the control circuit can sink this current.

●Measurement circuit

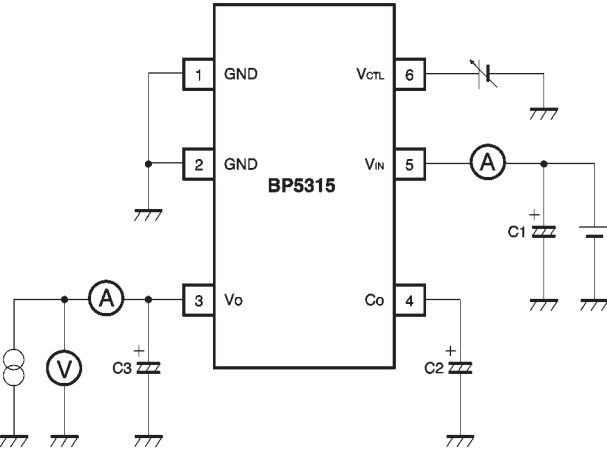


Fig. 1

- C1 : 100 μ F / 16V (NICHICON PL-series or equivalent)
- C2 : 47 μ F / 35V (NICHICON PL-series or equivalent)
- C3 : 2.2 μ F / 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 μ F between this pin and GND
4	Co	Output smoothing capacitor connection; connect a low-impedance capacitor with a recommended capacitance of 47 μ F between this pin and GND
5	V _{IN}	Input; connect a low-impedance capacitor with a recommended capacitance of 100 μ F 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

(1) Flash memory that requires 5V for reading



(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).

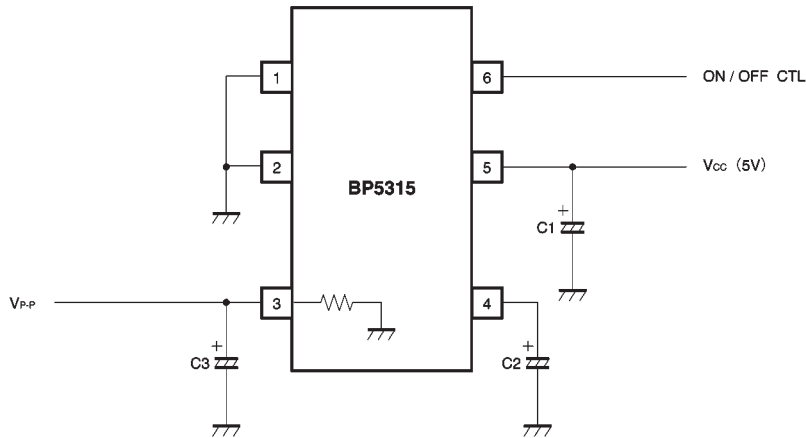
(2) Pull-down of V_{P-P} 

Fig.3

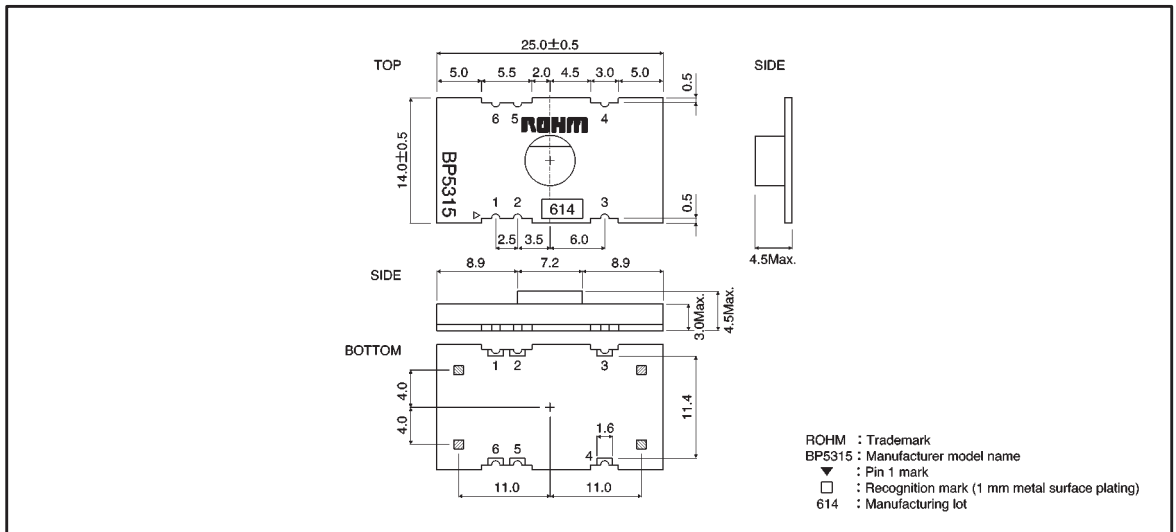
The OFF output is pulled down through an effective resistance of 30k Ω .

● 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 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)



- 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.