



LC2113

500mA 1.2M 6.3V Synchronous Buck Converter

DESCRIPTION

The LC2113 is a high efficiency synchronous buck regulator using a current mode, PWM architecture. The device operates from an input voltage range of 2.6V to 6V and provides an output voltage from 0.6 to 5V, making the LC2113 ideal for low voltage power conversions. Running at a fixed frequency of 1.2MHz allows the use of small external components, such as ceramic input and output caps, as well as small inductors, while still providing low output ripples. This low noise output along with its excellent efficiency achieved by the internal synchronous rectifier, making LC2113 an ideal green replacement for large power consuming linear regulators. Internal soft-start control circuitry reduces inrush current. Short-circuit and thermal-overload protection improves design reliability.

LC2113 is housed in a SOT23-5 Package

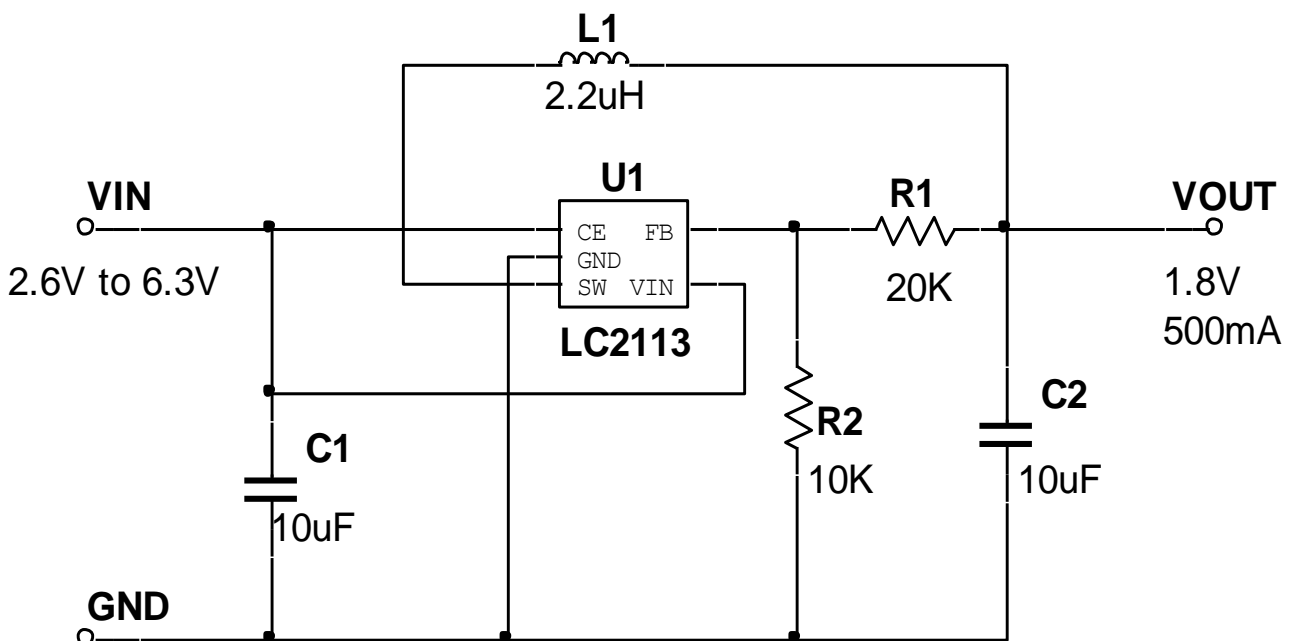
FEATURES

- ◆ Range of Input Voltage: 2.6V~6.3V
- ◆ <math><1\mu\text{A}</math> Shutdown Current
- ◆ Oscillation Frequency: 1.2MHz
- ◆ High Efficiency: 95%
- ◆ No Schottky Diode Required.
- ◆ Current Mode Control
- ◆ 0.6V Reference for Low Output Voltage
- ◆ Operating Temperature Range: -40°C~85°C
- ◆ Demo Board Available


APPLICATIONS

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

TYPICAL APPLICATION



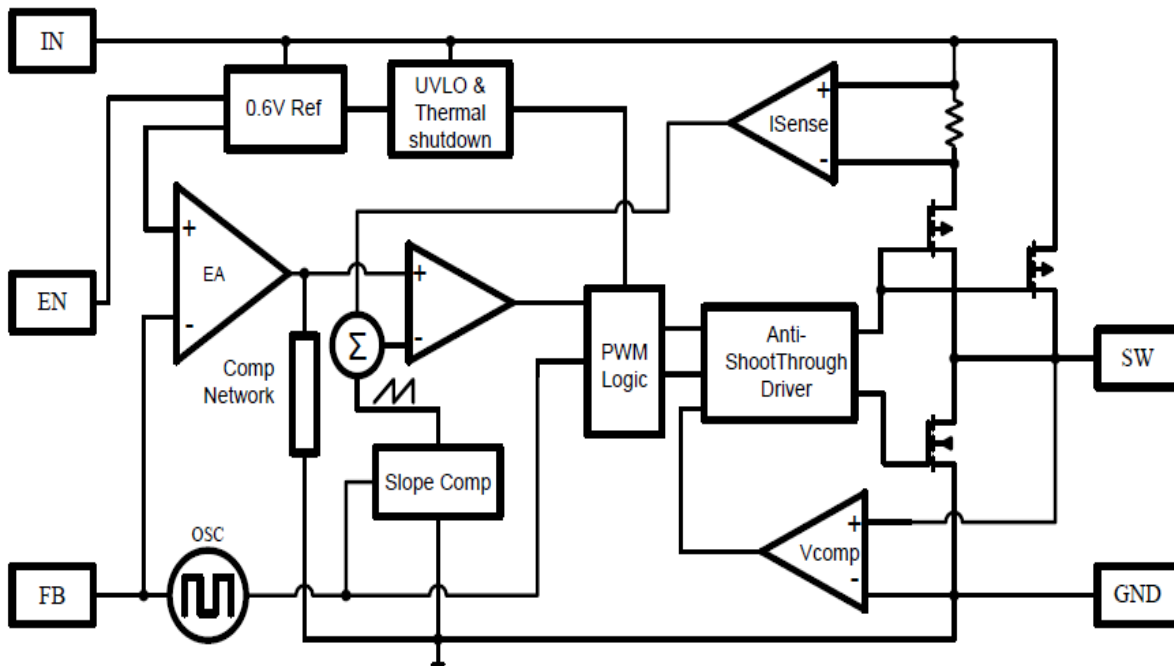
PACKAGE/ORDER INFORMATION

	ORDER PART NUMBER LC2113CB5TR
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PIN DESCRIPTION

Pin No.	Symbol	Description
1	CE	Chip Enable Pin (Active with "H")
2	GND	Ground Pin
3	SW	Switching Node: PWM output connection to inductor.
4	VIN	Power Supply
5	FB	Pin for Feedback Voltage

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATING

Parameter		Value
Max Input Voltage		6.5V
Max Operating Junction Temperature(Tj)		125°C
Ambient Temperature(Ta)		-40°C – 85°C
Maximum Power Dissipation	SOT23-5	400mW
Storage Temperature(Ts)		-40°C - 150°C
Lead Temperature & Time		260°C, 10S
ESD (HBM)		>2000V

ELECTRICAL CHARACTERISTICS

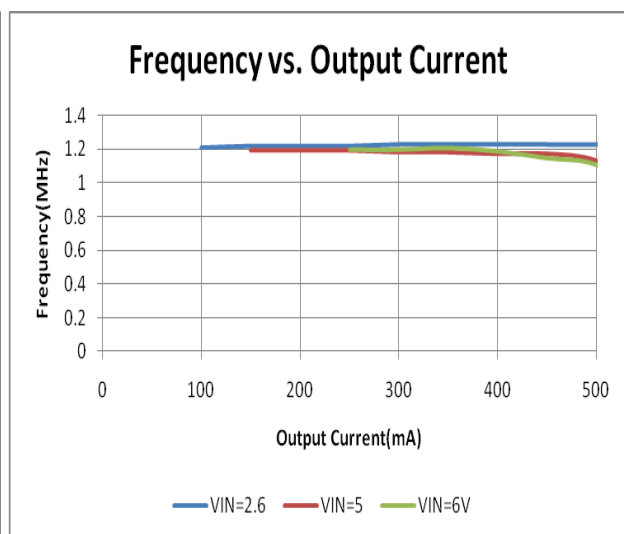
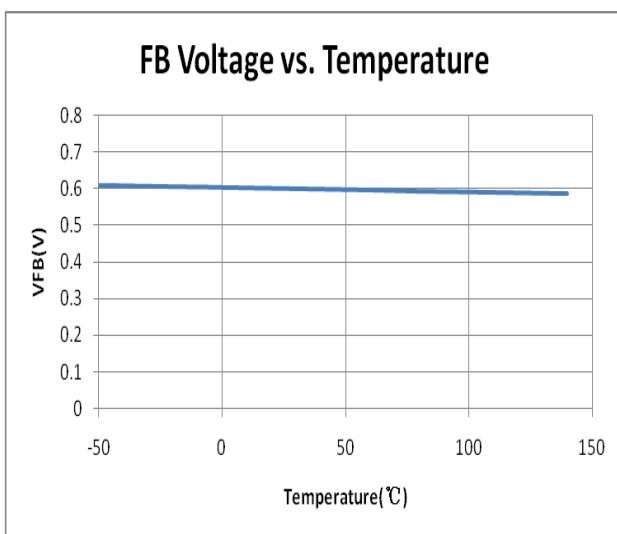
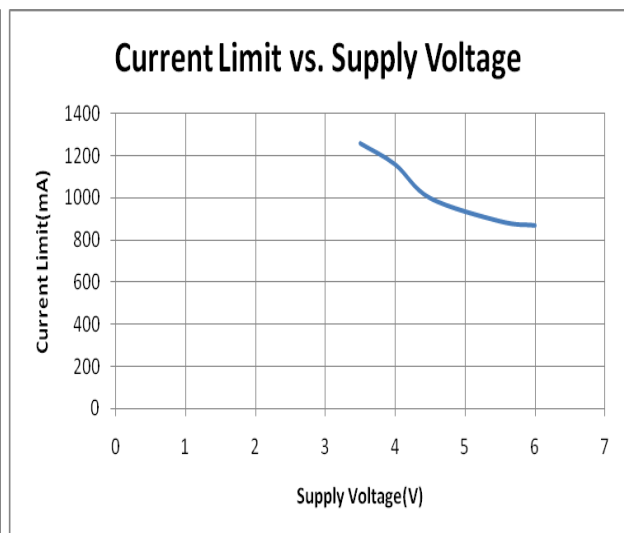
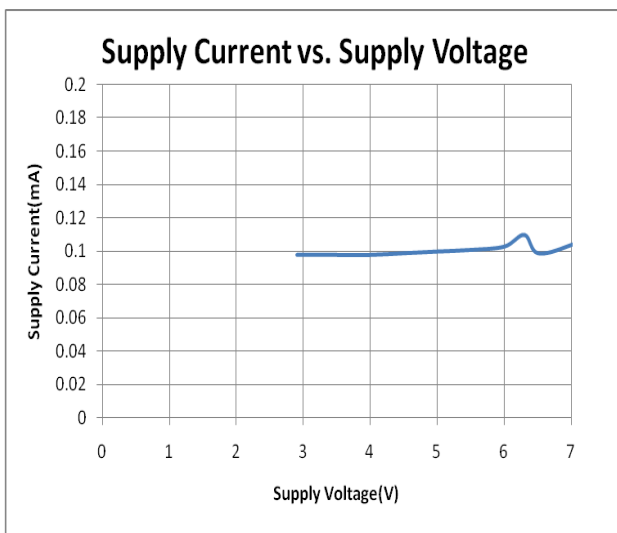
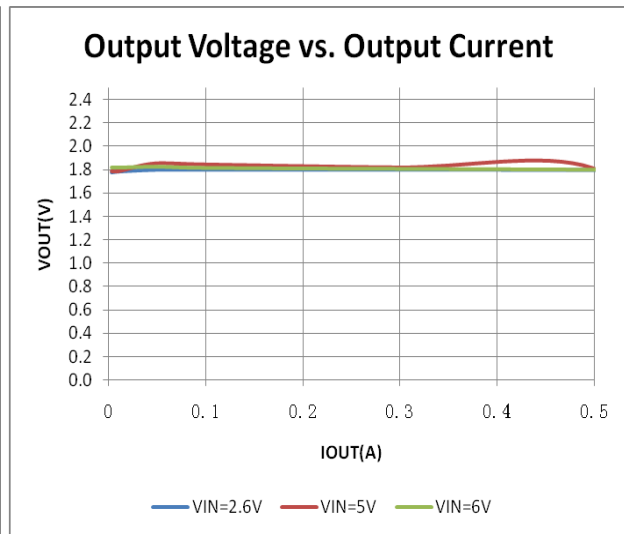
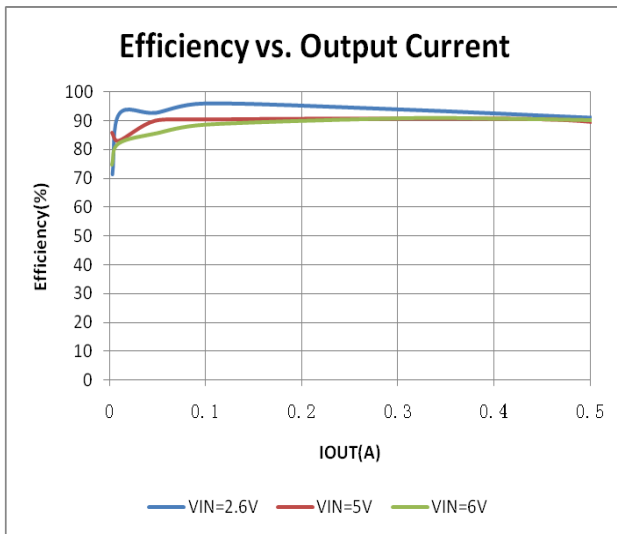
(Test condition is in 25°C, VIN=5V)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
VDD	Input Voltage Range		2.6		6.3	V
Vref	Feedback Voltage		0.585	0.6	0.615	V
I _{fb}	Feedback Leakage current			0.1	0.4	uA
I _q	Quiescent Current	Active, V _{fb} =0.65, No Switching		83		uA
		Shutdown			1	uA
LnReg	Line Regulation	V _{in} =2.7V to 6V		0.4	0.6	%/V
LdReg	Load Regulation	I _{out} =0.01 to 500mA		1	3	%/A
F _{sw}	Switching Frequency			1.2		MHz
R _{dsonP}	PMOS R _{dson}			300	400	mohm
R _{dsonN}	NMOS R _{dson}			220	300	mohm
I _{limit}	Peak Current Limit		0.75	0.85	2	A
I _{swk}	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		0.85			V
V _{l_en}	EN Input Low Voltage				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	L1	Inductor	2.2uH; 2A; SMD, Shielding	
4	IC1	IC	LC113; SMD SOT23-5	
5	R1	Resistor	20K;SMD 0805; 1%	
6	R2	Resistor	10K;SMD 0805; 1%	

DEMO BOARD MEASUREMENT



PACKAGE OUTLINE

Package	SOT23-5	Devices per reel	3000	Unit	mm
Package specification:					
<p>The technical drawing illustrates the SOT23-5 package with the following dimensions:</p> <ul style="list-style-type: none"> Top View: <ul style="list-style-type: none"> Total width: 2.9 ± 0.2 mm Distance between pins 1 and 2: 0.4 ± 0.1 mm Distance between pins 2 and 3: 0.4 ± 0.1 mm Distance between pins 3 and 4: 0.4 ± 0.1 mm Distance between pins 4 and 5: 0.4 ± 0.1 mm Distance from pin 1 to the center: 1.9 ± 0.2 mm Distance from pin 5 to the center: 1.9 ± 0.2 mm Distance from pin 1 to the center: (0.95) mm Distance from pin 5 to the center: (0.95) mm Side View: <ul style="list-style-type: none"> Maximum height: 2.8 ± 0.3 mm Height of the main body: 1.6 ± 0.1 mm Height of the top flange: $+0.2$ mm Lead length: 1.1 ± 0.2 mm Lead thickness: 0.8 ± 0.1 mm Lead width: 0.15 ± 0.1 mm Lead thickness at the end: -0.05 mm Lead angle: 0.2 MIN Lead thickness at the base: 0 to 0.1 mm Perspective View: Shows the package with pins 1, 2, 3, 4, and 5. 					


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