

**ULV334**

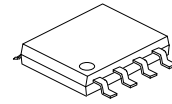
Preliminary

CMOS IC

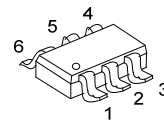
**ZERO-DRIFT, SINGLE-SUPPLY
CMOS OPERATIONAL
AMPLIFIERS****■ DESCRIPTION**

The UTC **ULV334** is high-precision, low quiescent current CMOS operational amplifiers with very low offset voltage (20 μ V typ.), and near-zero drift over time by using new auto-zeroing techniques. This amplifier offer high input impedance and rail-to-rail output swing. Single or dual supplies could be as low as +2.7V (± 1.35 V) and up to +5.5V (± 2.75 V).

This op amp is optimized for low-voltage, single-supply operation.



SOP-8



SOT-26

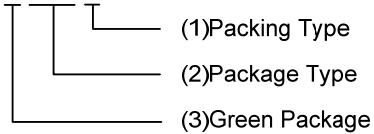
■ FEATURES

- * Low offset voltage: 20 μ V (typ.)
- * Single-supply operation
- * SHUTDOWN

■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
ULV334L-AG6-R	ULV334G-AG6-R	SOT-26	Tape Reel
ULV334L-S08-R	ULV334G-S08-R	SOP-8	Tape Reel

ULV334G-AG6-R

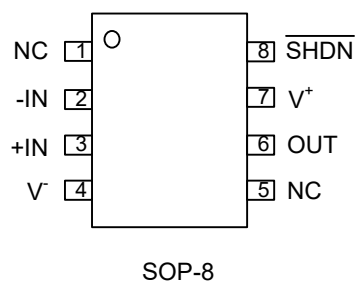
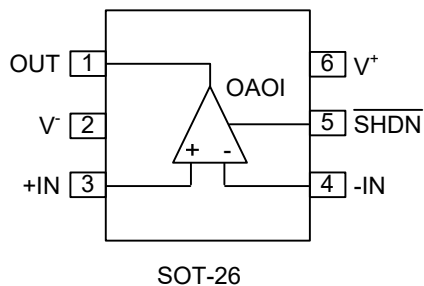


- (1) R: Tape Reel
(2) AG6: SOT-26, S08: SOP-8
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING

SOT-26	SOP-8

■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.		PIN NAME	DESCRIPTION
SOT-26	SOP-8		
1	6	OUT	Output
2	-	V ⁻	Negative Power Supply
3	3	+IN	Non-Inverting Input
4	2	-IN	Inverting Input
5	8	SHDN	Shutdown
6	7	V ⁺	Positive Power Supply
-	1, 5	NC	No Connect

■ ABSOLUTE MAXIMUM RATING

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage			+7	V
Signal Input Terminals	Voltage (Note 2)		-0.5 ~ (V+)+0.5	V
	Current (Note 2)		±10	mA
Output Short Circuit (Note 3)			continuous	
Junction Temperature		T _J	+150	°C
Operating Temperature		T _{OPR}	-40 ~ +125	°C
Storage Temperature		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 0.5V beyond the supply rails should be current-limited to 10mA or less.

3. Short-circuit to ground, one amplifier per package.

■ THERMAL DATA

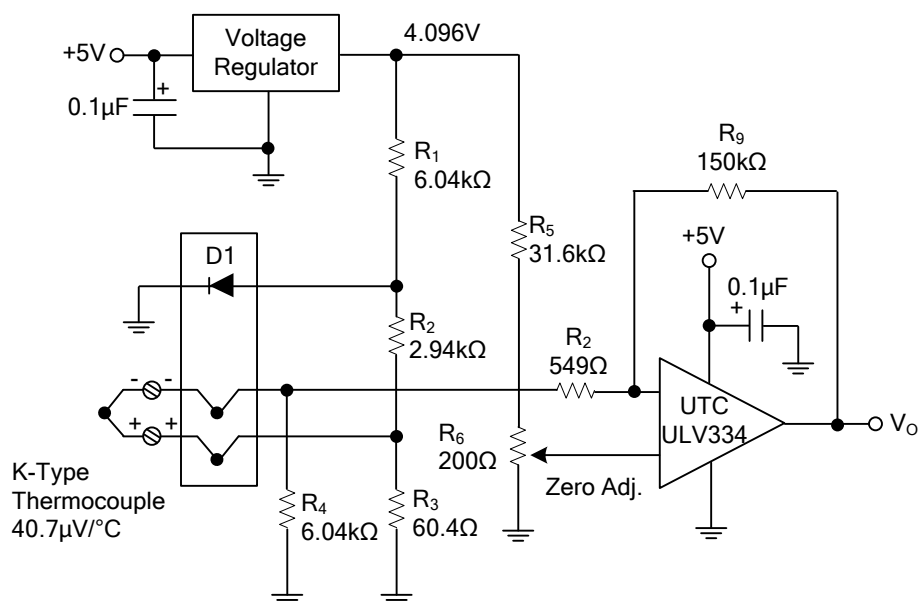
PARAMETER		SYMBOL	RATING	UNIT
Junction to Ambient	SOT-26	θ_{JA}	210	°C/W
	SOP-8		160	°C/W

■ ELECTRICAL CHARACTERISTICS

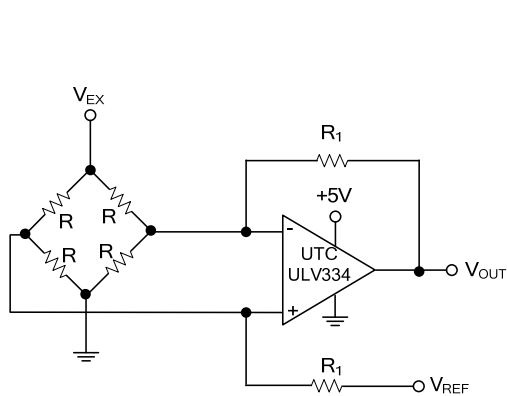
(T_A=25°C, V_S=+5V, R_L=10kΩ connected to V_S/2, and V_{OUT}=V_S/2, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
POWER SUPPLY						
Operating Voltage Range			2.7		5.5	V
Quiescent Current	I _Q	I _O =0		480	800	μA
Shutdown Current	I _{QSD}				2	μA
Power Supply Rejection Ratio	PSRR	V _S =+2.7V to +5.5V, V _{CM} =0	80	88		dB
OFFSET VOLTAGE						
Input Offset Voltage	V _{OS}	V _{CM} = V _S /2		20	40	μV
Input Bias Current						
Input Bias Current	I _B	V _{CM} = V _S /2		±100		pA
Input Offset Current	I _{OS}			±200		pA
INPUT VOLTAGE RANGE						
Common-Mode Voltage Range	V _{CM}		(V ₋)-0.1		(V ₊)-1.5	V
Common-Mode Rejection Ratio	CMRR	(V ₋)-0.1V < V _{CM} < (V ₊)-1.5V	90	110		dB
OPEN-LOOP GAIN						
Open-Loop Voltage Gain, Over Temperature A _{OL}	A _V	50mV < V _O < (V ₊) -50mV, R _L = 100kΩ, V _{CM} = V _S /2	80	105		dB
OUTPUT						
Voltage Output Swing from Rail		R _L = 10kΩ		20	100	mV
Short-Circuit Current	I _{SC}			±65		mA
FREQUENCY RESPONSE						
Gain-Bandwidth Product	GBW			2.5		MHz
Slew Rate	SR	G=+1		2.3		V/μs
NOISE						
Input Voltage Noise	e _n	f = 0.01Hz to 10Hz		1.5		μV _{PP}
Input Current Noise Density	i _n	f = 10Hz		21		fA/√Hz
INPUT CAPACITANCE						
Differential				1		pF
Common-Mode				5		pF

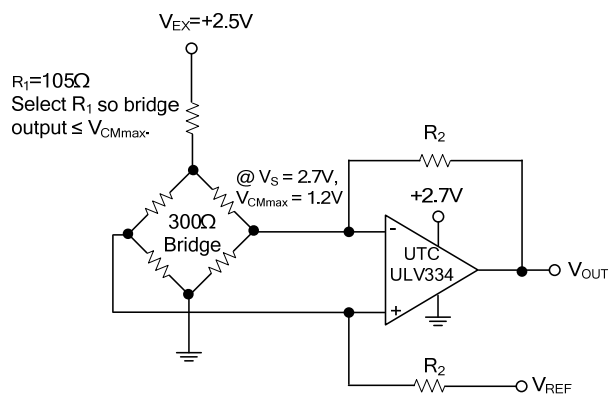
■ TYPICAL APPLICATION CIRCUIT



Temperature Measurement Circuit.



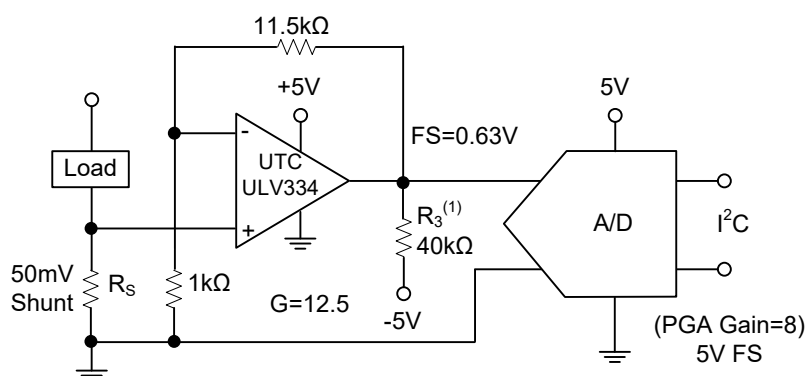
a. 5V Supply Bridge Amplifier.



b. 2.7V Supply Bridge Amplifier.

Single Op Amp Bridge Amplifier Circuits.

■ TYPICAL APPLICATION CIRCUIT (Cont.)



Note 1. Pull-down resistor to allow accurate swing to 0V.

Low-Side Current Measurement.

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.