



General Description

The NCP114ASN series is a set of low voltage differential (LDO) converters with a wide voltage input range of 2.0V to 6.0V, low voltage differential, low power consumption, and miniaturized packaging. The output voltage range is 1.2-3.3V, and the NCP114ASN has low static current characteristics as low as 70uA. The circuit also has a CE enable control port, which can put the circuit into sleep mode. It is particularly suitable for battery powered and long-term standby system equipment applications, helping to reduce standby power consumption of system equipment, effectively extending standby time and battery life.

Features

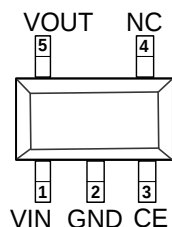
- Low Power Consumption
- Low Voltage Drop
- 1uA Max IQ in Shutdown Mode
- Withstanding Voltage 6V
- Quiescent Current 70uA
- Output Voltage Accuracy: tolerance $\pm 2\%$
- High output current: 300mA

Application

- Battery-powered Equipments
- Communication Equipments
- Audio/Video Equipments

Pin Configuration And Descriptions

SOT-23-5L(TSOP-5-1.5mm)



PIN No.	Name	Functions Description
SOT-23-5L (TSOP-5-1.5mm)		
1	V _{IN}	Input
2	GND	Ground
3	CE	ON/OFF Control
4	NC	No Connect
5	V _{OUT}	Output

Order Information

Orderable Device	Package	Output Voltage	Packing Option
NCP114ASN120T1G	SOT-23-5L (TOSP-5-1.5mm)	1.2V	3000/Reel
NCP114ASN150T1G	SOT-23-5L (TOSP-5-1.5mm)	1.5V	3000/Reel
NCP114ASN180T1G	SOT-23-5L (TOSP-5-1.5mm)	1.8V	3000/Reel
NCP114ASN250T1G	SOT-23-5L (TOSP-5-1.5mm)	2.5V	3000/Reel
NCP114ASN280T1G	SOT-23-5L (TOSP-5-1.5mm)	2.8V	3000/Reel
NCP114ASN300T1G	SOT-23-5L (TOSP-5-1.5mm)	3.0V	3000/Reel
NCP114ASN330T1G	SOT-23-5L (TOSP-5-1.5mm)	3.3V	3000/Reel



Absolute Maximum Ratings

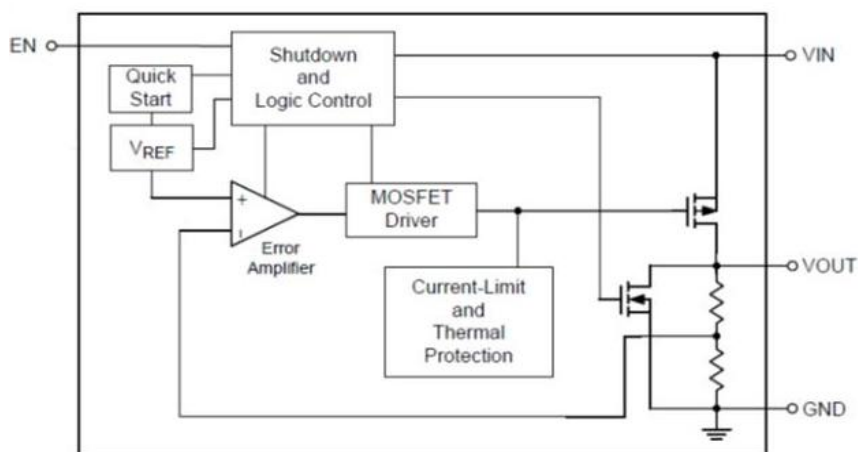
Description	Symbol	Value Range	Unit
Limit Power Voltage	V_{IN}	-0.3~+7	V
Storage Temperature Range	T_{STG}	-50~+125	°C
Operating Free-air Temperature Range	T_A	-40~+85	°C

Note: Stresses greater than those listed under “Absolute Maximum Ratings” 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 under “Recommended Operating Conditions” is not implied. Exposure to “Absolute Maximum Ratings” for extended periods may affect device reliability.

Heat Dissipation

Description	Symbol	Package	Value Range	Unit
Thermal resistance	θ_{JA}	SOT-23-5L (TSOP-5-1.5mm)	500	°C/W
Power dissipation	P_W	SOT-23-5L (TSOP-5-1.5mm)	200	mW

Block Diagram





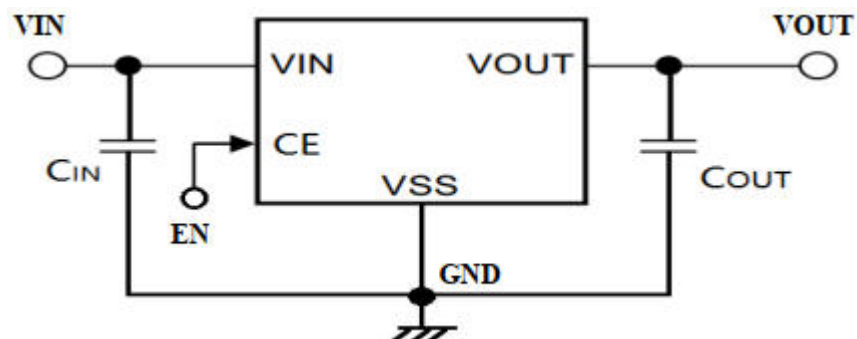
DC Characteristics (unless otherwise noted $T_A = 25^\circ\text{C}$)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Input Voltage	V_{IN}				6.0	V
Output Voltage	V_{OUT}		1.2		3.6	V
Voltage Accuracy		$I_{OUT}=1\text{mA}$	-2		+2	%
Output Current	I_{OUT}	$V_{IN}=V_{OUT}+2.0\text{V}$		300		mA
Load Regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2.0\text{V}$ $1\text{mA} \leq I_{OUT} \leq 100\text{mA}$		100		mV
Line Regulation	$\frac{\Delta V_{OUT}}{V_{OUT} \cdot \Delta V_{IN}}$	$V_{OUT}+1.0\text{V} \leq V_{IN} \leq 18\text{V}$ $I_{OUT}=10\text{mA}$		0.05		%/V
Voltage Drop	V_{DIF}^1	$I_{OUT}=100\text{mA}, V_{OUT}=3.3\text{V}$		90		mV
Quiescent Current	I_{SS}	$V_{CE}=V_{IN}$		70		μA
Standby Current	$I_{STANDBY}$	$V_{CE}=V_{SS}$		1.0		μA
	V_{CEH}		1.1			V
	V_{CEL}				0.4	V
Short-circuit current	I_{SHORT}	$V_{IN}=V_{OUT}+2.0\text{V}$		500		mA
Output noise Resistor	V_{en}	$I_{OUT} = 40\text{mA}$, 300Hz ~ 50kHz		50		μVrms

Note: 1. When $V_{IN}=V_{OUT}+2.0\text{V}$, as the output voltage declined 2%, the $V_{DIF}=V_{IN}-V_{OUT}$.

Application Circuit

Basic Circuits



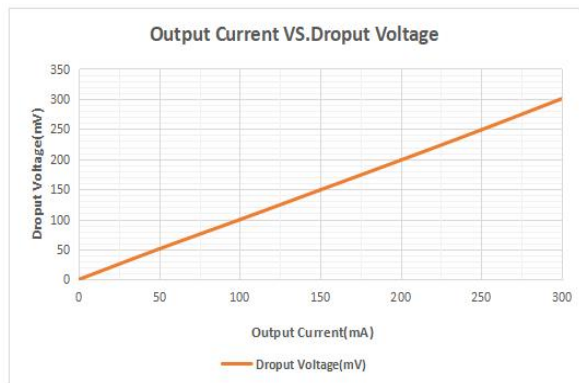
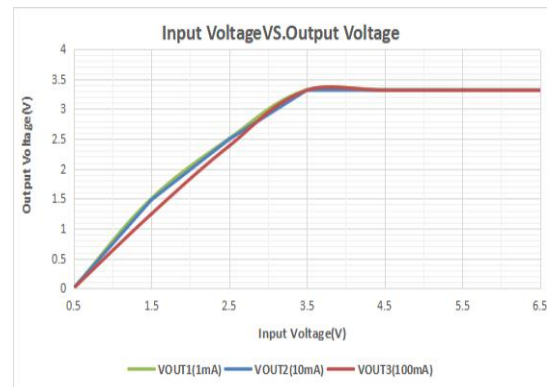
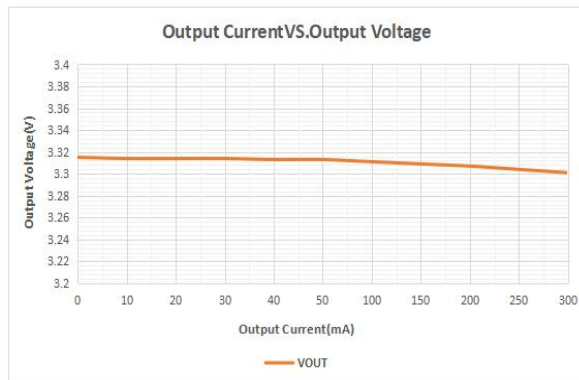
1. C_{IN} is used to stabilize the input capacitor.
2. C_{IN} eramic capacitors greater than or equal to 1pF can be used for C_{OUT} .



Function Description

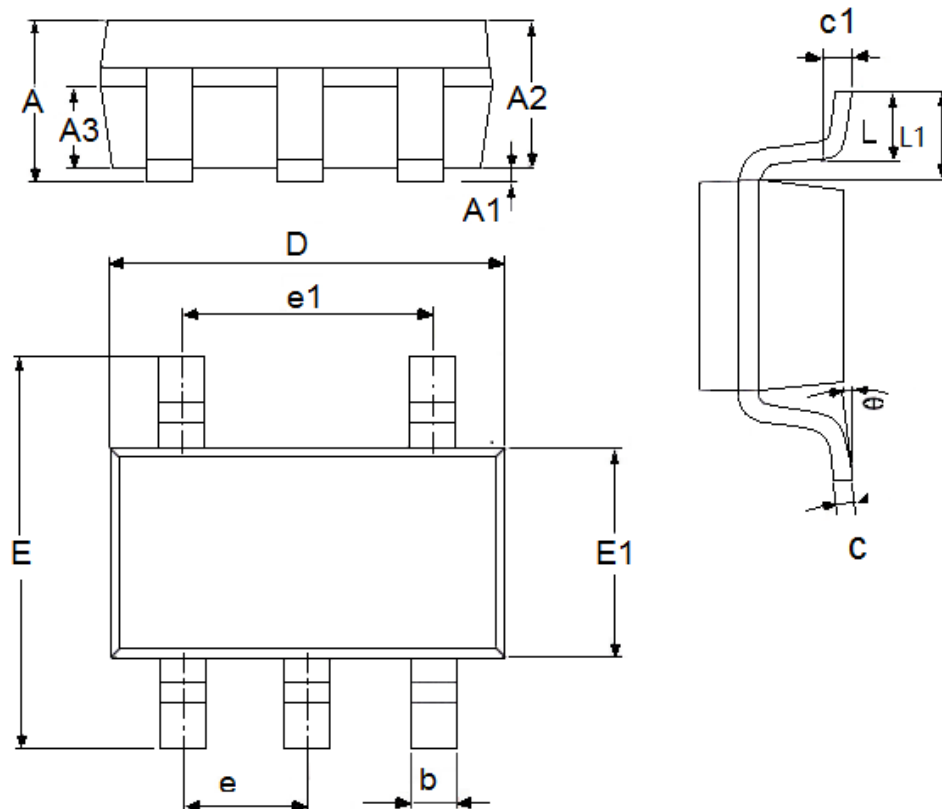
NCP114ASN series are linear voltage regulator ICs withstanding 6.0V voltage. The series IC consists of a voltage reference, an error amplifier, a current limiter and a phase compensation circuit plus a driver transistor. The output stabilization capacitor is also compatible with low ESR ceramic capacitors. The over current protection circuit and the over voltage protection circuit are built-in. The protection circuit will operate when the output current or input voltage reaches limit level.

Typical Characteristics





Package Outline Dimensions
SOT-23-5L(TSOP-5-1.5mm)



Symbol	Dimensions in Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.05	1.45	0.0413	0.0571
A1	0	0.15	0.0000	0.0059
A2	0.9	1.3	0.0354	0.0512
A3	0.6	0.7	0.0236	0.0276
b	0.25	0.5	0.0098	0.0197
c	0.1	0.23	0.0039	0.0091
D	2.82	3.05	0.1110	0.1201
e1	1.9(TYP)		0.0748(TYP)	
E	2.6	3.05	0.1024	0.1201
E1	1.5	1.75	0.0512	0.0689
e	0.95(TYP)		0.0374(TYP)	
L	0.25	0.6	0.0098	0.0236
L1	0.59(TYP)		0.0232(TYP)	
θ	0	8°	0.0000	8°
c1	0.2(TYP)		0.0079(TYP)	



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