

High-Precision LDO 60mA C-MOS Voltage Regulator with Standby

■ GENERAL DESCRIPTION

The NJU7241 series are high precision $\pm 2\%$, 60mA output, C-MOS voltage regulators with standby function, which contains internal accurate voltage reference, error amplifier, control transistor, output voltage setting resistor, short current protection circuit and standby circuit.

The fixed regulation voltages of internal circuits are as following line-up.

The NJU7241 series packed MTP5 and suitable for battery-operated items, battery back-up systems, and especially control block of cellular phone system because of low operating current and low dropout voltage.

■ PACKAGE OUTLINE



NJU7241F

■ FEATURES

- High Precision Output Voltage $\pm 2\%$
- Low Operating Current $20\mu\text{A typ.}$
- Low Standby Current $0.1\mu\text{A typ.}$
- Low Dropout Voltage $0.2\text{V typ. } V_{\text{OUT}}=3\text{V}$
- Ripple Rejection $55\text{dB typ. @}1\text{kHz}$
- Standby Function
- Small Temperature Coefficient of Output Voltage
- Wide Operating Voltage Range
- Package Outline MTP-5
- C-MOS Technology

■ OUTPUT VOLTAGE LINE-UP

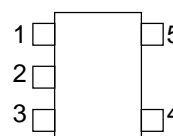
| Output Voltage | Type | Output Voltage | Type |
|----------------|-------------|----------------|------------|
| 1.8V | NJU7241F18 | 3.4V | NJU7250F34 |
| 2.4V | NJU7241F24 | 3.5V | NJU7241F35 |
| 2.5V | NJU7241F25 | 3.6V | NJU7241F36 |
| 2.55V | NJU7241F255 | 4.0V | NJU7241F40 |
| 2.8V | NJU7241F28 | 4.5V | NJU7241F45 |
| 2.85V | NJU7241F285 | 5.0V | NJU7241F50 |
| 2.9V | NJU7241F29 | 5.9V | NJU7241F59 |
| 3.0V | NJU7241F30 | 6.0V | NJU7241F60 |
| 3.3V | NJU7250F33 | - | - |

Planning Voltage: 2.4V, 3.5V, 3.6V, 4.0V and 6.0V

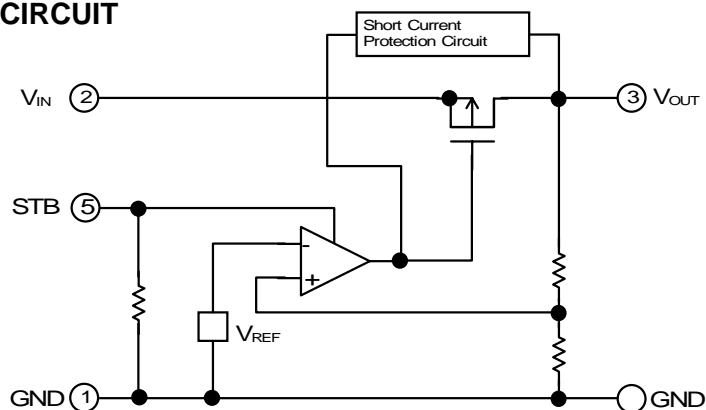
■ TERMINAL DESCRIPTION

| No. | Symbol | Function |
|-----|------------------|--|
| 1 | GND | GND |
| 2 | V_{IN} | Input |
| 3 | V_{OUT} | Output |
| 4 | NC | None Connection |
| 5 | STB | Standby: Internal Pull-down H: Regulation L: Standby, Output off |

■ PIN CONFIGURATION



■ EQUIVALENT CIRCUIT



■ ABSOLUTE MAXIMUM RATINGS

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

| Parameter | Symbol | Ratings | Unit |
|-----------------------|-----------|----------------------------------|------------------|
| Input Voltage | V_{IN} | 15 | V |
| Input Voltage | V_{STB} | $\text{GND}-0.3 \sim V_{IN}+0.3$ | V |
| Output Voltage | V_{OUT} | $\text{GND}-0.3 \sim V_{IN}+0.3$ | V |
| Output Current | I_{OUT} | 120 | mA |
| Power Dissipation | P_D | 200 | mW |
| Operating Temperature | T_{opr} | $-40 \sim +85$ | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | $-40 \sim +125$ | $^\circ\text{C}$ |

■ ELECTRICAL CHARACTERISTICS

• $V_O=1.8\text{V}$

($C_{IN}=0.1\mu\text{F}$, $C_O=10\mu\text{F}$, $T_a=25^\circ\text{C}$)

| Parameter | Symbol | Condition | MIN. | TYP. | MAX. | Unit |
|-----------------------|----------------------------|---|-------|-------|----------|---------------|
| Output Voltage | V_O | $V_{IN}=2.8\text{V}$, $I_O=30\text{mA}$ | 1.764 | 1.800 | 1.836 | V |
| Dropout Voltage | ΔV_{IO} | $I_O=15\text{mA}$ | | 0.2 | 0.3 | V |
| Input Voltage | V_{IN} | | | | 14 | V |
| Operating Current | I_{DD1} | $V_{IN}=2.8\text{V}$, $V_{STB}=V_{IN}$, No Load | | 20 | 40 | μA |
| Standby Current | I_{DD2} | $V_{IN}=2.8\text{V}$, $V_{STB}=\text{GND}$ | | 0.1 | 1.0 | μA |
| Input Current | I_{STB} | $V_{IN}=2.8\text{V}$, $V_{STB}=V_{IN}$ | | 0.56 | 1.12 | μA |
| Load Regulation | $\Delta V_O/\Delta I_O$ | $V_{IN}=2.8\text{V}$, $1\text{mA} \leq I_O \leq 60\text{mA}$ | | 200 | 300 | mV |
| Line Regulation | $\Delta V_O/\Delta V_{IN}$ | $V_{IN}=2.8\text{V} \sim 12\text{V}$ | | 0.10 | | $\%/V$ |
| Ripple Rejection | RR | $V_{IN}=2.8\text{V}$, $e_{in}=0.5\text{Vp-p}$, 1kHz | | 55 | | dB |
| H Level Input Voltage | V_{STBH} | | 1.5 | | V_{IN} | V |
| L Level Input Voltage | V_{STBL} | | 0 | | 0.25 | V |

• $V_O=2.4\text{V}$

($C_{IN}=0.1\mu\text{F}$, $C_O=10\mu\text{F}$, $T_a=25^\circ\text{C}$)

| Parameter | Symbol | Condition | MIN. | TYP. | MAX. | Unit |
|-----------------------|----------------------------|---|-------|-------|----------|---------------|
| Output Voltage | V_O | $V_{IN}=3.4\text{V}$, $I_O=30\text{mA}$ | 2.352 | 2.400 | 2.448 | V |
| Dropout Voltage | ΔV_{IO} | $I_O=30\text{mA}$ | | 0.2 | 0.3 | V |
| Input Voltage | V_{IN} | | | | 14 | V |
| Operating Current | I_{DD1} | $V_{IN}=3.4\text{V}$, $V_{STB}=V_{IN}$, No Load | | 20 | 40 | μA |
| Standby Current | I_{DD2} | $V_{IN}=3.4\text{V}$, $V_{STB}=\text{GND}$ | | 0.1 | 1.0 | μA |
| Input Current | I_{STB} | $V_{IN}=3.4\text{V}$, $V_{STB}=V_{IN}$ | | 0.9 | 1.8 | μA |
| Load Regulation | $\Delta V_O/\Delta I_O$ | $V_{IN}=3.4\text{V}$, $1\text{mA} \leq I_O \leq 60\text{mA}$ | | 200 | 300 | mV |
| Line Regulation | $\Delta V_O/\Delta V_{IN}$ | $V_{IN}=3.4\text{V} \sim 12\text{V}$ | | 0.10 | | $\%/V$ |
| Ripple Rejection | RR | $V_{IN}=3.4\text{V}$, $e_{in}=0.5\text{Vp-p}$, 1kHz | | 55 | | dB |
| H Level Input Voltage | V_{STBH} | | 1.5 | | V_{IN} | V |
| L Level Input Voltage | V_{STBL} | | 0 | | 0.25 | V |

• $V_O=2.5V$

($C_{IN}=0.1\mu F$, $C_O=10\mu F$, $T_a=25^\circ C$)

| Parameter | Symbol | Condition | MIN. | TYP. | MAX. | Unit |
|-----------------------|----------------------------|--|-------|-------|----------|---------|
| Output Voltage | V_O | $V_{IN}=3.5V$, $I_O=30mA$ | 2.450 | 2.500 | 2.550 | V |
| Dropout Voltage | ΔV_{IO} | $I_O=50mA$ | | 0.2 | 0.3 | V |
| Input Voltage | V_{IN} | | | | 14 | V |
| Operating Current | I_{DD1} | $V_{IN}=3.5V$, $V_{STB}=V_{IN}$, No Load | | 20 | 40 | μA |
| Standby Current | I_{DD2} | $V_{IN}=3.5V$, $V_{STB}=GND$ | | 0.1 | 1.0 | μA |
| Input Current | I_{STB} | $V_{IN}=3.5V$, $V_{STB}=V_{IN}$ | | 1.0 | 2.0 | μA |
| Load Regulation | $\Delta V_O/\Delta I_O$ | $V_{IN}=3.5V$, $1mA \leq I_O \leq 60mA$ | | 35 | 120 | mV |
| Line Regulation | $\Delta V_O/\Delta V_{IN}$ | $V_{IN}=3.5V \sim 12V$ | | 0.10 | | %/V |
| Ripple Rejection | RR | $V_{IN}=3.5V$, $e_{in}=0.5Vp-p$, 1kHz | | 55 | | dB |
| H Level Input Voltage | V_{STBH} | | 1.5 | | V_{IN} | V |
| L Level Input Voltage | V_{STBL} | | 0 | | 0.25 | V |

• $V_O=2.55V$

($C_{IN}=0.1\mu F$, $C_O=10\mu F$, $T_a=25^\circ C$)

| Parameter | Symbol | Condition | MIN. | TYP. | MAX. | Unit |
|-----------------------|----------------------------|---|-------|-------|----------|---------|
| Output Voltage | V_O | $V_{IN}=3.55V$, $I_O=30mA$ | 2.499 | 2.550 | 2.601 | V |
| Dropout Voltage | ΔV_{IO} | $I_O=50mA$ | | 0.2 | 0.3 | V |
| Input Voltage | V_{IN} | | | | 14 | V |
| Operating Current | I_{DD1} | $V_{IN}=3.55V$, $V_{STB}=V_{IN}$, No Load | | 20 | 40 | μA |
| Standby Current | I_{DD2} | $V_{IN}=3.55V$, $V_{STB}=GND$ | | 0.1 | 1.0 | μA |
| Input Current | I_{STB} | $V_{IN}=3.55V$, $V_{STB}=V_{IN}$ | | 1.05 | 2.1 | μA |
| Load Regulation | $\Delta V_O/\Delta I_O$ | $V_{IN}=3.55V$, $1mA \leq I_O \leq 60mA$ | | 35 | 120 | mV |
| Line Regulation | $\Delta V_O/\Delta V_{IN}$ | $V_{IN}=3.55V \sim 12V$ | | 0.10 | | %/V |
| Ripple Rejection | RR | $V_{IN}=3.55V$, $e_{in}=0.5Vp-p$, 1kHz | | 55 | | dB |
| H Level Input Voltage | V_{STBH} | | 1.5 | | V_{IN} | V |
| L Level Input Voltage | V_{STBL} | | 0 | | 0.25 | V |

• $V_O=2.8V$

($C_{IN}=0.1\mu F$, $C_O=10\mu F$, $T_a=25^\circ C$)

| Parameter | Symbol | Condition | MIN. | TYP. | MAX. | Unit |
|-----------------------|----------------------------|--|-------|-------|----------|---------|
| Output Voltage | V_O | $V_{IN}=3.8V$, $I_O=30mA$ | 2.744 | 2.800 | 2.856 | V |
| Dropout Voltage | ΔV_{IO} | $I_O=50mA$ | | 0.2 | 0.3 | V |
| Input Voltage | V_{IN} | | | | 14 | V |
| Operating Current | I_{DD1} | $V_{IN}=3.8V$, $V_{STB}=V_{IN}$, No Load | | 20 | 40 | μA |
| Standby Current | I_{DD2} | $V_{IN}=3.8V$, $V_{STB}=GND$ | | 0.1 | 1.0 | μA |
| Input Current | I_{STB} | $V_{IN}=3.8V$, $V_{STB}=V_{IN}$ | | 1.3 | 2.6 | μA |
| Load Regulation | $\Delta V_O/\Delta I_O$ | $V_{IN}=3.8V$, $1mA \leq I_O \leq 60mA$ | | 35 | 120 | mV |
| Line Regulation | $\Delta V_O/\Delta V_{IN}$ | $V_{IN}=3.8V \sim 12V$ | | 0.10 | | %/V |
| Ripple Rejection | RR | $V_{IN}=3.8V$, $e_{in}=0.5Vp-p$, 1kHz | | 55 | | dB |
| H Level Input Voltage | V_{STBH} | | 1.5 | | V_{IN} | V |
| L Level Input Voltage | V_{STBL} | | 0 | | 0.25 | V |

• $V_O=2.85V$

($C_{IN}=0.1\mu F$, $C_O=10\mu F$, $T_a=25^\circ C$)

| Parameter | Symbol | Condition | MIN. | TYP. | MAX. | Unit |
|-----------------------|----------------------------|---|-------|-------|----------|---------|
| Output Voltage | V_O | $V_{IN}=3.85V$, $I_O=30mA$ | 2.793 | 2.850 | 2.907 | V |
| Dropout Voltage | ΔV_{IO} | $I_O=50mA$ | | 0.2 | 0.3 | V |
| Input Voltage | V_{IN} | | | | 14 | V |
| Operating Current | I_{DD1} | $V_{IN}=3.85V$, $V_{STB}=V_{IN}$, No Load | | 20 | 40 | μA |
| Standby Current | I_{DD2} | $V_{IN}=3.85V$, $V_{STB}=GND$ | | 0.1 | 1.0 | μA |
| Input Current | I_{STB} | $V_{IN}=3.85V$, $V_{STB}=V_{IN}$ | | 1.35 | 2.70 | μA |
| Load Regulation | $\Delta V_O/\Delta I_O$ | $V_{IN}=3.85V$, $1mA \leq I_O \leq 60mA$ | | 35 | 120 | mV |
| Line Regulation | $\Delta V_O/\Delta V_{IN}$ | $V_{IN}=3.85V \sim 12V$ | | 0.10 | | %/V |
| Ripple Rejection | RR | $V_{IN}=3.85V$, $e_{in}=0.5Vp-p$, 1kHz | | 55 | | dB |
| H Level Input Voltage | V_{STBH} | | 1.5 | | V_{IN} | V |
| L Level Input Voltage | V_{STBL} | | 0 | | 0.25 | V |

• $V_O=2.9V$

($C_{IN}=0.1\mu F$, $C_O=10\mu F$, $T_a=25^\circ C$)

| Parameter | Symbol | Condition | MIN. | TYP. | MAX. | Unit |
|-----------------------|----------------------------|--|-------|-------|----------|---------|
| Output Voltage | V_O | $V_{IN}=3.9V$, $I_O=30mA$ | 2.842 | 2.900 | 2.958 | V |
| Dropout Voltage | ΔV_{IO} | $I_O=50mA$ | | 0.2 | 0.3 | V |
| Input Voltage | V_{IN} | | | | 14 | V |
| Operating Current | I_{DD1} | $V_{IN}=3.9V$, $V_{STB}=V_{IN}$, No Load | | 20 | 40 | μA |
| Standby Current | I_{DD2} | $V_{IN}=3.9V$, $V_{STB}=GND$ | | 0.1 | 1.0 | μA |
| Input Current | I_{STB} | $V_{IN}=3.9V$, $V_{STB}=V_{IN}$ | | 1.4 | 2.8 | μA |
| Load Regulation | $\Delta V_O/\Delta I_O$ | $V_{IN}=3.9V$, $1mA \leq I_O \leq 60mA$ | | 35 | 120 | mV |
| Line Regulation | $\Delta V_O/\Delta V_{IN}$ | $V_{IN}=3.9V \sim 12V$ | | 0.10 | | %/V |
| Ripple Rejection | RR | $V_{IN}=3.9V$, $e_{in}=0.5Vp-p$, 1kHz | | 55 | | dB |
| H Level Input Voltage | V_{STBH} | | 1.5 | | V_{IN} | V |
| L Level Input Voltage | V_{STBL} | | 0 | | 0.25 | V |

• $V_O=3.0V$

($C_{IN}=0.1\mu F$, $C_O=10\mu F$, $T_a=25^\circ C$)

| Parameter | Symbol | Condition | MIN. | TYP. | MAX. | Unit |
|-----------------------|----------------------------|--|-------|-------|----------|---------|
| Output Voltage | V_O | $V_{IN}=4.0V$, $I_O=30mA$ | 2.940 | 3.000 | 3.060 | V |
| Dropout Voltage | ΔV_{IO} | $I_O=60mA$ | | 0.2 | 0.3 | V |
| Input Voltage | V_{IN} | | | | 14 | V |
| Operating Current | I_{DD1} | $V_{IN}=4.0V$, $V_{STB}=V_{IN}$, No Load | | 20 | 40 | μA |
| Standby Current | I_{DD2} | $V_{IN}=4.0V$, $V_{STB}=GND$ | | 0.1 | 1.0 | μA |
| Input Current | I_{STB} | $V_{IN}=4.0V$, $V_{STB}=V_{IN}$ | | 1.5 | 3.0 | μA |
| Load Regulation | $\Delta V_O/\Delta I_O$ | $V_{IN}=4.0V$, $1mA \leq I_O \leq 60mA$ | | 35 | 120 | mV |
| Line Regulation | $\Delta V_O/\Delta V_{IN}$ | $V_{IN}=4.0V \sim 12V$ | | 0.10 | | %/V |
| Ripple Rejection | RR | $V_{IN}=4.0V$, $e_{in}=0.5Vp-p$, 1kHz | | 55 | | dB |
| H Level Input Voltage | V_{STBH} | | 1.5 | | V_{IN} | V |
| L Level Input Voltage | V_{STBL} | | 0 | | 0.25 | V |

• $V_O=3.3V$

($C_{IN}=0.1\mu F$, $C_O=10\mu F$, $T_a=25^\circ C$)

| Parameter | Symbol | Condition | MIN. | TYP. | MAX. | Unit |
|-----------------------|----------------------------|--|-------|-------|----------|---------|
| Output Voltage | V_O | $V_{IN}=4.3V$, $I_O=30mA$ | 3.234 | 3.300 | 3.366 | V |
| Dropout Voltage | ΔV_{IO} | $I_O=60mA$ | | 0.2 | 0.3 | V |
| Input Voltage | V_{IN} | | | | 14 | V |
| Operating Current | I_{DD1} | $V_{IN}=4.3V$, $V_{STB}=V_{IN}$, No Load | | 20 | 40 | μA |
| Standby Current | I_{DD2} | $V_{IN}=4.3V$, $V_{STB}=GND$ | | 0.1 | 1.0 | μA |
| Input Current | I_{STB} | $V_{IN}=4.3V$, $V_{STB}=V_{IN}$ | | 1.8 | 3.6 | μA |
| Load Regulation | $\Delta V_O/\Delta I_O$ | $V_{IN}=4.3V$, $1mA \leq I_O \leq 60mA$ | | 35 | 120 | mV |
| Line Regulation | $\Delta V_O/\Delta V_{IN}$ | $V_{IN}=4.3V \sim 12V$ | | 0.10 | | %/V |
| Ripple Rejection | RR | $V_{IN}=4.3V$, $e_{in}=0.5Vp-p$, 1kHz | | 55 | | dB |
| H Level Input Voltage | V_{STBH} | | 1.5 | | V_{IN} | V |
| L Level Input Voltage | V_{STBL} | | 0 | | 0.25 | V |

• $V_O=3.4V$

($C_{IN}=0.1\mu F$, $C_O=10\mu F$, $T_a=25^\circ C$)

| Parameter | Symbol | Condition | MIN. | TYP. | MAX. | Unit |
|-----------------------|----------------------------|--|-------|-------|----------|---------|
| Output Voltage | V_O | $V_{IN}=4.4V$, $I_O=30mA$ | 3.332 | 3.400 | 3.468 | V |
| Dropout Voltage | ΔV_{IO} | $I_O=60mA$ | | 0.2 | 0.3 | V |
| Input Voltage | V_{IN} | | | | 14 | V |
| Operating Current | I_{DD1} | $V_{IN}=4.4V$, $V_{STB}=V_{IN}$, No Load | | 20 | 40 | μA |
| Standby Current | I_{DD2} | $V_{IN}=4.4V$, $V_{STB}=GND$ | | 0.1 | 1.0 | μA |
| Input Current | I_{STB} | $V_{IN}=4.4V$, $V_{STB}=V_{IN}$ | | 1.9 | 3.8 | μA |
| Load Regulation | $\Delta V_O/\Delta I_O$ | $V_{IN}=4.4V$, $1mA \leq I_O \leq 60mA$ | | 35 | 120 | mV |
| Line Regulation | $\Delta V_O/\Delta V_{IN}$ | $V_{IN}=4.4V \sim 12V$ | | 0.10 | | %/V |
| Ripple Rejection | RR | $V_{IN}=4.4V$, $e_{in}=0.5Vp-p$, 1kHz | | 55 | | dB |
| H Level Input Voltage | V_{STBH} | | 1.5 | | V_{IN} | V |
| L Level Input Voltage | V_{STBL} | | 0 | | 0.25 | V |

• $V_O=3.5V$

($C_{IN}=0.1\mu F$, $C_O=10\mu F$, $T_a=25^\circ C$)

| Parameter | Symbol | Condition | MIN. | TYP. | MAX. | Unit |
|-----------------------|----------------------------|--|-------|-------|----------|---------|
| Output Voltage | V_O | $V_{IN}=4.5V$, $I_O=30mA$ | 3.430 | 3.500 | 3.570 | V |
| Dropout Voltage | ΔV_{IO} | $I_O=60mA$ | | 0.2 | 0.3 | V |
| Input Voltage | V_{IN} | | | | 14 | V |
| Operating Current | I_{DD1} | $V_{IN}=4.5V$, $V_{STB}=V_{IN}$, No Load | | 20 | 40 | μA |
| Standby Current | I_{DD2} | $V_{IN}=4.5V$, $V_{STB}=GND$ | | 0.1 | 1.0 | μA |
| Input Current | I_{STB} | $V_{IN}=4.5V$, $V_{STB}=V_{IN}$ | | 2.0 | 4.0 | μA |
| Load Regulation | $\Delta V_O/\Delta I_O$ | $V_{IN}=4.5V$, $1mA \leq I_O \leq 60mA$ | | 35 | 120 | mV |
| Line Regulation | $\Delta V_O/\Delta V_{IN}$ | $V_{IN}=4.5V \sim 12V$ | | 0.10 | | %/V |
| Ripple Rejection | RR | $V_{IN}=4.5V$, $e_{in}=0.5Vp-p$, 1kHz | | 55 | | dB |
| H Level Input Voltage | V_{STBH} | | 1.5 | | V_{IN} | V |
| L Level Input Voltage | V_{STBL} | | 0 | | 0.25 | V |

• $V_O=3.6V$

($C_{IN}=0.1\mu F$, $C_O=10\mu F$, $T_a=25^\circ C$)

| Parameter | Symbol | Condition | MIN. | TYP. | MAX. | Unit |
|-----------------------|----------------------------|--|-------|-------|----------|---------|
| Output Voltage | V_O | $V_{IN}=4.6V$, $I_O=30mA$ | 3.528 | 3.600 | 3.672 | V |
| Dropout Voltage | ΔV_{IO} | $I_O=60mA$ | | 0.2 | 0.3 | V |
| Input Voltage | V_{IN} | | | | 14 | V |
| Operating Current | I_{DD1} | $V_{IN}=4.6V$, $V_{STB}=V_{IN}$, No Load | | 20 | 40 | μA |
| Standby Current | I_{DD2} | $V_{IN}=4.6V$, $V_{STB}=GND$ | | 0.1 | 1.0 | μA |
| Input Current | I_{STB} | $V_{IN}=4.6V$, $V_{STB}=V_{IN}$ | | 2.1 | 4.2 | μA |
| Load Regulation | $\Delta V_O/\Delta I_O$ | $V_{IN}=4.6V$, $1mA \leq I_O \leq 60mA$ | | 35 | 120 | mV |
| Line Regulation | $\Delta V_O/\Delta V_{IN}$ | $V_{IN}=4.6V \sim 12V$ | | 0.10 | | %/V |
| Ripple Rejection | RR | $V_{IN}=4.6V$, $e_{in}=0.5Vp-p$, 1kHz | | 55 | | dB |
| H Level Input Voltage | V_{STBH} | | 1.5 | | V_{IN} | V |
| L Level Input Voltage | V_{STBL} | | 0 | | 0.25 | V |

• $V_O=4.0V$

($C_{IN}=0.1\mu F$, $C_O=10\mu F$, $T_a=25^\circ C$)

| Parameter | Symbol | Condition | MIN. | TYP. | MAX. | Unit |
|-----------------------|----------------------------|--|-------|-------|----------|---------|
| Output Voltage | V_O | $V_{IN}=5.0V$, $I_O=30mA$ | 3.920 | 4.000 | 4.080 | V |
| Dropout Voltage | ΔV_{IO} | $I_O=60mA$ | | 0.2 | 0.3 | V |
| Input Voltage | V_{IN} | | | | 14 | V |
| Operating Current | I_{DD1} | $V_{IN}=5.0V$, $V_{STB}=V_{IN}$, No Load | | 20 | 40 | μA |
| Standby Current | I_{DD2} | $V_{IN}=5.0V$, $V_{STB}=GND$ | | 0.1 | 1.0 | μA |
| Input Current | I_{STB} | $V_{IN}=5.0V$, $V_{STB}=V_{IN}$ | | 2.5 | 5.0 | μA |
| Load Regulation | $\Delta V_O/\Delta I_O$ | $V_{IN}=5.0V$, $1mA \leq I_O \leq 60mA$ | | 35 | 120 | mV |
| Line Regulation | $\Delta V_O/\Delta V_{IN}$ | $V_{IN}=5.0V \sim 12V$ | | 0.10 | | %/V |
| Ripple Rejection | RR | $V_{IN}=5.0V$, $e_{in}=0.5Vp-p$, 1kHz | | 55 | | dB |
| H Level Input Voltage | V_{STBH} | | 1.5 | | V_{IN} | V |
| L Level Input Voltage | V_{STBL} | | 0 | | 0.25 | V |

• $V_O=4.5V$

($C_{IN}=0.1\mu F$, $C_O=10\mu F$, $T_a=25^\circ C$)

| Parameter | Symbol | Condition | MIN. | TYP. | MAX. | Unit |
|-----------------------|----------------------------|--|-------|-------|----------|---------|
| Output Voltage | V_O | $V_{IN}=5.5V$, $I_O=30mA$ | 4.410 | 4.500 | 4.590 | V |
| Dropout Voltage | ΔV_{IO} | $I_O=60mA$ | | 0.2 | 0.3 | V |
| Input Voltage | V_{IN} | | | | 14 | V |
| Operating Current | I_{DD1} | $V_{IN}=5.5V$, $V_{STB}=V_{IN}$, No Load | | 20 | 40 | μA |
| Standby Current | I_{DD2} | $V_{IN}=5.5V$, $V_{STB}=GND$ | | 0.1 | 1.0 | μA |
| Input Current | I_{STB} | $V_{IN}=5.5V$, $V_{STB}=V_{IN}$ | | 3.0 | 6.0 | μA |
| Load Regulation | $\Delta V_O/\Delta I_O$ | $V_{IN}=5.5V$, $1mA \leq I_O \leq 60mA$ | | 35 | 120 | mV |
| Line Regulation | $\Delta V_O/\Delta V_{IN}$ | $V_{IN}=5.5V \sim 12V$ | | 0.10 | | %/V |
| Ripple Rejection | RR | $V_{IN}=5.5V$, $e_{in}=0.5Vp-p$, 1kHz | | 55 | | dB |
| H Level Input Voltage | V_{STBH} | | 1.5 | | V_{IN} | V |
| L Level Input Voltage | V_{STBL} | | 0 | | 0.25 | V |

• $V_O=5.0V$

($C_{IN}=0.1\mu F$, $C_O=10\mu F$, $T_a=25^\circ C$)

| Parameter | Symbol | Condition | MIN. | TYP. | MAX. | Unit |
|-----------------------|----------------------------|--|-------|-------|----------|---------|
| Output Voltage | V_O | $V_{IN}=6.0V$, $I_O=30mA$ | 4.900 | 5.000 | 5.100 | V |
| Dropout Voltage | ΔV_{IO} | $I_O=60mA$ | | 0.2 | 0.3 | V |
| Input Voltage | V_{IN} | | | | 14 | V |
| Operating Current | I_{DD1} | $V_{IN}=6.0V$, $V_{STB}=V_{IN}$, No Load | | 20 | 40 | μA |
| Standby Current | I_{DD2} | $V_{IN}=6.0V$, $V_{STB}=GND$ | | 0.1 | 1.0 | μA |
| Input Current | I_{STB} | $V_{IN}=6.0V$, $V_{STB}=V_{IN}$ | | 3.5 | 7.0 | μA |
| Load Regulation | $\Delta V_O/\Delta I_O$ | $V_{IN}=6.0V$, $1mA \leq I_O \leq 60mA$ | | 35 | 120 | mV |
| Line Regulation | $\Delta V_O/\Delta V_{IN}$ | $V_{IN}=6.0V \sim 12V$ | | 0.10 | | %/V |
| Ripple Rejection | RR | $V_{IN}=6.0V$, $e_{in}=0.5Vp-p$, 1kHz | | 55 | | dB |
| H Level Input Voltage | V_{STBH} | | 1.5 | | V_{IN} | V |
| L Level Input Voltage | V_{STBL} | | 0 | | 0.25 | V |

• $V_O=5.9V$

($C_{IN}=0.1\mu F$, $C_O=10\mu F$, $T_a=25^\circ C$)

| Parameter | Symbol | Condition | MIN. | TYP. | MAX. | Unit |
|-----------------------|----------------------------|--|-------|-------|----------|---------|
| Output Voltage | V_O | $V_{IN}=6.9V$, $I_O=30mA$ | 5.782 | 5.900 | 6.018 | V |
| Dropout Voltage | ΔV_{IO} | $I_O=60mA$ | | 0.2 | 0.3 | V |
| Input Voltage | V_{IN} | | | | 14 | V |
| Operating Current | I_{DD1} | $V_{IN}=6.9V$, $V_{STB}=V_{IN}$, No Load | | 20 | 40 | μA |
| Standby Current | I_{DD2} | $V_{IN}=6.9V$, $V_{STB}=GND$ | | 0.1 | 1.0 | μA |
| Input Current | I_{STB} | $V_{IN}=6.9V$, $V_{STB}=V_{IN}$ | | 4.4 | 8.8 | μA |
| Load Regulation | $\Delta V_O/\Delta I_O$ | $V_{IN}=6.9V$, $1mA \leq I_O \leq 60mA$ | | 35 | 120 | mV |
| Line Regulation | $\Delta V_O/\Delta V_{IN}$ | $V_{IN}=6.9V \sim 12V$ | | 0.10 | | %/V |
| Ripple Rejection | RR | $V_{IN}=6.9V$, $e_{in}=0.5Vp-p$, 1kHz | | 55 | | dB |
| H Level Input Voltage | V_{STBH} | | 1.5 | | V_{IN} | V |
| L Level Input Voltage | V_{STBL} | | 0 | | 0.25 | V |

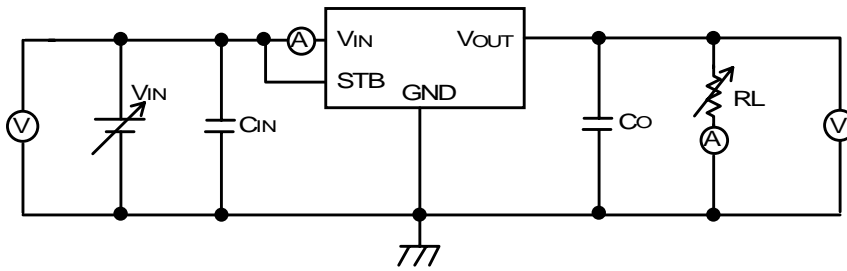
• $V_O=6.0V$

($C_{IN}=0.1\mu F$, $C_O=10\mu F$, $T_a=25^\circ C$)

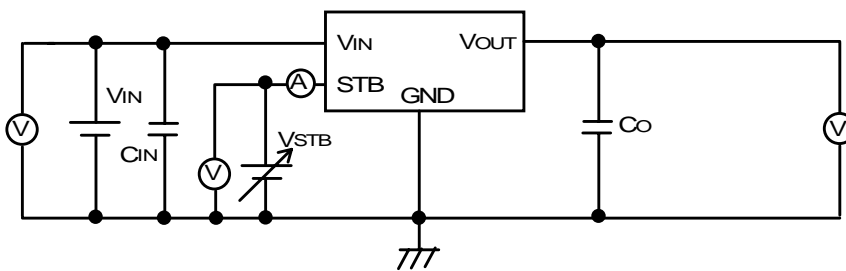
| Parameter | Symbol | Condition | MIN. | TYP. | MAX. | Unit |
|-----------------------|----------------------------|--|-------|-------|----------|---------|
| Output Voltage | V_O | $V_{IN}=7.0V$, $I_O=30mA$ | 5.880 | 6.000 | 6.120 | V |
| Dropout Voltage | ΔV_{IO} | $I_O=60mA$ | | 0.2 | 0.3 | V |
| Input Voltage | V_{IN} | | | | 14 | V |
| Operating Current | I_{DD1} | $V_{IN}=7.0V$, $V_{STB}=V_{IN}$, No Load | | 20 | 40 | μA |
| Standby Current | I_{DD2} | $V_{IN}=7.0V$, $V_{STB}=GND$ | | 0.1 | 1.0 | μA |
| Input Current | I_{STB} | $V_{IN}=7.0V$, $V_{STB}=V_{IN}$ | | 4.5 | 9.0 | μA |
| Load Regulation | $\Delta V_O/\Delta I_O$ | $V_{IN}=7.0V$, $1mA \leq I_O \leq 60mA$ | | 35 | 120 | mV |
| Line Regulation | $\Delta V_O/\Delta V_{IN}$ | $V_{IN}=7.0V \sim 12V$ | | 0.10 | | %/V |
| Ripple Rejection | RR | $V_{IN}=7.0V$, $e_{in}=0.5Vp-p$, 1kHz | | 55 | | dB |
| H Level Input Voltage | V_{STBH} | | 1.5 | | V_{IN} | V |
| L Level Input Voltage | V_{STBL} | | 0 | | 0.25 | V |

■ MEASUREMENT CIRCUIT

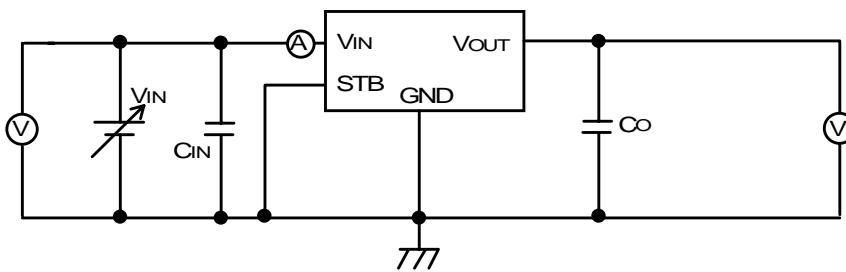
- Standard Test Circuit



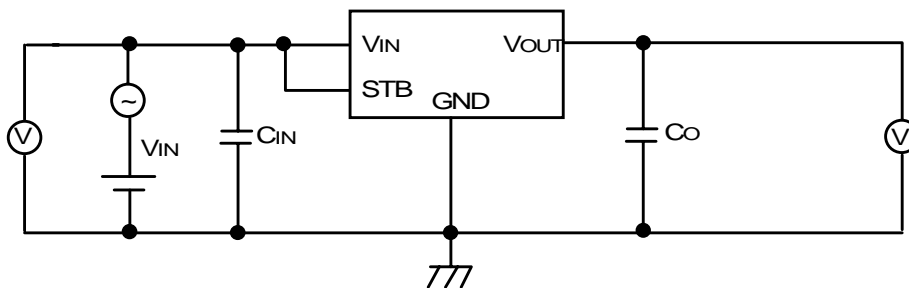
- Standby Input Voltage Test Circuit



- Standby Input Current Test Circuit



- Ripple Rejection Test 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.

Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

- ⊖ [View NJU7241F50-TE1 on WIN SOURCE](#)
- ⊖ [NJR Corporation/NJRC Information](#)

Optimize Your Supply Chain with WIN SOURCE Solutions

- ✓ Global Sourcing Solution
- ✓ Obsolete Management
- ✓ Cost Control Management
- ✓ Shortage Management
- ✓ Alternative Solution
- ✓ Excess Inventory Management