

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.

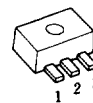
The regulation voltage is fixed by internal circuits and the following line-up of different output voltages version are available.

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

■ PACKAGE OUTLINE



NJU7211L



NJU7211U

■ FEATURES

- Low Operating Current (19 μ A typ)
- Wide Operating Voltage
- 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 TO-92/SOT-89
- C-MOS Technology

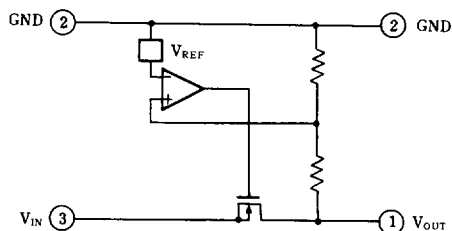
■ TERMINAL DESCRIPTION

NO	DESCRIPTION
1	OUTPUT
2	GND
3	INPUT

■ OUTPUT VOLTAGE LINE-UP

OUTPUT VOLTAGE	TO-92 TYPE	SOT-89 TYPE
$-3.0V$	7211L30	7211U30
$-5.0V$	7211L50	7211U50

■ EQUIVALENT CIRCUIT





■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V _{IN}	- 14	V
Output Voltage	V _{OUT}	GND+0.3 ~ V _{IN} -0.3	V
Output Current	I _{OUT}	100	mA
Power Dissipation	P _D	(TO-92) 500 (SOT-89) 300	mW
Operating Temperature Range	T _{opr}	-25 ~ +75	°C
Storage Temperature Range	T _{stg}	-40 ~ +125	°C
Soldering Temperature	T _{sold}	260	°C
Soldering Time	t _{sold}	10	sec

■ ELECTRICAL CHARACTERISTICS

● - 2.0V VERSION

(C_{IN}=C_O=0.1 μF, Ta=25°C)

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V _{OUT}	V _{IN} =-4.0V, I _{OUT} =10mA	-2.10	-2.00	-1.90	V
Dropout Voltage	ΔV _{IO}	I _{OUT} =20mA		0.2	0.6	V
Input Voltage	V _{IN}		-12			V
Operating Current	I _Q	V _{IN} =-4.0V		19	30	μA
Load Regulation	ΔV _{OUT} / ΔI _{OUT}	V _{IN} =-4.0V, I _{OUT} =1 ~ 20mA		80	120	mA
Line Regulation	ΔV _{OUT} / (ΔV _{IN} · V _{OUT})	V _{IN} =-3.0 ~ 12V		0.1		%/V

● - 3.0V VERSION

(C_{IN}=C_O=0.1 μF, Ta=25°C)

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V _{OUT}	V _{IN} =-5.0V, I _{OUT} =10mA	-3.15	-3.0	-2.85	V
Dropout Voltage	ΔV _{IO}	I _{OUT} =20mA		0.2	0.6	V
Input Voltage	V _{IN}		-12			V
Operating Current	I _Q	V _{IN} =-5.0V		19	30	μA
Load Regulation	ΔV _{OUT} / ΔI _{OUT}	V _{IN} =-5.0V, I _{OUT} =1 ~ 20mA		80	120	mV
Line Regulation	ΔV _{OUT} / (ΔV _{IN} · V _{OUT})	V _{IN} =-4 ~ 12V		0.1		%/V

● - 4.0V VERSION

(C_{IN}=C_O=0.1 μF, Ta=25°C)

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V _{OUT}	V _{IN} =-6V, I _{OUT} =30mA	-4.20	-4.00	-3.80	V
Dropout Voltage	ΔV _{IO}	I _{OUT} =40mA		0.3	0.6	V
Input Voltage	V _{IN}		-12			V
Operating Current	I _Q	V _{IN} =-6.0V		19	30	μA
Load Regulation	ΔV _{OUT} / ΔI _{OUT}	V _{IN} =-6.0V, I _{OUT} =1 ~ 40mA		80	120	mV
Line Regulation	ΔV _{OUT} / (ΔV _{IN} · V _{OUT})	V _{IN} =-5.0 ~ 12V		0.1		%/V



• — 5.0V VERSION

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

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT}	$V_{IN}=-7V$, $I_{OUT}=30mA$	-5.25	-5.0	-4.75	V
Dropout Voltage	ΔV_{IO}	$I_{OUT}=40mA$		0.3	0.6	V
Input Voltage	V_{IN}		-12			V
Operating Current	I_Q	$V_{IN}=-7V$		19	30	μA
Load Regulation	$\Delta V_{OUT} / \Delta I_{OUT}$	$V_{IN}=-7V$, $I_{OUT}=1\sim 40mA$		80	120	mV
Line Regulation	$\Delta V_{OUT} / (\Delta V_{IN} \cdot V_{OUT})$	$V_{IN}=-6\sim 12V$		0.1		%/V

■ MEASUREMENT CIRCUIT

