

C-MOS 3-TERMINAL NEGATIVE VOLTAGE REGULATOR

■ GENERAL DESCRIPTION

The **NJU7211 series** is a C-MOS 3-terminal negative voltage regulator which contains internal precision voltage reference, error amplifier, control transistor and output voltage setting resistor.

The regulation voltage is fixed by internal circuits and the following line-up of different output voltage versions are available.

The **NJU7211 series** is suitable for battery operated items and battery back-up systems because of low operating current and low dropout voltage.

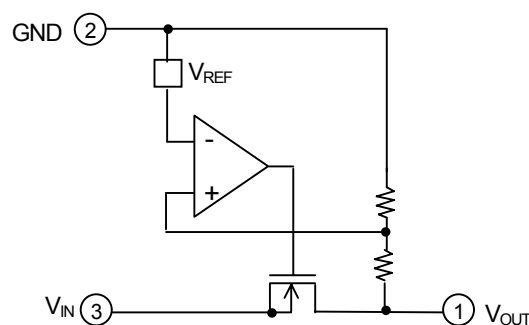
■ FEATURES

- Low Operating Current (19 μ A typ.)
- Wide Operating Voltage Range
- Low Dropout Voltage
 - ($\Delta V_{IO} < 0.6V$ -3.0V output, $I_{OUT} = 20mA$)
 - ($\Delta V_{IO} < 0.6V$ -5.0V output, $I_{OUT} = 40mA$)
- Small Temperature Coefficient of Output Voltage
- Package Outline (SOT-89)
- C-MOS Technology

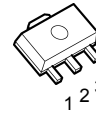
■ OUTPUT VOLTAGE LINE-UP

| Output Voltage | SOT-89 Type |
|----------------|-------------|
| -2.0V | NJU7211U20 |
| -3.0V | NJU7211U30 |
| -4.0V | NJU7211U40 |
| -5.0V | NJU7211U50 |

■ EQUIVALENT CIRCUIT



■ PACKAGE OUTLINE



NJU7221U (SOT-89)

■ TERMINAL DESCRIPTION

| No. | Description |
|-----|-------------|
| 1 | Output |
| 2 | GND |
| 3 | Input |

NJU7211 Series

■ ABSOLUTE MAXIMUM RATINGS

($T_a = 25^\circ\text{C}$)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|------------------------------|------------|------------------------------|------------------|
| Input Voltage | V_{IN} | -14 | V |
| Output Voltage | V_{OUT} | GND+0.3 to V_{IN} -0.3 | V |
| Output Current | I_{OUT} | 100 | mA |
| Power Dissipation | P_D | 300 (SOT-89) | mW |
| Operating Temperature | T_{opr} | -25 to +75 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | -40 to +125 | $^\circ\text{C}$ |
| Soldering Temperature / Time | T_{sold} | 260 $^\circ\text{C}$ /10 sec | - |

■ ELECTRICAL CHARACTERISTICS

-2.0V Version

($C_{IN} = C_o = 0.1\mu\text{F}$, $T_a = 25^\circ\text{C}$)

| PARAMETER | SYMBOL | CONDITION | MIN. | TYP. | MAX. | UNIT |
|-------------------|--|---|-------|-------|-------|---------------|
| Output Voltage | V_{OUT} | $V_{IN} = -4.0\text{V}$, $I_{OUT} = 10\text{mA}$ | -2.10 | -2.00 | -1.90 | V |
| Dropout Voltage | ΔV_{IO} | $I_{OUT} = 20\text{mA}$ | - | 0.2 | 0.6 | V |
| Input Voltage | V_{IN} | | -12 | - | - | V |
| Operating Current | I_Q | $V_{IN} = -4.0\text{V}$ | - | 19 | 30 | μA |
| Load Regulation | $\Delta V_{OUT} / \Delta I_{OUT}$ | $V_{IN} = -4.0\text{V}$, $I_{OUT} = 1\sim 20\text{mA}$ | - | - | 120 | mV |
| Line Regulation | $\Delta V_{OUT} / (\Delta V_{IN} \cdot V_{OUT})$ | $V_{IN} = -3.0 \sim -12\text{V}$ | - | 0.1 | - | %/V |

-3.0V Version

($C_{IN} = C_o = 0.1\mu\text{F}$, $T_a = 25^\circ\text{C}$)

| PARAMETER | SYMBOL | CONDITION | MIN. | TYP. | MAX. | UNIT |
|-------------------|--|---|-------|-------|-------|---------------|
| Output Voltage | V_{OUT} | $V_{IN} = -5.0\text{V}$, $I_{OUT} = 10\text{mA}$ | -3.15 | -3.00 | -2.85 | V |
| Dropout Voltage | ΔV_{IO} | $I_{OUT} = 20\text{mA}$ | - | 0.2 | 0.6 | V |
| Input Voltage | V_{IN} | | -12 | - | - | V |
| Operating Current | I_Q | $V_{IN} = -5.0\text{V}$ | - | 19 | 30 | μA |
| Load Regulation | $\Delta V_{OUT} / \Delta I_{OUT}$ | $V_{IN} = -5.0\text{V}$, $I_{OUT} = 1\sim 20\text{mA}$ | - | 80 | 120 | mV |
| Line Regulation | $\Delta V_{OUT} / (\Delta V_{IN} \cdot V_{OUT})$ | $V_{IN} = -4.0 \sim -12\text{V}$ | - | 0.1 | - | %/V |

-4.0V Version

($C_{IN} = C_o = 0.1\mu\text{F}$, $T_a = 25^\circ\text{C}$)

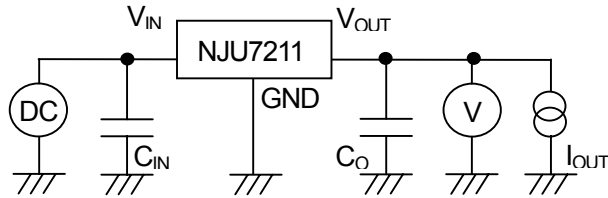
| PARAMETER | SYMBOL | CONDITION | MIN. | TYP. | MAX. | UNIT |
|-------------------|--|---|-------|-------|-------|---------------|
| Output Voltage | V_{OUT} | $V_{IN} = -6.0\text{V}$, $I_{OUT} = 30\text{mA}$ | -5.25 | -5.00 | -4.75 | V |
| Dropout Voltage | ΔV_{IO} | $I_{OUT} = 40\text{mA}$ | - | 0.3 | 0.6 | V |
| Input Voltage | V_{IN} | | -12 | - | - | V |
| Operating Current | I_Q | $V_{IN} = -6.0\text{V}$ | - | 19 | 30 | μA |
| Load Regulation | $\Delta V_{OUT} / \Delta I_{OUT}$ | $V_{IN} = -6.0\text{V}$, $I_{OUT} = 1\sim 40\text{mA}$ | - | - | 120 | mV |
| Line Regulation | $\Delta V_{OUT} / (\Delta V_{IN} \cdot V_{OUT})$ | $V_{IN} = -5.0 \sim -12\text{V}$ | - | 0.1 | - | %/V |

-5.0V Version

($C_{IN} = C_o = 0.1\mu\text{F}$, $T_a = 25^\circ\text{C}$)

| PARAMETER | SYMBOL | CONDITION | MIN. | TYP. | MAX. | UNIT |
|-------------------|--|---|-------|-------|-------|---------------|
| Output Voltage | V_{OUT} | $V_{IN} = -7.0\text{V}$, $I_{OUT} = 30\text{mA}$ | -5.25 | -5.00 | -4.75 | V |
| Dropout Voltage | ΔV_{IO} | $I_{OUT} = 40\text{mA}$ | - | 0.3 | 0.6 | V |
| Input Voltage | V_{IN} | | -12 | - | - | V |
| Operating Current | I_Q | $V_{IN} = -7.0\text{V}$ | - | 19 | 30 | μA |
| Load Regulation | $\Delta V_{OUT} / \Delta I_{OUT}$ | $V_{IN} = -7.0\text{V}$, $I_{OUT} = 1\sim 40\text{mA}$ | - | 80 | 120 | mV |
| Line Regulation | $\Delta V_{OUT} / (\Delta V_{IN} \cdot V_{OUT})$ | $V_{IN} = -6.0 \sim -12\text{V}$ | - | 0.1 | - | %/V |

■ MEASUREMENT CIRCUIT



[CAUTION]

The specifications on this databook are only given for information, without any guarantee as regards either mistakes or omissions. The application circuits in this databook are described only to show representative usages of the product and not intended for the guarantee or permission of any right including the industrial rights.

AMEYA360

Components Supply Platform

Authorized Distribution Brand :



Website :

Welcome to visit www.ameya360.com

Contact Us :

➤ Address :

401 Building No.5, JiuGe Business Center, Lane 2301, Yishan Rd
Minhang District, Shanghai , China

➤ Sales :

Direct +86 (21) 6401-6692

Email amall@ameya360.com

QQ 800077892

Skype [ameyasales1](#) [ameyasales2](#)

➤ Customer Service :

Email service@ameya360.com

➤ Partnership :

Tel +86 (21) 64016692-8333

Email mkt@ameya360.com