

ULV8532 Preliminary CMOS IC

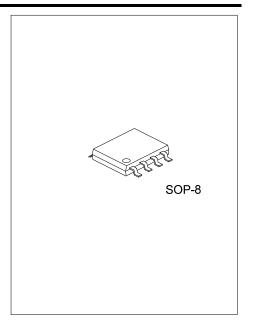
500kHz, 25µA, RAIL-TO-RAIL INPUT/OUTPUT, CMOS OPERATIONAL AMPLIFIER

■ DESCRIPTION

The UTC **ULV8532** (dual) is low cost, voltage feedback amplifier. The device can operate from 2.1V to 5.5V single supply, while consuming only 25µA quiescent current per amplifier. It provides rail-to-rail input with a wide input common mode voltage range and rail-to-rail output voltage swing. This feature makes UTC **ULV8532** appropriate for buffering ASIC.

The UTC **ULV8532** offers a gain-bandwidth product of 500kHz. It's well suited for piezoelectric sensors, integrators and photodiode amplifiers.

The UTC **ULV8532** is designed into a wide range of applications, such as battery-powered instrumentation, safety monitoring, portable systems, and transducer interface circuits in low power systems.



■ FEATURES

* Supply Voltage Range: 2.1V ~ 5.5V

* Low Cost

* Input Offset Voltage: 1.0mV (TYP)

* Unity-Gain Stable

* Gain-Bandwidth Product: 500kHz

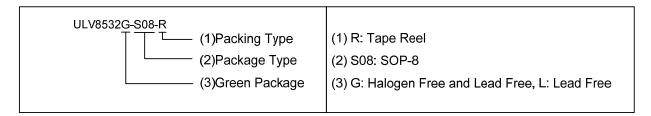
* Rail-to-Rail Input and Output

* Input Voltage Range: $-0.1V \sim 5.6V$ with $V_S = 5.5V$

* Low Supply Current: 25µA/Amplifier

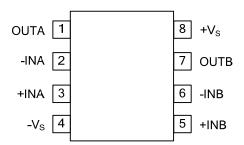
■ ORDERING INFORMATION

Ordering	Number	Package	Dealine	
Lead Free	Lead Free Halogen Free		Packing	
ULV8532L-S08-R	ULV8532G-S08-R	SOP-8	Tape Reel	



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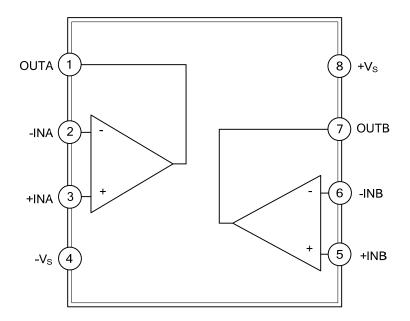
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION			
1	OUTA	Output pin of A AMP			
2	-INA	Invert input pin of A AMP			
3	+INA	Non-invert input of A AMP			
4	-Vs	Negative power supply			
5	+INB	Non-invert input of B AMP			
6	-INB	Invert input pin of B AMP			
7	OUTB	Output pin of B AMP			
8	+V _S	Positive power supply			

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	+V _S to -V _S	6	V
Input Common Mode Voltage Range	V_{ICM}	$(-V_S) - 0.3 \sim (+V_S) + 0.3$	V
Junction Temperature	TJ	+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

PARAMETER	SYMBOL	RATINGS	UNIT
Operating Temperature Range	T _A	-40 ~ +125	°C

■ THERMAL DATA (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Junction-to-Ambient Thermal Resistance	θ_{JA}	158	°C/W

■ ELECTRICAL CHARACTERISTICS

 $(T_A=25^{\circ}C, V_S=5V, R_L=200k\Omega$ connected to $V_S/2$ and $V_{OUT}=V_S/2$, unless otherwise specified)

$(I_A=25^{\circ}C, V_S=5V, R_L=200K\Omega$ col	nnected to	$V_S/2$ and $V_{OUT} = V_S/2$, unless otherwise	specifie	ea)		
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Characteristics						
Input Offact Voltage	Vos	$V_{CM} = V_S/2$		1.0	5.5	mV
Input Offset Voltage		V _{CM} = V _S /2, T _A = -40°C~125°C			7.4	mV
Input Offset Voltage Drift	$\Delta V_{OS}/\Delta T$			2.0		μV/°C
Input Bias Current	I _B			1		pА
Input Offset Current	Ios			1		pА
Input Common Mode Voltage Range	V _{CM}	V _S = 5.5V		-0.1~ 5.6		V
		$V_S = 5.5V$, $V_{CM} = -0.1V \sim 4V$	71	92		dB
Common Mada Daiastian Datia	01400	T _A = -40°C~125°C	68			dB
Common Mode Rejection Ratio	CMRR	$V_S = 5.5V$, $V_{CM} = -0.1V \sim 5.6V$	60	78		dB
		T _A = -40°C~125°C	57			dB
		$R_L = 5k\Omega$, $V_{OUT} = 0.1V \sim 4.9V$	72	88		dB
Onen Leen Veltere Cein		T _A = -40°C~125°C	68			dB
Open-Loop Voltage Gain	A _V	$R_L = 100k\Omega$, $V_{OUT} = 0.035V \sim 4.965V$	82	92		dB
		T _A = -40°C~125°C	78			dB
Power Supply			_			_
				25	53	μΑ
Quiescent Current/Amplifier	IQ	T _A = -40°C~125°C			59	μΑ
Danier Committee Daties Daties	DODD	$V_S = 2.5V \sim 5.5V, V_{CM} = 0.5V$	70	90		dB
Power Supply Rejection Ratio	PSRR	T _A = -40°C~125°C	66			dB
On anotic a Maltana Bana			2.1		5.5	V
Operating Voltage Range		T _A = -40°C~125°C	2.5		5.5	V
Output Characteristics						
	V _{OH}	$R_L = 100k\Omega$	4.980	4.997		V
		T _A = -40°C~125°C	4.970			V
		$R_L = 100k\Omega$		3	20	mV
0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	V_{OL}	T _A = -40°C~125°C			30	mV
Output Voltage Swing	.,,	$R_L = 10k\Omega$	4.970	4.994		V
	V _{OH}	T _A = -40°C~125°C	4.960			V
	V _{OL}	$R_L = 10k\Omega$		6	30	mV
		T _A = -40°C~125°C			40	mV
Output Current	I _{SOURCE}	$R_L = 10\Omega$ to $V_S/2$	60	85		mA
		T _A = -40°C~125°C	45			mA
		$R_L = 10\Omega$ to $V_S/2$	60	72		mA
	I _{SINK}	T _A = -40°C~125°C	45			mA
Dynamic Performance (C _L = 10	0pF)	•	•			•
Slew Rate	SR	G = +1, 2V Output Step		0.2		V/µs
Gain-Bandwidth Product	GBW			500		kHz
Settling Time to 0.1%	ts	G = +1, 2V Output Step		19		μs
Overload Recovery Time		$V_{IN} \cdot G = V_S$		18		μs
Noise Performance	•		•			
	en	f = 1kHz		35		nV √Hz
Input Voltage Noise Density		f = 10kHz		25		nV √Hz

TYPICAL APPLICATION CIRCUIT

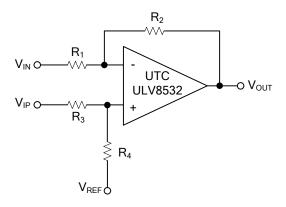


Figure 1: Differential Amplifier

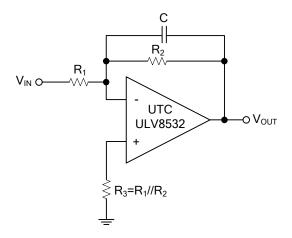


Figure 2: Active Low-Pass Filter

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