



LV551

Preliminary

CMOS IC

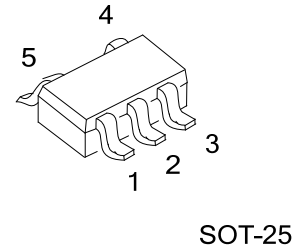
MICROPOWER RAIL-TO-RAIL OUTPUT AMPLIFIER

DESCRIPTION

The UTC **LV551** is high-performance, low-power operational amplifier. It features 3MHz of bandwidth while consuming only 34µA of current, which is an exceptional bandwidth to power ratio in this op amp. This ultra-low power amplifier is unity gain stable and provides an excellent solution for ultra-low power application requiring a wide bandwidth.

The UTC **LV551** has a rail-to-rail output stage and an input common mode range that extends below ground.

The UTC **LV551** has an operating supply voltage range from 2.7V to 5.5V. This amplifier can operate over a wide temperature range (-40°C to 125°C), making it a great choice for automotive application, sensor application as well as portable instrumentation application.



SOT-25

FEATURES

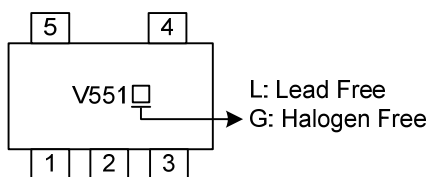
- * Supply Voltage:2.7~5.5V
- * Supply Current/Amplifier:46µA (Max)
- * Input Offset Voltage:3mV (Max)
- * Rail-to-Rail Output
- * Slew Rate 0.9V/µs (Typ.)

ORDERING INFORMATION

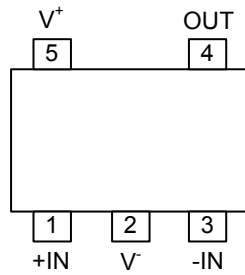
Ordering Number		Package	Packing
Lead Free	Halogen Free		
LV551L-AF5-R	LV551G-AF5-R	SOT-25	Tape Reel

<p>LV551G-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
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MARKING



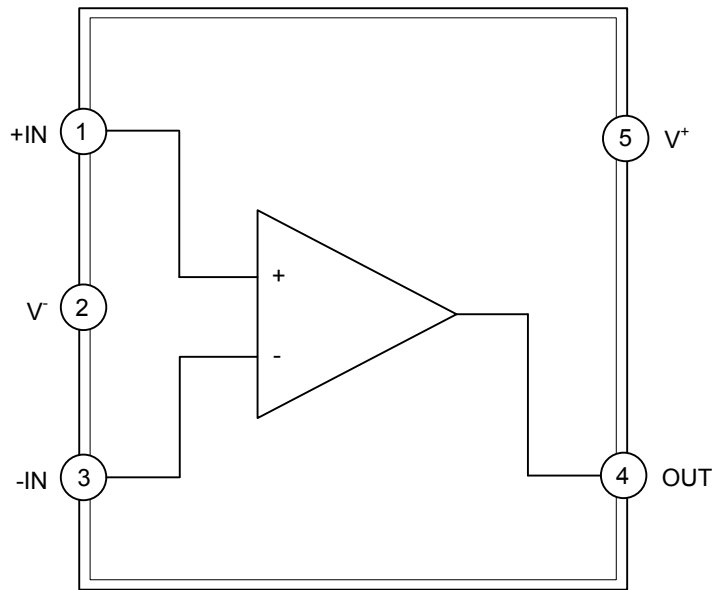
■ PIN CONFIGURATION



■ PIN DESCRIPTION

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

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage ($V^+ - V^-$)	$V^+ - V^-$	6	V
Differential Input	V_{ID}	Supply voltage	V
Input or Output Pin Voltage		$V^- - 0.3 \sim V^+ + 0.3$	V
Junction Temperature (Note 2)	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

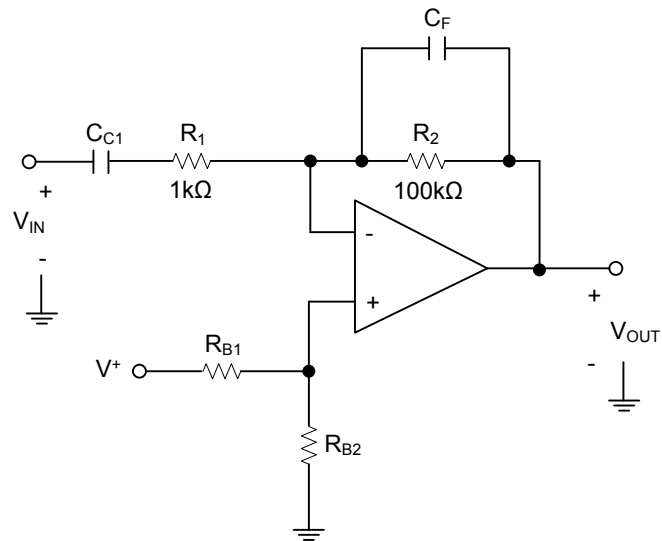
PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V^+ - V^-$	2.7 ~ 5.5	V
Operating Free-Air Temperature	T_{OPR}	-40 ~ +125	°C

■ ELECTRICAL CHARACTERISTICS

(($T_A=25^\circ\text{C}$, $V^+=3\sim 5\text{V}$, $V^-=0\text{V}$, $V_O=V_{CM}=V^+/2$, unless otherwise specified))

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Current per Amplifier	I_Q			34	46	μA
Power Supply Rejection Ratio	PSRR	$3\text{V} \leq V^+ \leq 5\text{V}$, $V_{CM}=0.5\text{V}$	78	100		dB
		$2.7\text{V} \leq V^+ \leq 5.5\text{V}$, $V_{CM}=0.5\text{V}$	78	100		dB
Input Offset Voltage	V_{OS}			1	3	mV
Input Bias Current	I_B			20		nA
Input Offset Current	I_{OS}			1		nA
Common-Mode Voltage Range	V_{CM}	CMRR $\geq 68\text{dB}$	0		$V^+ - 0.9$	V
Common-Mode Rejection Ratio	CMRR		68	105		dB
Large Signal Voltage Gain	A_V	$0.4 \leq V_O \leq V^+ - 0.4\text{V}$, $R_L=100\text{k}\Omega$	78	100		dB
		$0.4 \leq V_O \leq V^+ - 0.4\text{V}$, $R_L=10\text{k}\Omega$	75	90		dB
Output Voltage	V_O	$R_L=100\text{k}\Omega$	V_{OH}	$V^+ - 0.15$	$V^+ - 0.07$	V
			V_{OL}		0.04	0.15
		$R_L=10\text{k}\Omega$	V_{OH}	$V^+ - 0.2$	$V^+ - 0.1$	V
			V_{OL}		0.06	0.2
Short-Circuit Current	I_{SC}	Sourcing		17		mA
		Sinking		25		mA
Slew Rate	SR	$A_V=+1$, $V_O=1V_{PP}$, 10% to 90%		0.9		V/ μs
Gain-Bandwidth Product	GBW			3		MHz
Phase Margin	Φ_M	$R_L=10\text{k}\Omega$, $C_L=20\text{pF}$		65		°
Input-Referred Voltage Noise	e_n	f=100kHz		75		nV/ $\sqrt{\text{Hz}}$
		f=1kHz		75		nV/ $\sqrt{\text{Hz}}$
Input-Referred Current Noise	i_n	f=100kHz		0.2		pA/ $\sqrt{\text{Hz}}$
		f=1kHz		0.2		pA/ $\sqrt{\text{Hz}}$
Total Harmonic Distortion	THD	f=1kHz, $A_V=2$, $R_L=2\text{k}\Omega$		0.01		%

TYPICAL APPLICATION CIRCUIT



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