BL8529

3A 1.5MHz 5.5V Synchronous Buck Converter

DESCRIPTION

The BL8529 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 BL8529 is operated in PFM/PWM auto-switch mode which enhance the efficiency at light-load.

The BL8529 is available in the DFN2x2-8L and DFN3x3-10L package

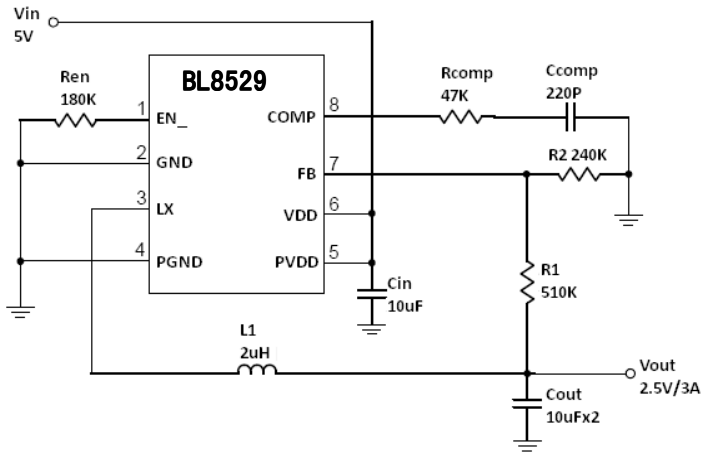
FEATURES

- 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

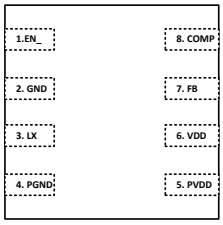
APPLICATIONS

- 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

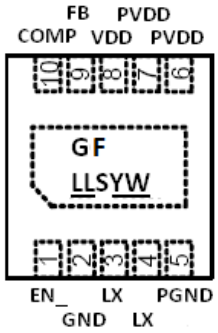
TYPICAL APPLICATION



PIN OUT & MARKING



DFN2x2-8L



DFN3X3-10

ORDERING INFORMATION

Part No.	Package	Tape&Reel
BL8529CKBTR	DFN2x2-8L	3000/Reel
BL8529CKATR	DFN3x3-10L	3000/Reel

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

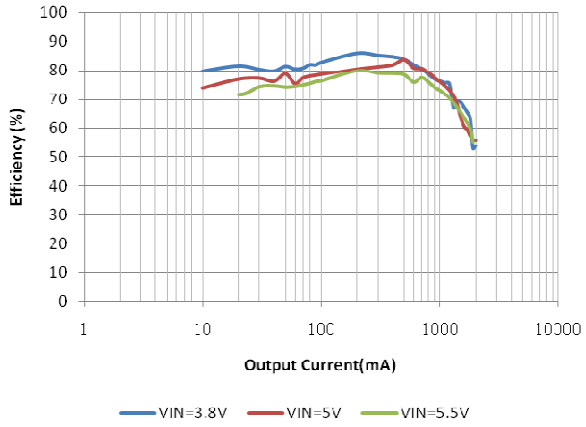
ELECTRICAL CHARACTERISTICS

(VDD=5V, TA=25°C)

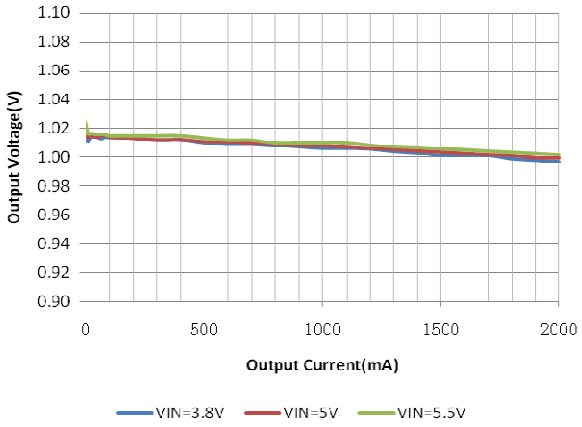
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
VDD	Input Voltage Range		2.6		5.5	V
Vref	Feedback Voltage		0.784	0.8	0.816	V
Ifb	Feedback Leakage current			0.1	0.4	uA
Iq	Quiescent Current	Active, Vfb=0.78, No Switching		450		uA
		Shutdown		1		uA
LnReg	Line Regulation	Vin=4V to 5.5V		0.1		%/V
LdReg	Load 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	

TYPICAL PERFORMANCE CHARACTERISTICS

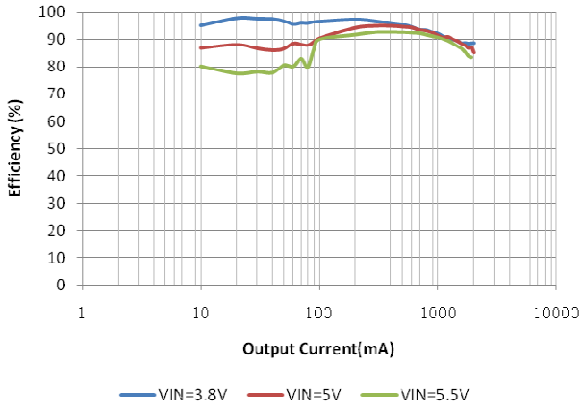
Efficiency vs. Output Current
(VOUT=1.0V)



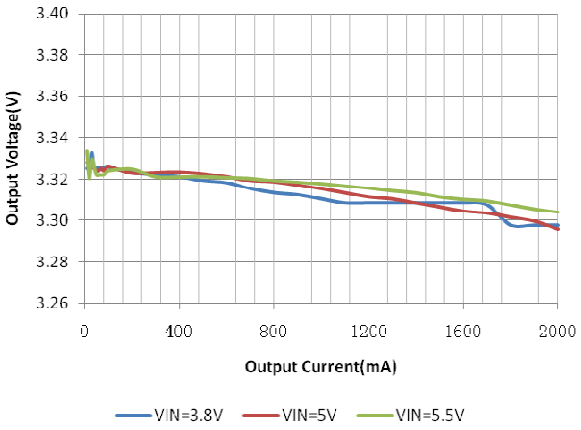
Load Regulation
(VOUT=1.0V)



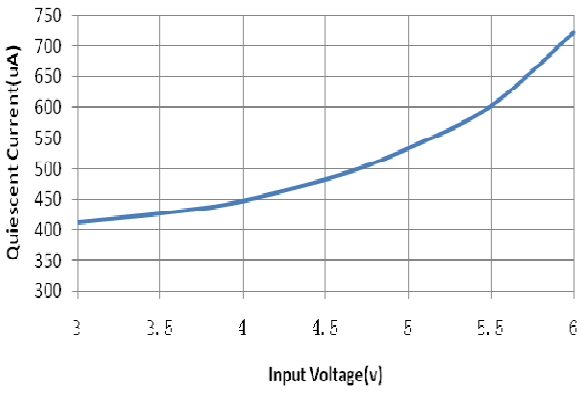
Efficiency vs. Output Current
(VOUT=3.3V)



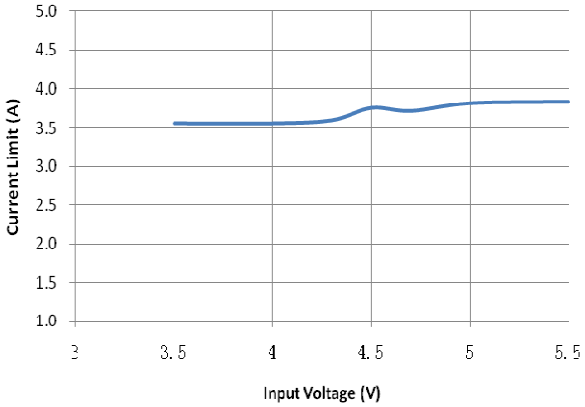
Load Regulation
(VOUT=3.3V)



Quiescent Current vs. Input Voltage



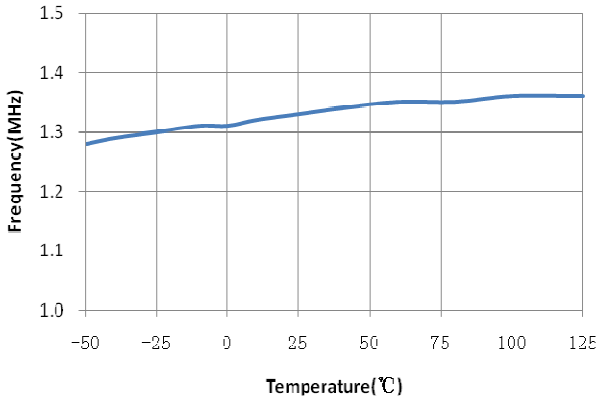
Current Limit vs. Input Voltage



TYPICAL PERFORMANCE CHARACTERISTICS cont'

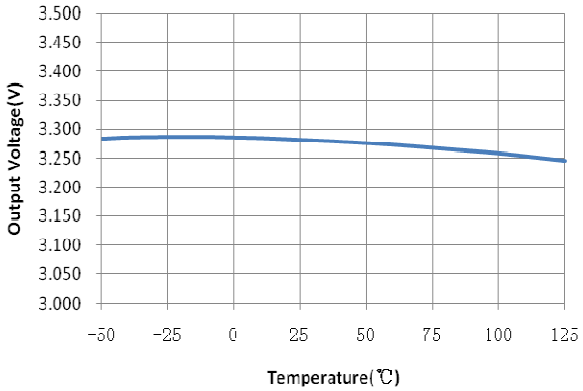
Frequency vs. Temperature

(VIN=5V)

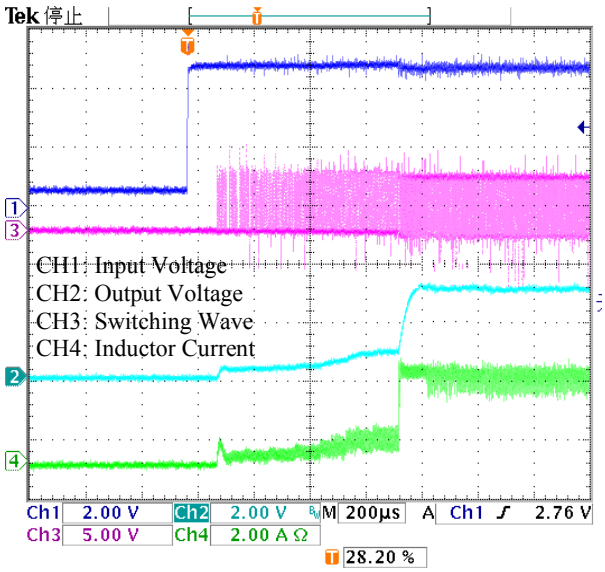


Output Voltage vs. Temperature

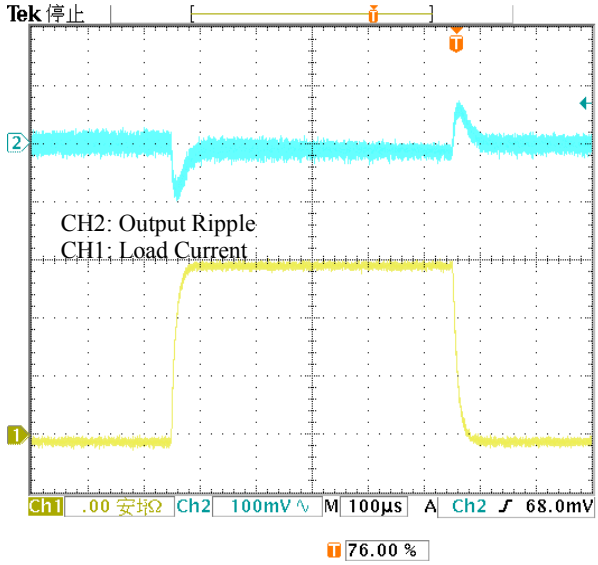
(VIN=5V)



Power On & Soft Start



Load Transient Response



DETAILED DESCRIPTION

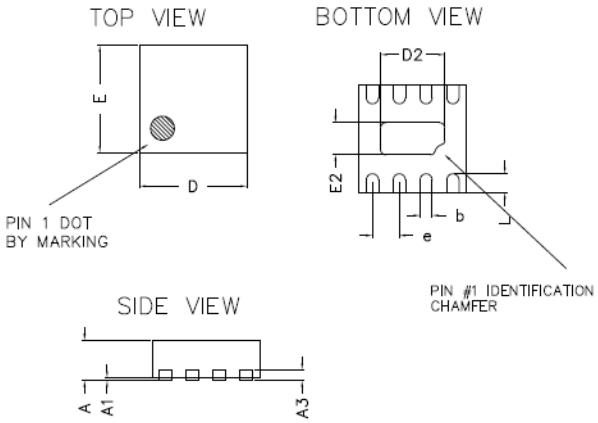
BL8529 is a 3A synchronous buck, with frequency adjusted by Ren_. It can achieve conversion efficiency up to 95%. It also support 100% duty cycle which will maximize the battery usage. Only a inductor and a few R & C need for peripheral. The PCB size can be very small

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. One can also switch off BL8529 by connect enable signal with at least 1mA driving capability to VDD pin (pin 6 of DFN2x2 and pin 8 of DFN3x3 package).

PACKAGE OUTLINE

Package	DFN2x2-8L	Devices per reel	3000	Unit	mm

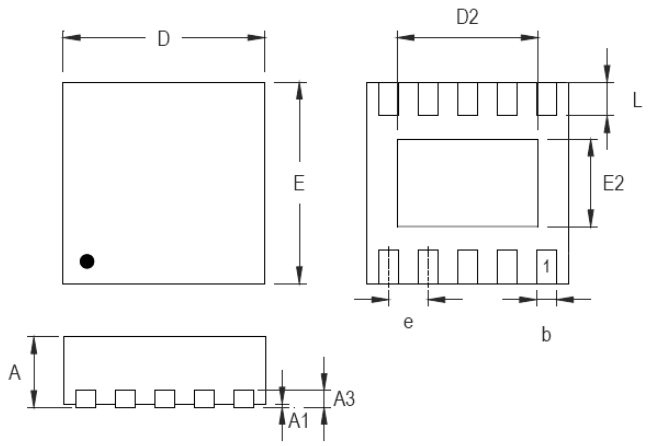
Package specification：



COMMON DIMENSIONS(MM)			
PKG. REF.	W: VERY VERY THIN		
	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		

Package	DFN3x3-10L	Devices per reel	3000	Unit	mm

Package specification：



Symbol	Dimensions In Millimeters	
	Min	Max
A	0.700	0.800
A1	0.000	0.050
A3	0.175	0.250
b	0.180	0.300
D	2.950	3.050
D2	2.300	2.650
E	2.950	3.050
E2	1.500	1.750
e	0.500	
L	0.350	0.450