Regulator ICs

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

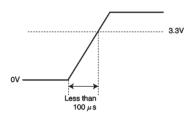
Parameter	Symbol	Limits	Unit
Input voltage	Vin	7	V
Operating temperature	Topr	0~+60	ĉ
Storage temperature Tstg		$-30 \sim +85$	ĉ

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions	
Input voltage	Vin	4.75	5.00	5.25	V		
Output current	Ιουτ	_	_	120	mA		
Output voltage	Vout	11.4	12.0	12.6	v	Vin=4.75~5.25V lout=0~120mA	
Ripple noise voltage	ע 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	Vст∟	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

●Electrical characteristics (unless otherwise noted, Ta = 25°C, VcTL = 5V)

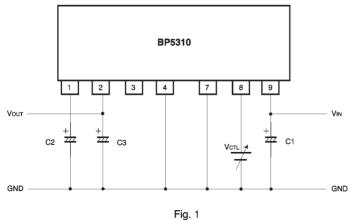
*1 Measured with a band width of 20 MHz.

*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.





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)



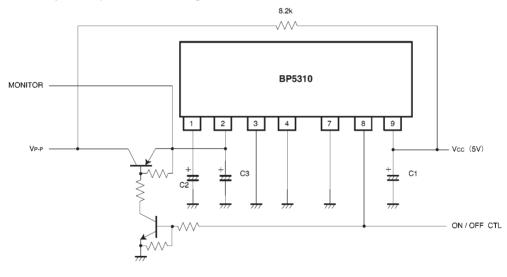
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Pin descriptions

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

Application examples

(1) Flash memory that requires 5V for reading





Operation notes

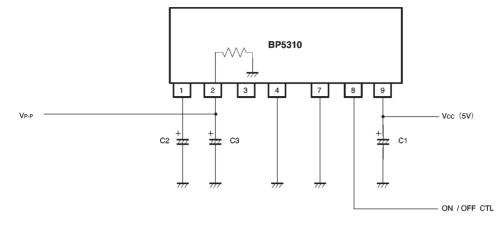
(1) Place I / O external capacitors as near as possible to the connection pins. In particular, make sure to minimize the impedance between the input-side capacitor (C1) and pin 9.

(Reference value: A length less than 50mm for a copper foil of 1.0mm wide and $35 \mu m$ thickness.)

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

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





The OFF output is pulled down through an effective resistance of $30k\Omega$.

(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)

