

## NCV4264 LOW DROPOUT LINEAR REGULATOR

### GENERAL DESCRIPTION

NCV4264 series are a set of Low Dropout Linear Regulator ICs implemented in CMOS technology. They can withstand voltage 45V. And they are available with low voltage drop and low quiescent current, widely used in audio, video and communication appliances.

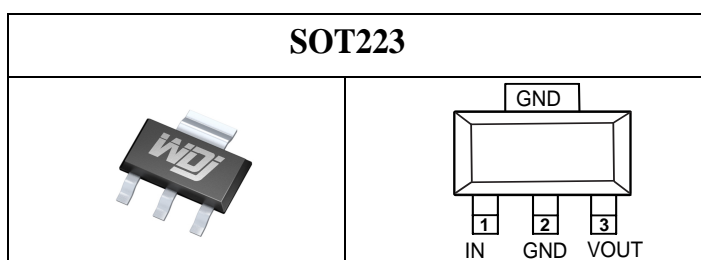
### FEATURES

- Low Power Consumption
- Low Voltage Drop
- Low Temperature Coefficient
- Withstanding Voltage 45V
- Quiescent Current 2.0 $\mu$ A
- Output Voltage Accuracy: tolerance  $\pm 2\%$
- High output current: 100mA
- Temperature exceeds 110 °C output current decreases

### TYPICAL APPLICATIONS

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

### PIN CONFIGURATION



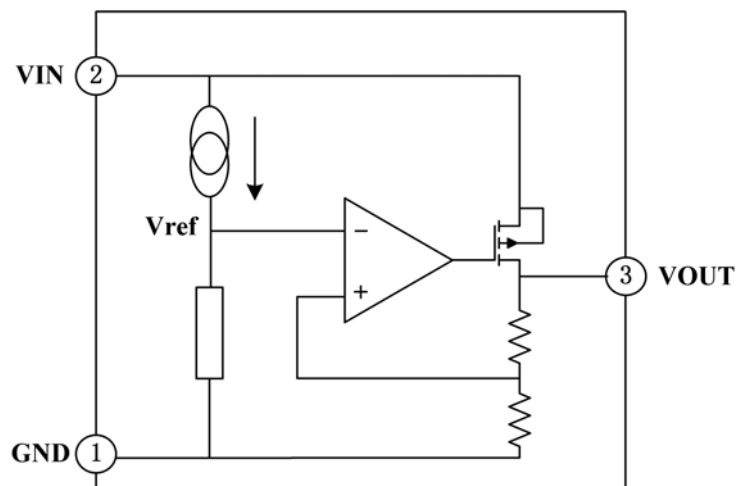
### PIN DESCRIPTION

No.	Name	Functions Description
2	GND	ground
1	V <sub>IN</sub>	input
3	V <sub>OUT</sub>	output

## ORDERING INFORMATION

Orderable Device	Package Type	Marking	Eco Plan	Package Qty
NCV4264-2ST33T3GW	<b>SOT223</b>	V6423	RoHS & Green	2500
NCV4264-2ST50T3GW	<b>SOT223</b>	V6425	RoHS & Green	2500

## FUNCTIONAL BLOCK DIAGRAM



## ABSOLUTE MAXIMUM RATINGS

Description	Symbol	Value range	Unit
Limit Power Voltage	$V_{IN}$	$-0.3 \sim +45$	V
Storage Temperature Range	$T_{STG}$	$-50 \sim +125$	°C
Operating Free-air Temperature Range	$T_A$	$-40 \sim +85$	°C

**Note :** Stresses greater than 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 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	$\theta_{JA}$	SOT223	150	°C/W
Power dissipation	$P_D$	SOT223	600	mW

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

### Series NCV4264-2ST33T3GW

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Voltage	$V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$ , $I_{OUT}=10\text{mA}$	3.234	3.30	3.366	V
Output Current	$I_{OUT}$	$V_{IN}=V_{OUT}+2.0V$	70	100	—	mA
Load Regulation	$\Delta V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$ $1\text{mA} \leq I_{OUT} \leq 100\text{mA}$	—	—	40	mV
Voltage Drop	$V_{DIF}$	$I_{OUT}=1\text{mA}$ , $\Delta V_{OUT}=2\%$	—	—	55	mV
Quiescent Current	$I_{SS}$	No Load	—	2.0	3.0	$\mu\text{A}$
Line Regulation	$\frac{\Delta V_{OUT}}{V_{OUT}} \cdot \frac{\Delta V_{IN}}{\Delta V_{IN}}$	$V_{OUT}+1.0V \leq V_{IN} \leq 45V$ , $I_{OUT}=1\text{mA}$	—	—	0.2	%/V
Input Voltage	$V_{IN}$	—	—	—	45	V
Temperature Coefficient	$\frac{\Delta V_{OUT}}{\Delta T_A} \cdot V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$ , $I_{OUT}=10\text{mA}$ , $-40^\circ\text{C} \leq T_A \leq 85^\circ\text{C}$	—	100	—	ppm/ $^\circ\text{C}$

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

### Series NCV4264-2ST50T3GW

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Voltage	$V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$ , $I_{OUT}=10\text{mA}$	4.9	5.0	5.1	V
Output Current	$I_{OUT}$	$V_{IN}=V_{OUT}+2.0V$	100	150	—	mA
Load Regulation	$\Delta V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$ $1\text{mA} \leq I_{OUT} \leq 100\text{mA}$	—	—	40	mV
Voltage Drop	$V_{DIF}$	$I_{OUT}=1\text{mA}$ , $\Delta V_{OUT}=2\%$	—	—	55	mV
Quiescent Current	$I_{SS}$	No Load	—	2.0	3.0	$\mu\text{A}$
Line Regulation	$\frac{\Delta V_{OUT}}{V_{OUT}} \cdot \frac{\Delta V_{IN}}{\Delta V_{IN}}$	$V_{OUT}+1.0V \leq V_{IN} \leq 45V$ , $I_{OUT}=1\text{mA}$	—	—	0.2	%/V
Input Voltage	$V_{IN}$	—	—	—	45	V
Temperature Coefficient	$\frac{\Delta V_{OUT}}{\Delta T_A} \cdot V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$ , $I_{OUT}=10\text{mA}$ , $-40^\circ\text{C} \leq T_A \leq 85^\circ\text{C}$	—	100	—	ppm/ $^\circ\text{C}$

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

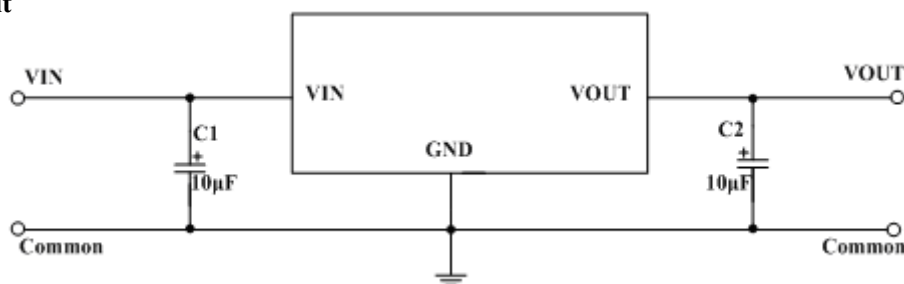
## FUNCTIONAL DESCRIPTION

NCV4264 series are linear voltage regulator ICs withstanding 45V 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.

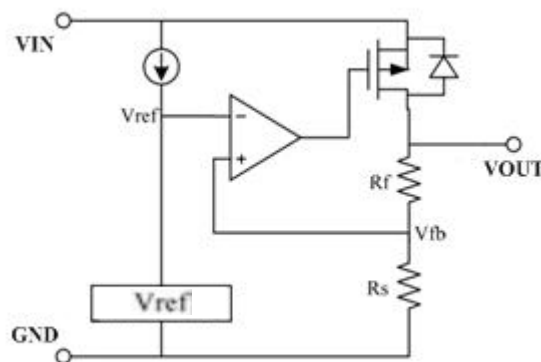
## TYPICAL APPLICATION CIRCUIT

### Basic Circuit



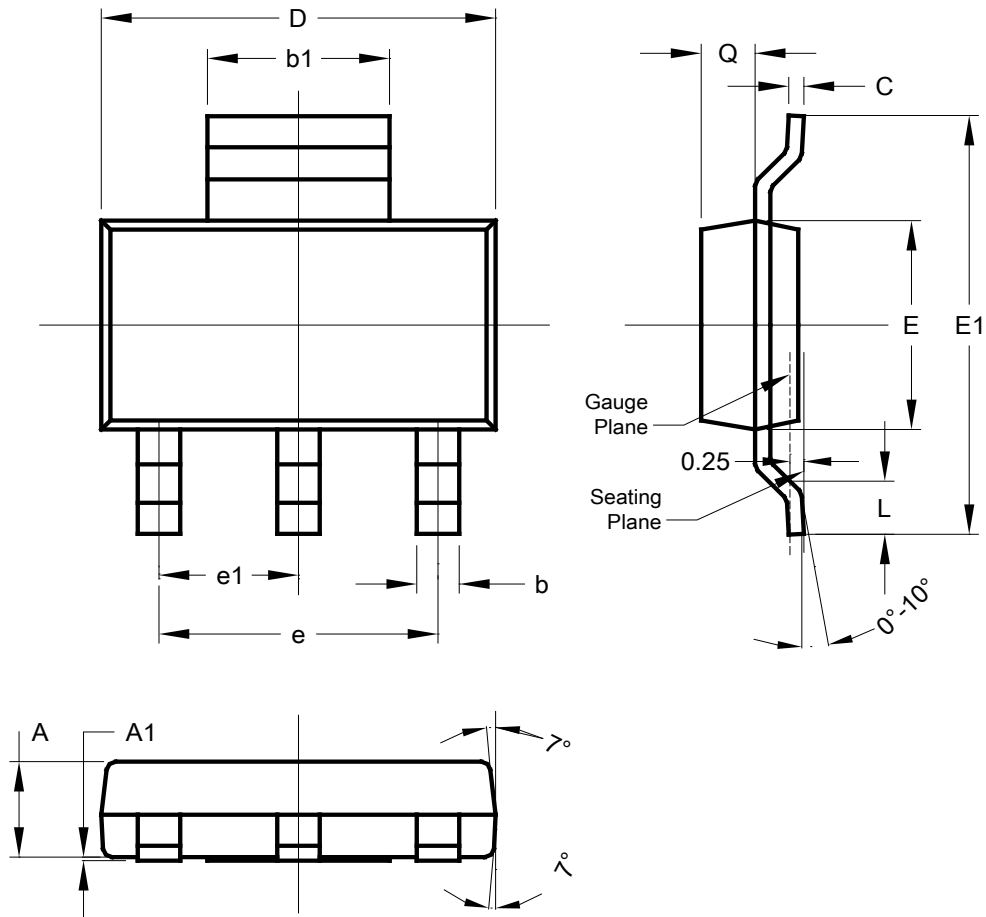
## APPLICATION DESCRIPTION

The error amplifier compares the input voltage of the divider resistor composed of feedback resistors  $R_s$  and  $R_f$  with the reference voltage  $V_{ref}$ , and provides the necessary gate voltage to the output transistor through this error amplifier, so that the output voltage is not affected by input voltage or temperature changes and remains constant.



1. When applying, try to connect the capacitor near the VIN and VOUT pins.
2. A phase compensation circuit is used inside the circuit and the ESR of the output capacitor is used for compensation. Therefore, the output to ground must be connected to a capacitor 2.2µF, larger than , and tantalum capacitors are recommended.
3. Pay attention to the usage conditions of input and output voltage and load current to avoid the power consumption inside the IC exceeding the maximum power consumption allowed by the package.

## SOT223



SOT223			
Dim	Min	Max	Typ
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b	0.60	0.80	0.70
b1	2.90	3.10	3.00
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	-	-	4.60
e1	-	-	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89
All Dimensions in mm			

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