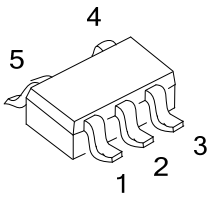
ULV2361

LINEAR INTEGRATED CIRCUIT

HIGH-PERFORMANCE LOW-VOLTAGE OPERATIONAL AMPLIFIERS



SOT-25

■ DESCRIPTION

The UTC **ULV2361** is a high-performance operational amplifier. This device can be operated at a very low supply voltage (±1V), while maintaining a wide output swing. The UTC **ULV2361** offers a dramatically improved dynamic range of signal conditioning in low-voltage system. The UTC **ULV2361** also provides higher performance than other general-purpose operational amplifier by combining higher unity-gain bandwidth and faster slew rate. With its low distortion and low-noise performance, it is well suited for audio applications.

■ FEATURES

* Low Supply-Voltage Operation: $V_{-/}$=±1V (Min.)
* Wide Bandwidth: 4MHz (Typ.) at V_{CC}=±2.5V
* High Slew Rate: 2V/μs (Typ.) at V_{CC}=±2.5V
* Wide Output Voltage Swing: ±2.4V (Typ.) at V_{CC}=±2.5V, R_L=10 kΩ

■ ORDERING INFORMATION

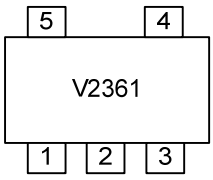
Ordering Number		Package	Packing
Lead Free	Halogen Free		
ULV2361L-AF5-R	ULV2361G-AF5-R	SOT-25	Tape Reel

ULV2361G-AF5-R

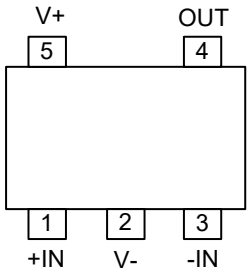
(1)Packing Type
(2)Package Type
(3)Green Package

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

■ MARKING



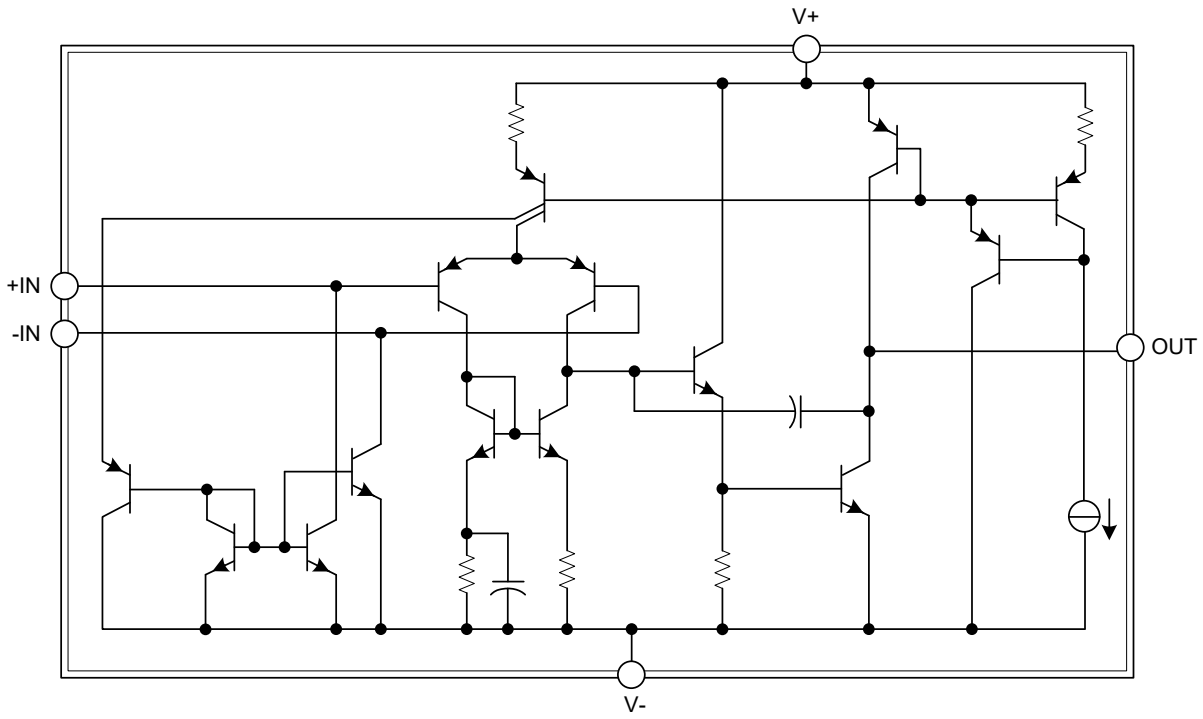
■ PIN CONFIGURATION



■ PIN DESCRIPTION

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

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage (Note 2)	V+	3.5	V
	V-	-3.5	V
Differential Input Voltage (Note 3)	V_{ID}	±3.5	V
Input Voltage (any input) (Notes 2, 4)	V_I	$\pm V_{CC}$	V
Output Voltage	V_O	±3.5	V
Output Current	I_O	20	mA
Operating Virtual Junction Temperature	T_J	+150	°C
Storage Temperature Range	T_{STG}	-65 ~ +150	°C

Notes: 1. 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.
2. All voltage values, except differential voltages, are with respect to the midpoint between V+ and V-.
3. Differential voltages are at +IN with respect to -IN.
4. All input voltage values must not exceed V_{CC}.

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V+/V-	±1 ~ ±2.5	V
Operating Free Air Temperature	T_A	-40 ~ +85	°C

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	230	°C/W

■ ELECTRICAL CHARACTERISTICS (V_{CC}=±2.5V, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Current	I_{CC}	V_O=0, No load		2.5	5	mA
Supply-Voltage Rejection Ratio	PSRR	V+/V- =±1.5V ~ ±2.5V		75		dB
Input Offset Voltage	V_{OS}	V_O=0, V_{CM}=0		1	6	mV
Input Bias Current	I_B	V_O=0, V_{CM}=0		35	150	nA
Input Offset Current	I_{OS}	V_O=0, V_{CM}=0		10	100	nA
Common-Mode Voltage Range	V_{CM}	$\lvert V_{OS} \rvert \leq$7.5mV	±1.5			V
Common-Mode Rejection Ratio	CMRR	V_{CM}=±0.5V		85		dB
Large-Signal Voltage Amplification	A_V	V_O=±1V, R_L=10kΩ	60	85		dB
Maximum Positive-Peak Output Voltage	V_{OM+}	R_L=10kΩ	2	2.4		V
Maximum Negative-Peak Output Voltage	V_{OM-}	R_L=10kΩ	-2	-2.4		V
Slew Rate	SR	A_V=1, V_I=±0.5V		2		V/μs
Gain-Bandwidth Product	GBW	A_V=40, R_L=10kΩ, C_L=100pF		4		MHz
Equivalent Input Noise Voltage	V_n	R_S=100Ω, R_F=10kΩ, f=1kHz		10		nV/$\sqrt{Hz}$
Total Harmonic Distortion, Plus Noise	THD+N	A_V=1, V_O=±1.2V, R_L=10kΩ, f=3kHz		0.004		%

■ ELECTRICAL CHARACTERISTICS (V_{CC}=±1.5V, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Current	I_{CC}	V_O=0, No load		2.5	4	mA
Supply-Voltage Rejection Ratio	PSRR	V+/V- =±1.5V ~ ±2.5V		75		dB
Input Offset Voltage	V_{OS}	V_O=0, V_{CM}=0		1	6	mV
Input Bias Current	I_B	V_O=0, V_{CM}=0		35	150	nA
Input Offset Current	I_{OS}	V_O=0, V_{CM}=0		10	100	nA
Common-Mode Voltage Range	V_{CM}	$\mid V_{OS} \mid \leq$7.5mV	±0.5			V
Common-Mode Rejection Ratio	CMRR	V_{CM}=±0.5V		75		dB
Large-Signal Voltage Amplification	A_V	V_O=±1V, R_L=10kΩ	60	80		dB
Maximum Positive-Peak Output Voltage	V_{OM+}	R_L=10kΩ	1.2	1.4		V
Maximum Negative-Peak Output Voltage	V_{OM-}	R_L=10kΩ	-1.2	-1.4		V
Slew Rate	SR	A_V=1, V_I=±0.5V		1.8		V/μs
Gain-Bandwidth Product	GBW	A_V=40, R_L=10kΩ, C_L=100pF		3.5		MHz
Equivalent Input Noise Voltage	V_n	R_S=100Ω, R_F=10kΩ, f=1kHz		12		nV/$\sqrt{Hz}$

■ TYPICAL CHARACTERISTICS