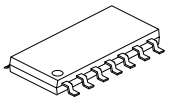
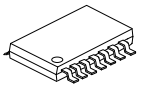
ULV8554

CMOS IC

ZERO-DRIFT, SINGLE-SUPPLY, RAIL-TO-RAIL INPUT/OUTPUT CMOS OPERATIONAL AMPLIFIERS



SOP-14



TSSOP-14

■ DESCRIPTION

The UTC **ULV8554** has ultralow offset, drift, and bias current. The UTC **ULV8554** is quad amplifiers featuring rail-to-rail input and output swings. Single supply as low as 2.7V and up to 5V may be used.

With an offset voltage of only 1μV(Typ). The UTC **ULV8554** is perfectly suited for applications in which error sources cannot be tolerated. Position and pressure sensors and strain gage amplifiers benefit greatly from nearly zero drift. The rail-to-rail input and output swings provided by the UTC **ULV8554** make both high-side and low-side sensing easy.

■ FEATURES

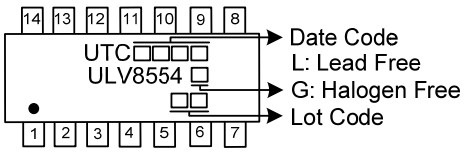
* Supply Voltage: 2.7V ~ 5.0V
* Supply Current: 725μA/amplifier (Typ.)
* Input Offset Voltage: 20μV (Max.)
* Rail-to-rail input and output swing
* Slew Rate: 0.33V/μs (Typ.)
* No external capacitors required

■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
ULV8554L-S14-R	ULV8554G-S14-R	SOP-14	Tape Reel
ULV8554L-P14-R	ULV8554G-P14-R	TSSOP-14	Tape Reel

ULV8554G-S14-R (1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) S14: SOP-14, P14: TSSOP-14 (3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



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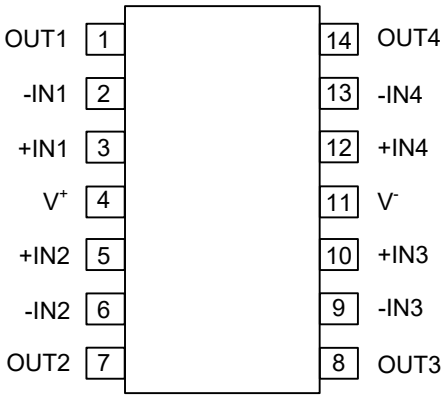
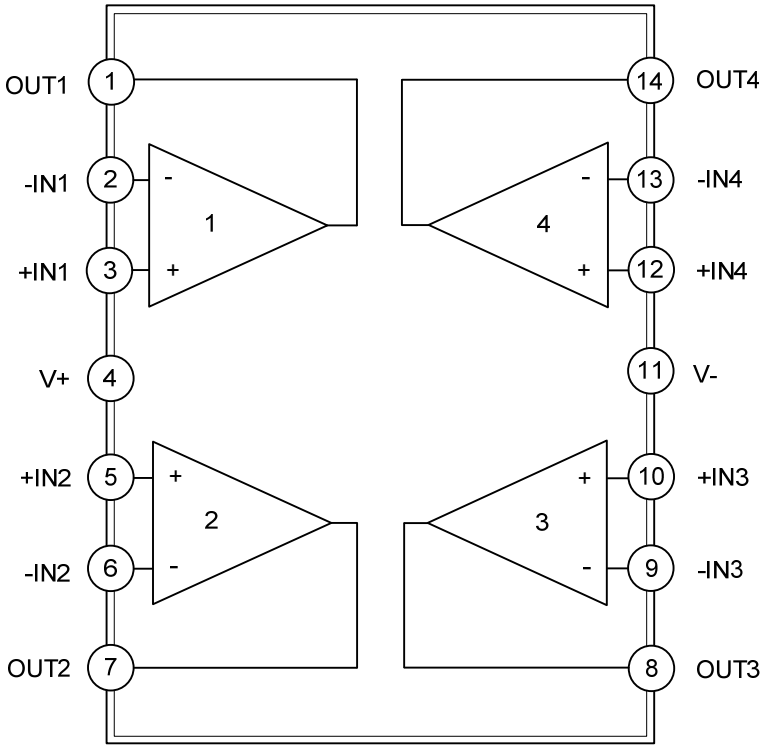
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	OUT1	Output of 1 AMP
2	-IN1	Inverting input of 1 AMP
3	+IN1	Non-inverting input of 1 AMP
4	V^+	Positive Power Supply
5	+IN2	Non-inverting input of 2 AMP
6	-IN2	Inverting input of 2 AMP
7	OUT2	Output of 2 AMP
8	OUT3	Output of 3 AMP
9	-IN3	Inverting input of 3 AMP
10	+IN3	Non-inverting input of 3 AMP
11	V^-	Negative Power Supply
12	+IN4	Non-inverting input of 4 AMP
13	-IN4	Inverting input of 4 AMP
14	OUT4	Output of 4 AMP

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V^+ - V^-$	6.0	V
Input Voltage	V_{IN}	GND - 0.3 ~ V_S + 0.3	V
Differential Input Voltage (Note 2)	V_{ID}	±5	V
Junction Temperature Range	T_J	-65 ~ +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. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

■ RECOMMENDED OPWRAING CONDITIONS

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	$V_+ - V_-$	2.7 ~ 5.0	V
Operating Free-Air Temperature	T_{OPR}	-40 ~ +125	°C

■ ELECTRICAL CHARACTERISTICS

(V^+=5.0V, V_{CM}=2.5V, V_O=2.5V, T_A=25°C unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Supply Current/Amplifier	I_Q	V_O=0V			875	1000	μA
Power Supply Rejection Ratio	PSRR	V^+=2.7V ~ 5.5V		98	115		dB
Input Offset Voltage	V_{OS}				1	20	μV
Input Bias Current	I_B				10		pA
Input Offset Current	I_{OS}				20		pA
Common-Mode Rejection Ratio	CMRR	V_{CM}=0V ~ +5V		100	125		dB
Large Signal Voltage Gain	A_V	R_L=10kΩ, V_O=0.3V ~ 4.7V		98	120		dB
Output Voltage	V_O	R_L=100kΩ	V_{OH}	4.97	4.99		V
			V_{OL}		1	10	mV
		R_L=10kΩ	V_{OH}	4.95	4.98		V
			V_{OL}		10	30	mV
Short-Circuit Current	I_{SC}			±25	±60		mA
Slew Rate	SR	R_L=10kΩ			0.33		V/μs
Gain-Bandwidth Product	GBW				1.3		MHz
Input Voltage Noise Density	e_n	f=1kHz			42		$nV/\sqrt{Hz}$

Note: Gain testing is dependent upon test bandwidth.

■ ELECTRICAL CHARACTERISTICS

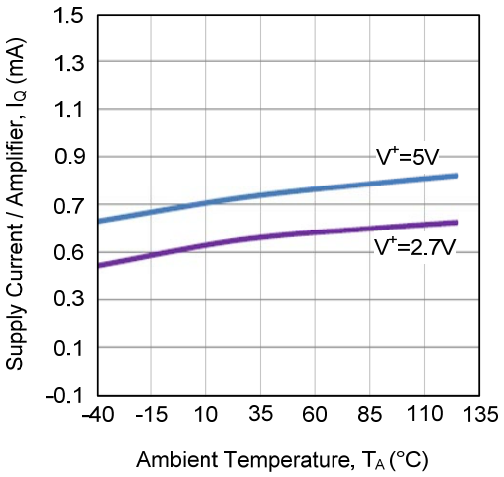
(V^+=2.7V, V_{CM}=1.35V, V_O=1.35V, T_A=25°C, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Supply Current/Amplifier	I_Q	V_O=0V			775	900	μA
Power Supply Rejection Ratio	PSRR	V^+=2.7V ~ 5.5V, V_{CM} < (V^-)+0.5V		98	115		dB
Input Offset Voltage	V_{OS}				1	20	mV
Input Bias Current	I_B				10		pA
Input Offset Current	I_{OS}				10		pA
Common-Mode Rejection Ratio	CMRR	V_{CM}=0V ~ 2.7V		100	125		dB
Large Signal Voltage Gain	A_V	V_O=0.3V ~ 2.4V , R_L=10kΩ		98	120		dB
Output Voltage	V_O	R_L=100kΩ	V_{OH}	2.67	2.69		V
			V_{OL}		1	10	mV
		R_L=10kΩ	V_{OH}	2.65	2.68		V
			V_{OL}		10	20	mV
Short-Circuit Current	I_{SC}	Sourcing, V_O=0V		±10	±20		mA
Slew Rate	SR	R_L=10kΩ			0.4		V/μs
Gain-Bandwidth Product	GBW				1		MHz
Input Voltage Noise Density	e_n	f=1kHz			75		$nV/\sqrt{Hz}$

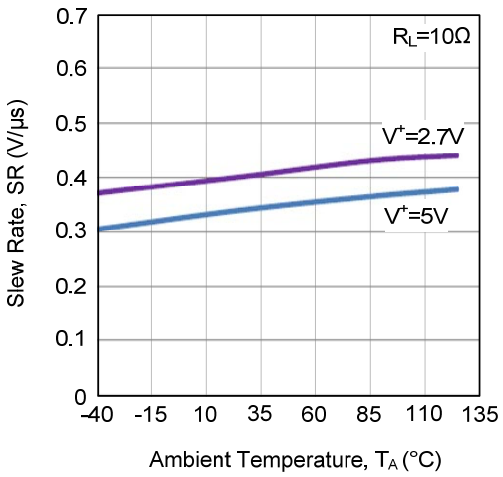
Note: Gain testing is dependent upon test bandwidth.

■ TYPICAL CHARACTERISTICS

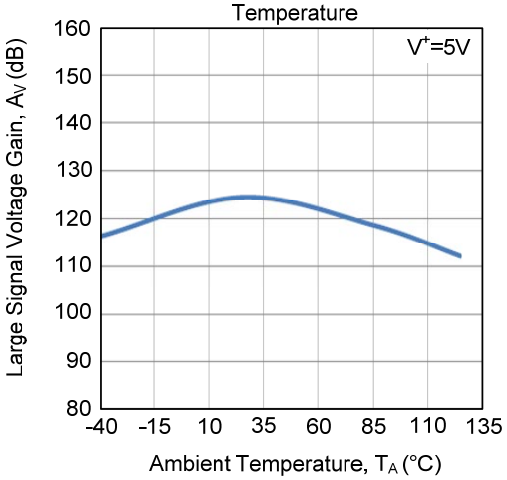
Supply Current vs. Temperature



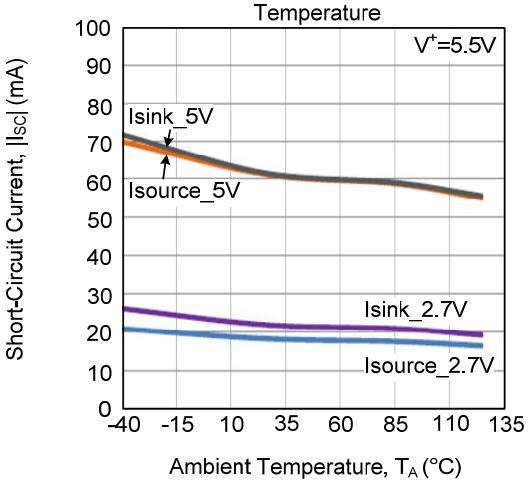
Slew Rate vs. Temperature



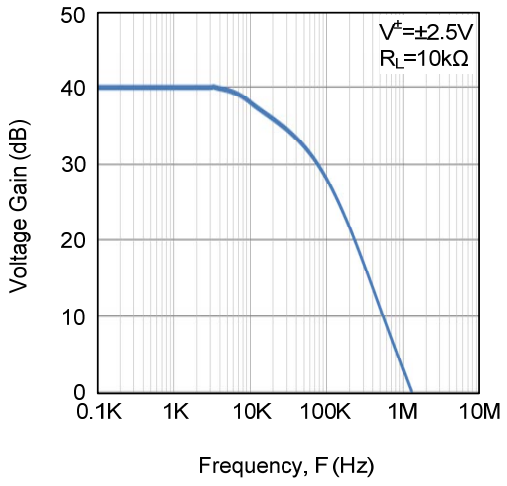
Large Signal Voltage Gain vs. Temperature



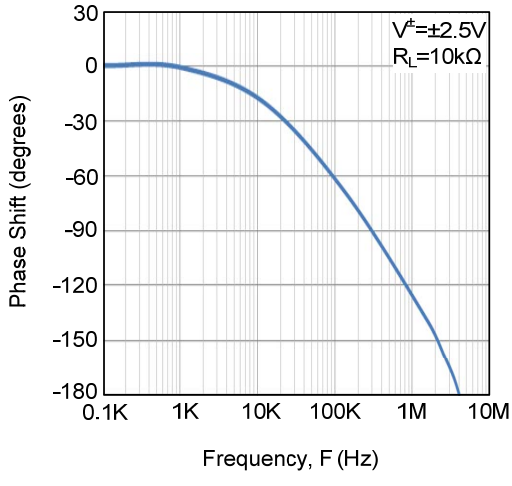
Output Short Circuit Current vs. Temperature



Voltage Gain vs. Frequency



Phase Shift vs. Frequency



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