

STRUCTURE

Silicon Monolithic Integrated Circuit

PRODUCT

CMOS Type Series Regulator

TYPE

BH6733HFV

○ BLOCK DIAGRAM and APPLICATION CIRCUIT

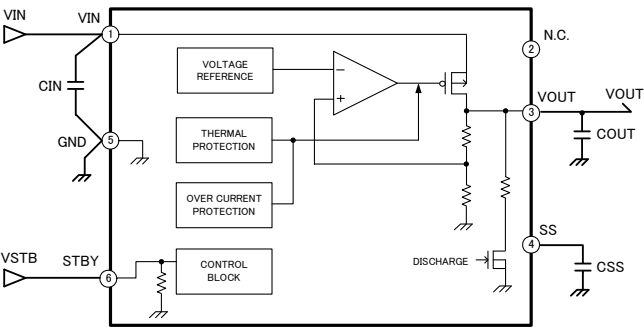


Fig.1 Block Diagram and Application Circuit

○ PIN DESCRIPTION

Pin No.	Pin Name	Description
1	VIN	Input Pin
2	N.C.	No Connect
3	VOUT	Output Pin
4	SS	Slow Start Pin
5	GND	Ground Pin
6	STBY	Output Control Pin (High:ON, Low:OFF)

CIN = 4.7 μ F (Ceramic)
COUT = 4.7 μ F (Ceramic)
CSS = 4700pF (Ceramic)

○ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Parameter	Symbol	Limit	Unit
Power Supply Voltage	VMAX	-0.3 ~ +6.5	V
Power Dissipation	Pd	680 (*1)	mW
Maximum junction temperature	TjMAX	+125	°C
Operating Temperature Range	Topr	-40 ~ +85	°C
Storage Temperature Range	Tstg	-55 ~ +125	°C

(*1) Pd derated at 6.8mW/°C for temperature above Ta=25°C,
mounted on 70mm × 70mm × 1.6mm glass-epoxy PCB.

Status of this document

The Japanese version of this document is the official specification.
Please use the translation version of this document as a reference to expedite understanding of the official version.
If there is any uncertainty in translation version of this document, official version takes priority.

○ OPERATING RANGE (Operating Condition are Limited by Pd)

Parameter	Symbol	Limit	Unit
Power Supply Voltage	VIN	2.5~5.5	V
Maximum Output Current	IMAX	300	mA

○ ELECTRICAL CHARACTERISTICS (Ta=25°C, VIN=STBY=5.0V, CIN=4.7 μ F, COUT=4.7 μ F, CSS=4700pF unless otherwise noted.)

Parameter	Symbol	Limit			Unit	Conditions	
		Min	Typ	Max			
【Regulator】							
Output Voltage	VOUT	3.234	3.300	3.366	V	IOUT=0.1mA	
Circuit Current	ICC	–	90	140	μ A	IOUT=0mA, VIN Pin Monitor	
Circuit Current (STBY)	ISTBY	–	–	1.0	μ A	STBY=0V	
Ripple Rejection Ratio	R.R.	55	70	–	dB	VIN=5.0V, VRR=–10dBv, fRR=1kHz, IOUT=10mA	
Dropout Voltage	VSAT	–	0.7	1.0	V	VIN=0.95*VOUT, IOUT=300mA	
Line Regulation	VDL	–	2	10	mV	VIN=VOUT+1.0V to 5.5V, IOUT=0.1mA	
Load Regulation	VDLO	–	20	100	mV	IOUT=1mA to 300mA	
【Over Current Protection】							
Limit Current	ILMAX	350	600	–	mA	Vo=VOUT*0.9	
Short Current	ISHORT	50	240	420	mA	Vo=0V	
【Stand-by】							
STBY Pull Down Resistor	RSTBY	675	1350	2000	kΩ		
Discharge Resistor	RDSCG	0.8	1.2	2.0	kΩ	VIN=5.0V, STBY=0V	
STBY	ON	VSTBH	2.5	–	5.5	V	VIN=5.0V, STBY=L→H STBY Threshold Voltage
Control Voltage	OFF	VSTBL	–0.3	–	1.1	V	VIN=5.0V, STBY=H→LSTBY Threshold Voltage

● This product is not designed for protection against radio active rays.

○ OPERATING CONDITION

Parameter	Symbol	Min	Typ	Max	Unit	Condition
Input Capacitor	CIN	2.2(*2)	4.7	–	μ F	Ceramic Capacitor Recommended
Output Capacitor	COUT	2.2(*2)	4.7	–	μ F	Ceramic Capacitor Recommended

(*2) Make sure that the output capacitor value is not kept lower than this specified level across a variety of temperature, DC bias characteristic. And also make sure that the capacitor value cannot change as time progresses.

○ POWER DISSIPATION REDUCATION

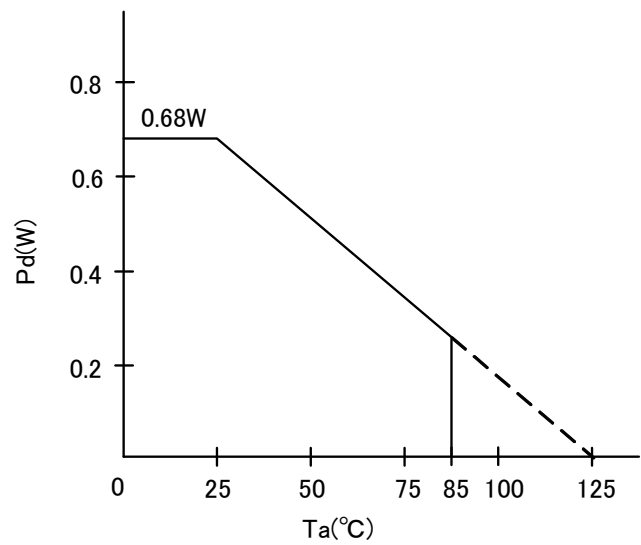
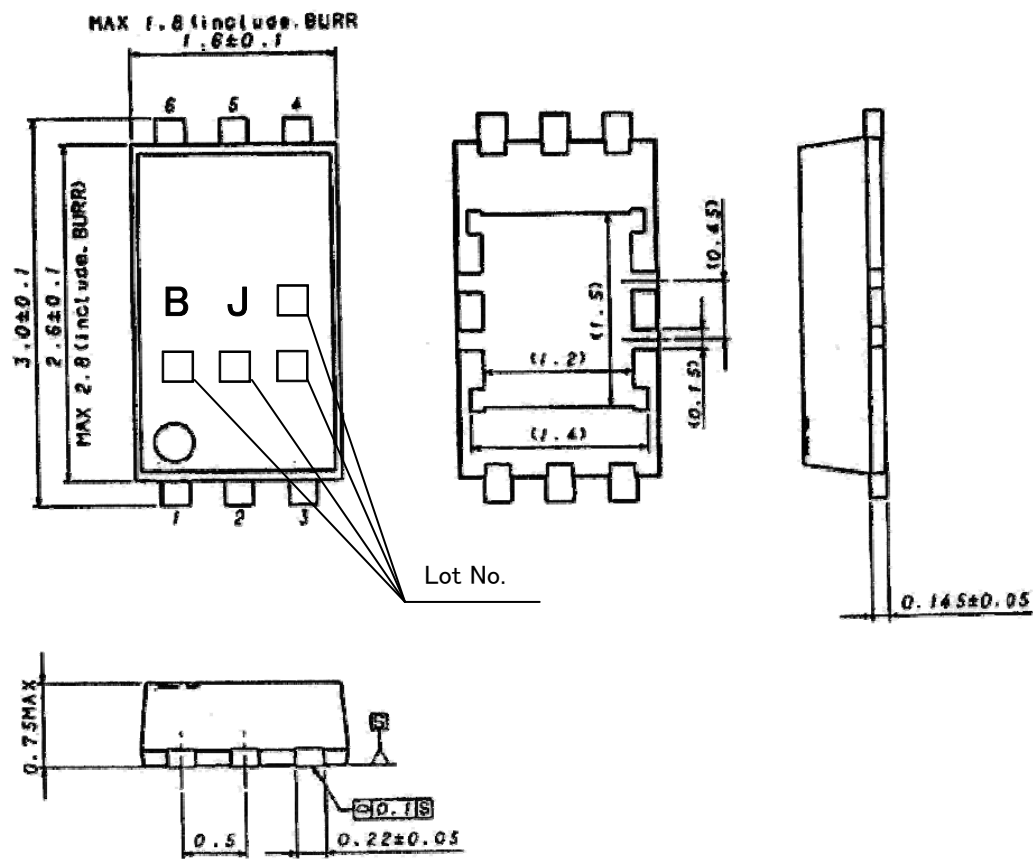


Fig.2 Power Dissipation Reduction

○ PACKAGE DIMENSIONS (HVSOF6)



[unit : mm]

Fig.3 Package Dimensions

○ OPERATION NOTES

1.) Absolute Maximum Ratings

This product is produced with strict quality control, however, may be destroyed if it is operated beyond its absolute maximum ratings. If the device is destroyed in exceeding the recommended maximum ratings, the failure mode will be difficult to determine (E.g. short mode, open mode). Therefore, physical protection counter-measures (like fuse) should be implemented when operating conditions are beyond the absolute maximum ratings specified.

2.) GND Potential

GND potential must be the lowest potential no matter what may happen. Actually, including transitional states, all pins except GND must not be the voltage below GND.

3.) Setting of Heat

Consider Pd of actually using states, carry out the heat design that have adequate margin.

4.) Pin Short and Mistake Fitting

When mounting the IC on the PCB, pay attention to the orientation of the IC. If there is a placement mistake, the IC may be burned up.

5.) Actions in Strong Magnetic Field

Using the IC within a strong magnetic field may cause a malfunction.

6.) Mutual Impedance

Use short and wide wiring tracks for the power supply and ground to keep the mutual impedance as small as possible. Use a capacitor to keep ripple to a minimum.

7.) Voltage of STBY Pin

For standby mode, set STBY voltage below 1.1V. For normal operation, set the pin voltage beyond 2.5V. It is not recommended to set STBY voltage between 1.1V and 2.5V, and it may cause improper operation. And, please be sure to turn STBY Control Voltage ON from OFF after applying Operating Voltage on VIN pin.

8.) Over Current Protection Circuit

Over current and short circuit protection is built-in at the output, and IC destruction is prevented at the time of load short circuit. These protection circuits is effective in the destructive prevention by the sudden accident, please avoid use to which a protection circuit operates continuously.

9.) Thermal Shutdown

This IC has Thermal Shutdown Circuit (TSD Circuit). When the temperature of IC Chip is higher than 175°C, the output turned off by TSD Circuit. TSD Circuit is only designed for protecting IC from thermal over load, therefore it is not recommended that you design the application as TSD working in normally condition.

10.) SS Pin

SS pin can drive quite small current, because the pin is directly connected to reference voltage circuit. It may be that output voltage is dropping when the load of SS pin is more than 100nA. If the pin is connected to a capacitor, please use a ceramic capacitor for small leak current. Please take care that output noise is smaller as SS pin capacitor is larger, but startup time is longer.

11.) Input / Output Capacitor

Mounting input capacitor between input pin and GND (as close to pin as possible), and also output capacitor between output pin and GND (as close to pin as possible) is recommended. The input capacitor reduces the output impedance of the voltage supply source connected to the VIN. The higher value the output capacitor goes, the more stable the whole operation becomes. This leads to high load transient response. Please confirm the whole operation on actual application board. Fig4 is the relation of IOUT and ESR. Please confirm the whole operation on actual application board. Generally, ceramic capacitor has wide range of tolerance, temperature coefficient, and DC bias characteristic. And also its value goes lower as time progresses. Please choose ceramic capacitors after obtaining more detailed data by asking capacitor makers.

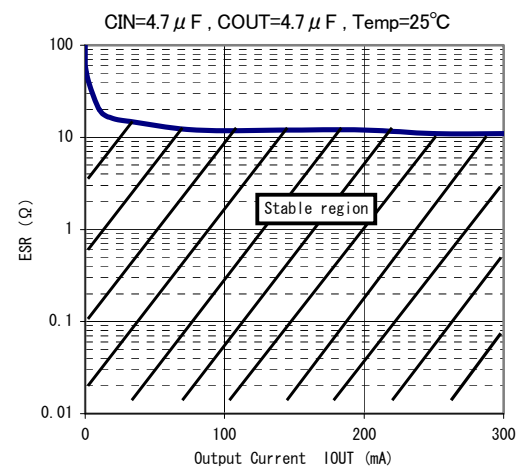


Fig.4 Stable region (Example)

Notes

No copying or reproduction of this document, in part or in whole, is permitted without the consent of ROHM CO.,LTD.

The content specified herein is subject to change for improvement without notice.

The content specified herein is for the purpose of introducing ROHM's products (hereinafter "Products"). If you wish to use any such Product, please be sure to refer to the specifications, which can be obtained from ROHM upon request.

Examples of application circuits, circuit constants and any other information contained herein illustrate the standard usage and operations of the Products. The peripheral conditions must be taken into account when designing circuits for mass production.

Great care was taken in ensuring the accuracy of the information specified in this document. However, should you incur any damage arising from any inaccuracy or misprint of such information, ROHM shall bear no responsibility for such damage.

The technical information specified herein is intended only to show the typical functions of and examples of application circuits for the Products. ROHM does not grant you, explicitly or implicitly, any license to use or exercise intellectual property or other rights held by ROHM and other parties. ROHM shall bear no responsibility whatsoever for any dispute arising from the use of such technical information.

The Products specified in this document are intended to be used with general-use electronic equipment or devices (such as audio visual equipment, office-automation equipment, communication devices, electronic appliances and amusement devices).

The Products are not designed to be radiation tolerant.

While ROHM always makes efforts to enhance the quality and reliability of its Products, a Product may fail or malfunction for a variety of reasons.

Please be sure to implement in your equipment using the Products safety measures to guard against the possibility of physical injury, fire or any other damage caused in the event of the failure of any Product, such as derating, redundancy, fire control and fail-safe designs. ROHM shall bear no responsibility whatsoever for your use of any Product outside of the prescribed scope or not in accordance with the instruction manual.

The Products are not designed or manufactured to be used with any equipment, device or system which requires an extremely high level of reliability the failure or malfunction of which may result in a direct threat to human life or create a risk of human injury (such as a medical instrument, transportation equipment, aerospace machinery, nuclear-reactor controller, fuel-controller or other safety device). ROHM shall bear no responsibility in any way for use of any of the Products for the above special purposes. If a Product is intended to be used for any such special purpose, please contact a ROHM sales representative before purchasing.

If you intend to export or ship overseas any Product or technology specified herein that may be controlled under the Foreign Exchange and the Foreign Trade Law, you will be required to obtain a license or permit under the Law.

Thank you for your accessing to ROHM product informations.

More detail product informations and catalogs are available, please contact your nearest sales office.

ROHM Customer Support System

THE AMERICAS / EUROPE / ASIA / JAPAN

www.rohm.com

Contact us : webmaster@rohm.co.jp