



## High Efficiency Boost DC/DC Controller

### General Description

The LP6239 is a high performance non-synchronous boost converter controller that drives N-channel power MOSFETs. Synchronous rectification increases efficiency, reduces power losses and eases thermal requirements, allowing the LP6239 to be used in high power boost applications.

A 2.5V to 6V input supply range encompasses a wide range of system architectures. The LP6239 features operating fixed-frequency at 600kHz and a 1.215V reference voltage. The CS pin can adjustable the current limited and slope compensation by permutations the external resistor .

Other features include over current protection (OCP), output over voltage protection (OVP), and under-voltage lockout (UVLO). The LP6239 is available in SOP-8 (0.5mm pitch) package.

### Order Information

LP6239 □□□  
F: Green  
Package Type  
SO: SOP-8



### Features

- ◆ Wide  $V_{IN}$  Range: 2.5V to 6V
- ◆ Current-Mode PWM Controller
- ◆ Under-Voltage Lockout
- ◆ Over Current Protection
- ◆ Under-Voltage Protection
- ◆ Over-Temperature Protection
- ◆ Available in SOP-8
- ◆ RoHS Compliant and Halogen Free
- ◆ Pb-Free Package

### Applications

- ◆ Battery Products
- ◆ Audio Amplifier

### Marking Information

Device	Marking	Package	Shipping
LP6239	LPS LP6239 YWXXX	SOP-8	4K/REEL
Y is year code. W is week code. XXX is series number.			



### Typical Application Circuit

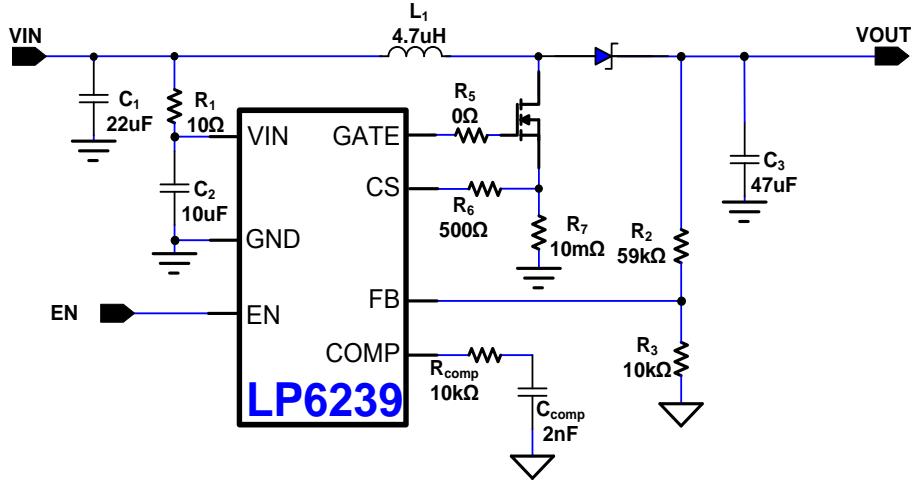


Figure 1. Typical Application Circuit of LP6239

### Pin Configuration

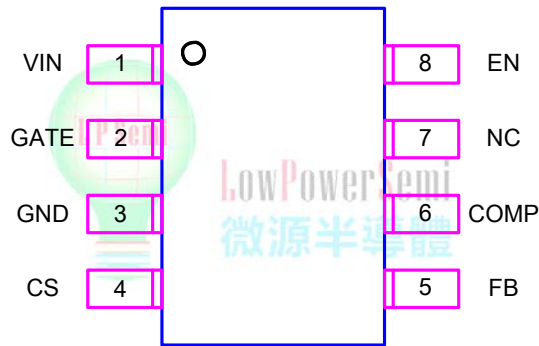


Figure 2. SOP-8 Package Top View



## Function Block Diagram

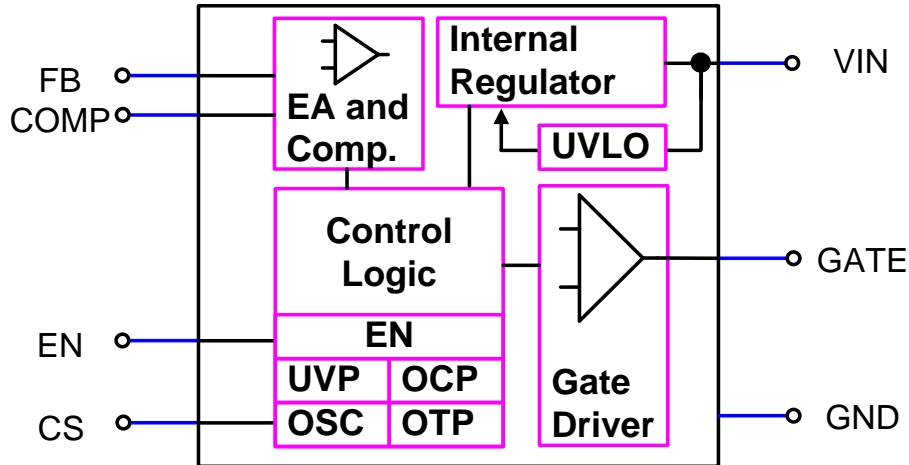


Figure 3. Function Block Diagram

## Functional Pin Description

Pin NO.	Pin Name	Description
1	VIN	Input Supply Pin. Decouple with 10 $\mu$ F ceramic capacitor close to the pin.
2	GATE	External NMOS Gate Drive Pin.
3	GND	Ground.
4	CS	Current Sense Input Pin.
5	FB	Regulator Feedback Input. Connect to an external resistive to set the output current.
6	COMP	Regulator Error Amplifier Compensation Pin.
7	NC	No Connection.
8	EN	Chip Enable Control.



## Absolute Maximum Ratings<sup>Note 1</sup>

◇ VIN to GND	-----	-0.3V to +6.5V
◇ GATE, CS, FB, COMP, EN to GND	-----	-0.3V to +6.5V
◇ Operating Junction Temperature Range (T <sub>J</sub> )	-----	-40°C to +150°C
◇ Operation Ambient Temperature Range	-----	-40°C to +85°C
◇ Storage Temperature Range	-----	-65°C to +150°C
◇ Maximum Soldering Temperature (at leads, 10sec)	-----	+260°C
◇ Maximum Junction Temperature	-----	+150°C

**Note 1.** Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

## Thermal Information

◇ Thermal Resistance		
SOP-8, $\theta_{JA}$	-----	112°C/W
SOP-8, $\theta_{JC}$	-----	39°C/W





## Electrical Characteristics

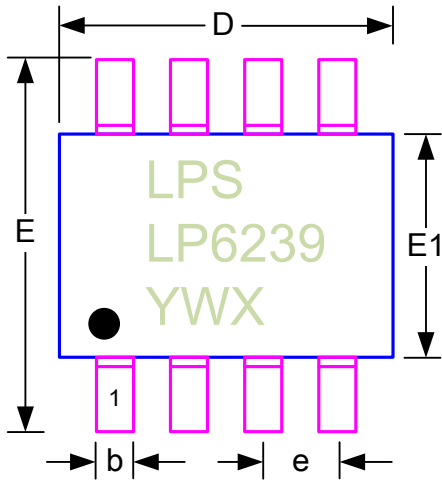
( $V_{IN}=5V$ ,  $V_{EN}=5V$ ,  $T_A=25^{\circ}C$ , unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
<b>General</b>						
Input Supply Voltage	$V_{IN}$		2.5		6	V
$V_{IN}$ Supply Current	$I_Q$	Shutdown Current		0.1	1	$\mu A$
		Sleep Current		0.5	1	mA
		Operation Current		2	4	mA
Input UVLO Threshold	$V_{UVLO(VTH)}$	$V_{IN}$ Rising		1.9		V
UVLO Threshold Hysteresis	$V_{UVLO(HYS)}$	Falling Hysteresis		170		mV
Soft Start Time	$T_{SS}$			15		ms
Thermal Shutdown Threshold	$T_{SD}$	Temperature Rising		150		$^{\circ}C$
Thermal Shutdown Hysteresis	$\Delta T_{SD}$			25		$^{\circ}C$
<b>EN Function</b>						
EN Threshold Voltage	$V_{IH}$	Logic High.			1.5	V
	$V_{IL}$	Logic Low	0.7			
Pull Down Resistor	$R_{PULL\_LOW}$			150		k $\Omega$
<b>Boost Regulator</b>						
Feedback Voltage	$V_{FB}$		1.191	1.215	1.239	V
Internal Oscillator Frequency	$F_{OSC}$			600		kHz
Maximum Duty Cycle	$D_{MAX}$			80		%
Voltage Gain of Error Amplifier	$A_V$			1500		V/V
Transconductance of EA	$G_m$			100		$\mu A/V$
Gate rising time		$C_{Gate}=500pF$		40		$\mu A$
Gate falling time		$C_{Gate}=500pF$		20		$\mu A$
Over Current Protection	$V_{OCP}$	Threshold of OCP		170		mV
Slope Compensation Current	$I_{Slope}$			40		$\mu A$
Under Voltage Protection	$V_{UVP}$			1		V
Fault Trigger Duration	$T_{Fault}$			42		ms
SCP Threshold	$V_{SCP}$			0.5		V
Hiccup Timer				580		ms



## Outline Information

SOP-8 Package (Unit: mm)



SYMBOLS UNIT	DIMENSION IN MILLIMETER		
	MIN	NOM	MAX
A	--	--	1.750
A1	0.100	--	0.225
A2	1.300	1.400	1.500
A3	0.600	0.650	0.700
b	0.390	--	0.470
D	4.800	4.900	5.000
E	5.800	6.000	6.200
E1	3.800	3.900	4.000
e	1.27BSC		
L	0.500	--	0.800

