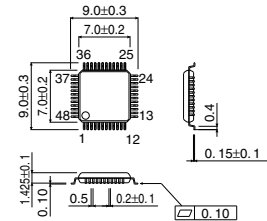


# 5-channel Switching Regulator Controller BD9730KV

## ● Description

The BD9730KV is a 5-channel switching regulator controller IC designed for digital still cameras. This IC can be operated at 2.5V. (Min.). The 5-channel (4 channel for step-down and 1 channel for step-up) switching regulator controllers are integrated into a VQFP48 package. This IC can operate both external Bipolar and FET transistors. A triangle wave oscillator, a reference voltage, PWM comparator, a CMOS type driver, and a short protection circuit are all integrated in this single IC.

## ● Dimension (Unit : mm)



## ● Features

- 1) Operates at a supply voltage of 2.5V (Min.)
- 2) High-precision reference voltage of  $1.0V \pm 1.2\%$
- 3) Can operate both external transistors of FET and Bipolar (Base current can be set by resistance.)
- 4) All channels have dead time control
- 5) Built-in output shutdown circuit (timer latch) when overloaded
- 6) Channels 1 and 5 can externally set the reference voltage
- 7) Channels 1, 4 and 5 can control independently the ON/OFF

**VQFP48**

## ● Applications

Digital still camera, portable DVD player, digital movie camera, PDA, W-CDMA

## ● Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Maximum applied voltage	Vmax	-0.3 ~ +12	V
Power dissipation	Pd	400 <sup>*1</sup>	mW
		900 <sup>*2</sup>	
Operating temperature range	Topr	-20 ~ +85	°C
Storage temperature range	Tstg	-55 ~ +125	°C

\*1 When only IC is used. Derating : 4.0mW/°C for operation above Ta=25°C

\*2 PCB (70mmx70mm, t=1.6mm) glass epoxy mounting.  
Derating : 9.0mW/°C for operation above Ta=25°C

## ● Recommended Operating Conditions (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply voltage <sup>*3</sup>	Vcc	2.5	—	11	V
Oscillating frequency	fosc	100	—	700	kHz
Output current	IOUT	—	—	30	mA

\*3 REG output voltage is derated when Vcc is less than 2.6V-2.5V.

● Electrical characteristics (Unless otherwise noted; Ta=25°C, Vcc=6V, fosc=0.20MHz, STB1~5=3V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Circuit current at standby	Ist	—	—	10	μA	STB1~5=0V
Circuit current at operating	Icc	—	4.8	9.5	mA	
(Reference voltage)						
Output voltage	Vref	0.988	1.0	1.012	V	Iref=-1mA
(Internal regulator)						
Output voltage REGA	VREGA	2.4	2.5	2.6	V	Ireg=-1mA
(Shutdown at overload)						
CH1~5 threshold voltage	Vsc1~5	0.90	1.0	1.10	V	VSCP1~5=1.5V~0.5V
(Protection circuit)						
SCP pin detection voltage	Vtsc	0.90	1.0	1.10	V	VSCP=0V~1.5V
Triangular oscillator						
Oscillating frequency	fosc1	0.179	0.200	0.221	MHz	RT=24kΩ, CT=220pF
(Output)						
Output voltage "H" at operating	VSATH	Vcc-0.4	Vcc-0.2	—	V	Io=10mA
Output voltage "L" at operating	VSATL	—	0.2	0.4	V	Io=-10mA
Maximum output source current	Iosource	30	—	—	mA	
Maximum output sink current	Iosink	—	—	-30	mA	
(STB1~5)						
STB pin control voltage	Operating	VSTBL	2.0	—	—	V
	Non-operating	VSTBH	-0.3	—	0.3	V

● Application Circuit

