High Performance Regulated Charge Pump

General Description

The LP3210 is a high performance charge pump DC/DC converter that produces a regulated 5V output. No external inductor is required for operation. The operating voltage range is 2.8V to Vout. Internal soft-start circuitry effectively reduces the in-rush current both while start-up and mode change.
The LP3210 features very low quiescent current, over current protection and short circuit protection.
The LP3210 is available in SOT-23-6 package.

Features

- 2.8V to Vout Range Input Voltage
- Soft Start Function
- Built-In Short-Circuit Protection
- Built-in Thermal Protection
- Over Current Protection Function
- I_Q<1uA in Shutdown
- SOT23-6 Package
- RoHS Compliant and 100% Lead (Pb)-Free

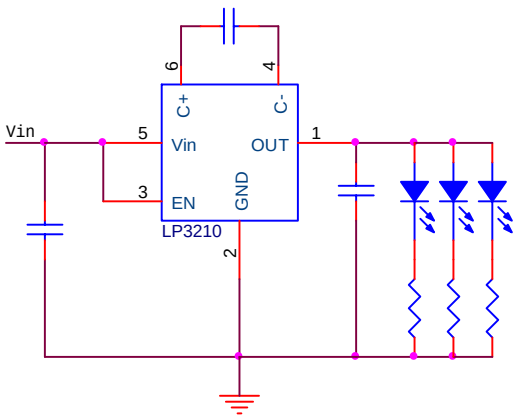
Order Information

LP3210 - □ □ □

F: Pb-Free

Package Type
B6: SOT23-6

Typical Application Circuit



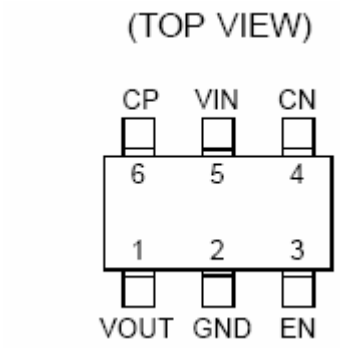
Applications

- LCD Panel
- Cellular and Smart mobile phone
- PDA/DSC
- Flash LED Driver

Marking Information

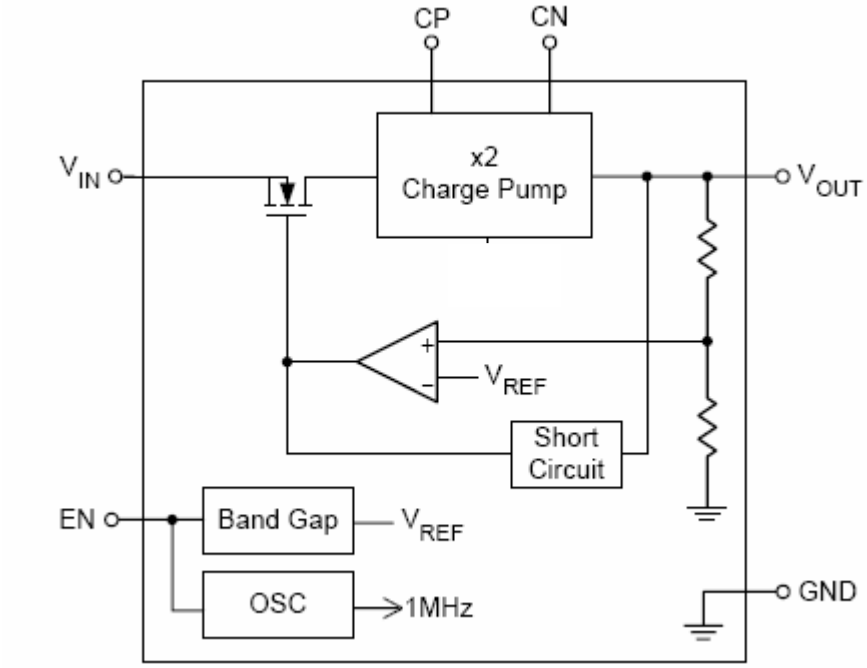
Please see website.

Functional Pin Description

Package Type	Pin Configurations
SOT23-6	

PIN	NAME	DESCRIPTION
1	VOUT	Output Voltage
2	GND	Ground
3	EN	Chip Enable (Active High)
4	CN	Flying Capacitor Negative Terminal
5	VIN	Power Input Voltage
6	CP	Flying Capacitor Positive Terminal

Function Block Diagram



Absolute Maximum Ratings

- ✧ Input Voltage to GND (V_{IN}) ---------- 6V
- ✧ EN to GND Voltage (V_{en}) ---------- 0.3V to V_{in}+0.3V
- ✧ Maximum DC Output Current(Iout) ---------- 300mA
- ✧ Operating Junction Temperature Range (T_J) ----------40℃ to 150℃
- ✧ Maximum Soldering Temperature (at leads, 1 0sec) ----------260℃

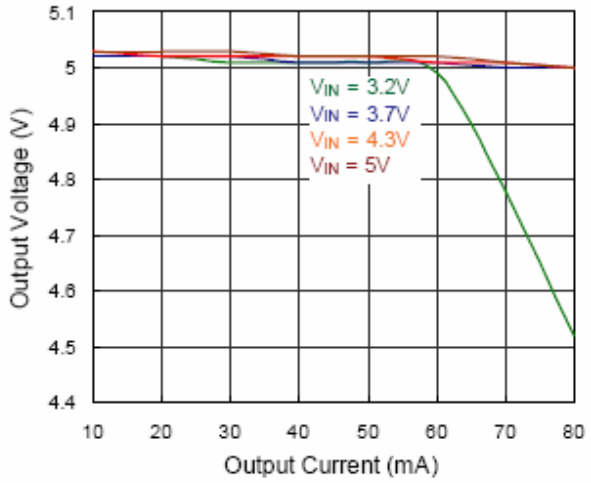
Electrical Characteristics

(Over recommended operating conditions unless specified otherwise) V_{IN} =3.6V,EN=High, T_A=25℃)

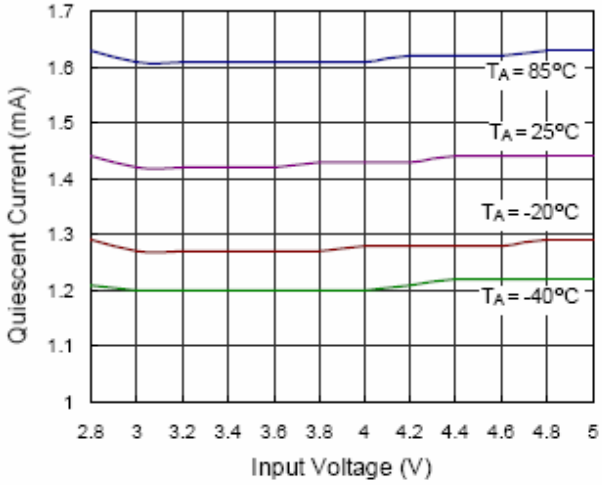
Symbol	Parameter	Conditions	LP3210			Unit
			Min.	Typ.	Max.	
V_{IN}	Input Voltage		2.8		Vout	V
V_{OUT}	Output Voltage Range			5.0		V
I_Q	Quiescent Current	No Load		2	4	mA
I_{SHDN}	Shutdown Current	EN = GND		1	5	μA
F_{OSC}	Oscillator Frequency		0.9	1.2	1.5	MHz
I_{SC}	Output short Circuit Current Limit	Vout<0.5V	350	450	500	mA
$V_{EN(L)}$	Enable Threshold Low				0.4	V
$V_{EN(H)}$	Enable Threshold High		**1.5**			**V**
I_{EN}	Input Low Current	**V_{IN} = V_{EN} = 5.5V**	**-1**		**1**	**μA**

Typical Operating Characteristics

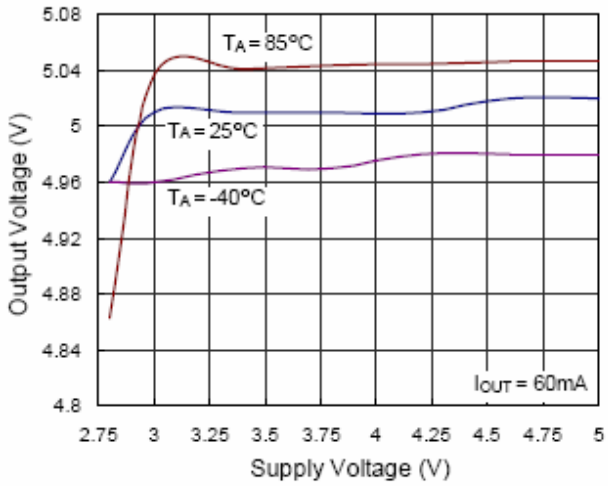
Output Voltage vs. Output Current



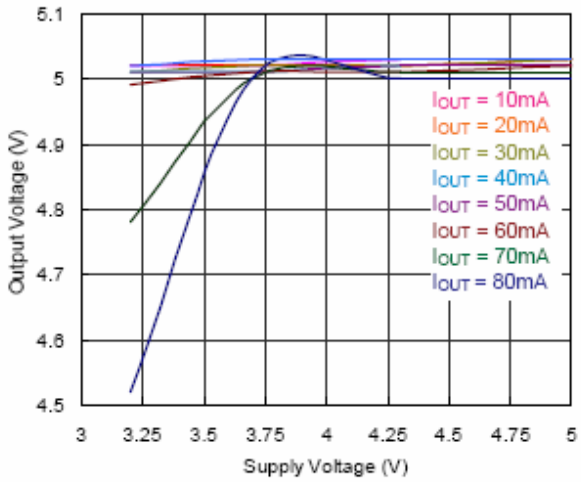
Quiescent Current vs. Input Voltage



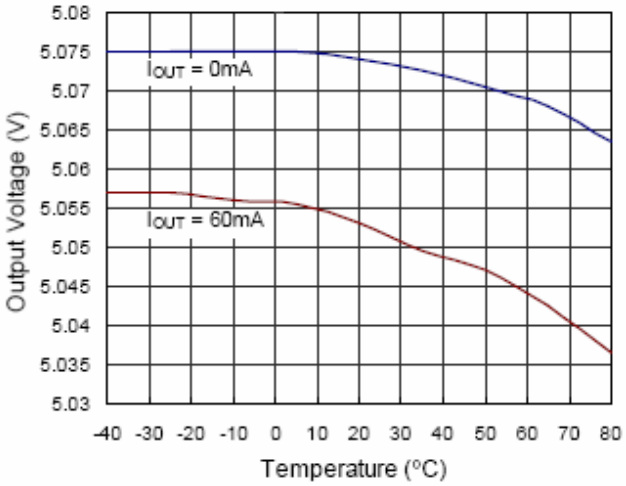
Output Voltage vs. Supply Voltage



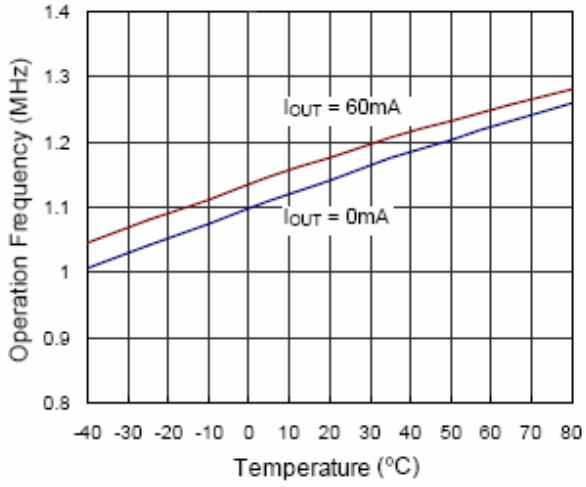
Output Voltage vs. Supply Voltage



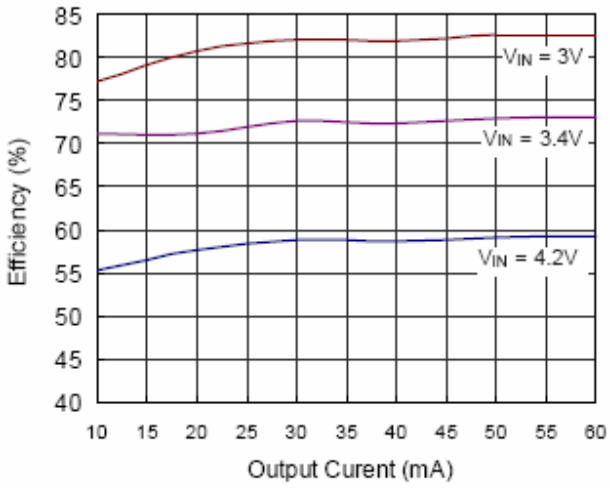
Output Voltage vs. Temperature



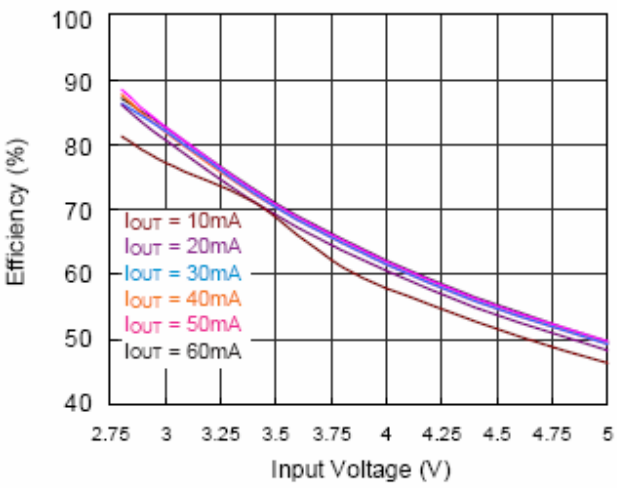
Operation Frequency vs. Temperature



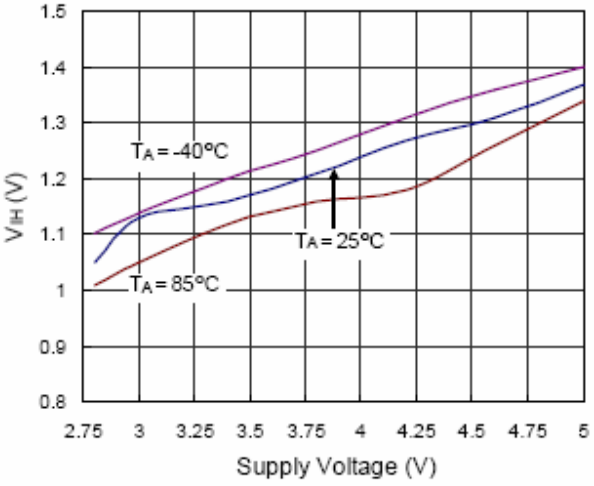
Efficiency vs. Output Curent



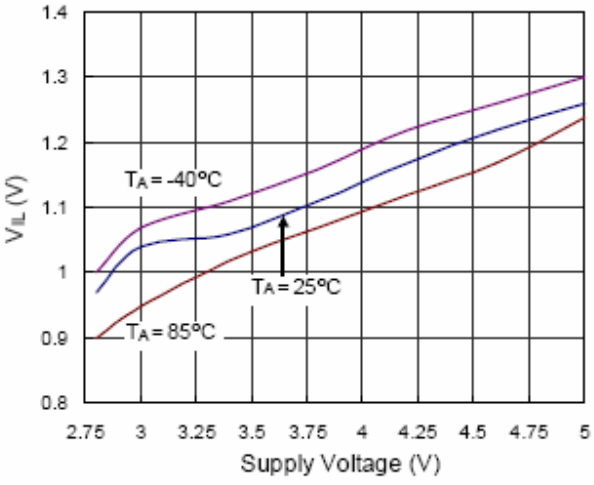
Efficiency vs. Input Voltage



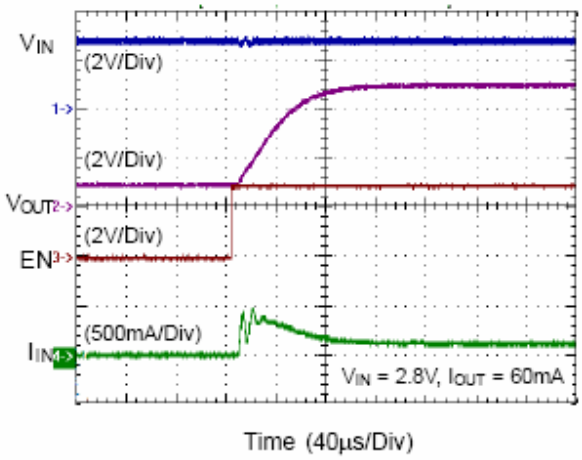
V_{IH} vs. Supply Voltage



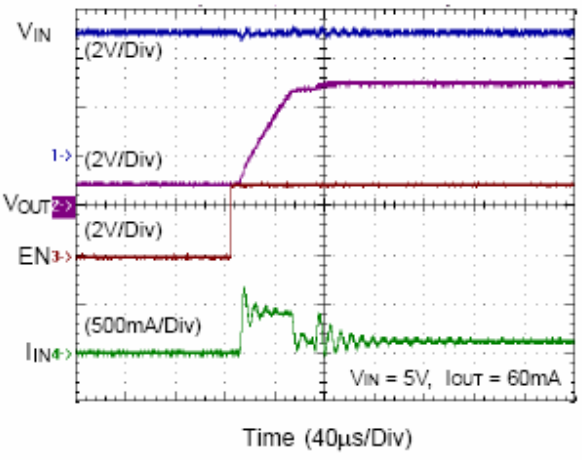
V_{IL} vs. Supply Voltage



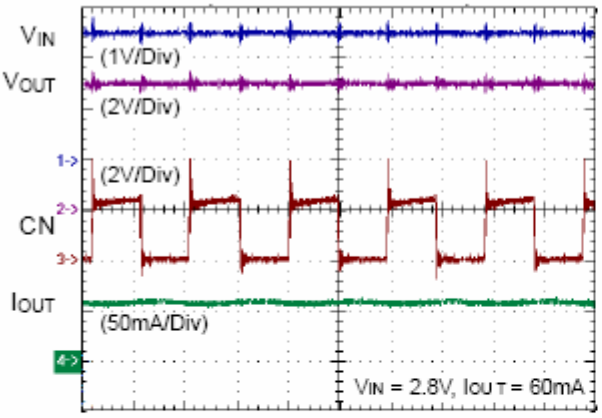
Inrush Current



Inrush Current

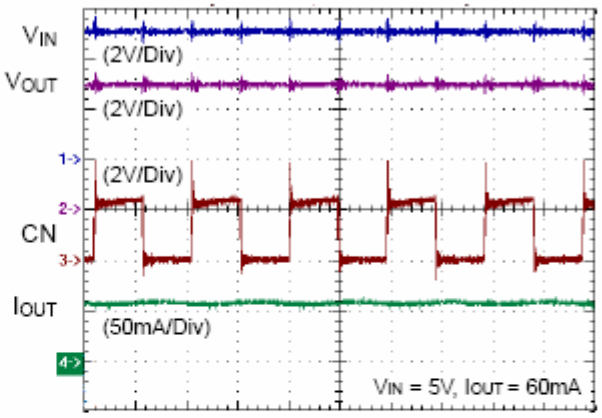


Normal Operation



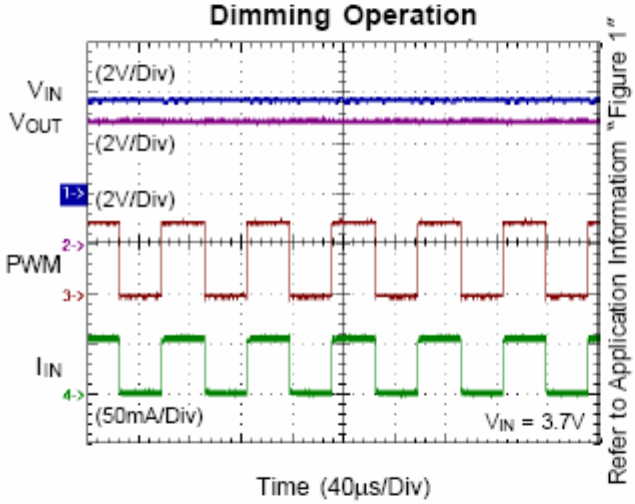
Time (400ns/Div)

Normal Operation



Time (400ns/Div)

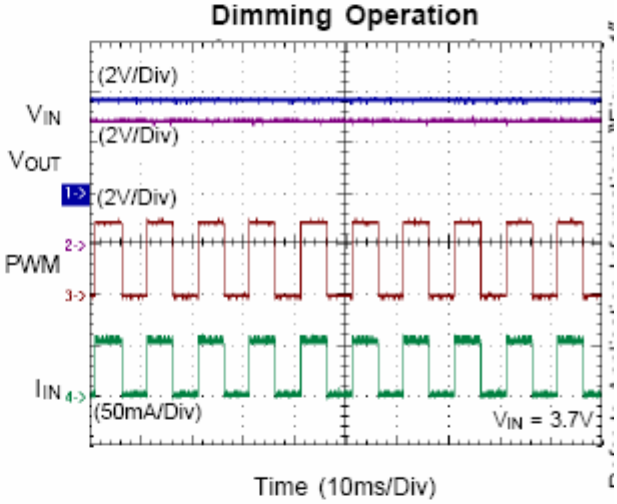
Dimming Operation



Refer to Application Information "Figure 1"

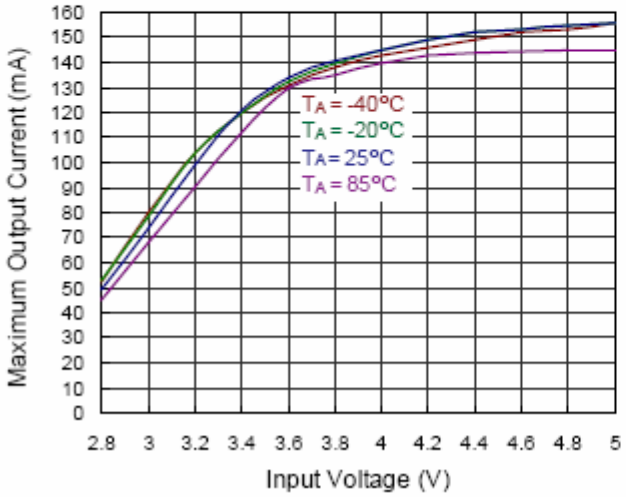
Time (40µs/Div)

Dimming Operation

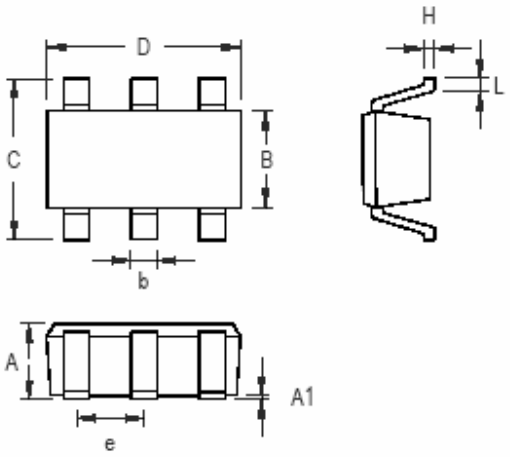


Time (10ms/Div)

Maximum Output Current vs. Input Voltage



Packaging Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.889	1.295	0.031	0.051
A1	0.000	0.152	0.000	0.006
B	1.397	1.803	0.055	0.071
b	0.250	0.560	0.010	0.022
C	2.591	2.997	0.102	0.118
D	2.692	3.099	0.106	0.122
e	0.838	1.041	0.033	0.041
H	0.080	0.254	0.003	0.010
L	0.300	0.610	0.012	0.024

SOT-23-6 Surface Mount Package