

1-channel Step-down PWM switching regulator controller with synchronous rectification

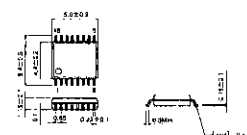
BD9721FV

●Description

The BD9721FV is a 1-chip synchronous rectification step down PWM switching regulator controller IC for a DC/DC converter. The synchronous rectification system achieves higher efficiency. It incorporates a timer latch short protection circuit and a stand-by switch, while supporting low consumption current during OFF output.

●Dimension (Units : mm)

●SSOP-B16



●Features

- 1) High efficiency: more than 95%, $I_o=1A$
- 2) External output voltage control: High precisely feedback voltage : 2%
- 3) 3A class NchFET direct drive
- 4) Built-in timer latch protection circuit
External capacitor needed
- 5) Stand-by switch
Stand-by current: less than $5\mu A$

SSOP-B16

●Applications

HDD, PC,
Applications required 1.5~3.3V output from 5V power supply

●Absolute Maximum Ratings ($T_a=25^\circ C$)

Parameter	Symbol	Limits	Unit
Supply voltage1 ($V_{cc}-GND$)	V_{cc}	15	V
Supply voltage2 ($PV_{cc1}-SW$)	PV_{cc1}	7.5	V
Supply voltage3 ($PV_{cc2}-PGND$)	PV_{cc2}	7.5	V
Power dissipation	P_d	450 *1	mW
Operating temperature range	T_{opr}	0 ~ 70	$^\circ C$
Storage temperature range	T_{stg}	-55 ~ +125	$^\circ C$
Output current	I_o	300 *2	mA

*1 Derating: $4.5mW/^\circ C$ for operation above $T_a=25^\circ C$.

*2 Do not exceed PD and ASO.

● Recommended Operating Conditions (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply voltage1 (Vcc-GND)	Vcc	3.8	—	13.0	V
Supply voltage2 (PVcc1-SW)	PVcc1	3.8	—	6.5	V
Supply voltage3 (PVcc2-PGND)	PVcc2	3.8	—	6.5	V
Output current	Io	—	—	200	mA
Timing capacitance	Cct	75	—	470	pF
Oscillator frequency	Fosc	100	—	500	kHz
Stand-by voltage	Vstb	GND	—	Vcc	V
Error amplifier input voltage	VINV	GND	—	1.6	V

Note: In case of boostup of PVcc1, the voltage is approximately twice as much as PVcc2.

● Electrical Characteristics (Unless otherwise noted, Ta=25°C, Vcc=5V, PVcc=5V, f=300kHz)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Reference voltage	VREF	2.4	2.5	2.6	V	IREF=1mA
Oscillator frequency	FOSC	240	300	360	kHz	CCT=150pF
Maximum duty	DMAX	80	83	86	%	
Feedback voltage	VF	1.225	1.25	1.275	V	INV=FB
Output rise/fall time	Tr/Tf	—	80	—	nS	Cgate=2000pF, PVccX0.1⇄PVccX0.9
Synchronous output non-over lap time	Tmo	50	150	—	nS	Cgate=2000pF, G1&G2≤0.5V
Active voltage	VTHA	2.4	—	—	V	
Stand-by voltage	VTHS	—	—	0.8	V	
Stand-by current	Iccs	—	—	5	μA	

● Block Diagram

