

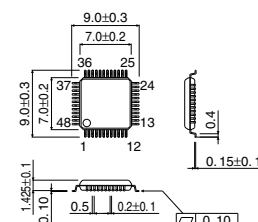
## 5-channel switching regulator controller

### BD9731KV

#### ● Description

BD9731KV is a PWM switching regulator controller IC. The 5-channel (4 channel for step-up, and 1 channel for step-down) switching regulator controllers are integrated into a VQFP48 package. This IC can operate both Bipolar and MOS transistor. Triangle wave oscillator, reference voltage, PWM comparator, CMOS type driver, and short protection circuit are integrated.

#### ● Dimension (Units : mm)



VQFP48

#### ● Features

- 1) Can operate both external transistors of Bipolar and MOS.  
(Base current can be set by resistance.)
- 2) Built-in output shutdown circuit (Timer latch) when overloaded.
- 3) Channel 1, and 5 can externally set the reference voltage.
- 4) Channel 1, 4, and 5 can control independently ON/OFF.
- 5) All channels have dead time control.

#### ● Applications

Digital still camera, Portable DVD player, W-CDMA, PDA, Digital movie camera

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

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

\*Derating : 4.0mW/°C for operation above Ta=25°C (Only IC unit)

\*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
Power supply voltage	Vcc	2.8	—	11	V
Oscillating frequency	fosc	100	—	700	kHz
Output current	IOUT	—	—	30	mA

● 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 stand-by	Ist	—	—	10	μA	STB1~5=0V
Circuit current at operating	Icc	—	4.5	9.5	mA	
<Reference voltage>						
Output voltage	Vref	1.485	1.5	1.515	V	Iref=-1mA
<Internal regulator>						
Output voltage REGA	VREGA	2.4	2.5	2.6	V	Ireg=-1mA
<Shutdown at overloaded>						
CH1~5 threshold voltage	Vsc1~5	1.425	1.5	1.575	V	VSCP1~5=2V~1V
<Protection circuit>						
SCP pin detection circuit	Vtsc	0.90	1.0	1.10	V	VSCP=0V~1.5V
Triangle wave oscillator						
Oscillating frequency	fosc1	0.179	0.20	0.221	MHz	RT=24kΩ, CT=220pF
<Output>						
Output voltage 'H' at operating	VSATH	Vcc-0.3	Vcc-0.1	—	V	I <sub>o</sub> =10mA
Output voltage 'L' at operating	VSATL	—	0.1	0.3	V	I <sub>o</sub> =-10mA
Maximum output source current	I <sub>OSOURCE</sub>	—	—	30	mA	
Maximum output sink current	I <sub>OSINK</sub>	—	—	-30	mA	
<STB1~5>						
STB pin control voltage	Operating	VSTBL	2.0	—	—	V
	Non-operating	VSTBH	-0.3	—	0.3	V

● Block Diagram

