

General Description

The BCT3210S is a constant frequency charge pump DC/DC converter used for white LED applications; it is capable of driving up to 100mA of load current. The LED brightness which is proportional to the forward current can be set by the external resistor at the pin "CS" of BCT3210S. A space saving design can be easily built by incorporating external SMT capacitors and resistors

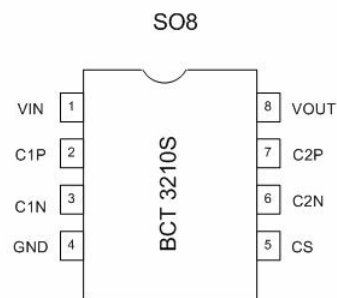
Features

- On chip DC/DC converter with current regulation
- Wide input voltage range: 1.5V to 3.6V
- Maximum output current: 100mA
- Output current adjustable by external resistor at pin CS
- On chip oscillator
- Low power consumption
- Wide operation temperature: -20°C to 70°C
- Available in Pb-free SO8 package

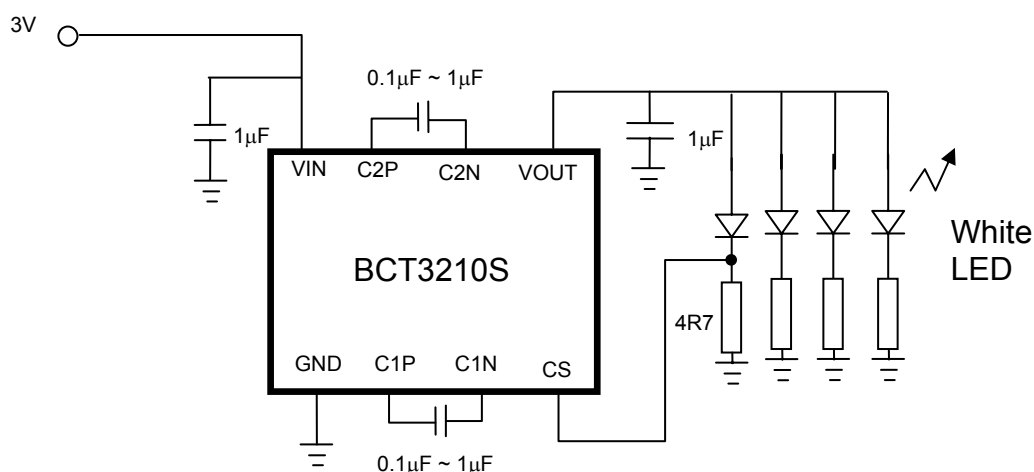
Applications

- White/Blue LED Driver
- Back Light driver for LCD Display
- Toys and Giveaway

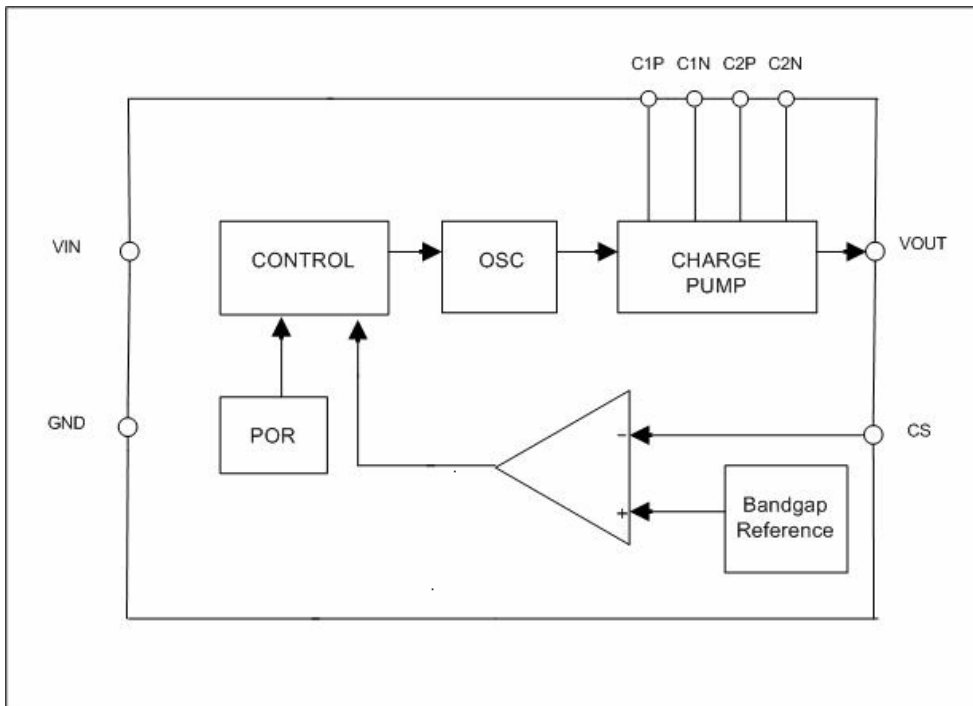
Package



Typical Application Circuit



Block Diagram



Pin Descriptions

Pin Number	Pin Name	I/O	Description
1	VIN	Power	Input Supply 1.5V – 3.6V
4	GND	Power	Ground 0V
2,3	C1P, C1N	I/O	Charge Pump Flying Capacitor 1 Pins. To connect a 0.1 μ F ~ 1 μ F capacitor between C1P and C1N
7,6	C2P, C2N	I/O	Charge Pump Flying Capacitor 2 Pins. To connect a 0.1 μ F ~ 1 μ F capacitor between C2P and C2N
8	VOUT	Output	Charge Pump Output. To connect a 10 μ F ~ 100 μ F capacitor from VOUT to GND
5	CS	Input	Current sense feedback for regulation control loop, feedback voltage = 0.1V

Absolute Maximum Specifications

Rating	Symbol	Value	Unit
Supply voltage range	V_{IN}	-0.3 to 4.3	V
Output current Range	I_{OUT}	0 to 100	mA
Output voltage range	V_{OUT}	-0.3 to 8	V
Operating temperature range	T_{OPR}	-20 to 70	$^{\circ}C$
Storage temperature range	T_{STR}	-20 to 100	$^{\circ}C$

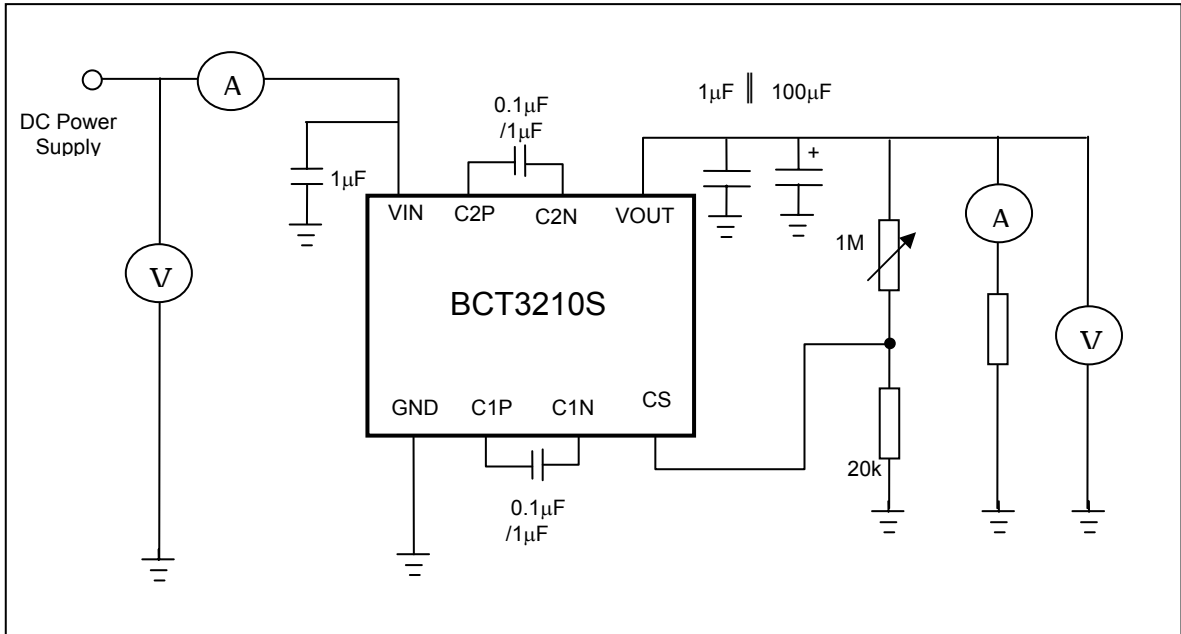
Electrical Specifications

All electrical specifications are specified at $T_{AMBIENT}$ from $-20^{\circ}C$ to $70^{\circ}C$, V_{IN} from 1.5V to 3.6V, unless otherwise specified.

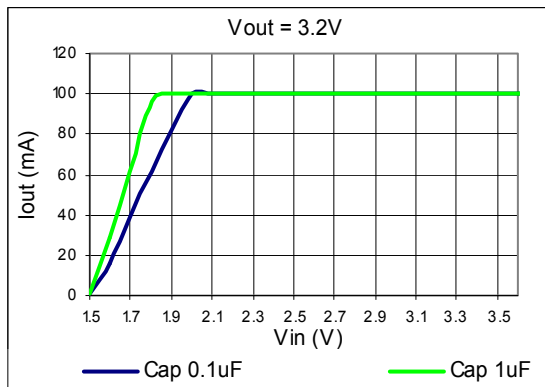
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{IN}	Input Power Supply		1.5	2.4	3.6	V
I_{CC}	Operating Current	$I_{OUT} = 0mA$ $V_{OUT} = 3.6Volts$		1.1		mA
V_{CS}	Feedback Voltage at CS			100		mV
F_{OSC}	Internal Oscillator Frequency			1.0		MHz

Typical Characteristics

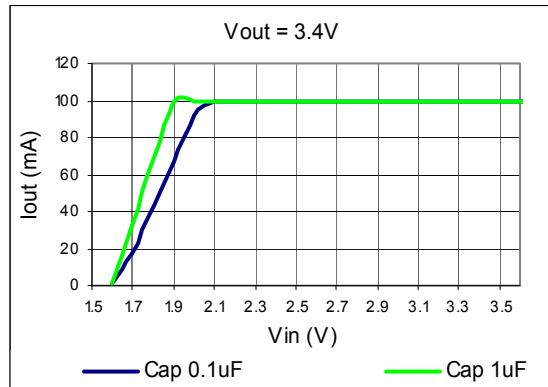
$C1 = C2 = 0.1\mu\text{F}$ or $1\mu\text{F}$, $C(\text{VIN}) = 1\mu\text{F}$, $C(\text{VOUT}) = 1\mu\text{F} \parallel 100\mu\text{F}$
 $T_A = 25^\circ\text{C}$, unless otherwise noted



**Max Output Current vs. Supply Voltage
At Vout = 3.2V**

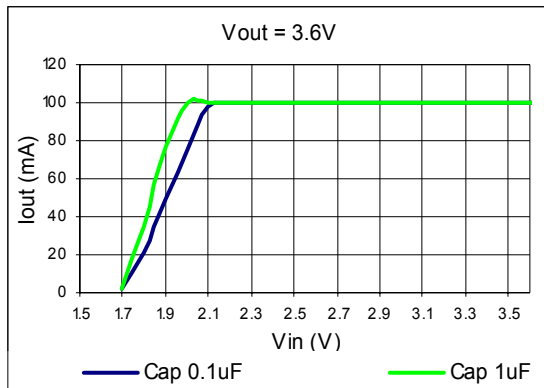


**Max Output Current vs. Supply Voltage
At Vout = 3.4V**

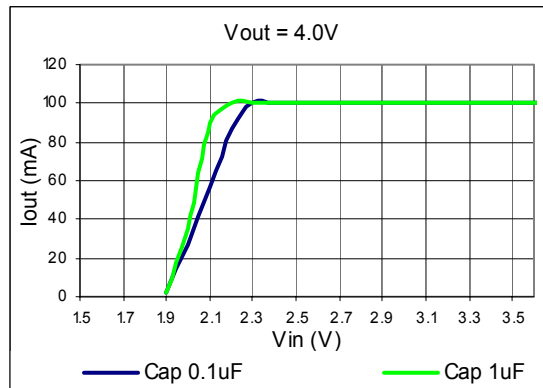


Typical Characteristics (continued)

Max Output Current vs. Supply Voltage
At $V_{out} = 3.6V$



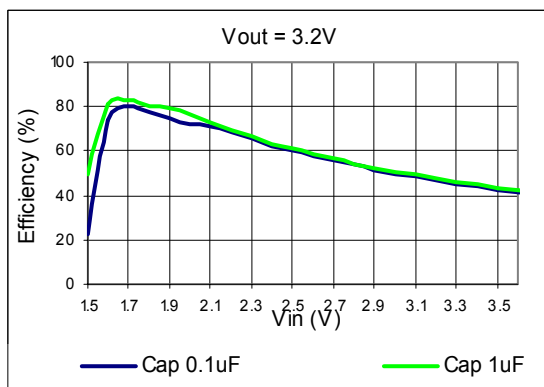
Max Output Current vs. Supply Voltage
At $V_{out} = 4.0V$



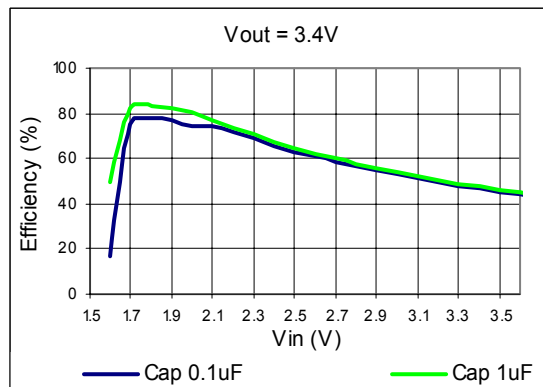
Performance Curves

$T_A = 25^\circ C$, unless otherwise noted

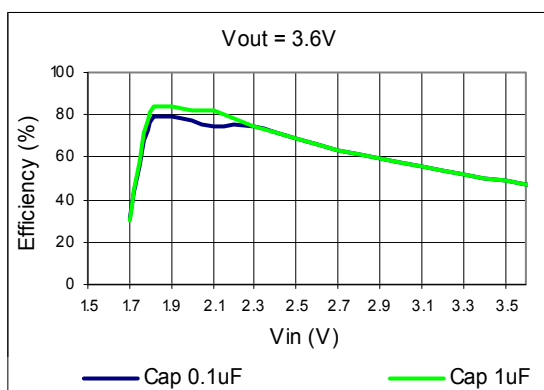
Power Efficiency vs. Supply Voltage
At $V_{out} = 3.2V$



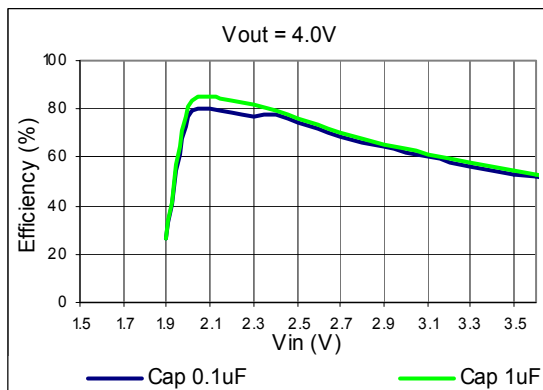
Power Efficiency vs. Supply Voltage
At $V_{out} = 3.4V$



Power Efficiency vs. Supply Voltage
At $V_{out} = 3.6V$



Power Efficiency vs. Supply Voltage
At $V_{out} = 4.0V$

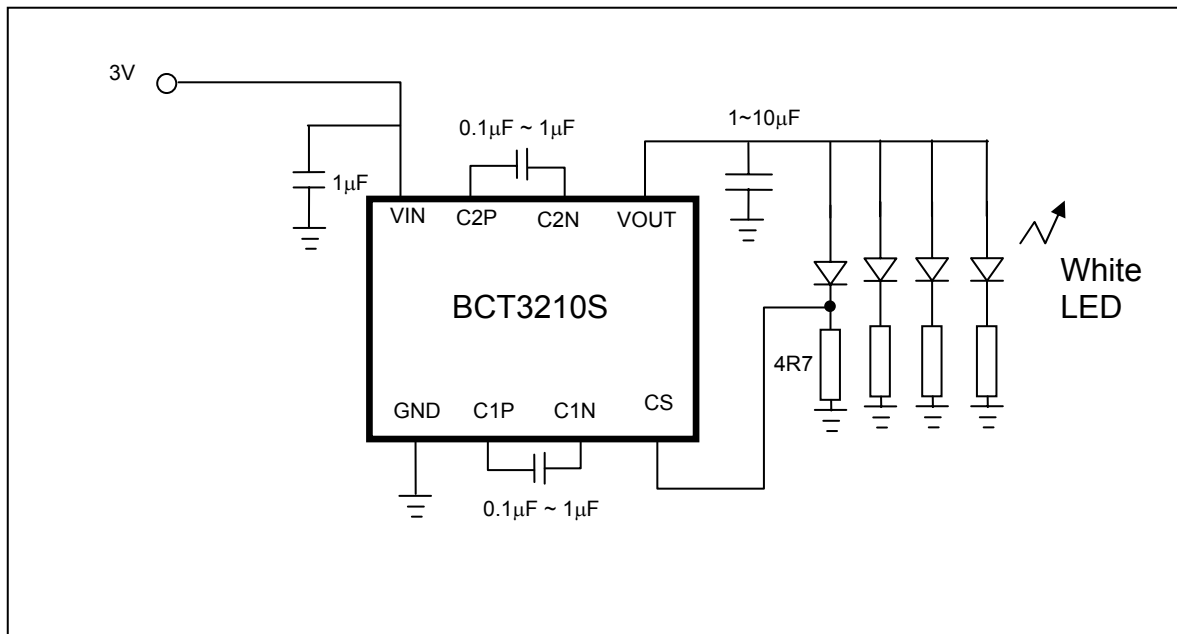


Applications

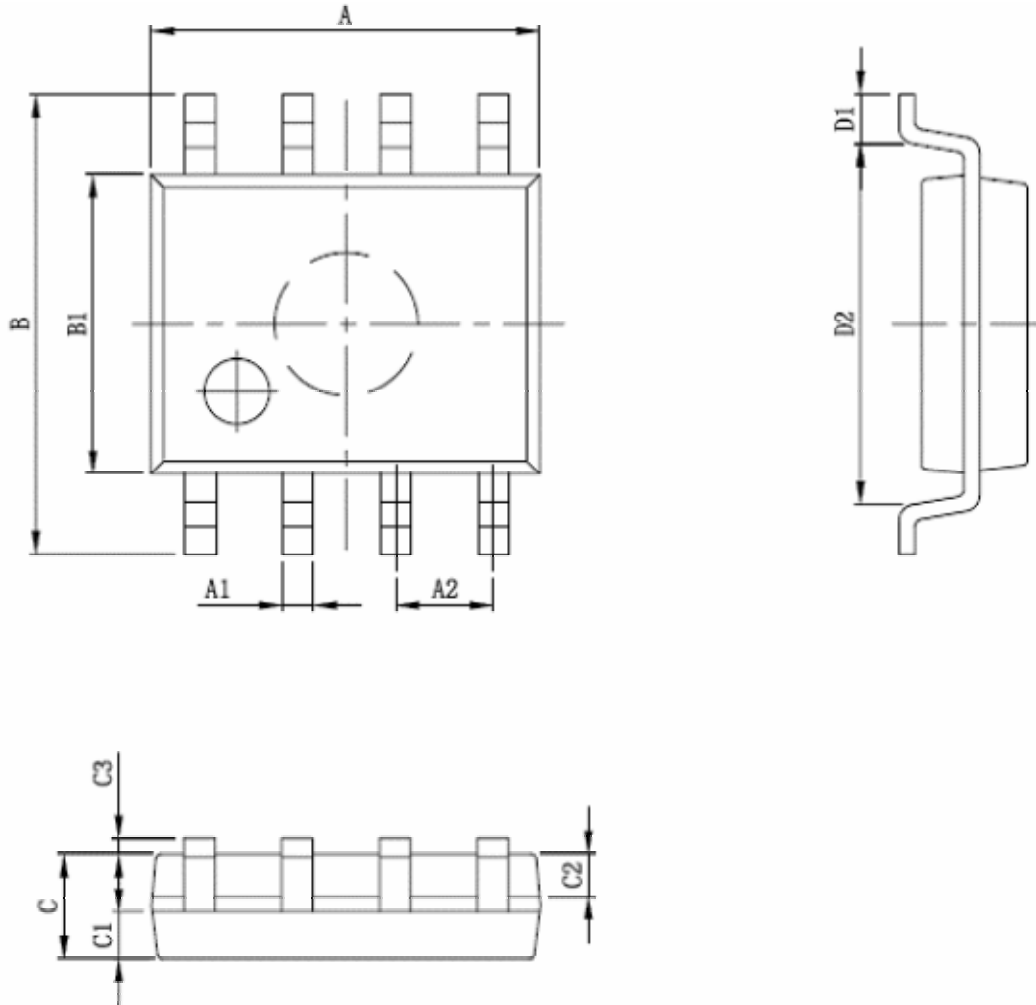
Care should be taken when batteries are connected to the chip. It will damage the chip when batteries are connected with reverse polarity.

White LED driver / White LED Back Light

Four white LEDs (or blue LEDs) are connected in parallel; the forward current is set by the current sensing resistor at pin CS.

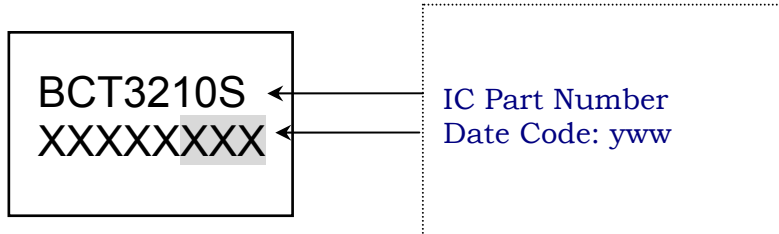


Package Information



SYMBOL	MIN (Millimeter)	MAX (Millimeter)
A	5.05	
A1	0.37	0.47
A2	1.27	
B	5.80	6.20
B1	3.85	3.95
C	1.35	1.45
C1	0.575	0.625
C2	0.575	0.625
C3	0.00	0.20
D1	0.40	0.60
D2	4.85	

Marking Notation / Ordering Information



Sales Offices

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