Super-Small Package PWM Control Step-up Switching Regulator

■ General Description

The LN2261 is a compact, high efficiency, and low voltage 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.

LN2261 can provide 800mA output current when input voltage above 3.3V. Besides, the 21μA low quiescent current together with high efficiency maintains long battery lifetime. The output voltage is set with two external resistors. Both internal 2.2A switch and driver for driving external power devices (NMOS or NPN) are provided.

■ Features

- 1MHz fixed switching frequency
- 90% efficiency
- 21μA quiescent (switch-off) supply current
- 0.01μA shutdown mode supply current
- Providing flexibility for using internal power switches
- Output voltage: settable to between 2.5V to 5.5V ,accuracy of 2%

■ Applications

- MP3
- PDA
- DSC
- LCD panel
- RF-Tags
- Portable instrument
- Wireless equipment

■ Package

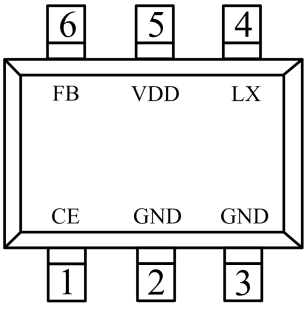
- SOT-23-6L

■ Ordering Information

LN2261P①②③④

Designator	Symbol	Description	Designator	Symbol	Description
①	X	CE with EXT	③	M	SOT-23-6L
	Y	CE without EXT			
②	1	Reference accuracy:±1%	④	R	Embossed Tape :Standard Feed
	2	Reference accuracy:±2%		L	Embossed Tape : Reverse Feed

■ Pin Configuration



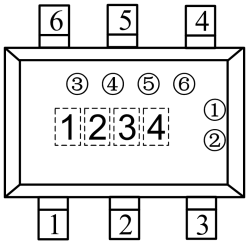
SOT-23-6L
(Top View)

■ Pin Assignment

Pin Number SOT-23-6	Pin Name	Function
1	CE	Chip enable
2	GND	Ground
3	GND	Ground
4	LX	Pin for switching
5	VDD	Input positive power pin of LN2261
6	FB	Feedback input pin

■ Marking Rule

- SOT-23-6L



SOT-23-6L
(Top View)

1 **Represents the product name**

Symbol	Product Name
A	LN2261P****

2 **Represents the type of regulator**

Symbol	A	B
Type	CE with EXT	CE without EXT

3 **Represents the accuracy of reference voltage**

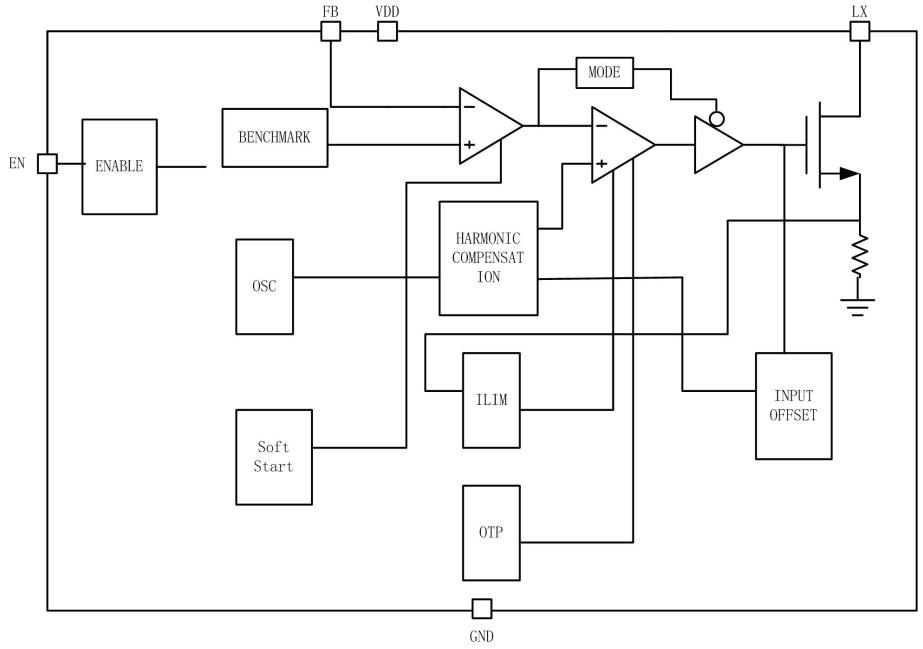
Symbol	Reference Accuracy
1	1%
2	2%

4 **Represents products quality tracking information**

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

Note:①②③④⑤⑥ Representative of code points, which means that production batch.

■ Function Block Diagram

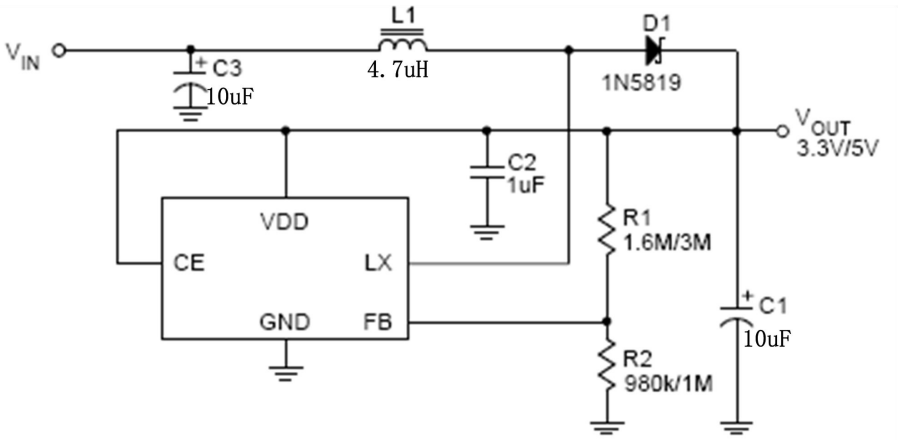


■ Absolute Maximum Ratings

Parameter	Symbol		Maximum Rating	Unit
Input voltage	V_{DD}		Vss-0.3～Vss+7	V
Output voltage	V_{OUT}		Vss-0.3～Vss+7	
	V_{LX}		Vss-0.3～Vss+7	
LX pin Switch Current	I_{LX}		2.2	A
Power dissipation	PD	SOT-23-6	250	mW
Operating ambient temperature	Topr		-40～＋85	℃
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.

■ Typical Application Circuit



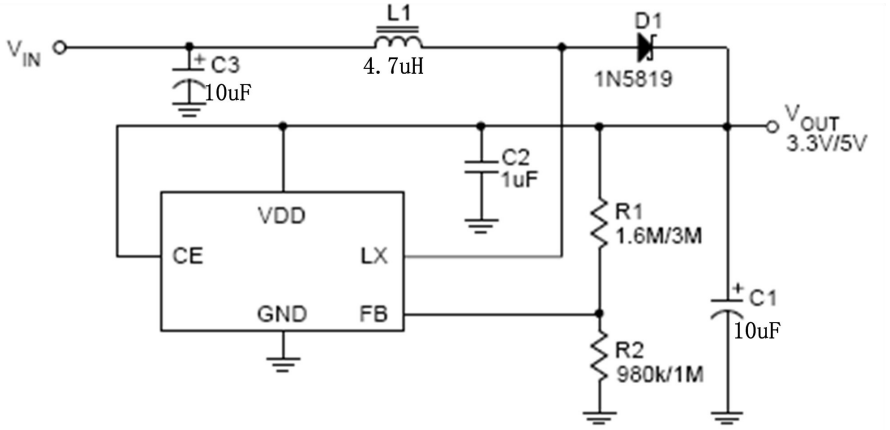
Circuit 1 . LN2261 Typical Application for Portable Instruments

■ Electrical Characteristics

(VIN=3.3V, VDD=5.0V, I_{Load} =0,Ta=25℃, unless otherwise noted)

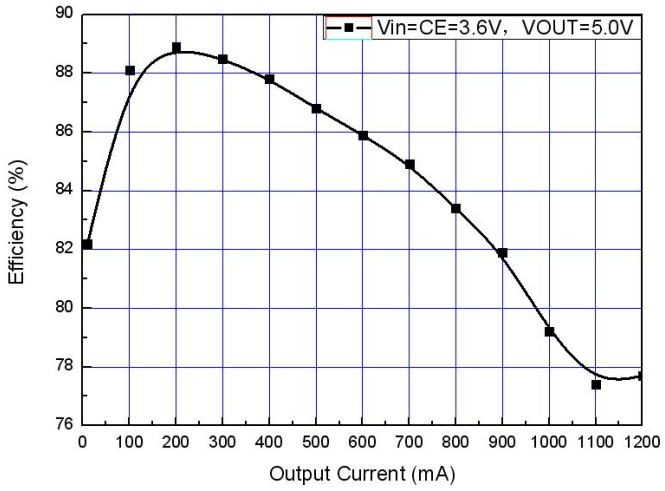
Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Operation start voltage	V_{ST}	I_{OUT}=1mA	2.2			V
VDD supply voltage	V_{DD}	VDD pin voltage	2.5		5.5	
Shut down current	I_{OFF}	CE=0,VIN=4.5V	—	0.01	1	μA
Switch-off Current	Iswitch-off	VIN=6V	—	21	30	μA
Continuous Switching Current	Iswitch	VIN=CE=3.3V,VFB=GND	—	500	—	μA
No load Current	Ino-load	VIN=3.3V,VOUT=5V	—	65	—	μA
Feedback Reference Voltage	Vref	Close Loop Vdd=5V	1.225	1.25	1.275	V
Switching Frequency	Fs	Vdd=5V	900	1000	1100	KHz
Maximum Duty	Dmax	Vdd=5V	78	82	—	%
LX on resistance		Vdd=5V	—	0.2	1.0	Ω
Current Limit Setting	Ilimit	Vdd=5V	2.0	2.2	2,5	A
Line Regulation	ΔVline	Vin=3.5~6V,IL=1mA	—	0.25	5	mV/V
Load Regulation	ΔVload	VIN=2.5V,IL=1~100mA	—	0.5	—	mV/mA
CE pin Trip level		VDD=5V	0.4	0.8	1.2	V
Temperature Stability for Vout	Ts		—	50	—	Ppm/℃
Thermal Shut down Hysterises	ΔTsd		—	10	—	℃

■ Test Circuits

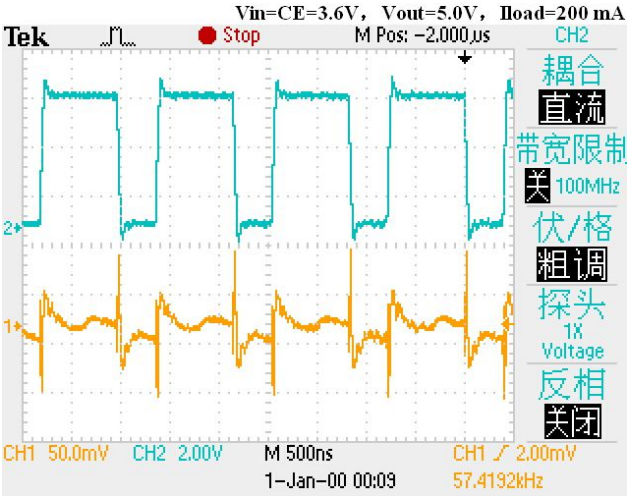


■ Typical Performance Characteristics

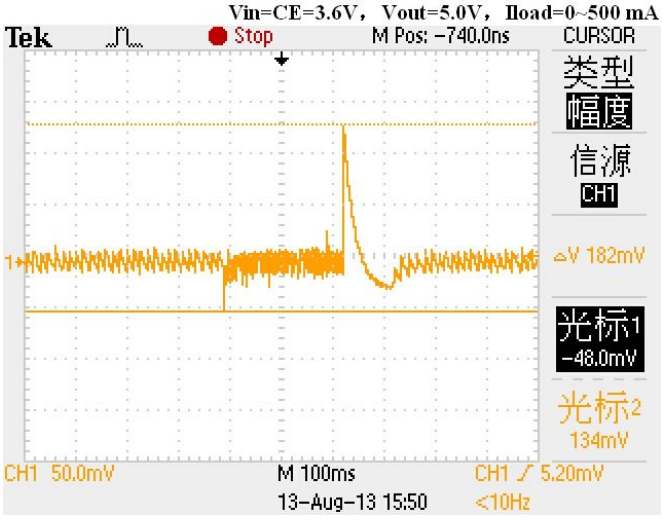
1. Efficiency vs. Output Current



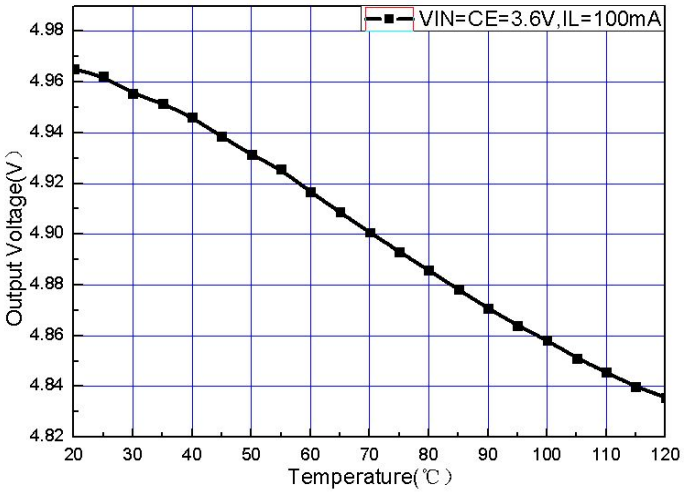
2. LX pin wave form & Output Ripple



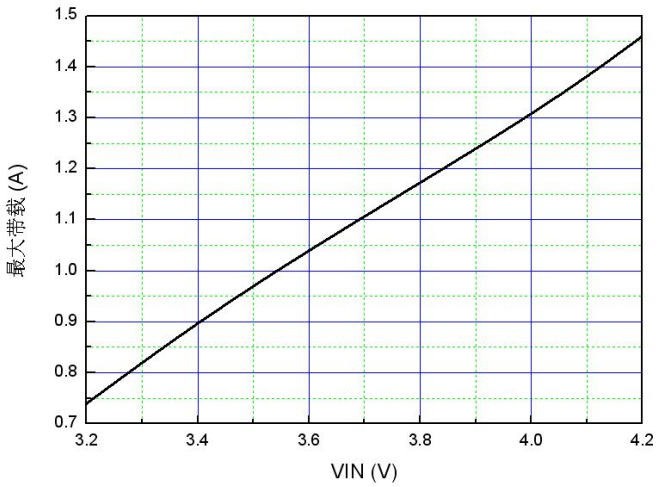
3. Transient Response



4. Output Voltage vs. Temperature

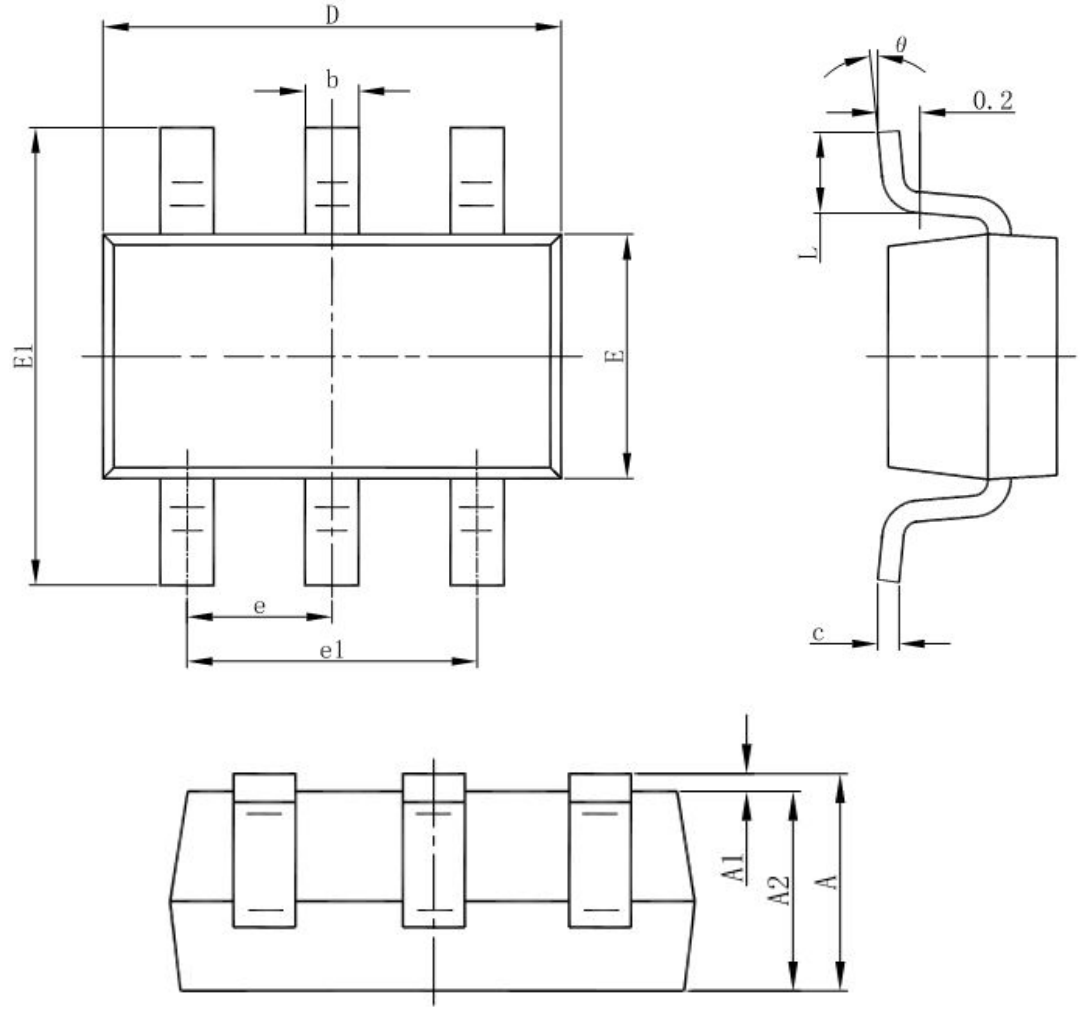


5. VIN VS The Max Output Current (VOUT=5.0V)



■ Package Information

- **SOT-23-6L**



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°