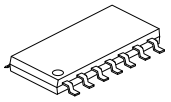
LOW POWER, RAIL-TO-RAIL OUTPUT OPERATIONAL AMPLIFIER



SOP-14

■ DESCRIPTION

The UTC **LV824** brings performance and economy to low voltage / low power system. With a 5.5MHz unity-gain frequency and 2.2 V/μs slew rate, the quiescent current is only 200μA/amplifier (5V). It provides rail-to-rail output swing into heavy load (600Ω Guarantees). The input common-mode voltage range includes ground, and the maximum input offset voltage is 3.5mV.

■ FEATURES

* Supply Voltage:2.5~5.5V
* Supply Current/Amplifier:0.35 mA (Max)
* Input Offset Voltage:3.5mV (Max)
* Rail-to-Rail Output
* Slew Rate: 2.2V/μs (Typ.)

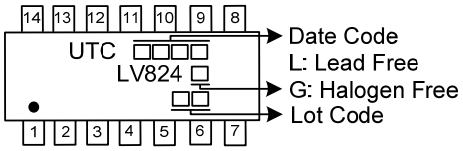
■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
LV824L-S14-R	LV824G-S14-R	SOP-14	Tape Reel

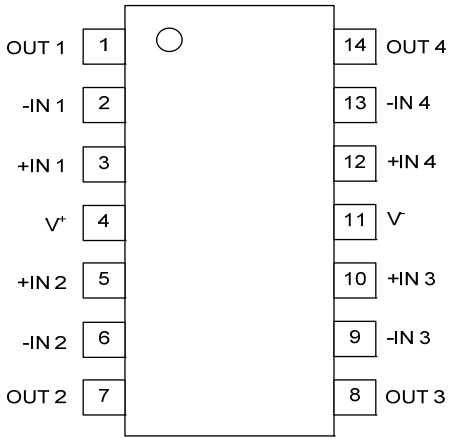
LV824G-S14-R

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

■ MARKING



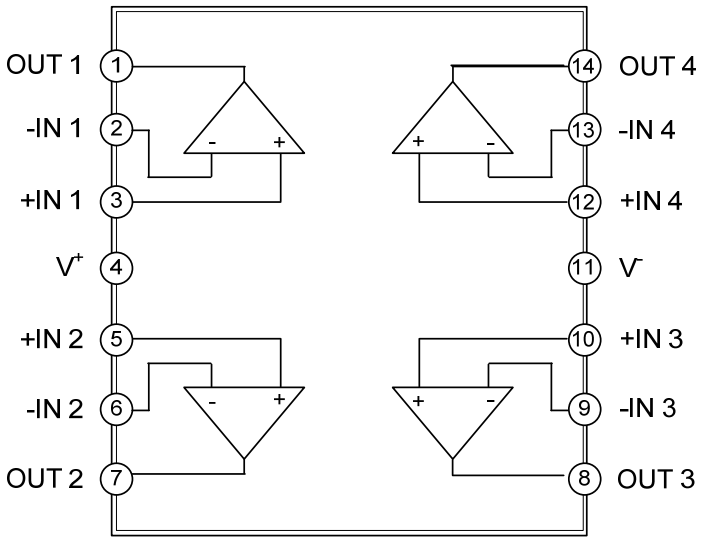
■ PIN CONFIGURATION



■ 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	$(V^+ - V^-)$	5.5	V
Differential Input Voltage	V_{ID}	Supply Voltage	
Junction Temperature (Note 3)	T_J	+150	°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. Applies to both single-supply and split-supply operation. Continuous short circuit operation at elevated ambient temperature can result in exceeding the maximum allowed junction temperature of 150°C. Output currents in excess of 45mA over long term may adversely affect reliability.
3. The maximum power dissipation is a function of $T_{J(max)}$, θ_{JA}, and T_A. The maximum allowable power dissipation at any ambient temperature is $P_D=(T_{J(max)} - T_A)/\theta_{JA}$. All numbers apply for packages soldered directly into a PC board.

■ RECOMMENDED OPWRAING CONDITIONS

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V^+ - V^-$	2.5 ~ 5.5	V
Operating Free-Air Temperature	T_{OPR}	-40 ~ +125	°C

■ ELECTRICAL CHARACTERISTICS

(T_A=25°C. V^+=2.5~5V, V^-=0V, V_{IC}=1~2V, V_O= V^+/2V and R_L > 1MΩ.)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Supply Current/Amplifier	I_Q				0.20	0.35	mA
Power Supply Rejection Ratio	PSRR	1.7V ≤V^+ ≤ 4V, V^-=1V, V_O=0V, V_{IC}=0V		68	75		dB
Input Offset Voltage	V_{OS}				1	3.5	mV
Input Bias Current	I_B				40		nA
Input Offset Current	I_{OS}				1		nA
Common-Mode Voltage Range	V_{CM}			-0.2		V^+-0.8	V
Common Mode Rejection Ratio	CMRR	0V≤V_{IC}≤4.0V		68	75		dB
Large Signal Voltage Gain	A_V	R_L=600Ω,V_O= V^+/2V~ V^+-0.5V		76	100		dB
		R_L=600Ω, V_O= V^+/2V ~0.5V		76	100		dB
		R_L=2kΩ,V_O= V^+/2V ~ V^+-0.5V		76	100		dB
		R_L=2kΩ,V_O= V^+/2V ~0.5V		76	100		dB
Output Voltage	V_O	R_L=600Ω	V_{OH}	V^+-0.25	V^+-0.15		V
			V_{OL}		0.17	0.250	V
		R_L=2kΩ	V_{OH}	V^+-0.15	V^+-0.10		V
			V_{OL}		0.10	0.15	V
Short-Circuit Current	I_{SC}	Sourcing, V_O=0V		20	45		mA
		Sinking, V_O= V^+		20	40		mA
Slew Rate	SR				2.2		V/μs
Gain-Bandwidth Product	GBW				5.5		MHz
Phase Margin	Φ_M				50		Deg.
Gain Margin	G_M				10		dB
Input-Referred Voltage Noise	e_n	f =1kHz, V_{iCM}=1V			35		nV/$\sqrt{Hz}$
Input-Referred Current Noise	i_n	f =1kHz			0.3		pA/$\sqrt{Hz}$
Total Harmonic Distortion	THD	f=1kHz, A_V=-2, R_L=10kΩ, V_O= (V^+-0.9)V_{PP}			0.01		%