

DESCRIPTION

The BL8526 is a high efficiency synchronous buck regulator. The device operates from an input voltage range of 3.6V to 5.5V and provides an output voltage from 0.8 to 5V while delivering up to 2A 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. While switching frequency is set to 1.4MHz, BL8526 can allow the use of small external components, such as ceramic input and output caps, as well as small inductors, while still providing low output ripples.

100% duty cycle provides low dropout operation extending battery life in portable systems.

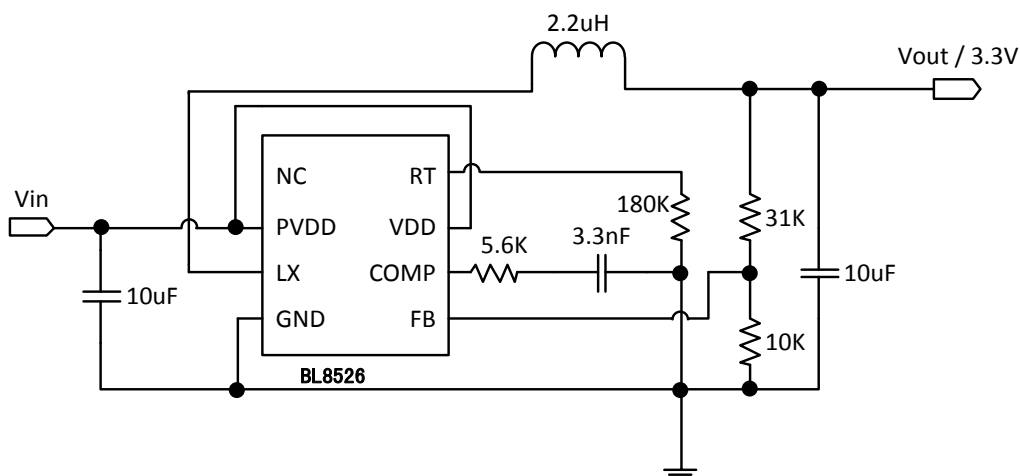
FEATURES

- ◆ Range of Input Voltage: 3.6V~5.5V
- ◆ 1 μ A Shutdown Current
- ◆ 100% Duty Cycle
- ◆ High Efficiency: 92%
- ◆ No Schottky Diode Required.
- ◆ 3.5A Current Limit
- ◆ 0.8V Reference for Low Output Voltage
- ◆ Operating Temp. Range: -20°C~85°C
- ◆ Demo Board Available

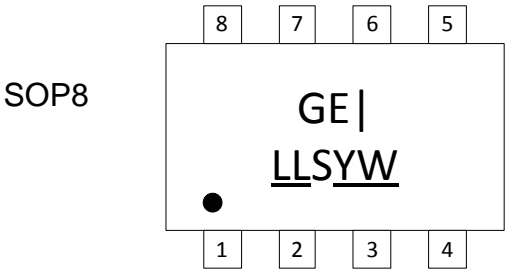
APPLICATIONS

- ◆ Cellular phones
- ◆ Digital Cameras
- ◆ MP3 and MP4 players
- ◆ Set top boxes
- ◆ Wireless and DSL Modems
- ◆ USB supplied Devices in Notebooks
- ◆ Portable Devices

TYPICAL APPLICATION



PACKAGE/ORDER INFORMATION

 <p>SOP8</p>	<p>ORDER PART NUMBER</p>
	<p>BL8526CD8TR</p>

PIN DESCRIPTION

Pin No.	Symbol	Description
1	N.C	Not Connected
2	PVDD	Power Supply for internal power switch
3	LX	Switching Node: PWM output connection to inductor.
4	GND	Ground Pin
5	FB	Pin for Feedback Voltage
6	COMP	Compensation Pin
7	VDD	Power Supply for internal control circuit
8	RT	Oscillator Resistor Input Pin

ABSOLUTE MAXIMUM RATING

Parameter	Value
Max Input Voltage	5.5V
CE Pin Voltage	-0.3V to $V_{in}+0.3V$
FB Pin Voltage	-0.3V to $V_{in}+0.3V$
Max Operating Junction Temperature(T_j)	125°C
Ambient Temperature(T_a)	-40°C – 85°C
Storage Temperature(T_s)	-40°C - 150°C
Lead Temperature & Time	260°C, 10S
ESD (HBM)	>2000V
Thermal resistance: Θ_{JA}	150°C/W

ELECTRICAL CHARACTERISTICS

(Test condition is in 25°C, VIN=5V)

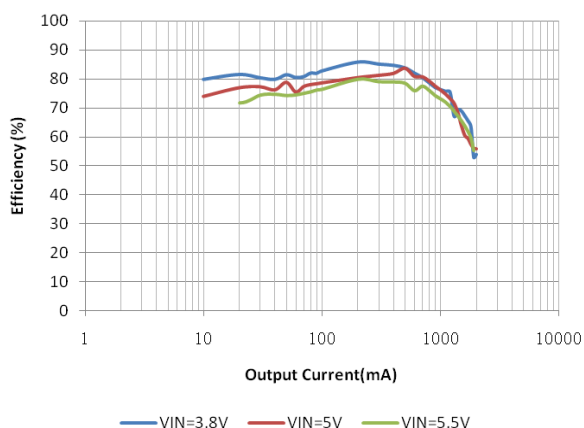
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
VDD	Input Voltage Range		3.6		5.5	V
Vref	Feedback Voltage		0.784	0.8	0.816	V
I _{fb}	Feedback Leakage current			0.1	0.4	uA
I _q	Quiescent Current	Active, V _{fb} =0.65, No Switching		450		uA
		Shutdown		1		uA
LnReg	Line Regulation	V _{in} =4V to 5.5V		0.1		%/V
LdReg	Load Regulation	I _{out} =0.1 to 2A		0.02		%/A
F _{soc}	Switching Frequency	R3=180K		1.4		MHz
R _{dsonP}	PMOS R _{dson}			150		mohm
R _{dsonN}	NMOS R _{dson}			130		mohm
I _{limit}	Peak Current Limit			3.8		A
I _{swlk}	SW Leakage Current	V _{out} =5.5V, V _{SW} =0 or 5.5V, EN=0V			10	uA
I _{enlk}	EN Leakage Current				1	uA
V _{h_en}	EN Input High Voltage		V _{IN} - 0.6			V
V _{l_en}	EN Input Low Voltage				V _{IN} - 0.8	V

DEMO BOARD BOM

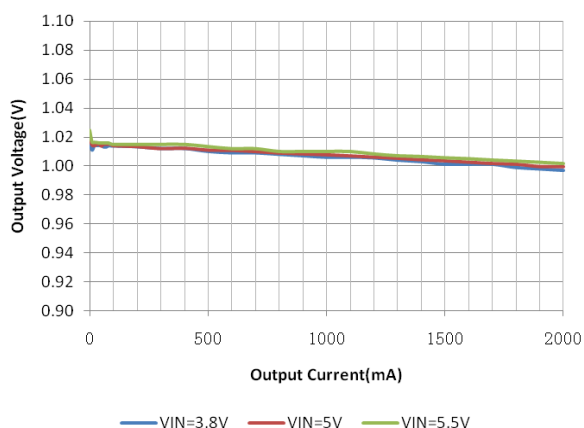
No.	Reference	Type	Specification	Note
1	C1	Capacitor	MLCC 10uF; SMD 0805	
2	C2	Capacitor	MLCC 10uF; SMD 0805	
3	C3	Capacitor	MLCC 3.3nF; SMD 0805	
4	L1	Inductor	2.2uH; 3A; SMD, Shielding	
5	U1	IC	BL8526; SMD SO-8	
6	R1	Resistor	10K;SMD 0805; 1%	
7	R2	Resistor	31K;SMD 0805; 1%	If VOUT is 1.0V, R2 is 2.5K
8	R3	Resistor	180K;SMD 0805; 1%	
9	R4	Resistor	5.6K;SMD 0805; 5%	

DEMO BOARD MEASUREMENT

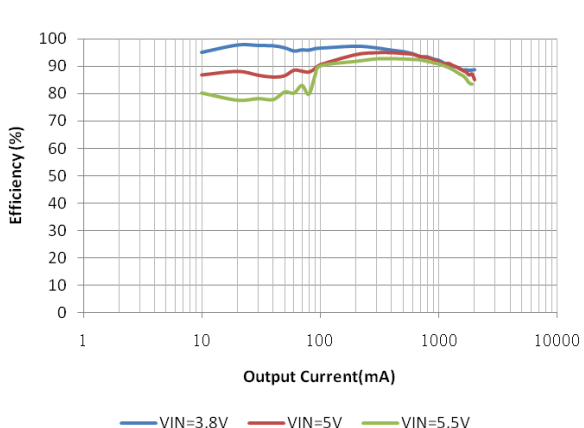
Efficiency vs. Output Current (VOUT=1.0V)



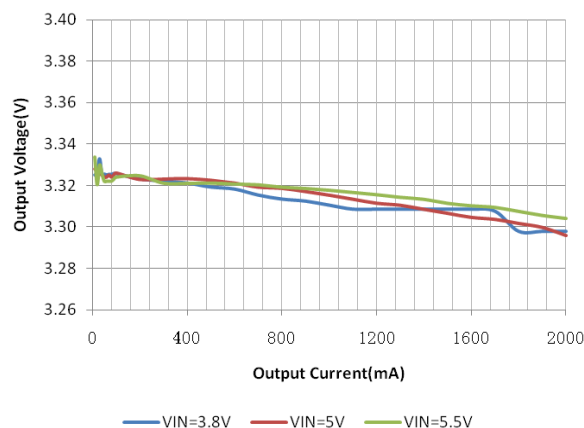
Load Regulation (VOUT=1.0V)



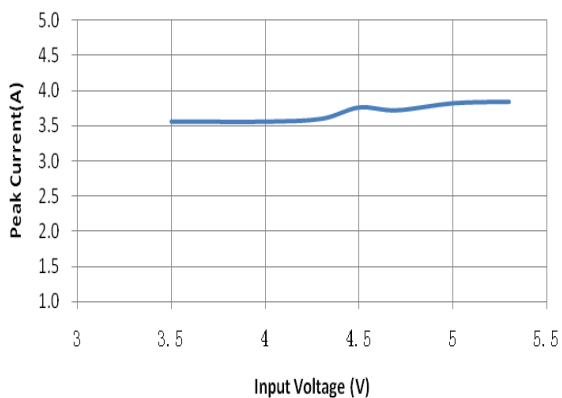
Efficiency vs. Output Current (VOUT=3.3V)



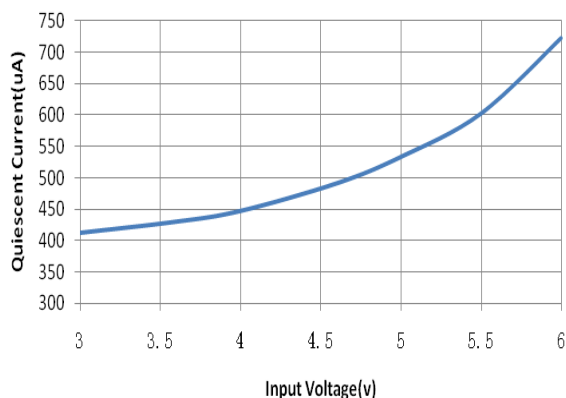
Load Regulation (VOUT=3.3V)



Peak Current vs. Input Voltage

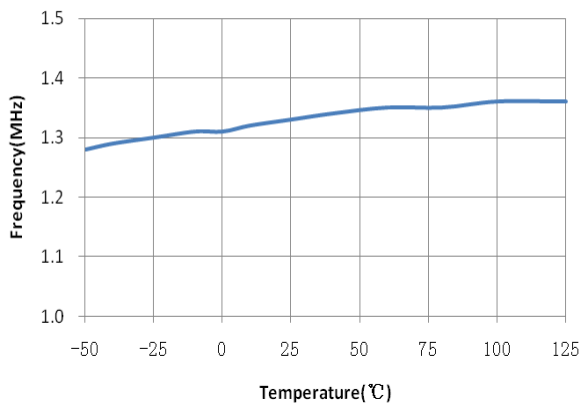


Quiescent Current vs. Input Voltage



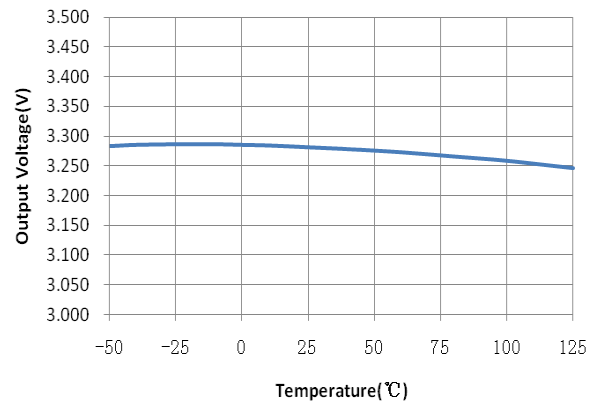
Frequency vs. Temperature

(VIN=5V)



Output Voltage vs. Temperature

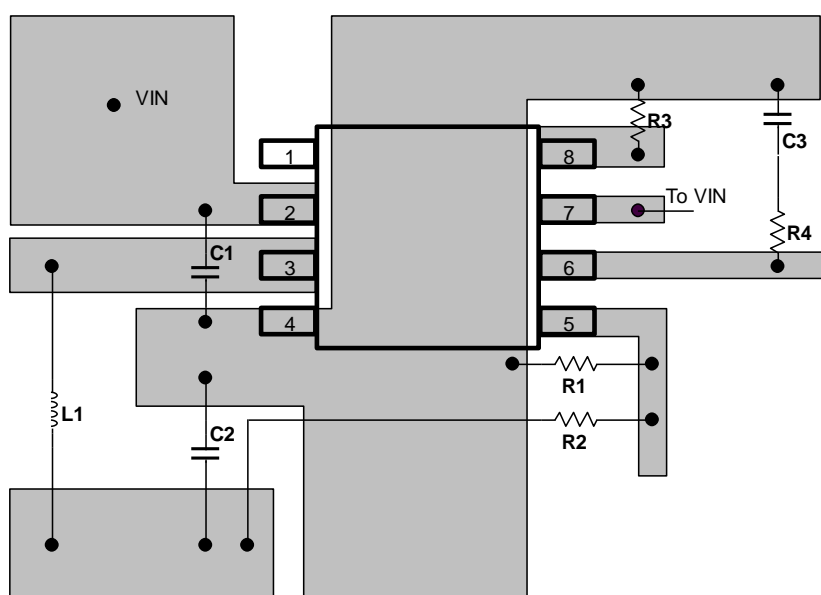
(VIN=5V)



APPLICATION INFORMATION

Layout is critical to achieve clean and stable operation. The switching power stage requires particular attention. Follow these guidelines for good PC board layout:

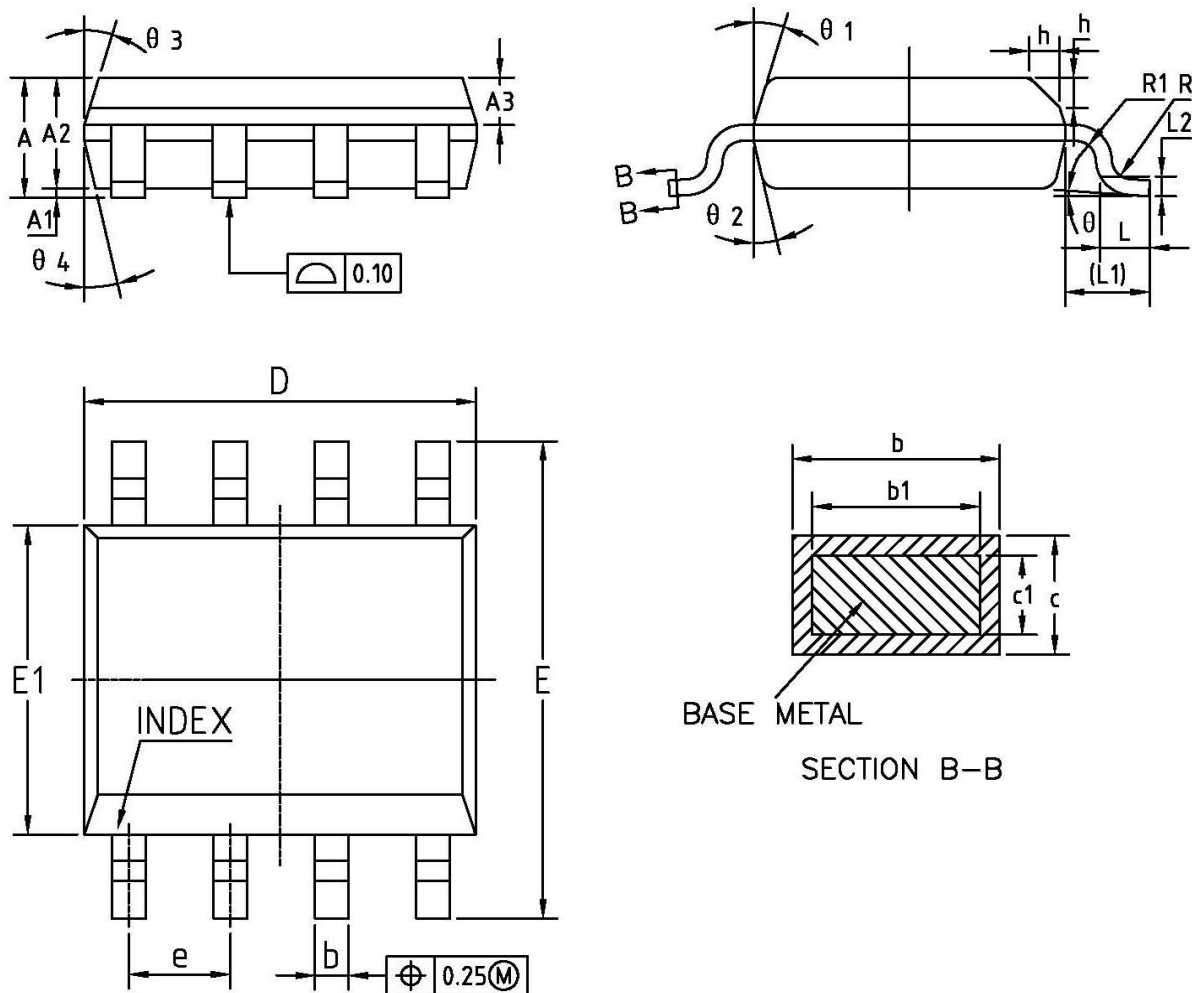
- 1) Place decoupling capacitors as close to the IC as possible
- 2) Connect input and output capacitors to the same power ground node with a star ground configuration then to IC ground.
- 3) Keep the high-current paths as short and wide as possible.
- 4) If possible, connect VDD, LX, and GND separately to a large copper area to help cool the IC to further improve efficiency and long-term reliability.
- 5) Ensure all feedback connections are short and direct. Place the feedback resistors as close to the IC as possible.
- 6) Route high-speed switching nodes away from sensitive analog areas



PACKAGE OUTLINE

Package	SOP-8	Devices per reel	2500Pcs	Unit	mm
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Package specification:



Symbol	Dimension (mm)			Symbol	Dimension (mm)		
	MIN	NOM	MAX		MIN	NOM	MAX
A	-	-	1.77	D	4.7	4.9	5.1
A1	0.08	0.18	0.28	E	5.8	6	6.2
A2	1.2	1.4	1.6	E1	3.7	3.9	4.1
A3	0.55	0.65	0.75	e	1.27BSC		
b	0.39	-	0.48	L	0.5	0.65	0.8
b1	0.38	0.41	0.43	L1	1.05BSC		
c	0.21	-	0.26	theta	0	-	8°