NCV8664 LOW DROPOUT LINEAR REGULATOR

GENERAL DESCRIPTION

NCV8664 series are a set of Low Dropout Linear Regulator ICs implemented in CMOS technology.They can withstand voltage 36V. And they are available with low voltage drop and low quiescent current, widely used in audio, video and communication appliances.

FEATURES

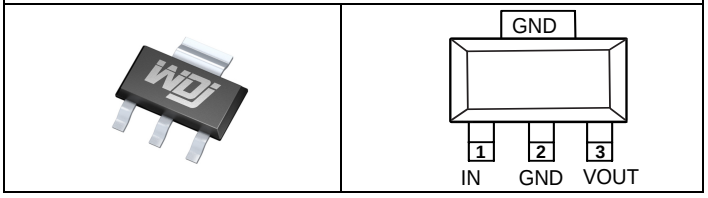
- Low Power Consumption
- Low Voltage Drop
- Low Temperature Coefficient
- Withstanding Voltage 36V
- Quiescent Current 2.0μA
- Output Voltage Accuracy: tolerance ±2%
- High output current: 150mA
- Temperature exceeds 110 ° C output current decreases

TYPICAL APPLICATIONS

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

PIN CONFIGURATION

SOT223



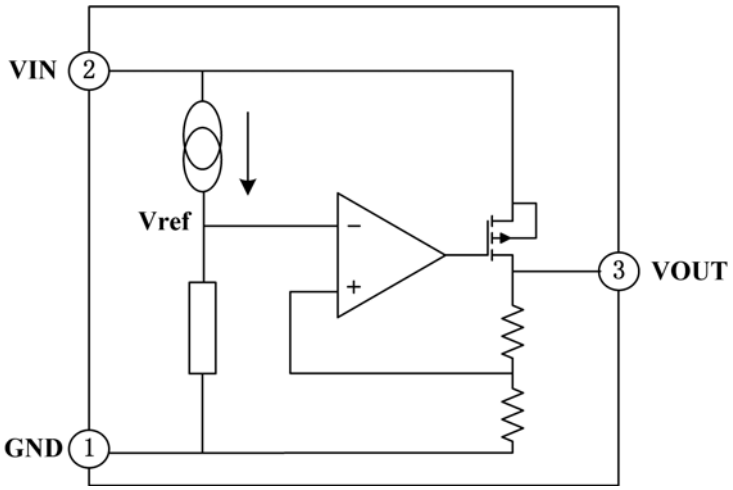
PIN DESCRIPTION

No.	Name	Functions Description
1	V_{IN}	input
2	GND	ground
3	V_{OUT}	output

ORDERING INFORMATION

Orderable Device	Package Type	Marking	Eco Plan	Package Qty
NCV8664ST33T3GW	**SOT223**	V6643	RoHS & Green	2500
NCV8664ST50T3GW	**SOT223**	V6645	RoHS & Green	2500

FUNCTIONAL BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Description	Symbol	Value range	Unit
Limit Power Voltage	V_{IN}	−0.3～+38	V
Storage Temperature Range	T_{STG}	−50～+125	℃
Operating Free-air Temperature Range	T_A	−40～+85	℃

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	θ_{JA}	SOT223	150	℃/W
Power dissipation	P_D	SOT223	600	mW

DC CHARACTERISTICS (unless otherwise noted T_A =＋25°C)

Series NCV8664-33T3G

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Voltage	V_{OUT}	V_{IN}=V_{OUT}+2.0V， I_{OUT}=10mA	3.234	3.30	3.366	V
Output Current	I_{OUT}	V_{IN}=V_{OUT}+2.0V	100	150	—	mA
Load Regulation	ΔV_{OUT}	V_{IN}=V_{OUT}+2.0V 1mA≤I_{OUT}≤100mA	—	—	40	mV
Voltage Drop	V_{DIF}	I_{OUT}=1mA，$\triangle V_{OUT}$=2%	—	—	55	mV
Quiescent Current	I_{SS}	No Load	—	2.0	3.0	μA
Line Regulation	$\triangle V_{OUT}$/ V_{OUT}* $\triangle V_{IN}$	V_{OUT}+1.0V≤V_{IN}≤36V， I_{OUT}=1mA	—	—	0.2	%/V
Input Voltage	V_{IN}	—	—	—	36	V
Temperature Coefficient	$\triangle V_{OUT}$/ $\triangle T_A$*V_{OUT}	V_{IN}= V_{OUT}+2.0V， I_{OUT}=10mA， -40℃≤T_A≤85℃	—	100	—	ppm/℃

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

Series NCV8664-50T3G

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Voltage	V_{OUT}	V_{IN}=V_{OUT}+2.0V ， I_{OUT}=10mA	4.9	5.0	5.1	V
Output Current	I_{OUT}	V_{IN}=V_{OUT}+2.0V	100	150	—	mA
Load Regulation	$\triangle V_{OUT}$	V_{IN}=V_{OUT}+2.0V 1mA≤I_{OUT}≤100mA	—	—	40	mV
Voltage Drop	V_{DIF}	I_{OUT}=1mA，$\triangle V_{OUT}$=2%	—	—	55	mV
Quiescent Current	I_{SS}	No Load	—	2.0	3.0	μA
Line Regulation	$\triangle V_{OUT}$/ V_{OUT}* $\triangle V_{IN}$	V_{OUT}+1.0 V≤V_{IN}≤36V， I_{OUT}=1mA	—	—	0.2	%/V
Input Voltage	V_{IN}	—	—	—	36	V
Temperature Coefficient	$\triangle V_{OUT}$/ $\triangle T_A$*V_{OUT}	V_{IN}= V_{OUT}+2.0V， I_{OUT}=10mA， -40℃≤T_A≤85℃	—	100	—	ppm/℃

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

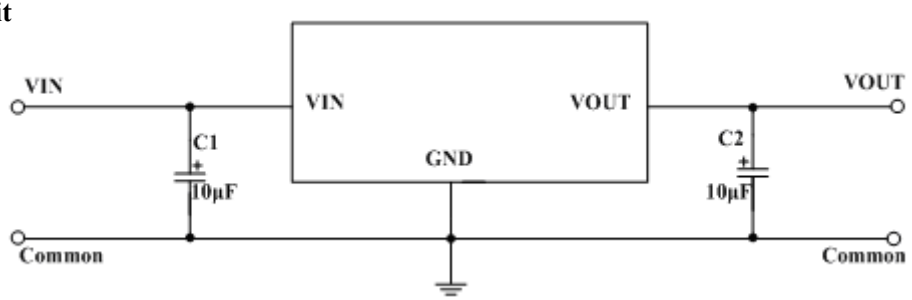
FUNCTIONAL DESCRIPTION

NCV8664 series are linear voltage regulator ICs withstanding 36V 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.

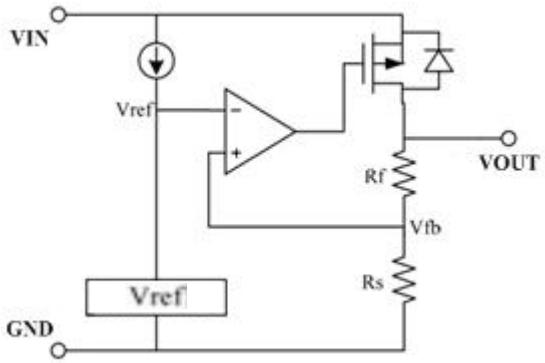
TYPICAL APPLICATION CIRCUIT

Basic Circuit



APPLICATION DESCRIPTION

The error amplifier compares the input voltage of the divider resistor composed of feedback resistors Rs and Rf with the reference voltage vref, 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 capacitor2.2uF , 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.

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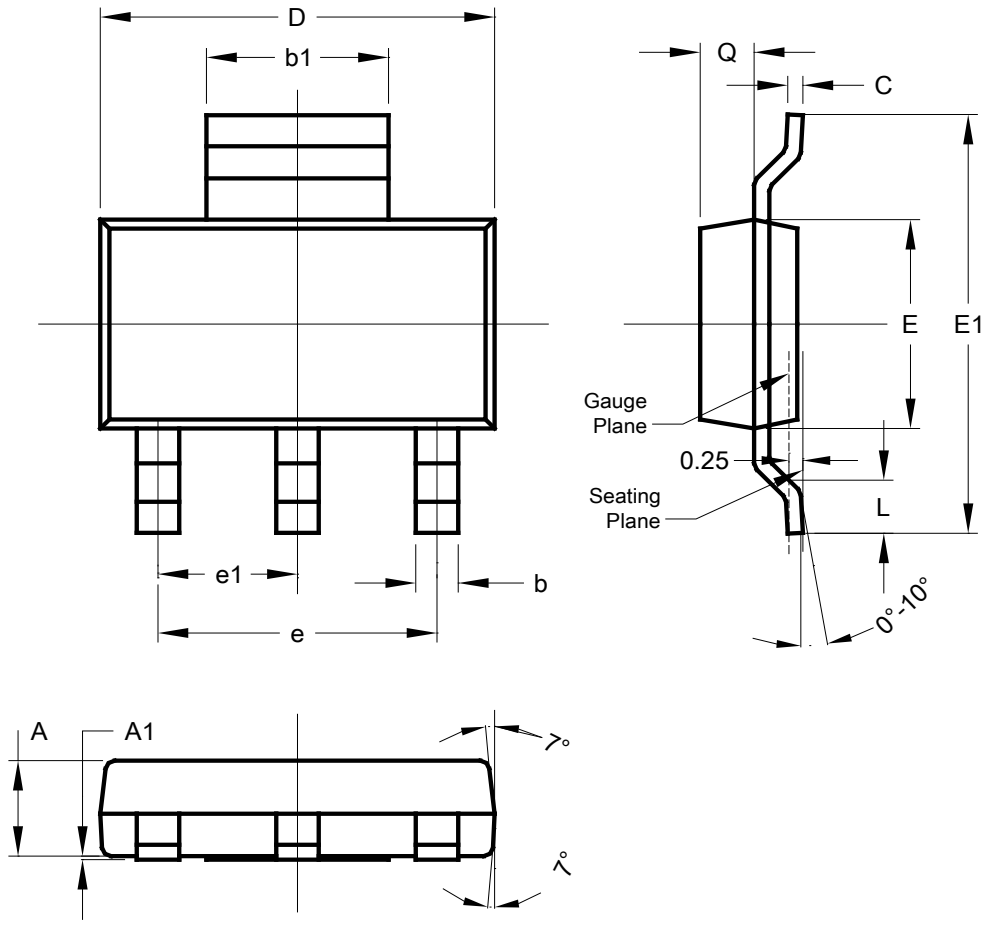

SOT223			
Dim	**Min**	**Max**	**Typ**
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b	0.60	0.80	0.70
b1	2.90	3.10	3.00
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	-	-	4.60
e1	-	-	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89
All Dimensions in mm			

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