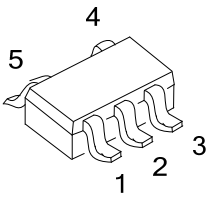
MICROPOWER RAIL-TO-RAIL OUTPUT AMPLIFIER



SOT-25

■ 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.

■ FEATURES

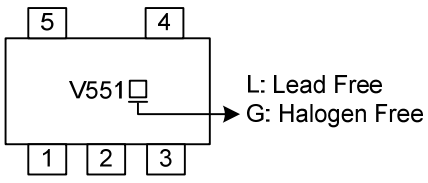
* Supply Voltage:2.7~5.5V
* Supply Current/Amplifier:46μA (Max)
* Input Offset Voltage:3mV (Max)
* Rail-to-Rail Output
* Slew Rate 0.9V/μs (Typ.)

■ ORDERING INFORMATION

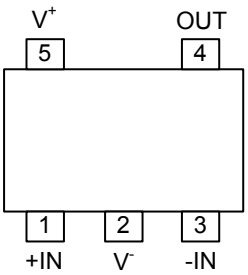
Ordering Number		Package	Packing
Lead Free	Halogen Free		
LV551L-AF5-R	LV551G-AF5-R	SOT-25	Tape Reel

LV551G-AF5-R (1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) AF5: SOT-25 (3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



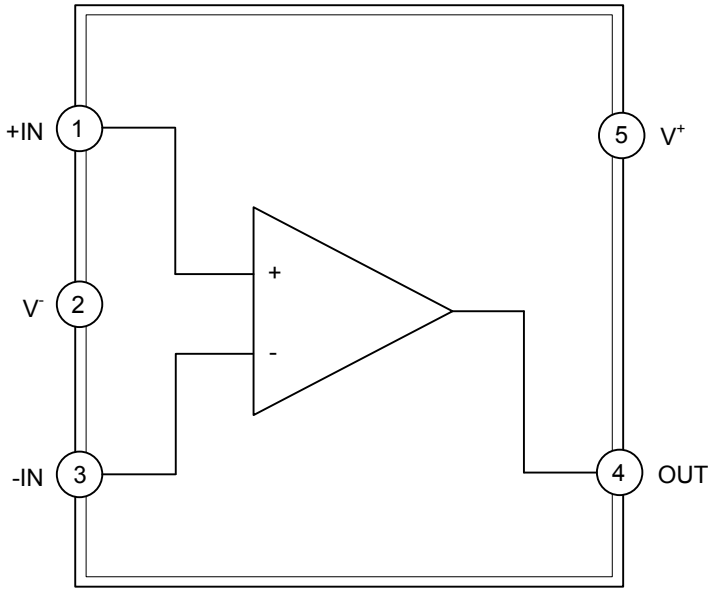
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	+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 ~ 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°C, V^+=3~5V, V^-=0V, 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	3V ≤ V^+ ≤ 5V, V_{CM}=0.5V		78	100		dB
		2.7V ≤ V^+ ≤ 5.5V, V_{CM}=0.5V		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 ≥68dB		0		V^+-0.9	V
Common-Mode Rejection Ratio	CMRR			68	105		dB
Large Signal Voltage Gain	A_V	0.4 ≤ V_O ≤ V^+-0.4V, R_L=100kΩ		78	100		dB
		0.4 ≤ V_O ≤ V^+-0.4V, R_L=10kΩ		75	90		dB
Output Voltage	V_O	R_L=100kΩ	V_{OH}	V^+-0.15	V^+-0.07		V
			V_{OL}		0.04	0.15	V
		R_L=10kΩ	V_{OH}	V^+-0.2	V^+-0.1		V
			V_{OL}		0.06	0.2	V
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=10kΩ, C_L=20pF			65		°
Input-Referred Voltage Noise	e_n	f=100kHz			75		nV/$\sqrt{Hz}$
		f=1kHz			75		nV/$\sqrt{Hz}$
Input-Referred Current Noise	i_n	f=100kHz			0.2		pA/$\sqrt{Hz}$
		f=1kHz			0.2		pA/$\sqrt{Hz}$
Total Harmonic Distortion	THD	f=1kHz, A_V=2, R_L=2kΩ			0.01		%

TYPICAL APPLICATION CIRCUIT