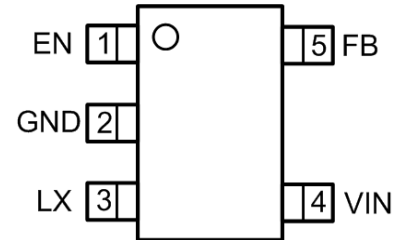


FEATURES

- High Efficiency: Up to 96%(@3.3V)
- 1.5MHz Constant Frequency Operation
- 1.2A 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: 40 μ A
- 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)
- <1 μ A 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 APPILICATION

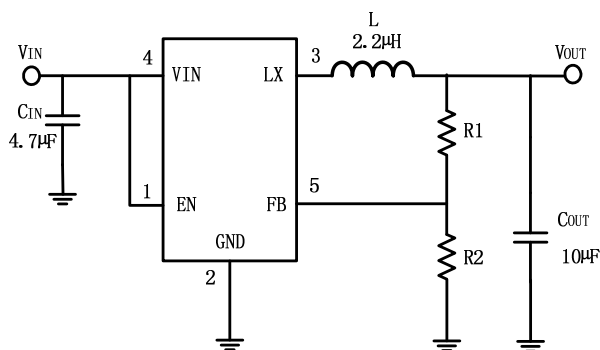


Figure 1. Basic Application Circuit

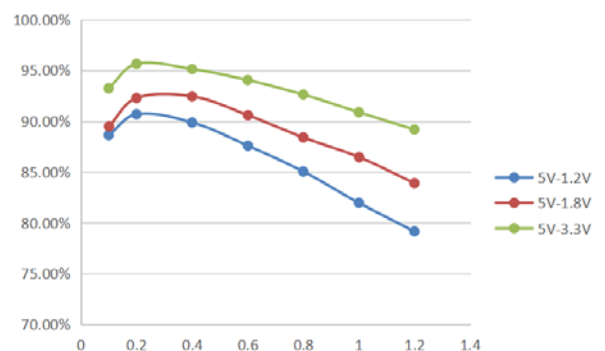


Figure2. Efficiency(%) vs. Load Current(A)

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)

($V_{IN}=V_{EN}=3.6V$, $V_{OUT}=1.8V$, $T_A = 25^{\circ}C$, 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	$V_{EN}=2.0V$, $I_{OUT}=0$, $V_{FB}=V_{REF} \cdot 105\%$		40	65	μA
Shutdown Current	$V_{EN}=0V$		0.1	1.0	μA
Regulated Feedback Voltage	$T_A = 25^{\circ}C$	0.588	0.600	0.612	V
	$T_A = 0^{\circ}C \leq T_A \leq 85^{\circ}C$	0.586	0.600	0.613	V
	$T_A = -40^{\circ}C \leq T_A \leq 85^{\circ}C$	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	$V_{IN}=5V$, $V_{OUT}=1.2V$, $L=4.7\mu H/2A$	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: $T_J = T_A + (P_D) \times (250^{\circ}C/W)$.

Note 3: 100% production test at $+25^{\circ}C$. 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

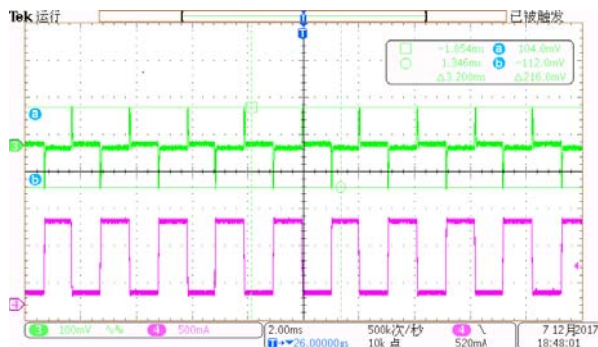
The diagram illustrates the control system for a Buck-Boost converter. The input is VIN, which passes through a resistor RS1 to the load. The output is LX, which passes through a resistor RS2 to ground. The control system includes an Error Amplifier, a PWM Comparator, a Current Sense block, a Zero Detector, a Driver, a Control Logic block, a Current Limit Detector, a UVLO & Power Good Detector, a VREF block, a Slope Compensation block, and an OSC & Shutdown Control block. The Error Amplifier's output is connected to the PWM Comparator. The PWM Comparator's output is connected to the Control Logic block. The Control Logic block is also connected to the Current Limit Detector, the Zero Detector, and the Driver. The Driver's output is connected to the load. The UVLO & Power Good Detector is connected to the VREF block and the Control Logic block. The OSC & Shutdown Control block is connected to the EN pin and the Control Logic block. The Slope Compensation block is connected to the Error Amplifier and the PWM Comparator. The Current Sense block is connected to the load and the Control Logic block.

Ver.1.0
www.canctech.com All information provided in this document is subject to legal disclaimers

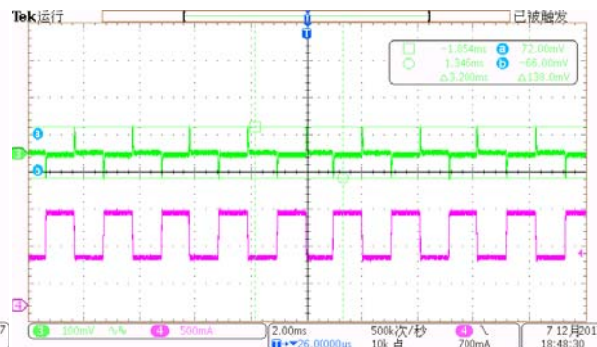
Test condition: $V_{in}=5V, V_{out}=1.8V$;

1. Load Dynamic Response

10%~90% load



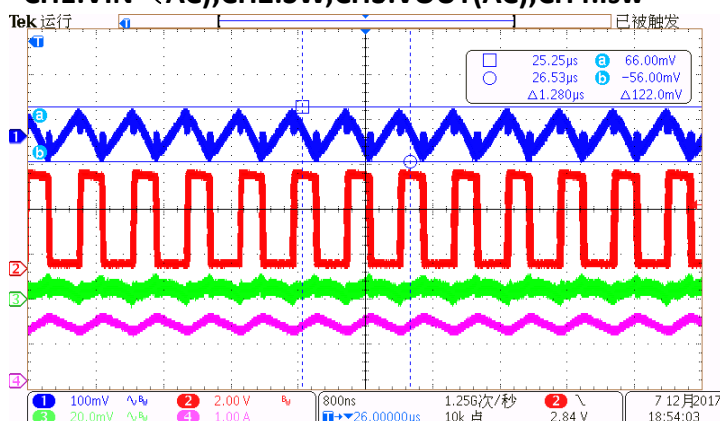
50%~100% load



$V_{in}=5V, V_{out}=1.8V$ Load transient((0.12A-1.08A-0.12A) $V_{in}=5V, V_{out}=1.8V$ Loadtransient((0.6A-1.2A-0.6A)

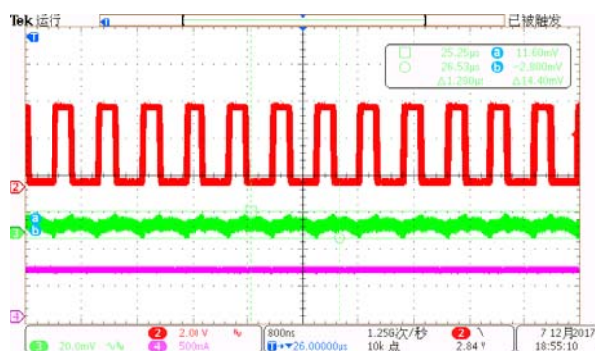
2. Input/output ripple, Iout=full load

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



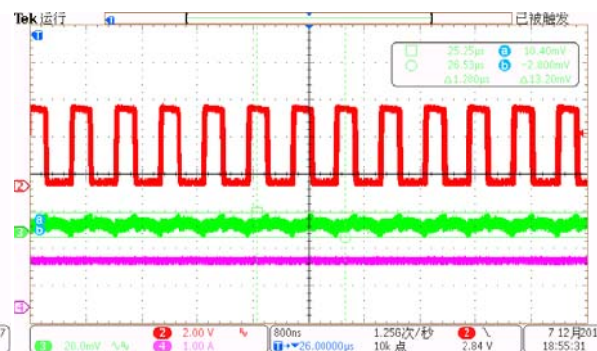
3. Vout ripple and Switching wavefo

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



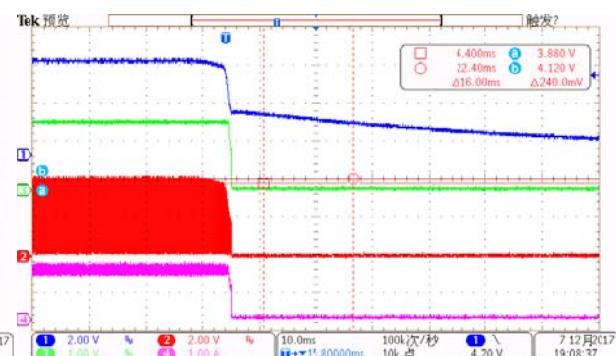
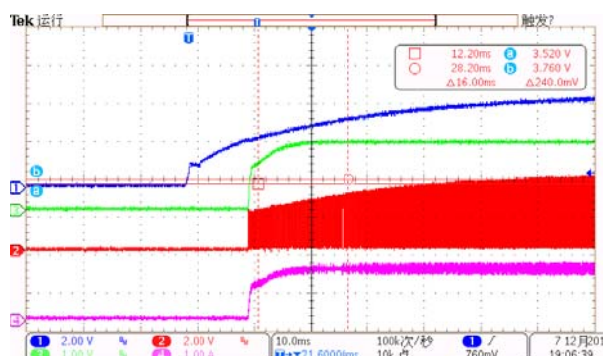
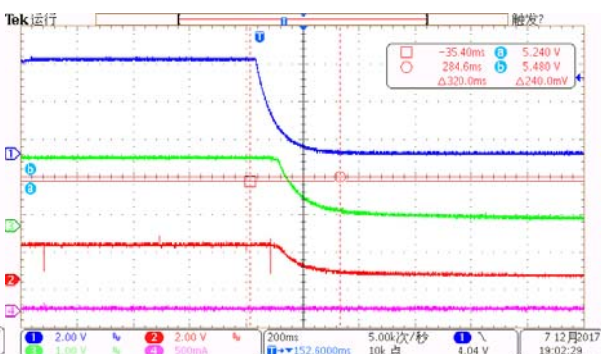
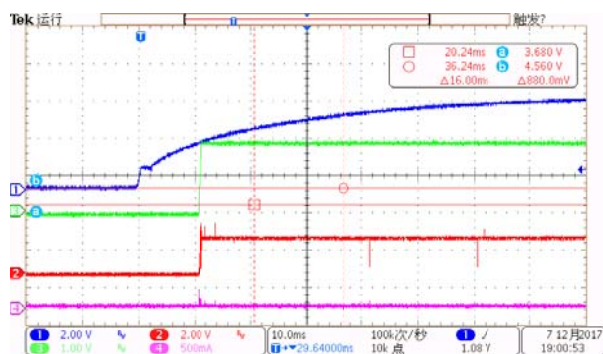
Iout=50% load

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

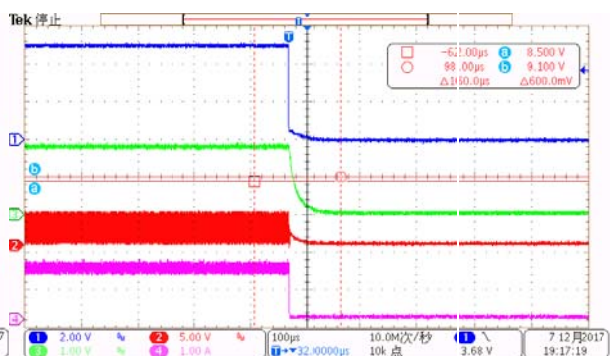
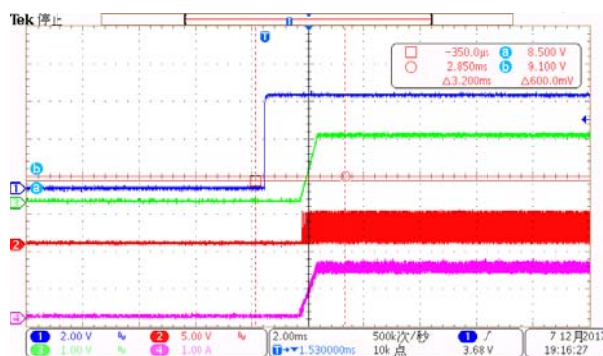


Iout=100% load

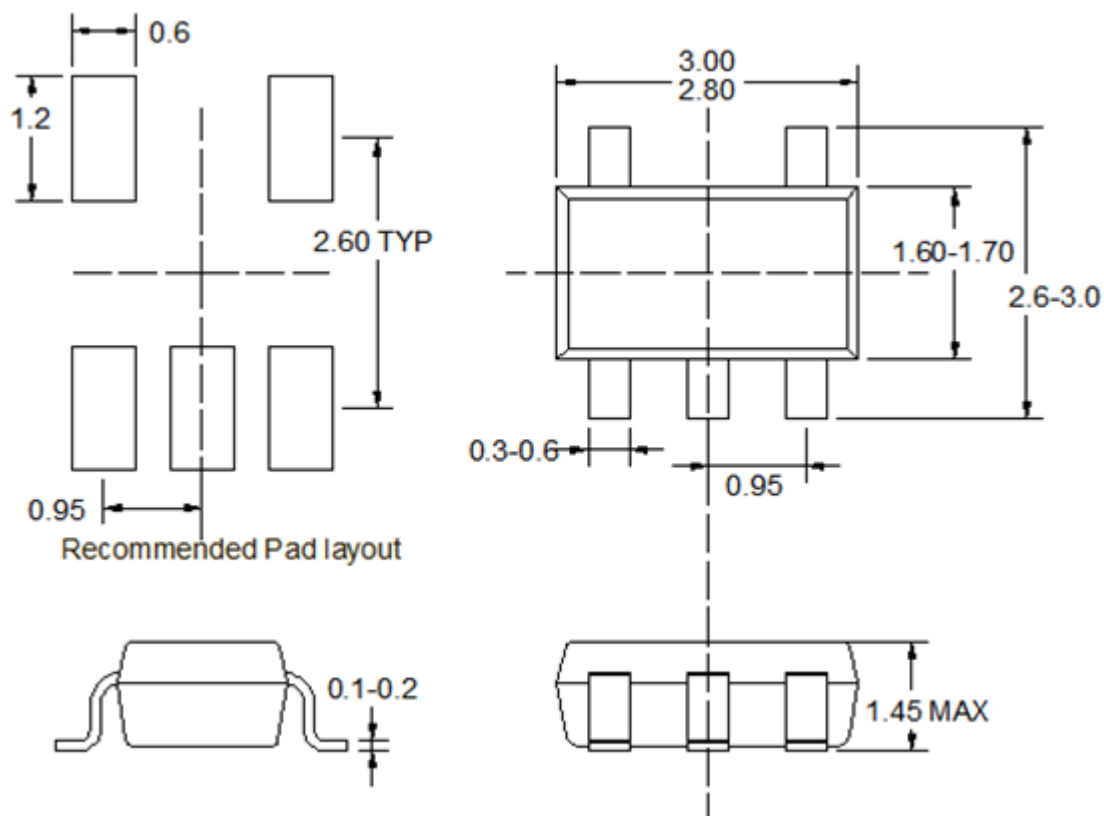
4. Power on/off: CH1:VIN;CH2:SW;CH3:VOUT;CH4:Isw



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



PACKAGE INFORMATION



SOT23-5

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,

CCS Semiconductor and  are trademarks of Semiconductor Components Industries, CCS Semiconductor reserves the right to make changes without further notice to any products herein. CCS Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does CCS Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. CCS Semiconductor does not convey any license under its patent rights nor the rights of others.