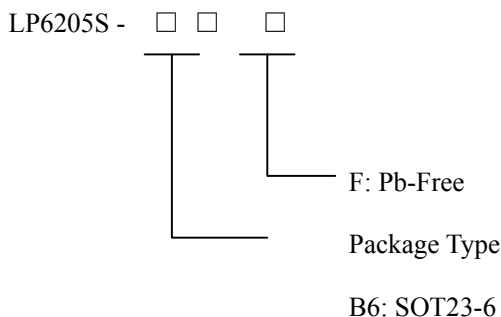


## High Efficiency Boost DC/DC Regulator

### General Description

The LP6205 is a current mode boost DC-DC converter. Its PWM circuitry with built-in 0.3Ω, 24V, 1.5A Current power MOSFET makes this converter highly power efficiently. Selectable high switching frequency allows faster loop response and easy filtering with a low noise output. The non-inverting input its error amplifier is connected to an internal 1.25V precision reference voltage. Soft-Start time can be programmed with an external capacitor, which sets the input current ramp rate. Current mode control and external compensation network make it easy and flexible to stabilize the system.

### Ordering Information



### Applications

- ✧ AIK. Battery Products
- ✧ Li-ion Battery Products
- ✧ Host/OTG 5V output
- ✧ HDMI Power Supply

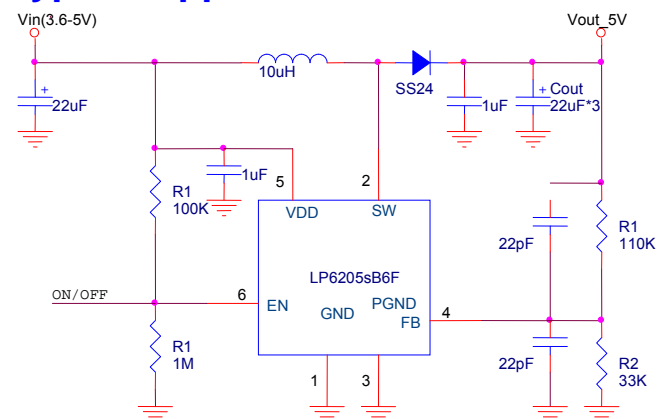
### Marking Information

Please see website: [www.lowpowersemi.com](http://www.lowpowersemi.com).

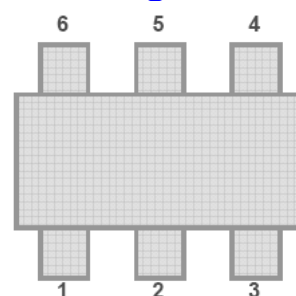
### Features

- ◆ 1.3V Start-up Input Voltage
- ◆ Output up to 1.5A
- ◆ Zero Shutdown Mode Supply Current
- ◆ 94% Efficiency
- ◆ Up to 1.2MHz Switching Frequency
- ◆ Using Internal Power Switches
- ◆ Small SOT23-6 Package

### Typical Application Circuit



### Pin Configurations

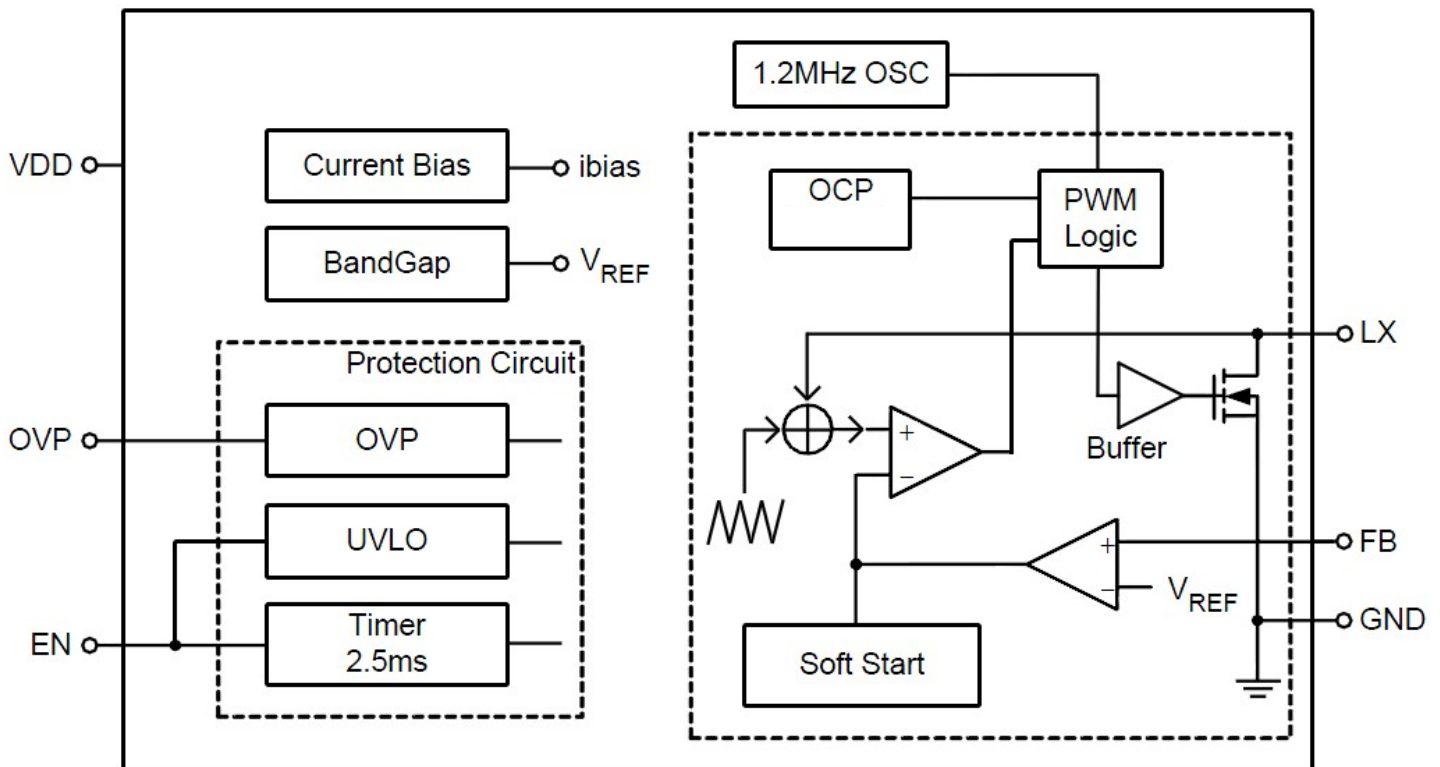


TOP View  
SOT23-6

### Functional Pin Description

Pin Number	Pin Name	Function
		SOT23-6
1	GND	Ground.
2	SW	Switch pin.
3	GND	Ground.
4	FB	Feedback
5	VDD	Power pin.
6	EN	Enable pin

### Function Block Diagram



## Absolute Maximum Ratings

Supply Input Voltage-----	6V
SW Pin Switch Voltage-----	-0.3V to (Vout + 0.8V)
Other I/O Pin Voltages-----	-0.3V to (Vout + 0.3V)
SW Pin Switch Current -----	1.5A
SW Pin Voltage(max) -----	30V
Lead Temperature (Soldering, 10 sec.) -----	260°C
Storage Temperature Range -----	-65°C to 150°C

### ESD Susceptibility

HBM (Human Body Mode) -----	2kV
MM(Machine-Mode)-----	200V

### Recommended Operating Conditions

Operation Ambient Temperature Range-----	-40°C to 85°C
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## Electrical Characteristics

(VIN = 1.5V, VDD set to 3.3V, Iload Current = 0, TA = 25°C, unless otherwise specified)

Parameter	Test Conditions	Min	Typ	Max	Units
Start-UP Voltage	IL = 1mA		2.5		V
Operating VDD Range	VDD pin voltage	2.5		6.5	V
No Load Current I (VIN)	VIN = 2V, VOUT = 6V		26		μA
Feedback Reference Voltage	Close Loop, VDD = 3.3V		1.25		V
Switching Frequency	VDD = 3.3V		1200		KHz
Maximum Duty	VDD = 3.3V		95		%
SW ON Resistance	VDD = 3.3V		200		mΩ
Current Limit Setting	VDD = 3.3V		1.5		A
Line Regulation	VIN = 1.5 ~ 2.5V, IL = 1mA		55		mV/V
Load Regulation	VIN = 2.5V, IL = 1 ~ 100mA		0.2		mV/mA
Temperature Stability for VOUT			50		ppm/°C
Thermal Shutdown			165		°C
Thermal Shutdown Hysterises			10		°C
Maximum VRS	VRS		145		mV

## Application Information

Referring to Typical application circuits, the output voltage of the switching regulator( $V_{out}$ ) can be set with Equation(1):

$$V_{out}=(1+R1/R2) \times 1.25 V$$

## Feedback Loop Design

Referring to the typical application circuits, the selection of R1 and R2 based on the trade-off between quiescent current consumption and interference immunity is stated below:

For applications without standby or suspend modes, lower values of R1 and R2 are preferred. For applications concerning the current consumption in standby or suspend modes, the higher values of R1 and R2 are needed. Such high impedance, which requires careful PCB layout and avoid any interference.

Especially to FB pin. To improve the system stability a

proper value capacitor between FB pin and GND pin is suggested. An empirical suggestion is around 220pF.

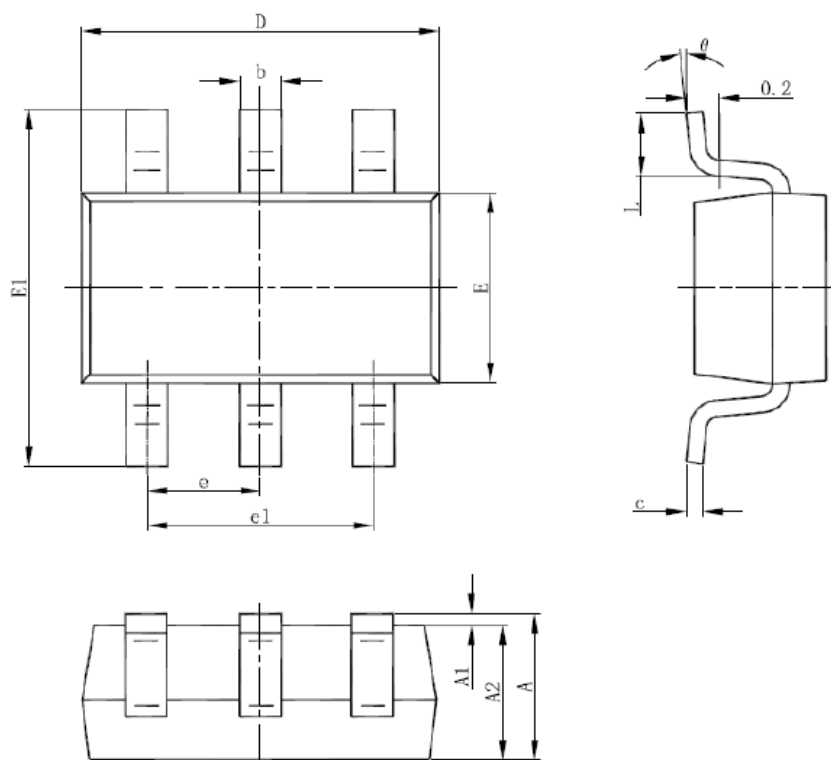
## PCB Layout Guide

PCB Layout shall follow these guidelines for better system stability:

1. A full GND plane without any gap break.
2. VDD to GND bypass Cap-The 1uF MLCC noise bypass cap pin4 shall have short and wide connections.
3. Vin to GND bypass Cap-Add a Cap close to the inductor when Vin is not an idea voltage source.
4. Minimize the FB node copper area and keep it far away from noise sources.
5. I follow Equation(1)
6. I Higher R reduces the quiescent current(Path current= $1.25V/R2$ ),however resistors beyond 5M/W are not recommended.

## Packaging Information

SOT23-6



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°