



LV8544

CMOS IC

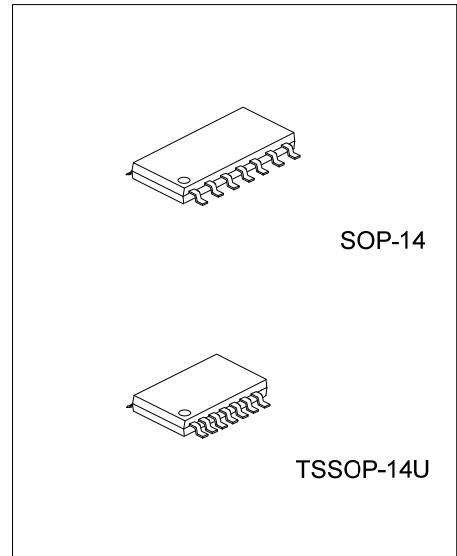
RAIL-TO-RAIL I/O CMOS QUAD AMP

DESCRIPTION

The UTC **LV8544** is a low cost rail to rail input and output quad OP AMP, Features in a wide input common-mode voltage range and output voltage swing. The minimum operating supply voltage down to 2.1V and the maximum recommended supply voltage is 5.5V. The operating temperature range extended -40°C to +125°C.

UTC **LV8544** suit for piezoelectric sensors, integrators, and photodiode amplifiers. Rail-to-rail inputs and outputs are useful to design buffering ASIC in single-supply systems.

The common applications for this device especially in very low power systems such as safety monitoring, portable equipment.



FEATURES

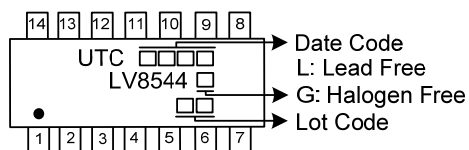
- * Operating voltage range: 2.1 V ~ 5.5 V
- * Supply Current/Amplifier: 120 μ A (Max.)
- * Low offset voltage: ± 3.5 mV (Max.)
- * Rail-to-Rail Input and Output
- * Slew Rate: 0.6 V/ μ s (Typ.)

ORDERING INFORMATION

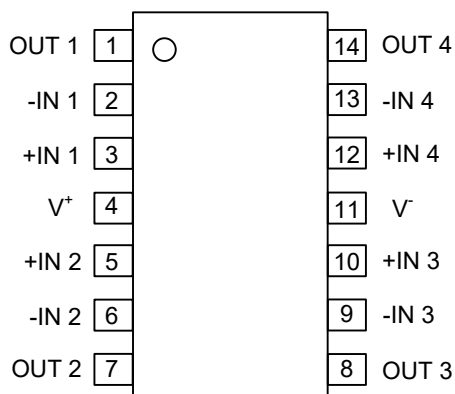
Ordering Number		Package	Packing
Lead Free	Halogen Free		
LV8544L-S14-R	LV8544G-S14-R	SOP-14	Tape Reel
LV8544L-UEB-R	LV8544G-UEB-R	TSSOP-14U	Tape Reel

LV8544G-S14-R (1) Packing Type (2) Package Type (3) Green Package	(1) R: Tape Reel (2) S14: SOP-14, UEB: TSSOP-14U (3) G: Halogen Free and Lead Free, L: Lead Free
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MARKING



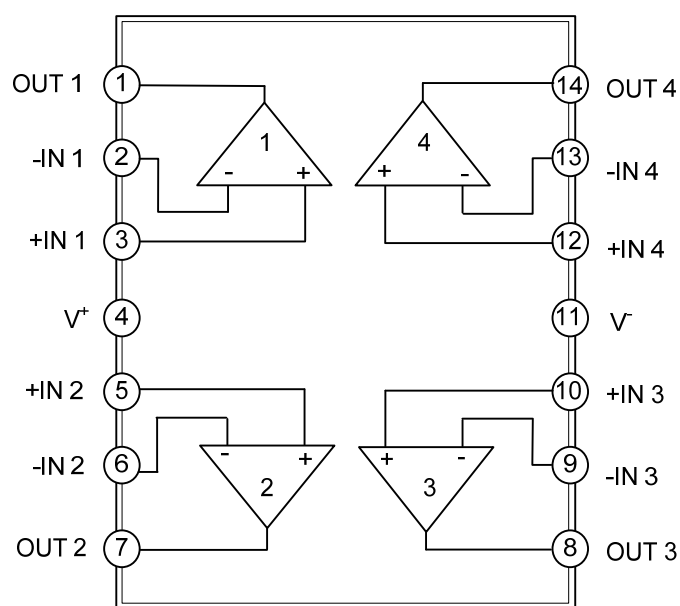
■ PIN CONFIGURATION



■ 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 ⁺	Positive 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	OUT 3	Output of 3 AMP
9	-IN 3	Inverting input of 3 AMP
10	+IN 3	Non-inverting input of 3 AMP
11	V ⁻	Negative power supply
12	+IN 4	Non-inverting input of 4 AMP
13	-IN 4	Inverting input of 4 AMP
14	OUT 4	Output of 4 AMP

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING (NOTE 1)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$(V^+ - V^-)$	7	V
Differential Input Voltage	V_{ID}	$V^- - 0.3 \sim V^+ + 0.3$	V
Junction Temperature	T_J	+150	°C
Storage Temperature	T_{STG}	-65 ~ +150	°C

Note: 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.

■ RECOMMENDED OPERATING CONDITIONS

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

■ ELECTRICAL CHARACTERISTICS

($V_S = +5V$, $R_L = 100k\Omega$, 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	$I_{OUT} = 0$		40	120	μA
Power Supply Rejection Ratio	PSRR	$V_S = +2.5V \sim +5.5V$ $V_{CM} = (-V_S) + 0.5V$	76	92		dB
Input Offset Voltage	V_{OS}				± 3.5	mV
Input Bias Current	I_B			0.5		pA
Input Offset Current	I_{OS}			0.5		pA
Common-Mode Voltage Range	V_{CM}	$V_S = 5.5V$	-0.1		5.6	V
Common Mode Rejection Ratio	CMRR	$V_S = 5.5V$, $V_{CM} = -0.1V \sim 5.6V$	60	85		dB
Large Signal Voltage Gain	A_V	$R_L = 5k\Omega$, $V_O = 0.1V \sim 4.9V$	80	91		dB
Output Voltage	V_O	$R_L = 100k\Omega$	V_{OH}	4.992		V
			V_{OL}	0.004		
Short-Circuit Current	I_{SC}	Sourcing, $V_O = 0V$	20	50		mA
		Sinking, $V_O = V^+$	20	70		mA
Slew Rate	SR	$G = +1$, 2V Output Step		0.6		V/ μs
Gain-Bandwidth Product	GBW			0.7		MHz
Input-Referred Voltage Noise	e_n	$f = 1kHz$		27		$nV/\sqrt{Hz}$
		$f = 10kHz$		20		$nV/\sqrt{Hz}$

■ TYPICAL APPLICATION CIRCUIT

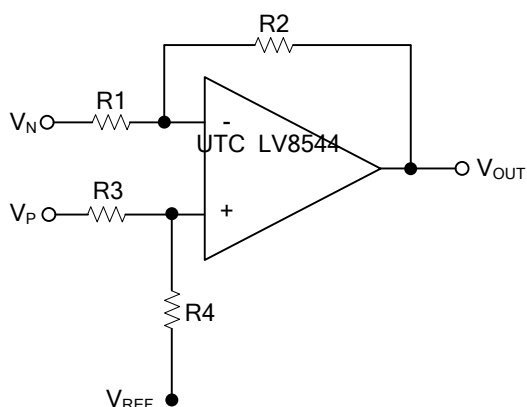


Figure 1. Differential Amplifier

Note: Figure 1 is the differential amplifier. $V_{OUT} = (V_P - V_N) \times R2/R1 + V_{ref}$ (when $R4/R3 = R2/R1$).

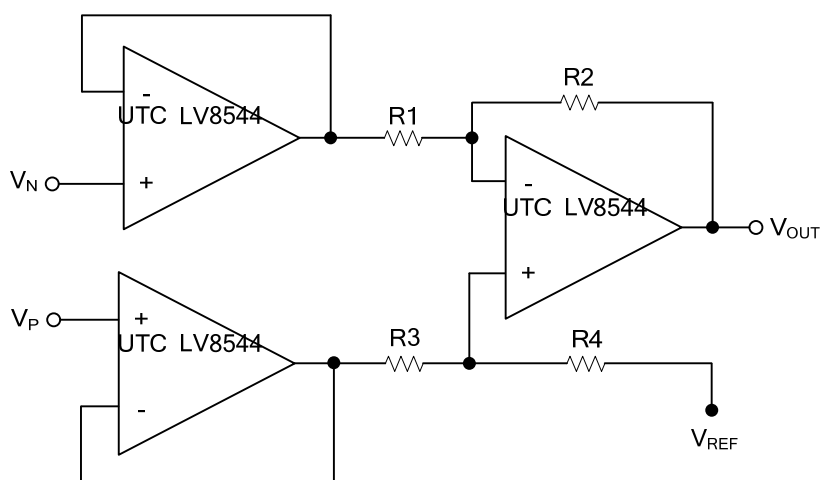


Figure 2. Instrumentation Amplifier

Note: The circuit in Figure 2 performs the same function as that in Figure 1 but with the high input impedance.

■ TYPICAL APPLICATION CIRCUIT (Cont.)

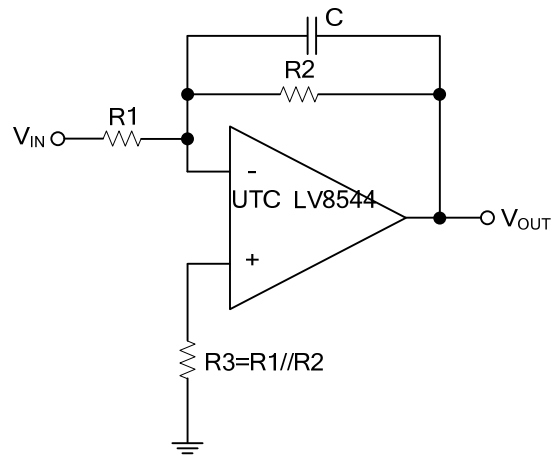
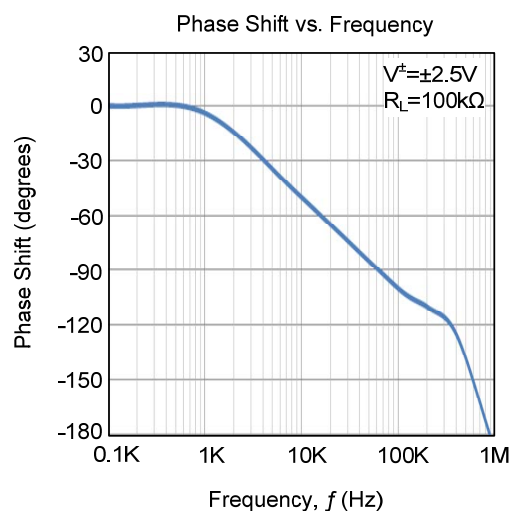
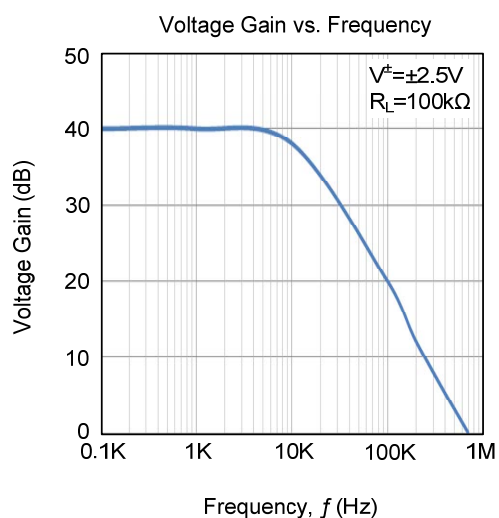
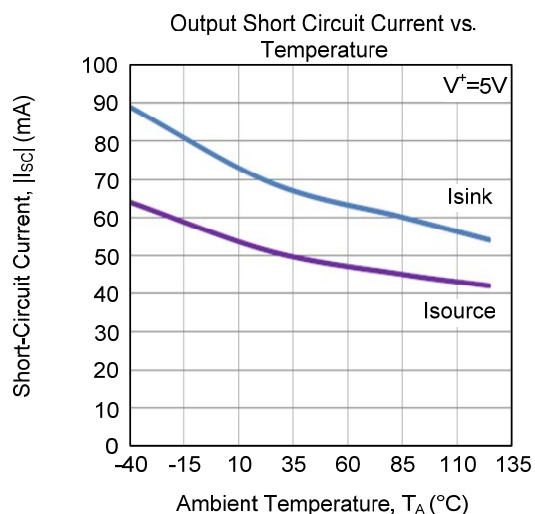
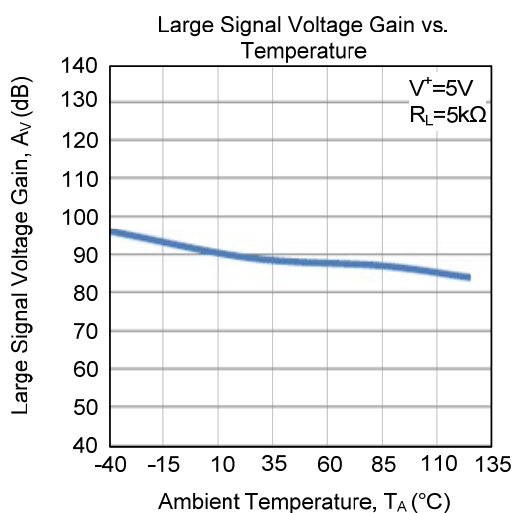
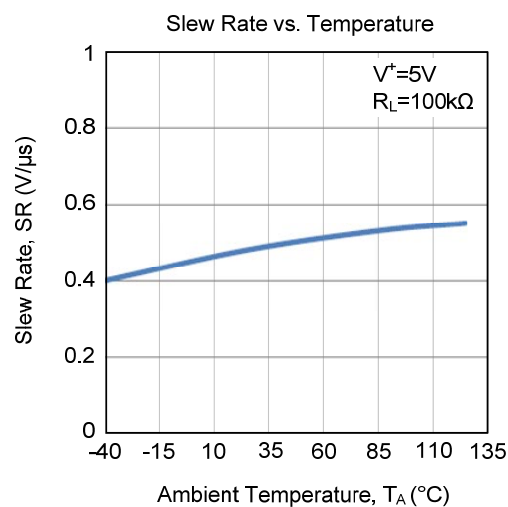
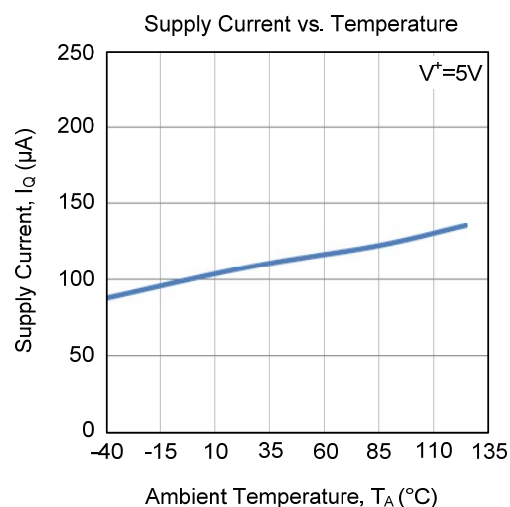


Figure 3. Low Pass Active Filter

Note: Figure 3 is the low pass filter. It's DC gain is $-R2/R1$ and the -3dB corner frequency is $1/2\pi R2C$.

■ TYPICAL CHARACTERISTICS



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