LC2129

3A 1.5MHz 5.5V Synchronous Buck Converter

DESCRIPTION

The LC2129 is a high efficiency synchronous, buck DC/DC converter. Its input voltage range is from 2.6V to 6V and provides an adjustable regulated output voltage from 0.8V to 5.5V while delivering up to 3A of output current.

The internal synchronous switches increase efficiency and eliminate the need for an external Schottky diode. The switching frequency is set by an external resistor or can be synchronized to an external clock. The 100% duty cycle provides low dropout operation extending battery life in portable systems.

The LC2129 is operated in forced continuous PWM Mode which minimizes ripple voltage and reduces the noise and RF interference.

The LC2129 is available in the DFN2x2-8L package

FEATURES

- Adjustable Output Voltage, Vfb=0.8V
- Maximum output current is 3A
- Range of operation input voltage: Max 6V
- Standby current: 0.5mA (typ.)
- Line regulation: 0.1%/V (typ.)
- Load regulation: 10mV (typ.)
- High efficiency, up to 96%
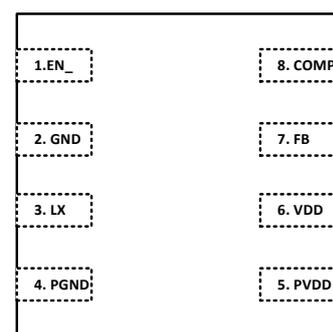- Environment Temperature: -20°C~85°C

APPLICATIONS

- Power Management for 3G modem
- 3W LED driver from Li-ion battery
- LCD Monitor and LCD TV
- DVD Decode Board
- ADSL Modem
- Post Regulators for Switching Supplies

TYPICAL APPLICATION
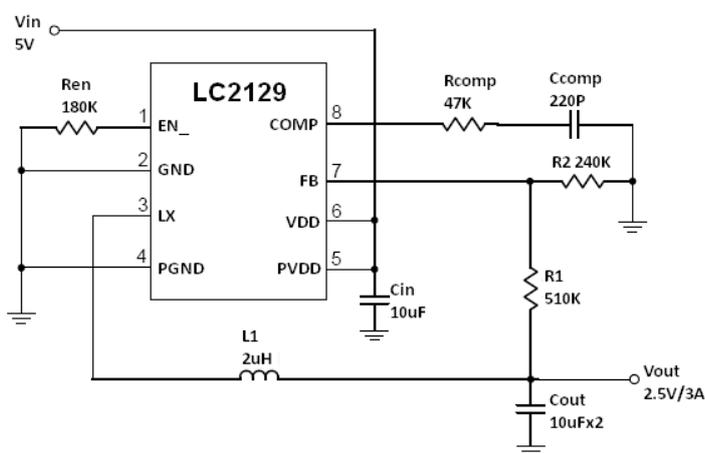
PIN OUT & MARKING

DFN2x2-8L

ABSOLUTE MAXIMUM RATING

Parameter		Value
Max Input Voltage		6V
Max Operating Junction Temperature(Tj)		125°C
Ambient Temperature(Ta)		-20°C – 85°C
Package Thermal Resistance	DFN2x2-8L	25°C / W
Storage Temperature(Ts)		-40°C - 150°C
Lead Temperature & Time		260°C, 10S
ESD (HBM)		>2000V

Note: Exceed these limits to damage to the device. Exposure to absolute maximum rating conditions may affect device reliability.
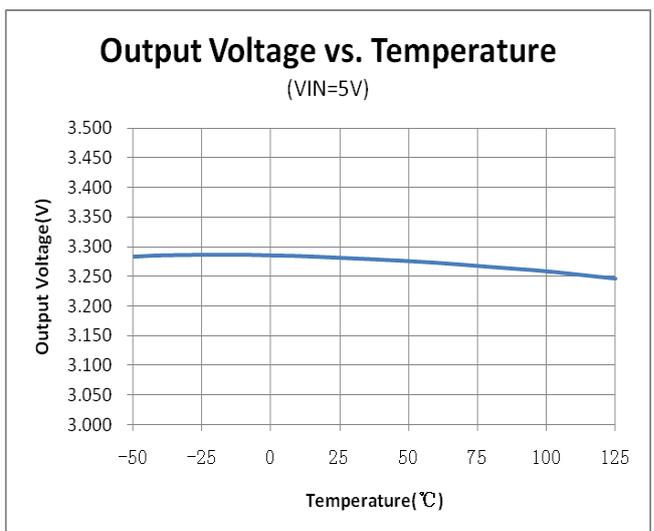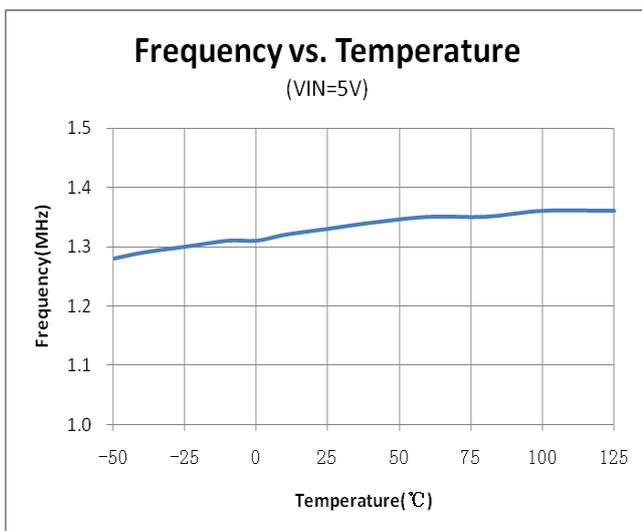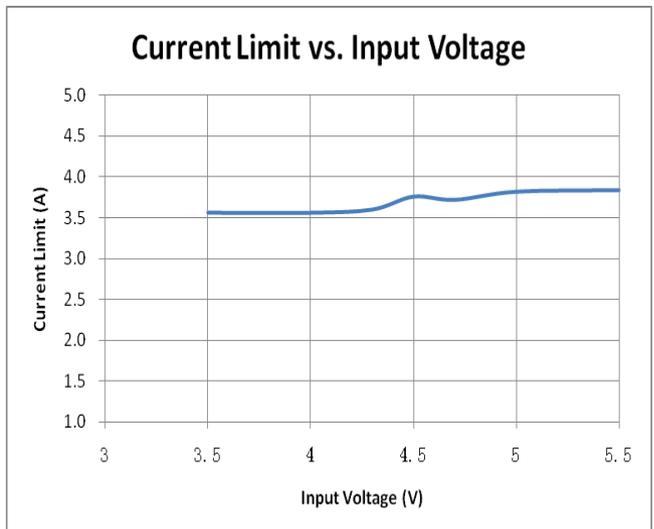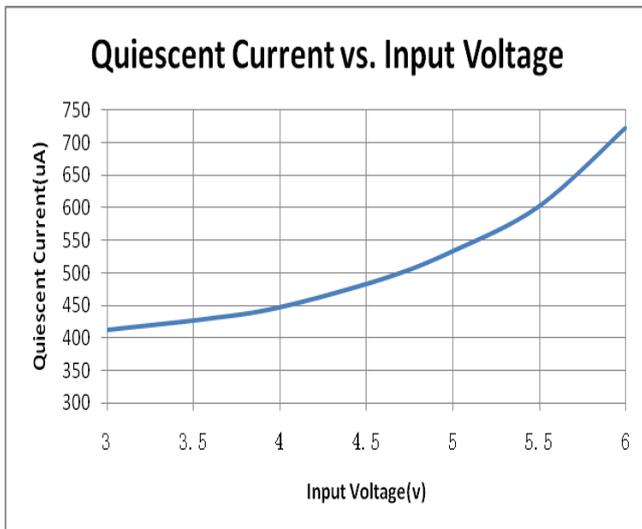
RECOMMENDED WORK CONDITIONS

Parameter	Value
Input Voltage Range	Max. 6V
Operating Junction Temperature(Tj)	-20°C –125°C

ELECTRICAL CHARACTERISTICS

(VDD=5V, TA=25°C)

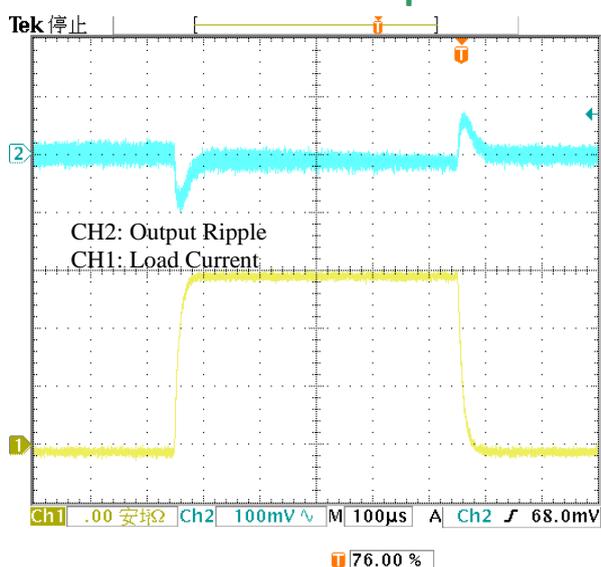| Symbol	Parameter	Conditions	Min	Typ	Max	Unit
VDD	Input Voltage Range		2.6		6	V
Vref	Feedback Voltage		0.784	0.8	0.816	V
Ifb	Feedback Leakage current			0.1	0.4	uA
Iq	Quiescent Current	Active, Vfb=0.78, No Switching		450		uA
		Shutdown		1		uA
LnReg	Line Regulation	Vin=4V to 5.5V		0.1		%/V
LdReg	Load Regulation	Iout=1 to 3A		0.02		%/A
Gm	EA Transconductance			600		us
Fsoc	Switching Frequency	Ren_=180K		1.35		MHz
RdsonP	PMOS Rdson			150		mohm
RdsonN	NMOS Rdson			130		mohm
Ilimit	Peak Current Limit			3.8		A
Ven_	EN_ Shutdown Voltage		Vin-0.7V		Vin	

Efficiency vs. Load Current
(VOUT=3.3V)

VIN=4V — VIN=5V — VIN=5.5V

Output Voltage vs. Load Current
(VIN=5V)

Quiescent Current vs. Input Voltage

Current Limit vs. Input Voltage

Frequency vs. Temperature
(VIN=5V)

Output Voltage vs. Temperature
(VIN=5V)

Power On & Soft Start

Tek 停止

CH1: Input Voltage
CH2: Output Voltage
CH3: Switching Wave
CH4: Inductor Current

| Ch1 | 2.00 V | Ch2 | 2.00 V | M 200µs | A | Ch1 ∫ | 2.76 V |
| Ch3 | 5.00 V | Ch4 | 2.00 A Ω | | | | |

28.20 %
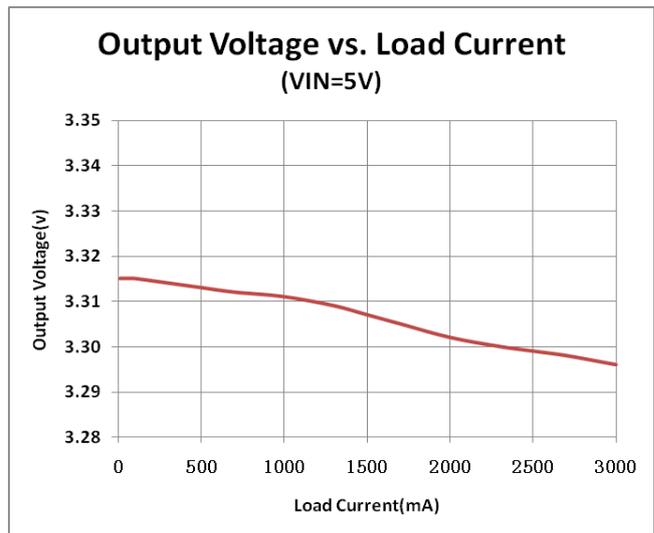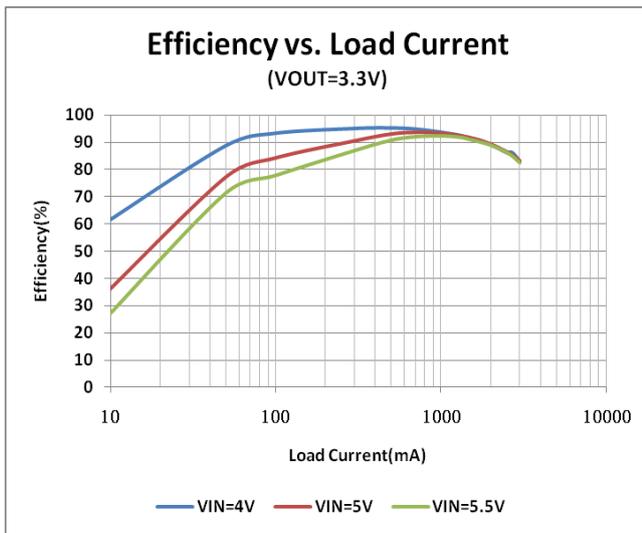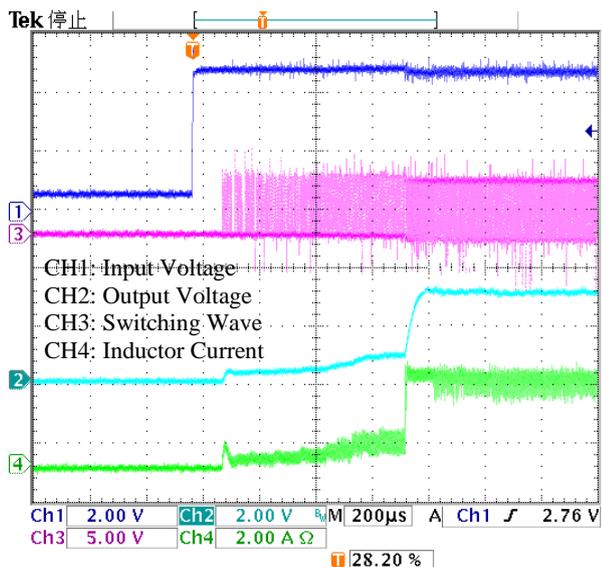
Load Transient Response

Tek 停止

CH2: Output Ripple
CH1: Load Current

| Ch1 | .00 安培Ω | Ch2 | 100mV | M 100µs | A | Ch2 ∫ | 68.0mV |

76.00 %

DETAILED DESCRIPTION

LC2129 is a 3A synchronous buck, with frequency adjusted by Ren_. It can achieve conversion efficiency up to 95%. It also support 100% duty cycle which will maximize the battery usage. Only a inductor and a few R & C need for peripheral. The PCB size can be very small

Please note that EN_ pin has to be pull high if one wants to shutdown the chip. And release it (with a Ren_ connected to GND) to have it work.

PACKAGE OUTLINE

Package	DFN2x2-8L	Devices per reel		Unit	mm

Package specification：

TOP VIEW   BOTTOM VIEW

PIN 1 DOT
BY MARKING

SIDE VIEW

PIN #1 IDENTIFICATION
CHAMFER

COMMON DIMENSIONS(MM)			
PKG.	W: VERY VERY THIN		
REF.	MIN.	NOM.	MAX
A	0.70	0.75	0.80
A1	0.00	–	0.05
A3	0.2 REF.		
D	1.95	2.00	2.05
E	1.95	2.00	2.05
b	0.18	0.23	0.30
L	0.25	0.35	0.45
D2	1.05	1.20	1.30
E2	0.45	0.60	0.70
e	0.50 BSC		