DC / DC converter for LCDs BP5311A / BP5311XA

The BP5311A and BP5311XA are DC / DC converters for supplying power to liquid crystal display (LCD) panels. The modules supply a positive voltage for LCDs from a logic circuit power supply (+5). They are available in a single in-line package as an upright (BP5311A) or L-shaped lead (BP5311XA) type.

Applications

LCD panels in personal computers and word processors.

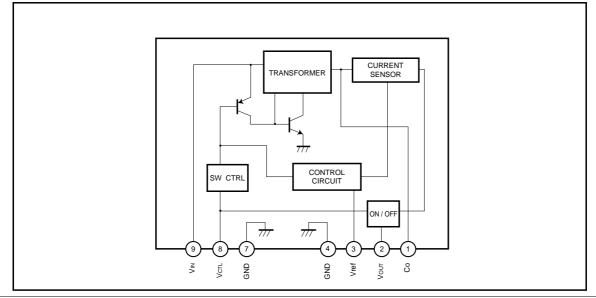
Features

- 1) High conversion efficiency
- 2) Built-in protection circuit
- 3) Built-in ON/OFF switch.
- 4) Compact and light.
- 5) Surface mounting is possible because parts are concentrated on one side.
- 6) Available as an upright or L-shaped lead type.

● Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Power supply voltage	VIN	7	V
Operating temperature range	Topr	0~60	°C
Storage temperature range	Tstg	-30~+85	°C

Block diagram



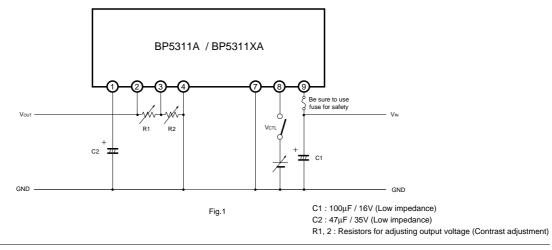
• Pin des	scriptions			
Pin No.	Pin name	Function		
1	Co	Output smoothing capacitor connection pin ; connect a low-impedance capacitor with a recommended capacitance of 47μ F between this and GND.		
2	Vout	Output pin.		
3	Vref	Output voltage adjustment pin for contrast ; output voltage is adjusted by connecting a resistor between pins 2 and 3 or pins 3 and 4.		
4, 7	GND	Ground pin.		
8	Vctl	Output ON/OFF control pin ; output starts when the pin is HIGH level, and stops when the pin is LOW or OPEN.		
9	Vin	Input pin ; connect a low-impedance capacitor with a recommended capacitance of $100\mu F$ between this pin and GND.		

● Electrical characteristics (unless otherwise noted, Ta=25°C, VcrL=5V, R1~R2 resistors are disconnected)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Input voltage	Vin	4.5	5.0	5.5	V	-
Output current	Іоит	-	-	25	mA	_
Output voltage	Vout1	28.0	29.5	31.0	V	Vin=4.5~5.5V, lout=0~25mA
Output voltage when OFF	Vout2	-	_	0.3	V	VIN=4.5~5.5V, VCTL=0V
Ripple noise voltage	ν1	-	100	200	mV _{P-P}	VIN=5V, IOUT=20mA *
Efficiency	η	67	77	_	%	Vin=5V, Iout=20mA
ON / OFF CTL voltage when ON	Vctl	1.5	-	-	V	Vin=5V, Vo>28V
ON / OFF CTL voltage when OFF	Vctl	0.5 (Alternatively, when OPEN)		V	Vin=5V, Vo<0.3V	
ON / OFF CTL current	Ість	_	_	500	μA	VIN=5V, VCTL=1.5V
Current consumption when OFF	IOFF	_	_	50	μA	VIN=5V, VCTL=0V

* Measured with a band width of 20 MHz.

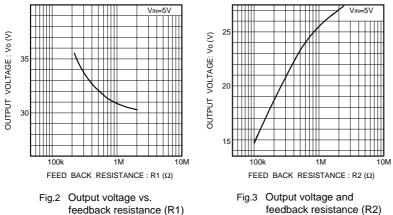
Measurement circuit / Application example

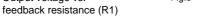


• Electrical characteristic curves

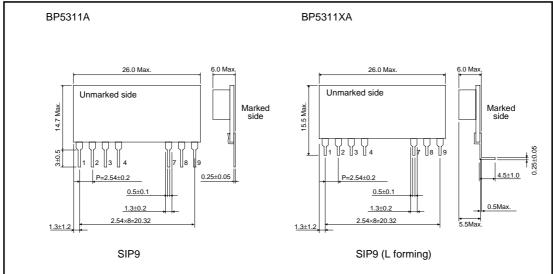
(1) Place I/O external capacitors as near as possible to the connection pins. In particular, make sure to minimize the impedance between the input-side capacitor (C1) and pin 9. A length less than 50 mm is recommended for a copper foil of 1.0 mm wide and 35µm thick.

- (2) Avoid frequent switching using the ON/OFF CTL pin (five times per second at the maximum).
- (3) R1 and R2 resistors, which are used for changing the output voltage, are usually not required.









Precautions on Use of ROHM Power Module

Safety Precautions

- 1) The products are designed and produced for application in ordinary electronic equipment (AV equipment, OA equipment, telecommunication equipment, home appliances, amusement equipment etc.). If the products are to be used in devices requiring extremely high reliability (medical equipment, transport equipment, aircraft/spacecraft, nuclear power controllers, fuel controllers, car equipment including car accessories, safety devices, etc.) and whose malfunction or operational error may endanger human life and sufficient fail-safe measures, please consult with the Company's sales staff in advance. If product malfunctions may result in serious damage, including that to human life, sufficient fail-safe measures must be taken, including the following:
 - [a] Installation of protection circuits or other protective devices to improve system safety
 - [b] Installation of redundant circuits in the case of single-circuit failure
- 2) The products are designed for use in a standard environment and not in any special environments. Application of the products in a special environment can deteriorate product performance. Accordingly, verification and confirmation of product performance, prior to use, is recommended if used under the following conditions:
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 - [b] Use outdoors where the products are exposed to direct sunlight, or in dusty places
 - [c] Use in places where the products are exposed to sea winds or corrosive gases, including Cl2, H2S, NH3, SO2, and NO2
 - [d] Use in places where the products are exposed to static electricity or electromagnetic waves
 - [e] Use in proximity to heat-producing components, plastic cords, or othe flammable items
 - [f] Use involving sealing or coating the products with resin or other coating materials
 - [g] Use involving unclean solder or use of water or water-soluble cleaning agents for cleaning after soldering
 - [h] Use of the products in places subject to dew condensation
- 3) The products are not radiation resistant.
- 4) The Company is not responsible for any problems resulting from use of the products under conditions not recommended herein.
- 5) The Company should be notified of any product safety issues. Moreover, product safety issues should be periodically monitored by the customer.

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