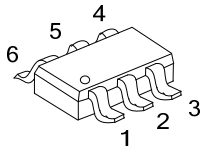
ZERO-DRIFT, SINGLE-SUPPLY CMOS OPERATIONAL AMPLIFIERS



SOT-26

■ DESCRIPTION

The UTC **ULV334** is high-precision, low quiescent current CMOS operational amplifiers with very low offset voltage (20μV 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 (±1.35V) and up to +5.5V (±2.75V).

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

■ FEATURES

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

■ ORDERING INFORMATION

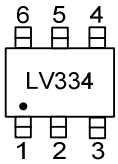
Ordering Number		Package	Packing
Lead Free	Halogen Free		
ULV334L-AG6-R	ULV334G-AG6-R	SOT-26	Tape Reel

ULV334G-AG6-R

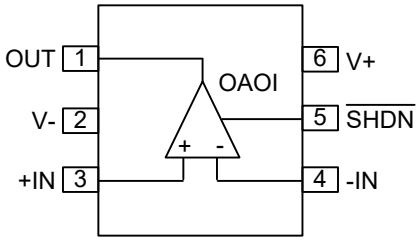
(1)Packing Type
(2)Package Type
(3)Green Package

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

■ MARKING



■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	OUT	Output
2	V-	Negative Power Supply
3	+IN	Non-Inverting Input
4	-IN	Inverting Input
5	SHDN	Shutdown
6	V+	Positive Power Supply

■ 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

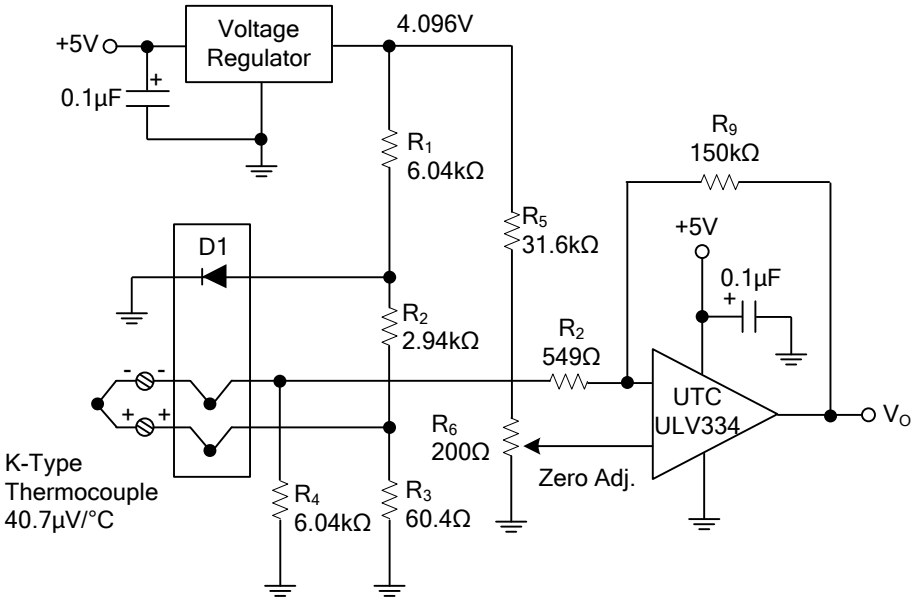
PARAMETER	SYMBOL	RATING	UNIT
Junction to Ambient	θ_{JA}	230	°C/W

■ ELECTRICAL CHARACTERISTICS

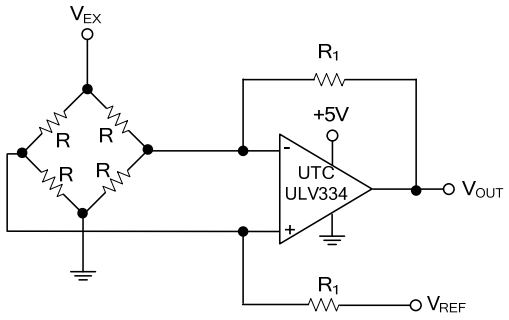
(T_A=25°C, V_S=+5V, R_L=10kΩ connected to V_S/2, and V_{OUT}=V_S /2, unless otherwise specified)

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/$\sqrt{Hz}$
INPUT CAPACITANCE						
Differential				1		pF
Common-Mode				5		pF

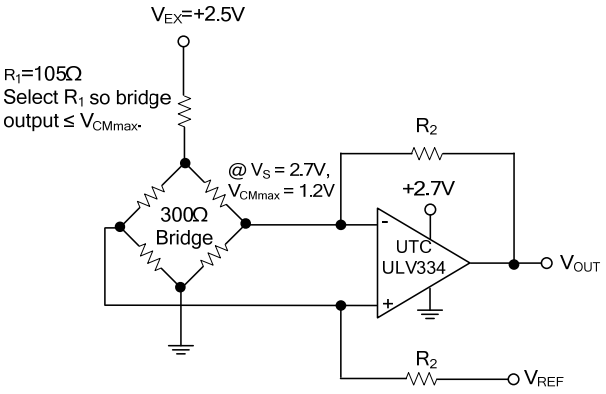
■ TYPICAL APPLICATION CIRCUIT



Temperature Measurement Circuit.



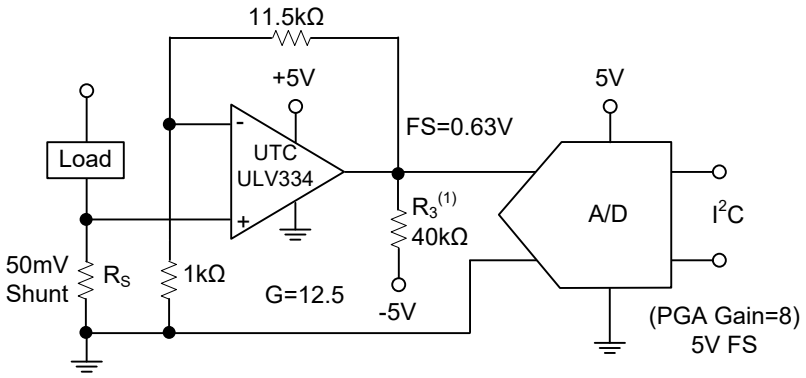
a. 5V Supply Bridge Amplifier.



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.