

- Structure                                      Silicon monolithic integrated circuit
- Product name                                 Boost DCDC converter for TV tuner
- Type     **BD8924G**
- Package outline                              Fig. 1
- Block Diagram                                Fig. 2
  
- Features                                      1) For varactor voltage in the TV tuner.  
     2) Over current Protection circuit  
     3) SSOP-5 small size

© This chip is not designed to protect itself against radioactive rays.

Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Ratings	Unit	Condition
Maximum applied voltage 1	Vmax1	7.0	V	It applies to VIN terminal
Maximum applied voltage 2	Vmax2	36	V	It applies to SW, VOUT terminals
Power dissipation	Pd1	674.9 (Note1)	mW	At single unit
Operating temperature range	Topr	-30 ~ +85	°C	
Storage temperature range	Tstr	-55 ~ +150	°C	

(Note1) Pd derated at 5.4mW/°C for temperature above Ta=25°C,  
 mounted on 70mm×70mm×1.6mm glass-epoxy PCB.

Operation condition (Ta=25°C)

Parameter	Symbol	Ratings	Unit	Condition
Power supply voltage range	VCC	4.5~5.5	V	VIN terminal voltage

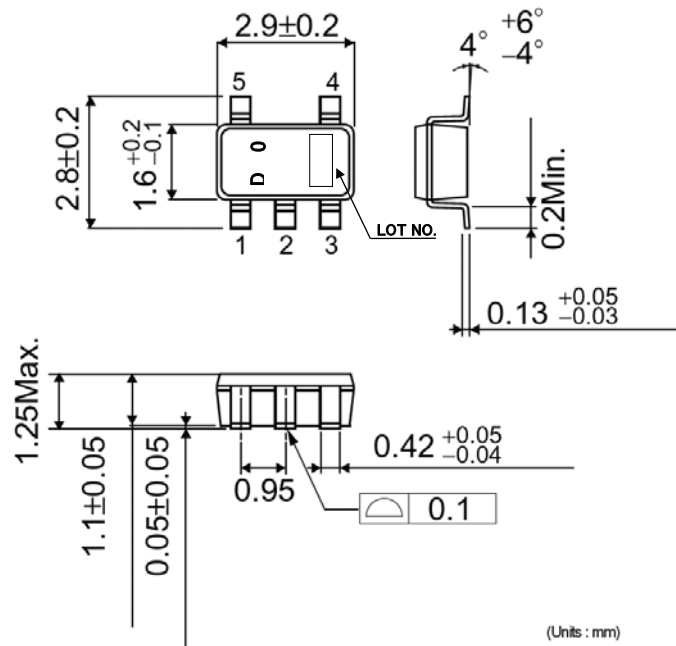


Fig. 1 Package Outline

Pin assigns

NO.	Pin Name	I/O	Function
1	SW	I	Inductor connection terminal
2	GND	-	GND
3	VOUT	O	Boost voltage output
4	GND	-	GND
5	VIN	-	Power supply input

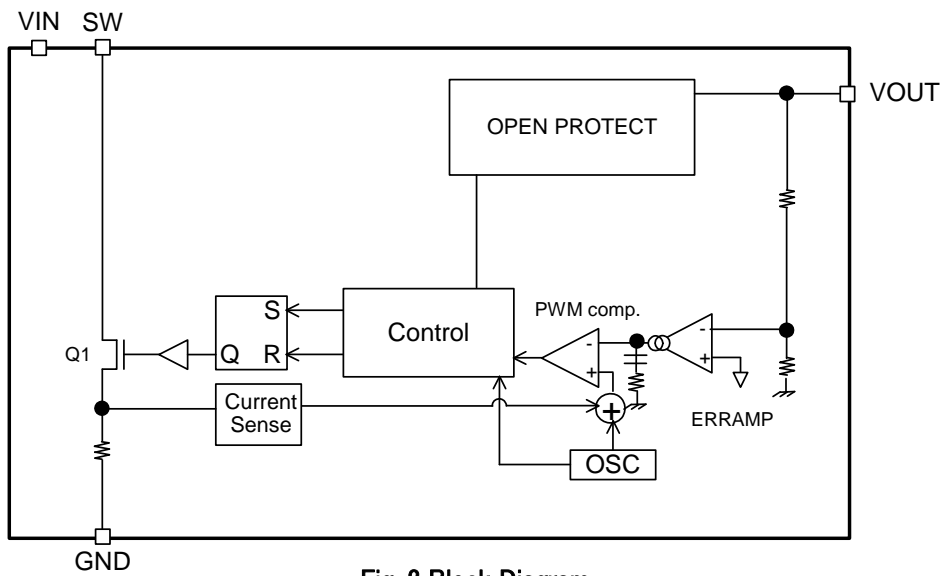
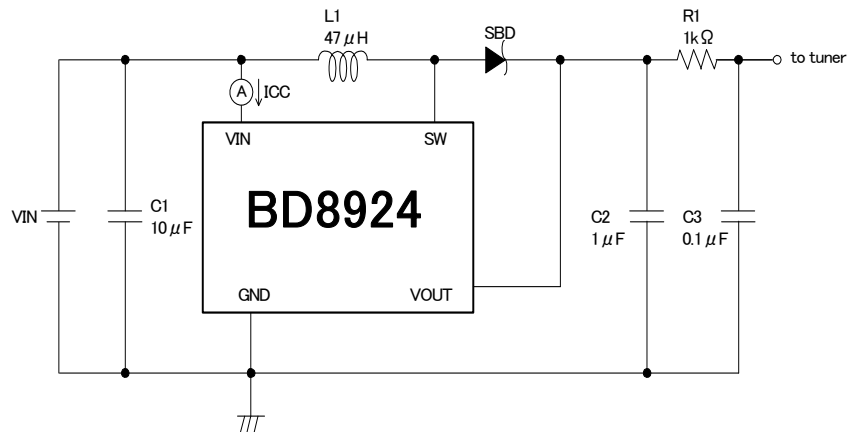
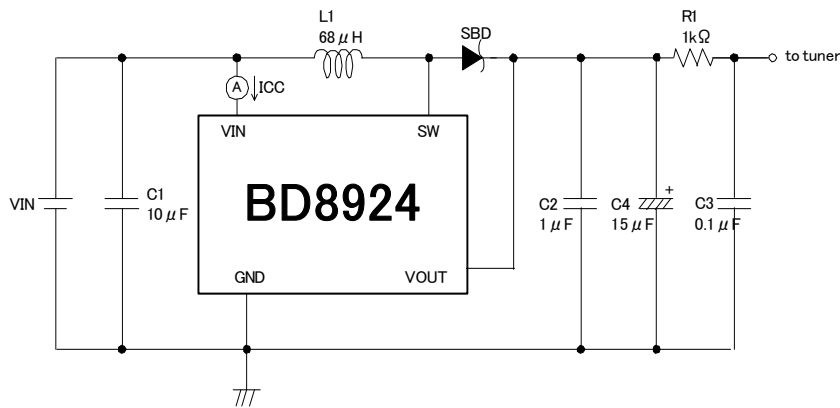


Fig. 2 Block Diagram

(a)  $I_{\text{omax}} \leq 2.0\text{mA}$



(b)  $2\text{mA} < I_{\text{omax}} \leq 4.0\text{mA}$



Please use RC-LPF of R1 and C3 if you need to cut the noise.  
We do not guarantee the operation of circuit if you use LC filter.  
About recommended parts, please see the technical-note.

**Fig. 3 Recommended Circuit**

Electrical characteristic (Unless otherwise specified  $T_a=25^\circ\text{C}$ ,  $V_{\text{IN}}=5\text{V}$ )

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Circuit current	ICC	-	1.0	2.0	mA	VOUT=35V force
Oscillation frequency	fsw	250	400	600	kHz	
Output voltage range	Vomax	30.0	31.0	32.0	V	I <sub>o</sub> =0mA
Maximum output current1	Iomax1	2.0	-	-	mA	L1=47uH, C2=1uF
Maximum output current2	Iomax2	4.0	-	-	mA	L1=68uH, C2=1uF, C4 ≥ 15uF
Oscillation beginning power-supply voltage	Vst	4.2	-	-	V	VIN terminal voltage The oscillation is confirmed with SW pin.

**Caution on use**

## (1) Absolute Maximum Ratings

An excess in the absolute maximum rating, such as supply voltage, temperature range of operating conditions, etc., can break down devices, thus making impossible to identify breaking mode such as a short circuit or an open circuit. If any special mode exceeding the absolute maximum ratings is assumed, consideration should be given to take physical safety measures including the use of fuses, etc.

## (2) The power supply and the GND lines

Design PCB pattern to provide low impedance for the wiring between the power supply and the GND lines. Please take care about interference by common impedance of the wiring pattern when there are two or more power supply and GND line. For the GND line, please note the separation of the large current route and the small signal route including the external circuit. Furthermore, for all power supply terminals to ICs, mount a capacitor between the power supply and the GND terminal. At the same time, in order to use an electrolytic capacitor, thoroughly check to be sure the characteristics of the capacitor to be used present no problem including the occurrence of capacity dropout at a low temperature, thus determining the constant.

## (3) GND voltage

Make setting of the potential of the GND terminal so that it will be maintained at the minimum in any operating state.

## (4) Short circuit between terminals and erroneous mounting

In order to mount ICs on a set PCB, pay thorough attention to the direction and offset of the ICs. Erroneous mounting can break down the ICs. Furthermore, if a short circuit occurs due to foreign matters entering between terminals or between the terminal and the power supply or the GND terminal, the ICs can break down.

## (5) Operation in strong electromagnetic field

Be noted that using ICs in the strong electromagnetic field can malfunction them.

## (6) Input terminals

In terms of the construction of IC, parasitic elements are inevitably formed in relation to potential. The operation of the parasitic element can cause interference with circuit operation, thus resulting in a malfunction and then breakdown of the input terminal. Therefore, pay thorough attention not to handle the input terminals, such as to apply to the input terminals a voltage lower than the GND respectively, so that any parasitic element will operate. Furthermore, do not apply a voltage to the input terminals when no power supply voltage is applied to the IC. In addition, even if the power supply voltage is applied, apply to the input terminals a voltage lower than the power supply voltage or within the guaranteed value of electrical characteristics.

## (7) External capacitor

In order to use a ceramic capacitor as the external capacitor, determine the constant with consideration given to a degradation in the nominal capacitance due to DC bias and changes in the capacitance due to temperature, etc.

## (8) Thermal design

Perform thermal design in which there are adequate margins by taking into account the permissible dissipation (Pd) in actual states of use. Moreover, please use it within the range where output Tr doesn't exceed the rated voltage and ASO.

## (9) Rush current

In CMOS IC, when the power supply is turned on rush current might flow momentarily in logical internal irregular state. Therefore, note drawing the capacity of the power supply coupling, the power supply, and width and drawing the GND pattern wiring, please.

## (10) Test terminal and unused terminal processing

Please process a test terminal and unused terminal according to explanations of the function manual and the application note, etc. to be unquestionable while real used. Moreover, please inquire of the person in charge of our company about the terminal without the explanation especially.

## (11) Content of material

The application notes etc. are the design material to design the application, and no one of the content securing it. Please decide the application after it examines enough and it evaluates it including external parts.

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