PRODUCT DATA SHEET

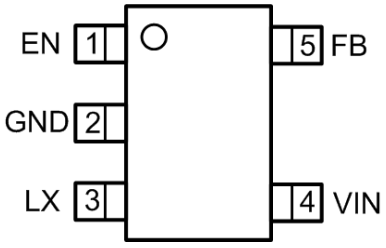
To learn more about JGSEMI, please visit our website at

Datasheet Resources Samples

Please note: Please check the JINGAO Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.jg-semi.cn. Please email any questions regarding the system integration to JINGAO_questions@jgsemi.com.

FEATURES

- High Efficiency: Up to 96%(@3.3V)
- 1.5MHz Constant Frequency Operation
- 1.5A Output Current
- No Schottky Diode Required
- 2.5V to 6V Input Voltage Range
- Output Voltage as Low as 0.6V
- 100% Duty Cycle in Dropout
- Low Quiescent Current: 40μA
- Slope Compensated Current Mode Control for Excellent Line and Load Transient Response
- Short Circuit Protection
- Thermal Fault Protection
- Inrush Current Limit and Soft Start
- Input over voltage protection(OVP)
- <1μA Shutdown Current
- SOT23-5 Package



SOT23-5

APPLICATIONS

- Cellular and Smart Phones
- Wireless and DSL Modems
- PDA/MID/PAD
- Digital Still and Video Cameras

TYPICAL APPILCATION

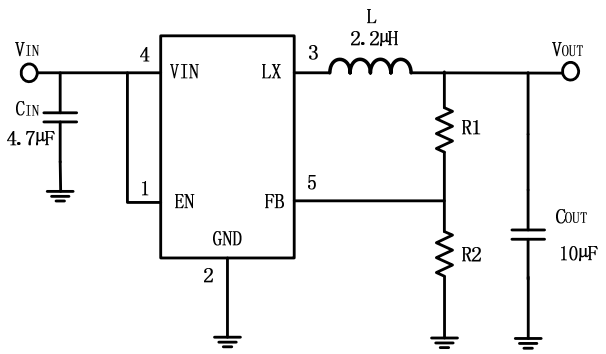


Figure 1. Basic Application Circuit

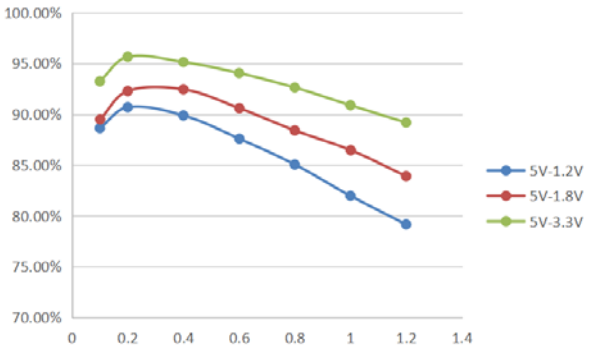


Figure2. Efficiency(%) vs. Load Current(A)

ABSOLUTE MAXIMUM RATINGS (Note 1)

Parameter	Value	Unit
Input Supply Voltage	-0.3~6.5	V
LX Voltages	-0.3~6.5	V
EN,FB Voltage	-0.3~6.5	V
Storage Temperature Range	-65~150	°C
Junction Temperature(Note2)	160	°C
Power Dissipation	600	mW
Lead Temperature(Soldering,10s)	260	°C

PIN DESCRIPTION

Pin	Name	Function
1	EN	Chip Enable Pin. Drive EN above 1.5V to turn on the part. Drive EN below 0.3V to turn it off. Do not leave EN floating.
2	GND	Ground Pin
3	LX	Power Switch Output. It is the switch node connection to Inductor.
4	VIN	Power Supply Input. Must be closely decoupled to GND with a 4.7μF or greater ceramic capacitor.
5	FB	Output Voltage Feedback Pin. A resistive divider divides the output voltage down for comparison to the internal reference voltage.

ESD RATING

Items	Description	Value	Unit
V_{ESD}	Human Body Model for all pins	±2000	V

RECOMMENDED OPERATING CONDITIONS

Items	Description	Min	Max	Unit
Voltage Range	IN	2.5	6.0	V
TA	Operating Temperature Range	-40	85	°C

ELECTRICAL CHARACTERISTICS (Note 3)

(V_{IN}=V_{EN}=3.6V ,V_{OUT}=1.8V , T_A = 25°C, unless otherwise noted.)

Parameter	Conditions	MIN	TYP	MAX	unit
Input Voltage Range		2.5		6.0	V
OVP Threshold			6.5		V
UVLO Threshold			2.3		V
Quiescent Current	V_{EN}=2.0V, I_{OUT}=0， V_{FB}=V_{REF}*105%		40	65	μA
Shutdown Current	V_{EN} =0V		0.1	1.0	μA
Regulated Feedback Voltage	T_A = 25°C	0.588	0.600	0.612	V
	T_A = 0°C ≤ T_A ≤ 85°C	0.586	0.600	0.613	V
	T_A = -40°C ≤ T_A ≤ 85°C	0.585	0.600	0.615	V
Reference Voltage Line Regulation	V_{IN}=2.5V to 6.0V		0.04	0.40	%/V
Output Voltage Line Regulation	V_{IN} = 2.5V to 6.0V		0.04	0.4	%
Output Voltage Load Regulation			0.5		%
Oscillation Frequency	V_{OUT}=100%		1.5		MHz
	V_{OUT}=0V		300		KHz
On Resistance of PMOS	I_{LX}=100mA		0.25	0.30	Ω
ON Resistance of NMOS	I_{LX}=-100mA		0.10	0.15	Ω
Peak Current Limit	V_{IN}=5V,V_{OUT}=1.2V,L=4.7uH/2A	1.5			A
EN Threshold		0.30	1.0	1.50	V
EN Leakage Current			±0.01	±1.0	μA
LX Leakage Current	V_{EN}=0V,V_{IN}=V_{LX}=5V		±0.01	±1.0	μA

Note 1: Absolute Maximum Ratings are those values beyond which the life of a device may be impaired.

Note 2: T_J is calculated from the ambient temperature T_A and power dissipation P_D according to the following formula: T_J = T_A + (P_D) x (250°C/W).

Note 3: 100% production test at +25°C. Specifications over the temperature range are guaranteed by design and characterization.

Note 4: Dynamic supply current is higher due to the gate charge being delivered at the switching frequency

FUNCTIONAL BLOCK DIAGRAM

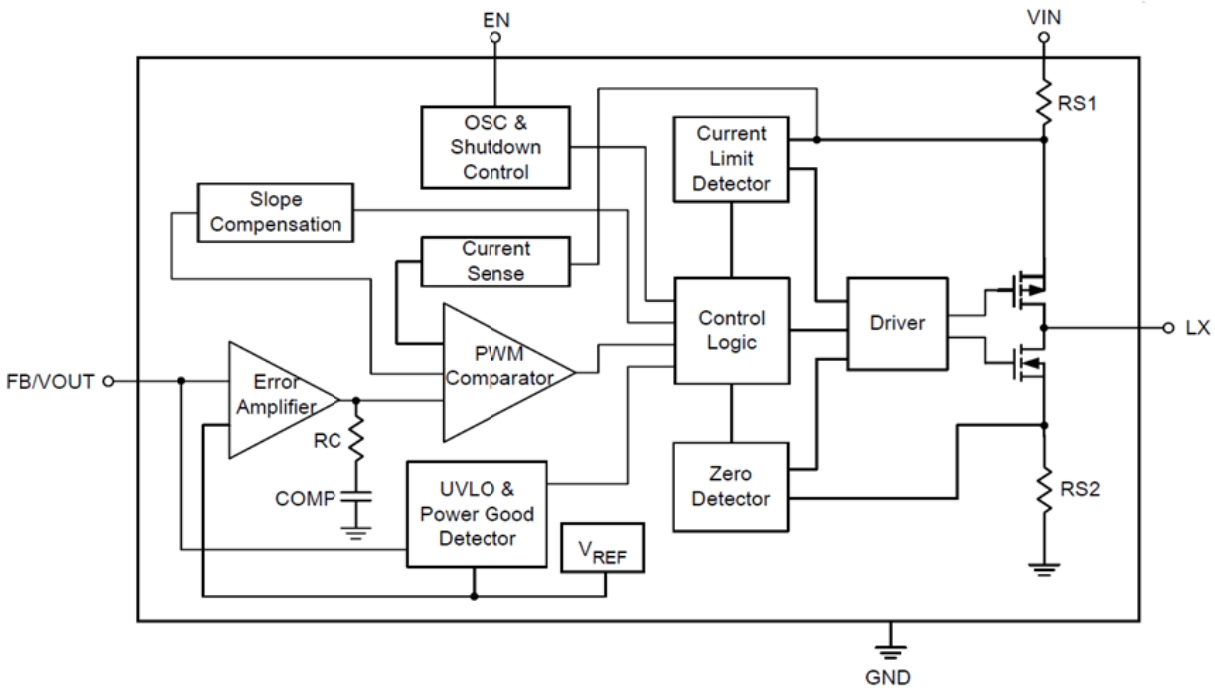
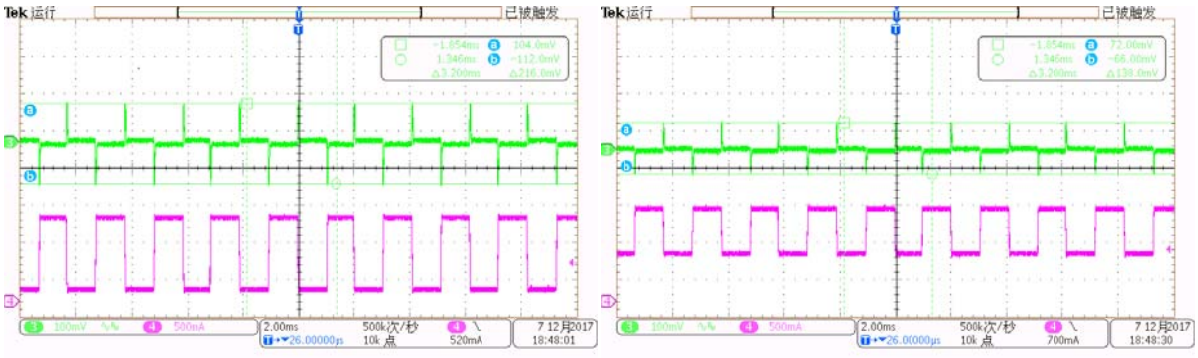


Figure 3. STI3408B Block Diagram

Test condition: Vin=5V,Vout=1.8V;

1.Load Dynamic Response

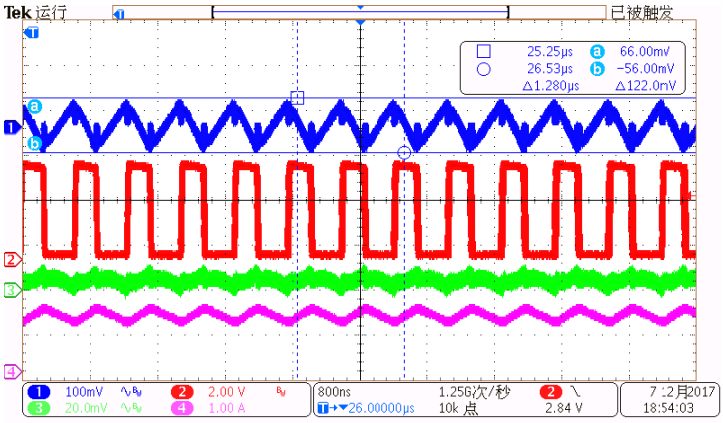
10%~90% load **50%~100% load**



Vin=5V,Vout=1.8VLoad transient((0.12A-1.08A-0.12A) Vin=5V, Vout=1.8VLoadtransient((0.6A-1.2A-0.6A)

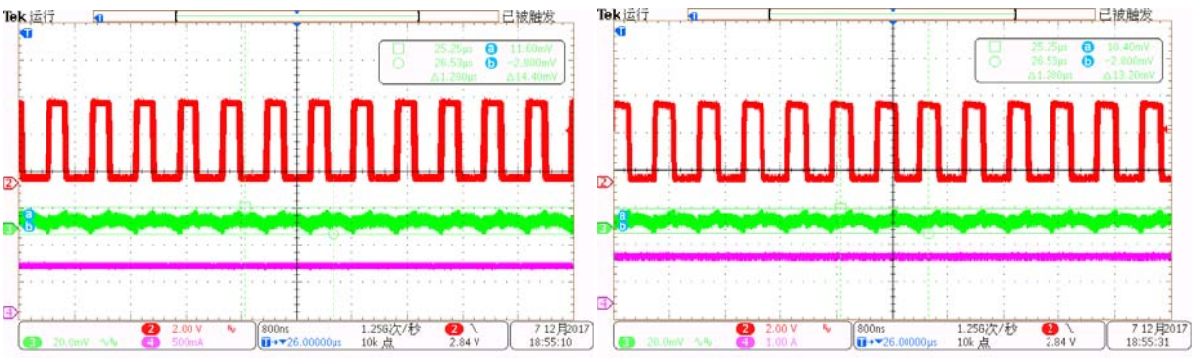
2.Input/output ripple, Iout=full load

CH1:VIN（AC);CH2:SW;CH3:VOUT(AC);CH4:Isw



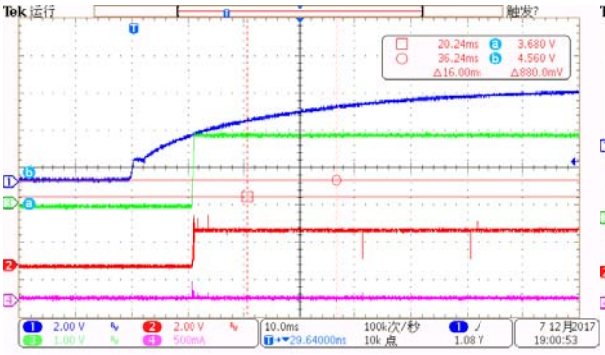
3.Vout ripple and Switching wavefo

CH3:VOUT(AC);CH2:SW;CH4:Iout **CH3:VOUT(AC);CH2:SW;CH4:Iout**

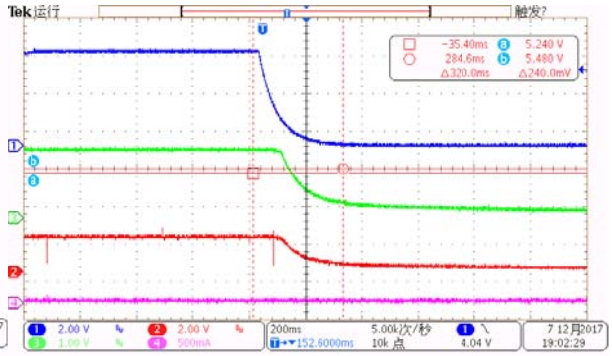


Iout=50% load Iout=100% load

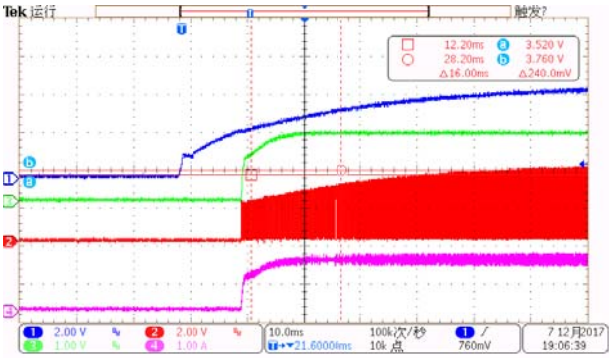
4.Power on/off: CH1:VIN;CH2:SW;CH3:VOUT;CH4:Isw



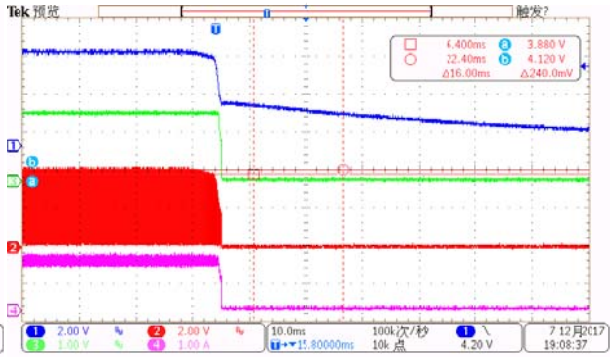
Power on , Iout=0A



Power off , Iout=0A

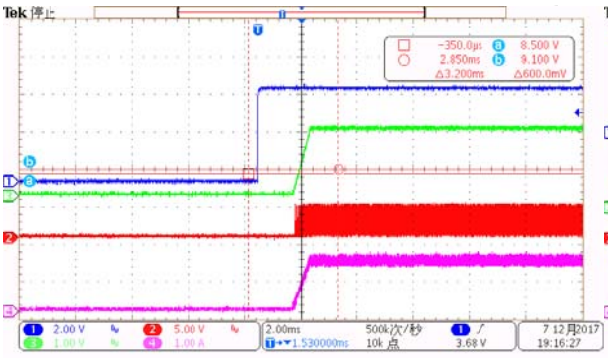


Power on Iout= 1.5A

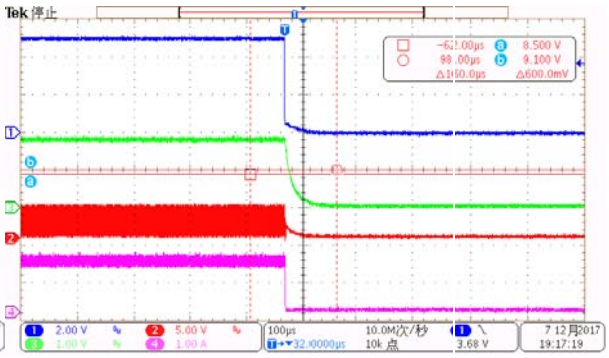


Power off , Iou= 1.5A

5.EN (5V)on/off:CH1:EN;CH2:SW;CH3:VOUT;CH4:Isw

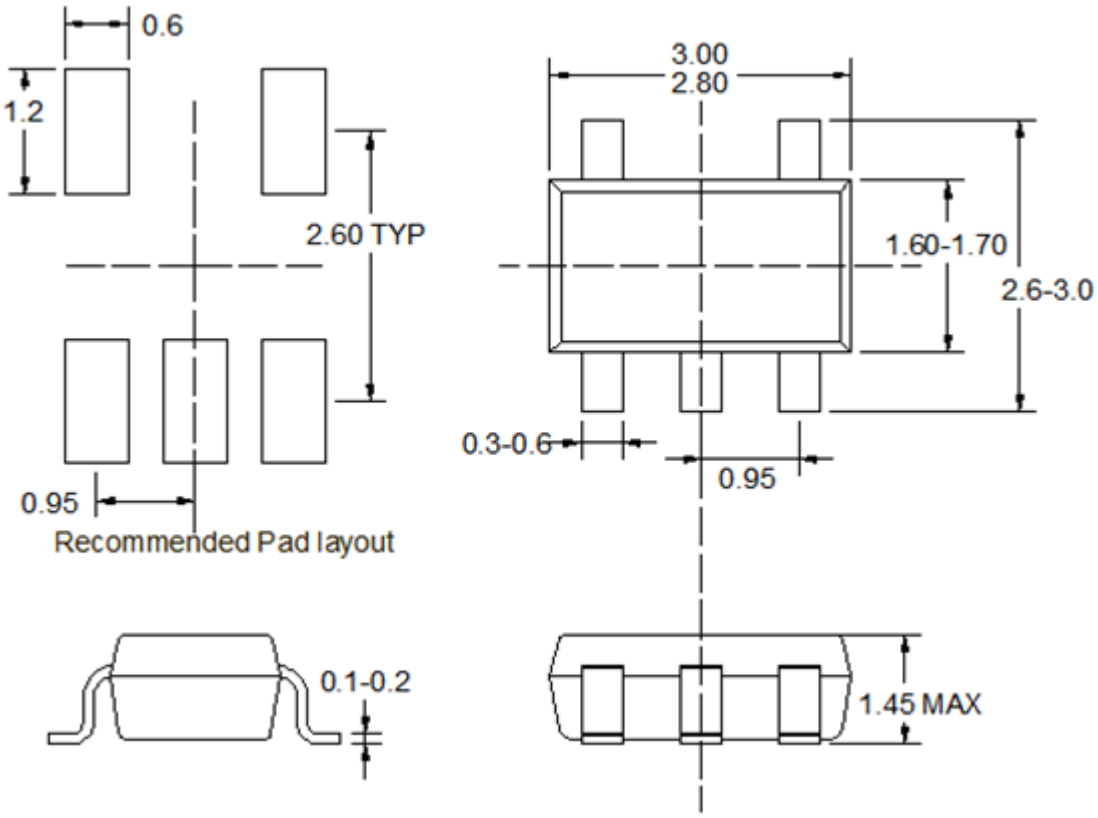


EN on , Iout= 1.5A



EN off , Iout= 1.5A

PACKAGE INFORMATION



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Note:

1) All dimensions are in millimeters.

2) Package length does not include mold flash, protrusion or gate burr.

3) Package width does not include inter lead flash or protrusion.

4) Lead popularity (bottom of leads after forming) shall be 0.10 millimeters max.

5) Pin 1 is lower left pin when reading top mark from left to right,

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