



## LV721

Preliminary

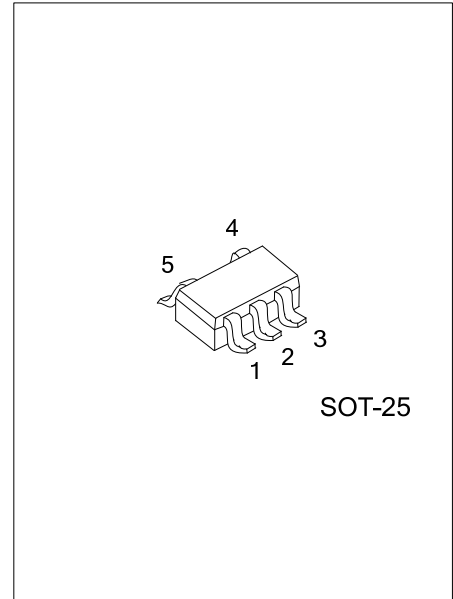
CMOS IC

# 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

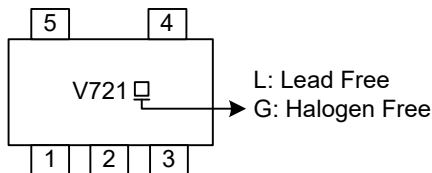
- \* Supply Voltage: 2.2~5.5V
- \* Supply Current/Amplifier: 1.4 mA (Max)
- \* Input Offset Voltage: 3mV (Max)
- \* Slew Rate: 5.1V/μs (Typ.)

### ORDERING INFORMATION

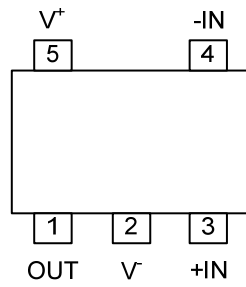
Ordering Number		Package	Packing
Lead Free	Halogen Free		
LV721L-AF5-R	LV721G-AF5-R	SOT-25	Tape Reel

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



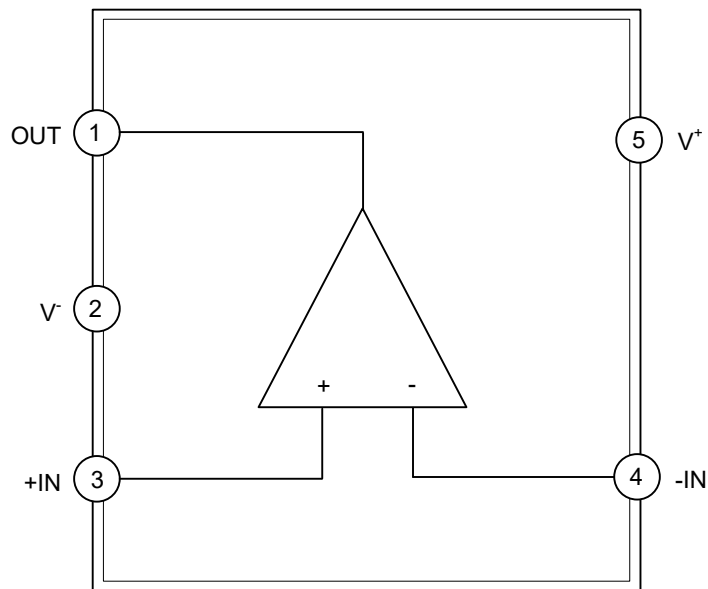
■ PIN CONFIGURATION



■ PIN DESCRIPTION

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

■ BLOCK DIAGRAM



### ■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage ( $V^+ - V^-$ )		6	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 $R_L > 1\text{M}\Omega$ )

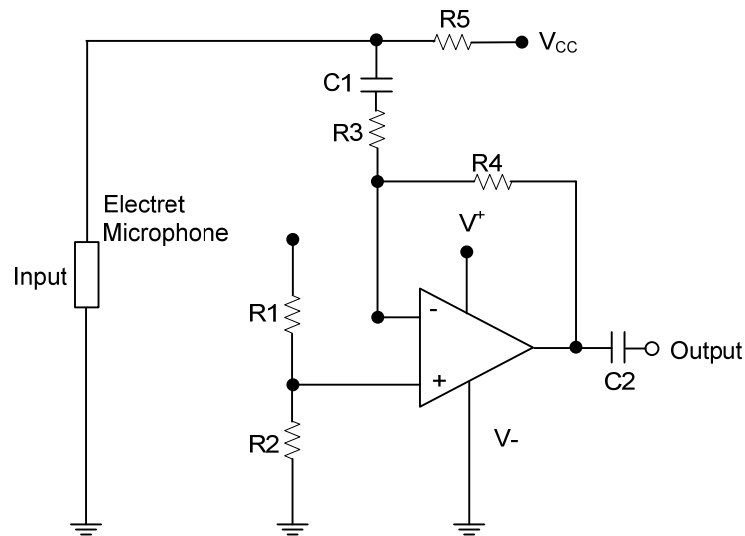
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP (Note 1)	MAX (Note 2)	UNIT
Supply Current/Amplifier	$I_Q$			1.03	1.4	mA
Power Supply Rejection Ratio	PSRR	$2\leq V^+\leq 5\text{V}$ , $V_O=0$ , $V_{CM}=0$	70	90		dB
Input Offset Voltage	$V_{OS}$			0.02	3	mV
Input Bias Current	$I_B$			260		nA
Input Offset Current	$I_{OS}$			25		nA
Common-Mode Voltage Range	$V_{CM}$	CMRR $\geq 50\text{dB}$		-0.30~ $V^+-0.9$		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/ $\mu\text{s}$
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

UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.