



LV721

Preliminary

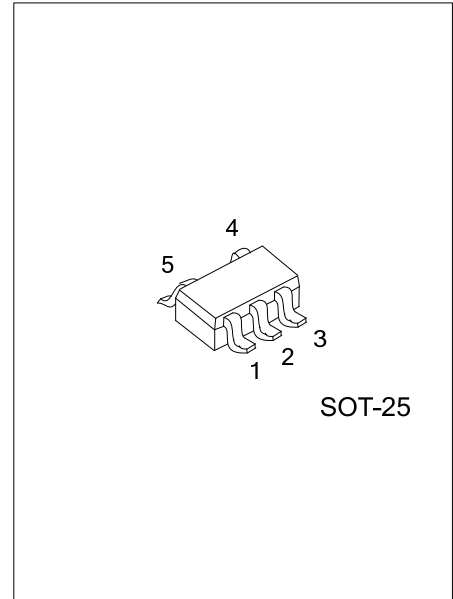
CMOS IC

SINGLE LOW VOLTAGE, AND LOW POWER OPERATIONAL AMPLIFIER

DESCRIPTION

The UTC **LV721** is a low noise, low voltage, and low power amp, that can be designed into a wide range of application. The UTC **LV721** has a slew rate of 5.1V/us.

The UTC **LV721** is designed to provide optimal performance in low voltage and low noise system. It provides rail-to-rail output swing into heavy load. The input common-mode voltage range includes ground, and the maximum input offset voltage is 3mV for the UTC **LV721**. Its capacitive load capability is also good at low supply voltages. The operating range is from 2.2V to 5.5V.



FEATURES

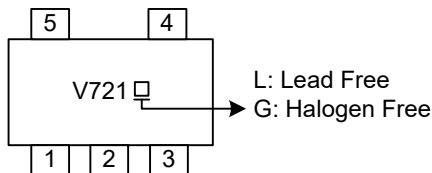
- * Supply Voltage: 2.2~5.5V
- * Supply Current/Amplifier: 1.4 mA (Max.)
- * Input Offset Voltage: 3mV (Max.)
- * Slew Rate: 5.1V/μs (Typ.)

ORDERING INFORMATION

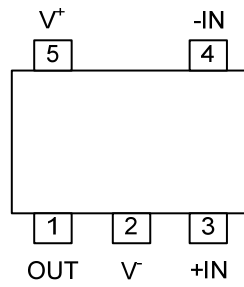
| Ordering Number | | Package | Packing |
|-----------------|--------------|---------|-----------|
| Lead Free | Halogen Free | | |
| LV721L-AF5-R | LV721G-AF5-R | SOT-25 | Tape Reel |

| | |
|---|--|
| <p>LV721G-AF5-R</p> <ul style="list-style-type: none"> (1) Packing Type (2) Package Type (3) Green Package | <ul style="list-style-type: none"> (1) R: Tape Reel (2) AF5: SOT-25 (3) G: Halogen Free and Lead Free, L: Lead Free |
|---|--|

MARKING



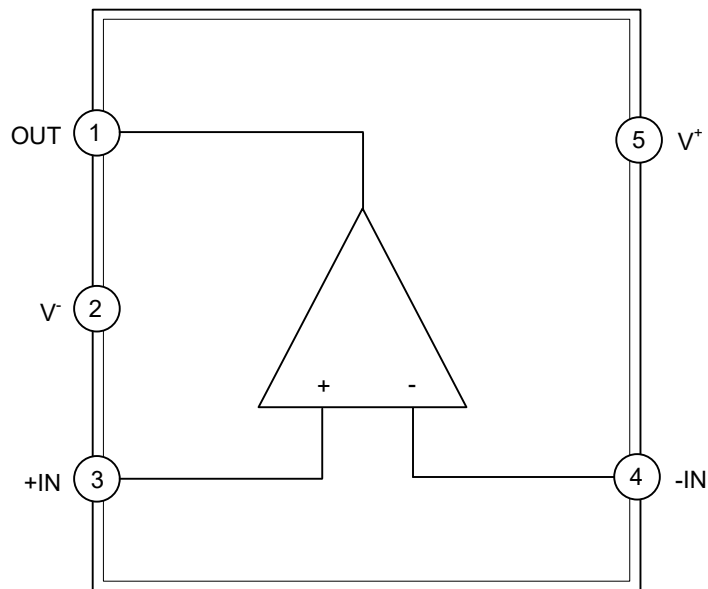
■ PIN CONFIGURATION



■ PIN DESCRIPTION

| PIN NO. | PIN NAME | DESCRIPTION |
|---------|----------------|-----------------------|
| 1 | OUT | Output |
| 2 | V ⁻ | Negative power supply |
| 3 | +IN | Non-inverting Input |
| 4 | -IN | Inverting Input |
| 5 | V ⁺ | Positive power supply |

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

| PARAMETER | SYMBOL | RATINGS | UNIT |
|----------------------------|-------------|----------------|------|
| Supply Voltage | $V^+ - V^-$ | 6.0 | V |
| Differential Input Voltage | V_{ID} | Supply voltage | V |
| Junction Temperature | T_J | +150 | °C |
| Storage Temperature | T_{STG} | -65 ~ +150 | °C |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ RECOMMENDED OPERATING CONDITIONS ($T_A=25^\circ\text{C}$, unless otherwise specified)

| PARAMETER | SYMBOL | MIN | TYP | MAX | UNIT |
|--------------------------------|-------------|-----|-----|------|------|
| Supply Voltage | $V^+ - V^-$ | 2.2 | | 5.5 | V |
| Operating Free-Air Temperature | T_{OPR} | -40 | | +125 | °C |

■ ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$, $V^+=2.2\sim 5.5\text{V}$, $V^-=0\text{V}$, $V_O=V_{CM}=V^+/2$, and $R_L > 1\text{M}\Omega$)

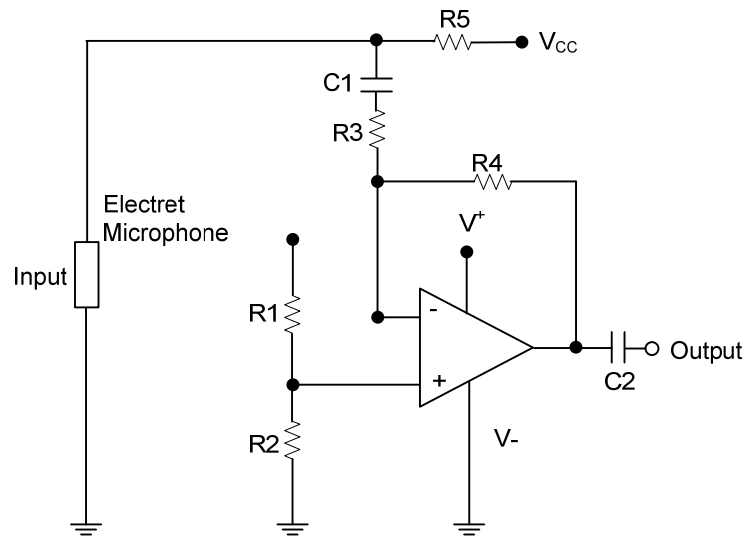
| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP (Note 1) | MAX (Note 2) | UNIT |
|------------------------------|----------|--|----------|--------------------|-----------------|------------------------------|
| Supply Current/Amplifier | I_Q | | | 1.03 | 1.4 | mA |
| Power Supply Rejection Ratio | PSRR | $2\leq V^+\leq 5\text{V}$, $V_O=0$, $V_{CM}=0$ | 70 | 90 | | dB |
| Input Offset Voltage | V_{OS} | | | 0.02 | 3 | mV |
| Input Bias Current | I_B | | | 260 | | nA |
| Input Offset Current | I_{OS} | | | 25 | | nA |
| Common-Mode Voltage Range | V_{CM} | CMRR $\geq 50\text{dB}$ | | -0.2~ $V^+-0.9$ | | V |
| Common-Mode Rejection Ratio | CMRR | $0\text{V} \leq V_{CM} \leq V^+-0.9\text{V}$ | 70 | 88 | | dB |
| Large Signal Voltage Gain | A_V | $R_L=600\Omega$, $V_O=0.75 \sim V^+-0.2\text{V}$ | 75 | 81 | | dB |
| | | $R_L=2\text{k}\Omega$, $V_O=0.70 \sim V^+-0.1\text{V}$ | 75 | 84 | | dB |
| Output Voltage | V_O | $R_L=2\text{k}\Omega$ | V_{OH} | $V^+-0.07$ | $V^+-0.05$ | V |
| | | | V_{OL} | | 0.07 | 0.11 |
| | | $R_L=600\Omega$ | V_{OH} | $V^+-0.16$ | $V^+-0.1$ | V |
| | | | V_{OL} | | 0.13 | 0.19 |
| Short-Circuit Current | I_{SC} | Sourcing, $V_O=V^-$, $V_{IN}(\text{diff})=\pm 0.5\text{V}$ | 10 | 14.9 | | V |
| | | Sinking, $V_O=V^+$, $V_{IN}(\text{diff})=\pm 0.5\text{V}$ | 10 | 17.6 | | V |
| Slew Rate | SR | (Note 3) | | 5.1 | | V/ μs |
| Gain-Bandwidth Product | GBW | | | 10 | | MHz |
| Total Harmonic Distortion | THD | $f=1\text{kHz}$, $A_V=1$, $R_L=600\Omega$, $V_O=500\text{mV}_{PP}$ | | 0.004 | | % |
| Input-Referred Voltage Noise | e_n | $f=1\text{kHz}$ | | 9 | | $\text{nV}/\sqrt{\text{Hz}}$ |
| Input-Referred Current Noise | i_n | $f=1\text{kHz}$ | | 0.3 | | $\text{pA}/\sqrt{\text{Hz}}$ |

Notes: 1. Typical Values represent the most likely parametric norm.

2. All limits are guaranteed by testing or statistical analysis.

3. Connected as voltage follower with 1V step input. Number specified is the slower of the positive and negative slew rate.

■ TYPICAL APPLICATION CIRCUIT



A Battery Powered Microphone Preamplifier

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