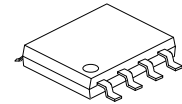


**ULV8522****CMOS IC****12 μ A, RAIL-TO-RAIL
INPUT/OUTPUT, CMOS
OPERATIONAL AMPLIFIER****■ DESCRIPTION**

The UTC **ULV8522** (dual) is low cost, voltage feedback amplifier. The device consuming only 12 μ A quiescent current per amplifier, while can operate from 2.1V to 5.5V single supply. It provides rail-to-rail input with a wide input common mode voltage range and rail-to-rail output voltage swing.

The UTC **ULV8522** is designed into a wide range of applications, such as buffering ASIC, battery-powered instrumentation, safety monitoring, portable systems, and transducer interface circuits in low power systems. The device offers a gain-bandwidth product of 170kHz. It's well suited for piezoelectric sensors, integrators and photodiode amplifiers.



SOP-8

■ FEATURES

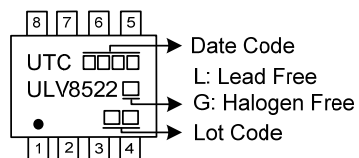
- * Supply Voltage: 2.1V ~ 5.5V
- * Low Supply Current /Amplifier: 12 μ A (Typ.)
- * Input Offset Voltage: 5.5mV (Max)
- * Rail-to-Rail Input and Output
- * Slew Rate: 0.08V/ μ s (Typ.)

■ ORDERING INFORMATION

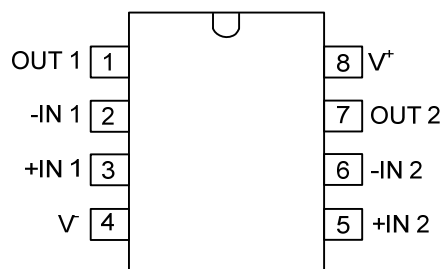
Ordering Number		Package	Packing
Lead Free	Halogen Free		
ULV8522L-S08-R	ULV8522G-S08-R	SOP-8	Tape Reel

ULV8522G-S08-R	(1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) S08: SOP-8 (3) G: Halogen Free and Lead Free, L: Lead Free
----------------	--	---

MARKING



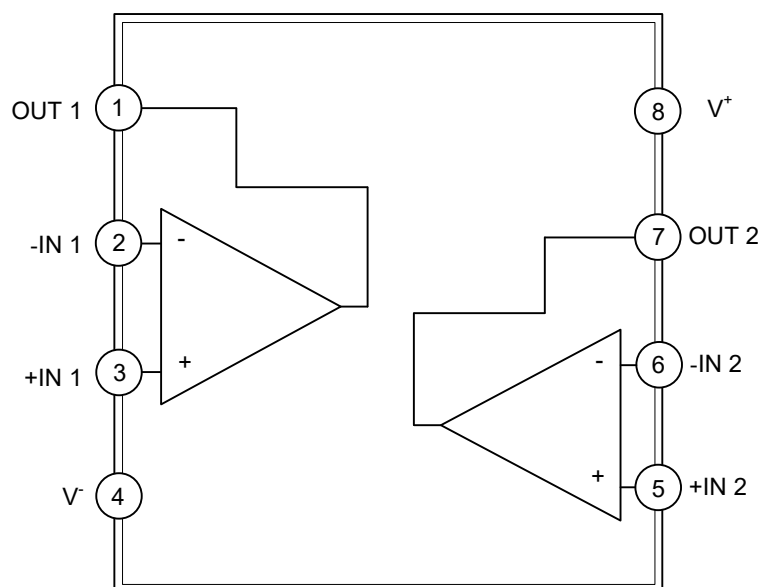
PIN CONFIGURATION



PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	OUT 1	Output of 1 AMP
2	-IN 1	Inverting Input of 1 AMP
3	+IN 1	Non-inverting input of 1 AMP
4	V ⁻	Negative power supply
5	+IN 2	Non-inverting input of 2 AMP
6	-IN 2	Inverting input of 2 AMP
7	OUT 2	Output of 2 AMP
8	V ⁺	Positive power supply

BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage, V^+ to V^-	V_S	6	V
Common-Mode Input Voltage	V_{CM}	$V^- - 0.3 \sim V^+ + 0.3$	V
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. Input terminals are diode-clamped to the power-supply rails. Input signals that can swing more than 0.3V beyond the supply rails must be current-limited to 10mA or less.
3. Short-circuit to ground.

■ RECOMMENDED OPERATING CONDITIONS

over operating free-air temperature range (unless otherwise specified)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Supply Voltage	$V^+ - V^-$	2.1		5.5	V
Operating Free-Air Temperature	T_{OPR}	-40		+125	°C

■ ELECTRICAL CHARACTERISTICS

($V_S=+5V$, $R_L=500k\Omega$, and $V_{OUT}=V_S / 2$, $T_A=25^\circ C$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Current/Amplifier	I_Q	$I_{OUT}=0$		12	20	μA
Power Supply Rejection Ratio	PSRR	$V_S=+2.5V \sim +5.5V$, $V_{CM}=0.5V$	65	95		dB
Input Offset Voltage	V_{OS}	$V_{CM}=V_S/2$		1.5	5.5	mV
Input Offset Voltage Drift	$\Delta V_{OS}/\Delta T$			3.5		$\mu V/^\circ C$
Input Bias Current	I_B			5		pA
Input Offset Current	I_{OS}			5		pA
Common-Mode Voltage Range	V_{CM}	$V_S=5.5V$		-0.1~ 5.6		V
Common-Mode Rejection Ratio	CMRR	$V_S=5.5V$, $V_{CM}=-0.1V \sim 4V$	70	92		dB
		$V_S=5.5V$, $V_{CM}=-0.1V \sim 5.6V$	60	78		dB
		$R_L=500k\Omega$, $V_O=0.015V \sim 4.985V$	90	106		dB
		$R_L=100k\Omega$, $V_O=0.1V \sim 4.9V$	88	104		dB
Large Signal Voltage Gain	A_V	$R_L=500k\Omega$, V_{OH}	4.990	4.998		V
		$R_L=500k\Omega$, V_{OL}		5	10	mV
Short-Circuit Current	I_{SC}	Sourcing	60	83		mA
		Sinking	60	72		mA
Slew Rate	SR	$R_L=100k\Omega$		0.08		V/ μs
Gain-Bandwidth Product	GBW			170		kHz
Input Voltage Noise Density	e_n	f=1kHz		90		nV/ $\sqrt{Hz}$
		f=10kHz		48		nV/ $\sqrt{Hz}$

■ TYPICAL APPLICATION CIRCUIT

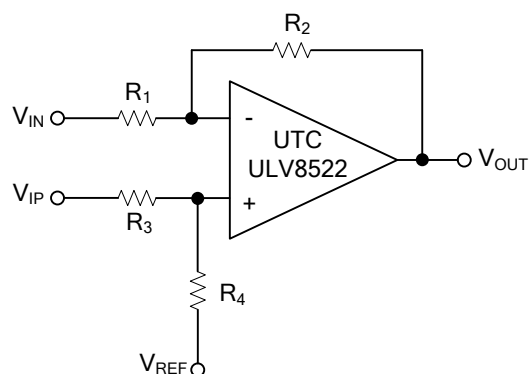


Figure 1: Differential Amplifier

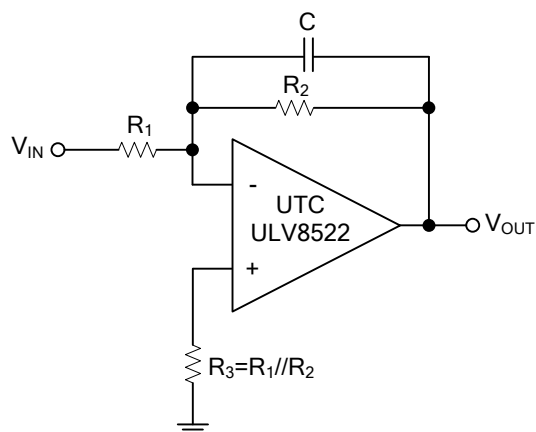
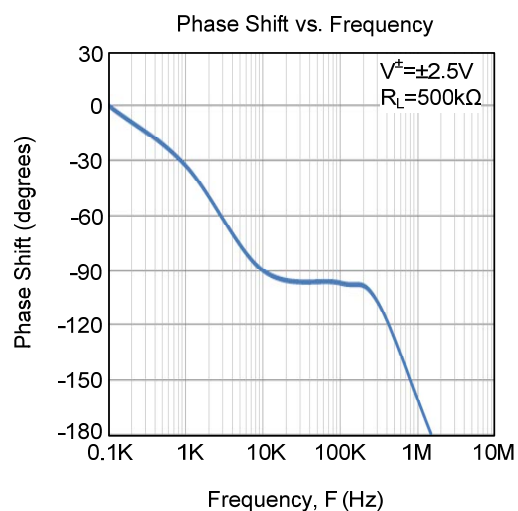
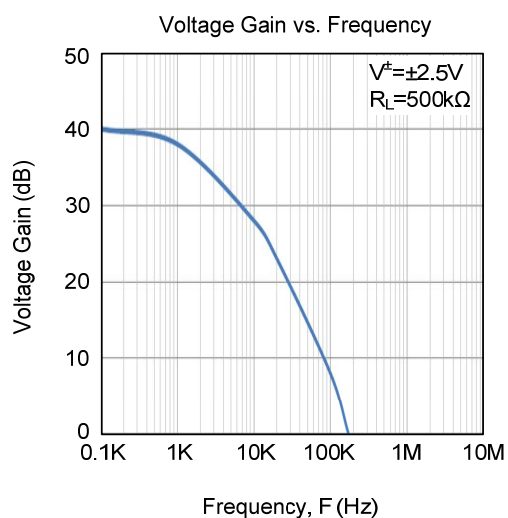
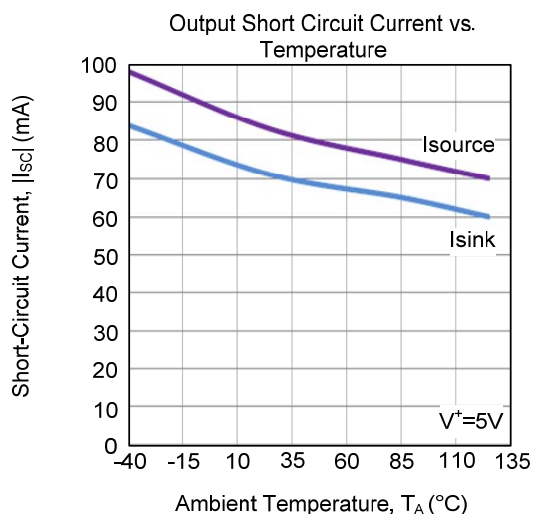
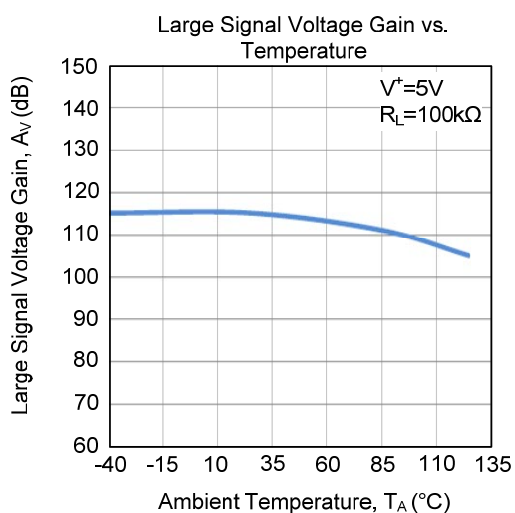
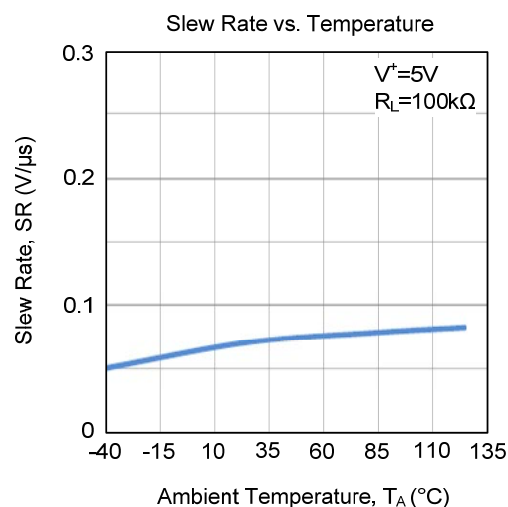
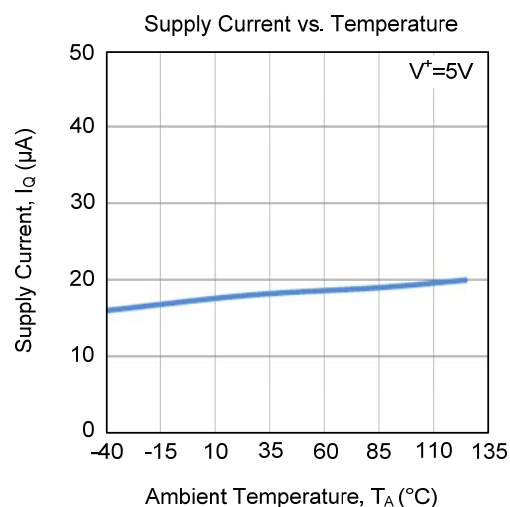


Figure 2: Active Low-Pass Filter

TYPICAL CHARACTERISTICS



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.