

Super-Small Package PWM Control Step-up Switching Regulator

General Description

The LN2272 is a compact, high efficiency, step-up DC/DC converter with an Adaptive Current Mode PWM control loop, includes an error amplifier, ramp generator, comparator, switch pass element and driver in which providing a stable and high efficient operation over a wide range of load currents. It operates in stable waveforms without external compensation. The 80 μ A low quiescent current together with high efficiency maintains long battery lifetime.

Package

- SOT23-6L

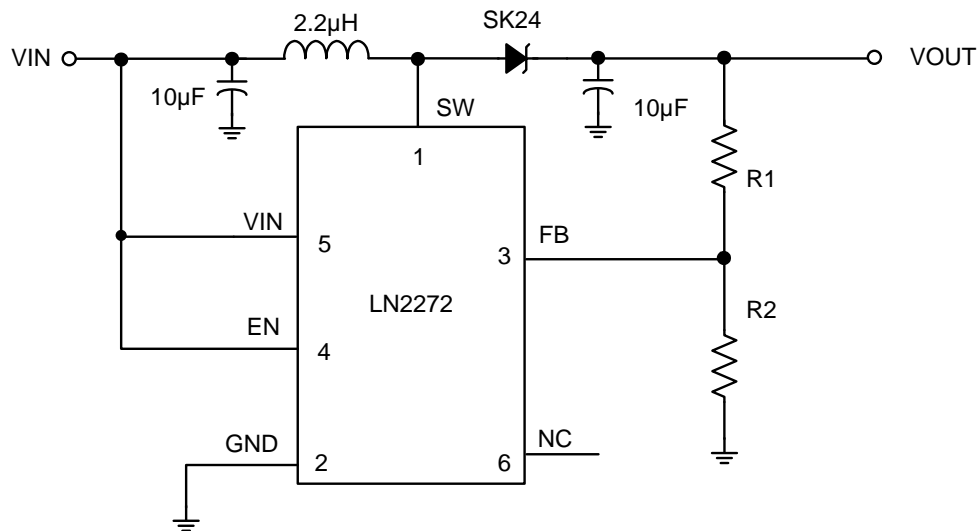
Features

- 1.5MHz fixed switching frequency
- 90% efficiency
- High supply capability to deliver 5V 1.2A with 1 Li-ion Cell
- 80 μ A supply current
- 0.01 μ A shutdown mode supply current

Applications

- PDA
- LCD panel
- Portable instrument
- Wireless equipment

Typical Application Circuit

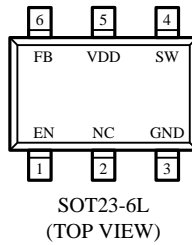


Ordering Information

LN2272P ①②③④

Designator	Symbol	Description
①	A	Feedback voltage 0.6V
②	M	SOT23-6L package
③	R	Embossed Tape : Standard Feed
	L	Embossed Tape : Reverse Feed
④	G	reen epoxy molding compound

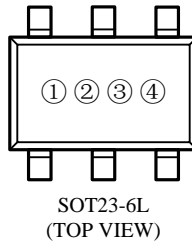
■ Pin Configuration



■ Pin Assignment

Pin Number	Pin Name	Function
1	EN	Chip enable
2	NC	Floating or connected to GND
3	GND	Ground
4	SW	Pin for switching
5	VDD	Input positive power pin
6	FB	Feedback input pin

■ Marking Rule



① Represents the product name

Symbol	Product Name
A	LN2272P***

② Represents the feedback voltage

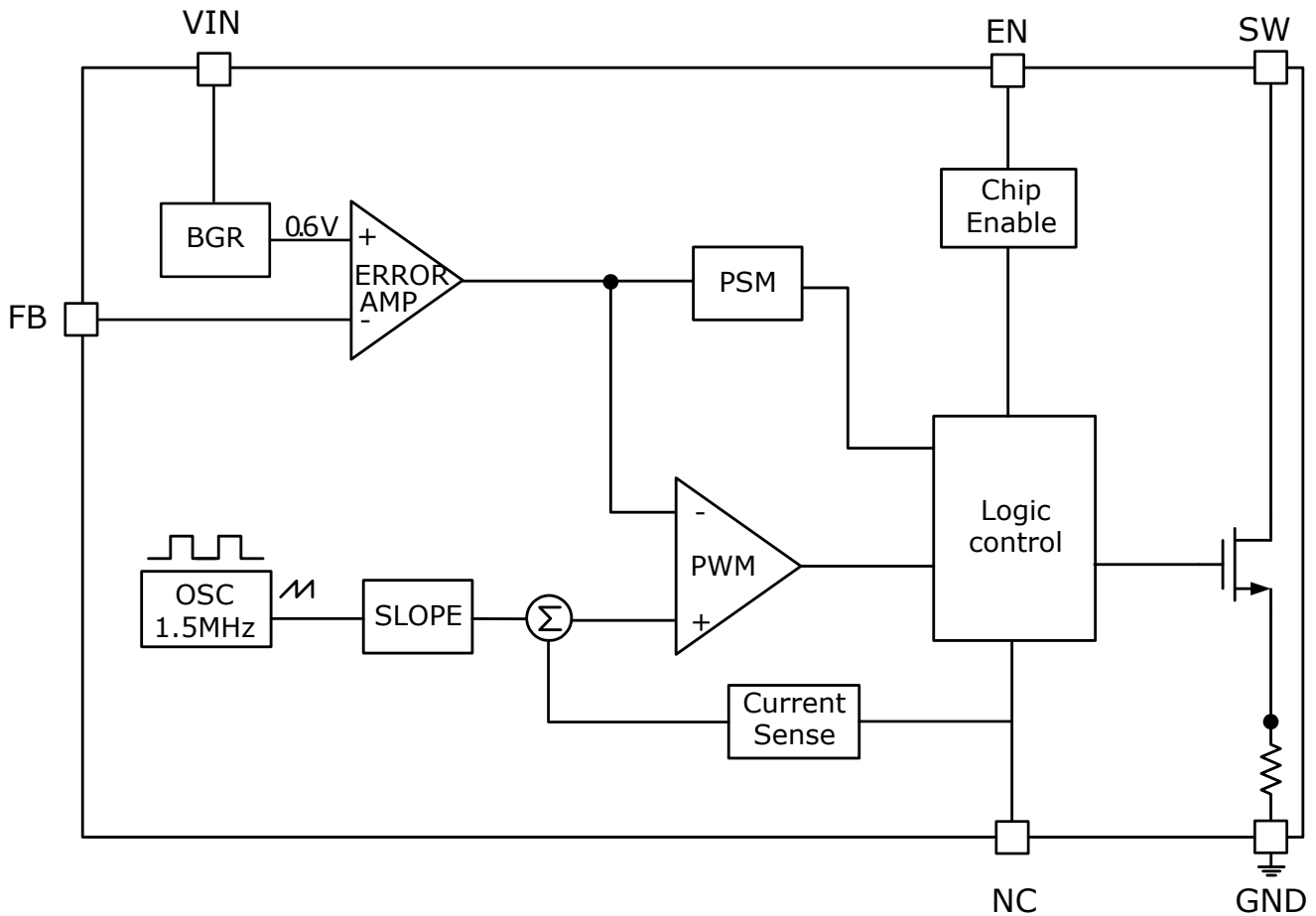
Symbol	Description
A	Feedback voltage 0.6V

③ Represents the packaging information

Symbol	Package
6	SOT23-6L

④ Represents the assembly lot No.

0-9, A-Z; 0-9, A-Z mirror writing, repeated (G, I, J, O, Q, W exception)

■ Function Block Diagram

■ Absolute Maximum Ratings

Parameter	Symbol	Maximum Rating	Unit
Input voltage	VDD	$V_{SS}-0.3 \sim V_{SS}+6$	V
Output voltage	VOUT	$V_{SS}-0.3 \sim V_{SS}+6$	
	VSW	$V_{SS}-0.3 \sim V_{SS}+6$	
LX pin Switch Current	ISW	3.0	A
Power dissipation	PD	250	mW
Operating ambient temperature	Topr	-40 ~ +80	°C
Storage ambient temperature	Tstg	-40 ~ +125	

Caution : The absolute maximum ratings are rated values exceeding which the product could suffer physical damage.

These values must therefore not be exceeded under any conditions.

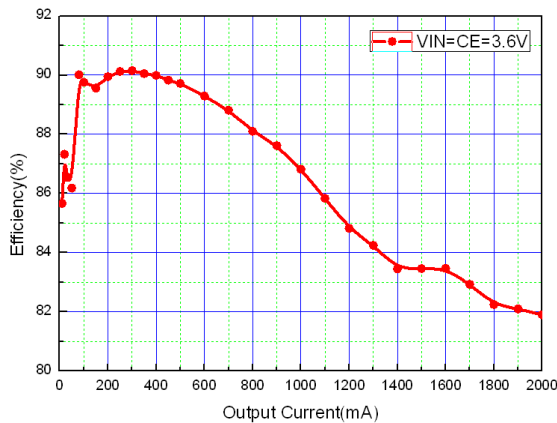
■ Electrical Characteristics

(VDD=1.5V, VDD=3.3V, I_{Load}=0, T_a=25°C, unless otherwise noted)

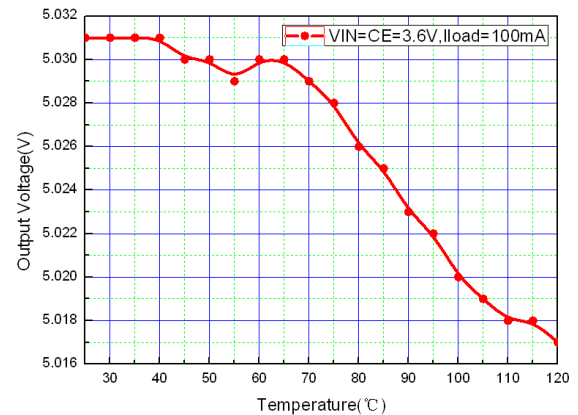
Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply voltage	VDD	IOUT=1.2A	1.6	-	5	V
Output voltage	VOUT	-	VDD-0.2	-	6	
Shut down current	IOFF	VEN<VENL	-	0.01	1	μA
No load Current	IC	VDD=3.6V, VOUT=5V	-	80	-	μA
Feedback voltage	VR	VOUT=5V	588	600	612	mV
Switching frequency	FS	IOUT=1.2A	1.25	1.5	1.75	MHz
Maximum Duty	DMAX	VDD=3.6V	75	-	-	%
Current Limit	ISW	VDD=4.2V	3	-	-	A
Line Regulation	ΔVLINE	IOUT=1.2A, VDD=3V~4.2V	-	0.4	-	%
Load Regulation	ΔVLOAD	VDD=3.6V, IOUT=10mA~1.2A	-	0.45	-	%
CE "High" Voltage	VENH	VDD=3.6V	0.9	-	-	V
CE "Low" Voltage	VENL	VDD=3.6V	-	-	0.8	V
Over Temperature Shutdown	TSHD	VDD=3.6V, IOUT=100mA	-	146	-	°C

■ Typical Performance Characteristics

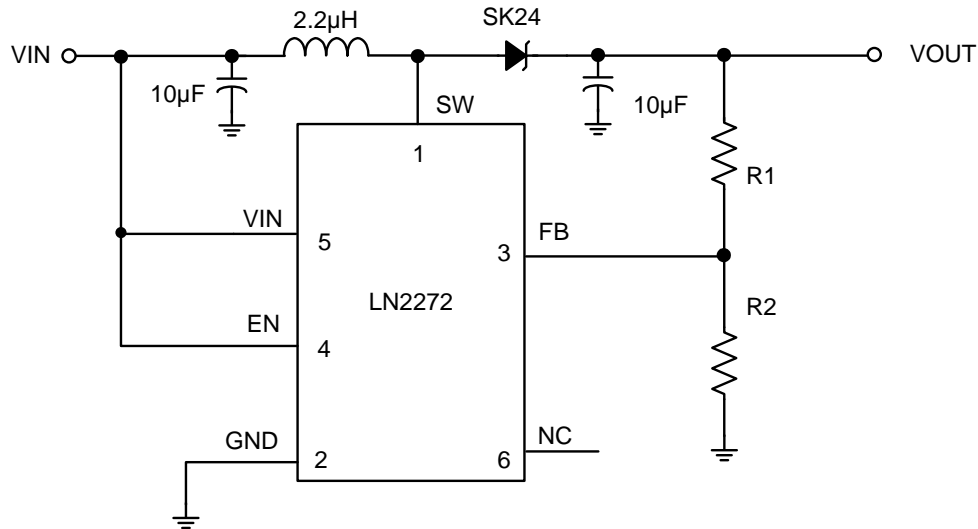
1. Efficiency vs. Output Current



2. Supply Current vs. Input Voltage



■ Application Information



- **Programming Output Voltage**

The output voltage can be calculated using the following formula as below

$$V_{OUT} = V_{FB} \times \left(1 + \frac{R1}{R2} \right)$$

- **Inductor Selection**

The recommended values of inductor are 2.2 to 10 uH. The inductor should have low core loss at 1.5MHz and low DCR for better efficiency.

- **Capacitor Selection**

Input and output ceramic capacitors of 10uF are recommended for LN2272 applications. For better voltage filtering, ceramic capacitors with low ESR are recommended.

- **Diode Selection**

Schottky diode is a good choice for LN2272 because of its low forward voltage drop and fast reverses recovery. Using Schottky diode can get better efficiency.

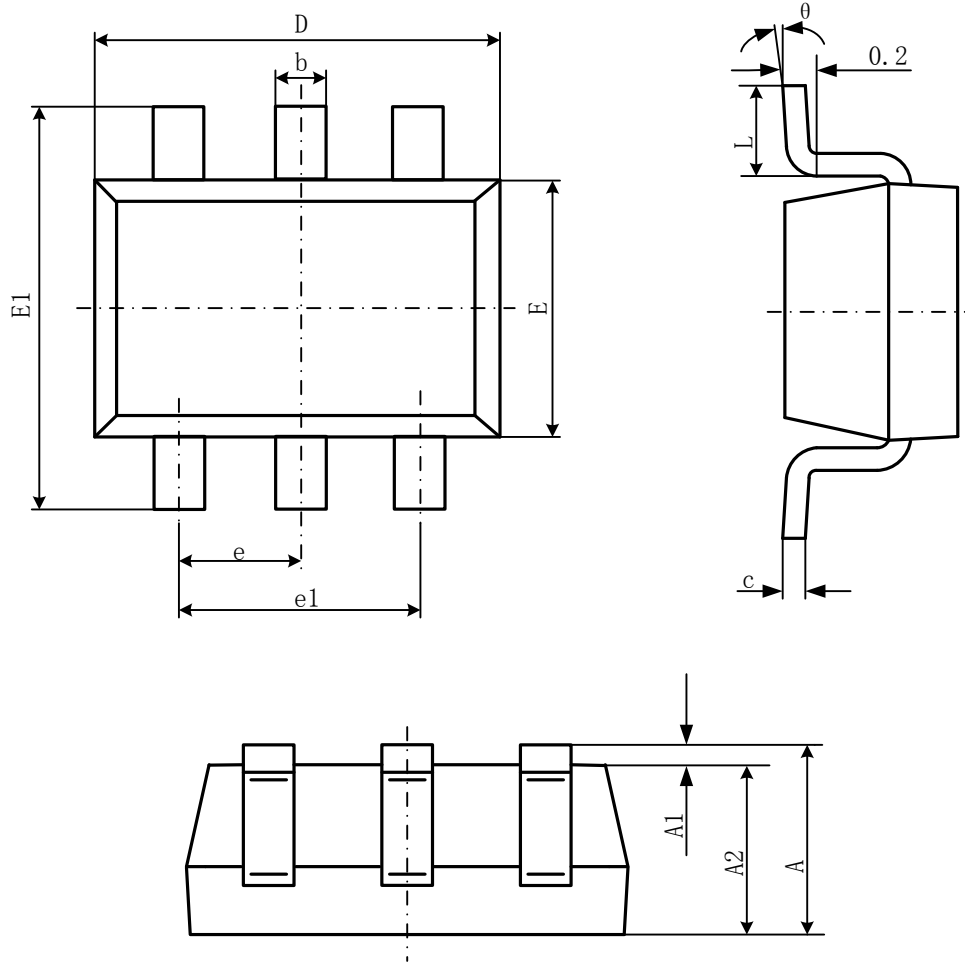
■ PCB Layout Consideration

- For best performance of the LN2272, the following guidelines must be strictly followed.
- Input and Output capacitors should be placed close to the IC and connected to ground plane to reduce noise coupling.
- Keep the main current traces as possible as short and wide.

SW node of DC-DC converter is with high frequency voltage swing. It should be kept at a small area.

Package Information

- SOT23-6L



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°