



## AN17823

Preliminary

**LINEAR INTEGRATED CIRCUIT**

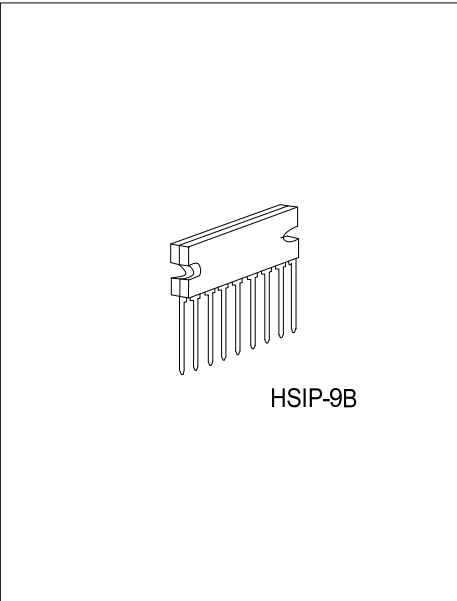
### BTL 4.0W X 1CH POWER AMPLIFIER

#### DESCRIPTION

The UTC **AN17823** is BTL 4.0W x 1CH power amplifier with standby function and volume function.

#### FEATURES

- \* 3-W output (8Ω) with supply voltage of 8V
- \* 4-W output (8Ω) with supply voltage of 9V
- \* On-chip standby function
- \* On-chip volume function

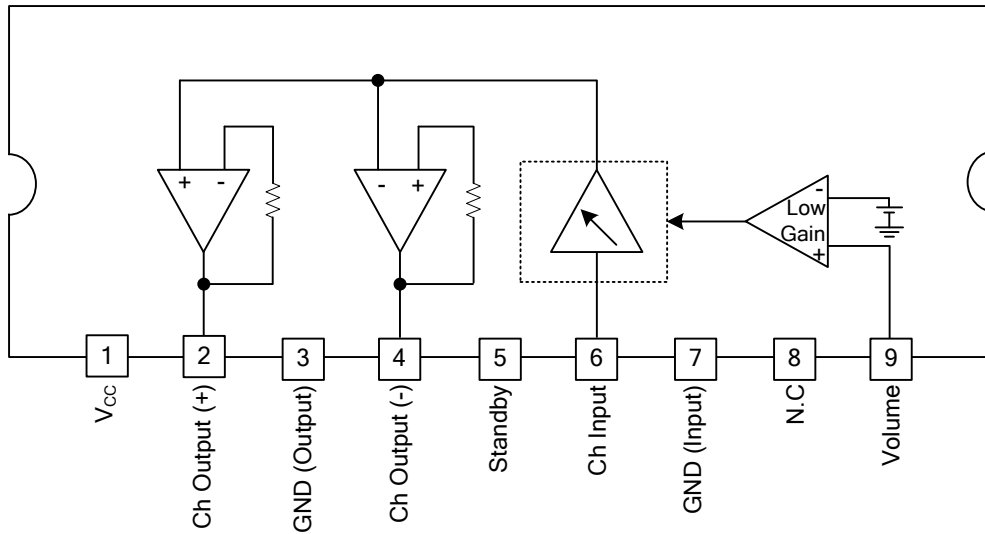


#### ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
AN17823L-H09-B-T	AN17823G-H09-B-T	HSIP-9B	Tube

<p>AN17823L-H09-B-T</p> <p>(1)Packing Type (2)Package Type (3)Halogen Free</p>	<p>(1) T: Tube (2) H09: HSIP-9B (3) G: Halogen Free, L: Lead Free</p>
--	---

■ BLOCK DIAGRAM AND PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	V <sub>cc</sub>	Supply Voltage
2	Ch Output (+)	Output+
3	GND (Output)	Power Ground
4	Ch Output (-)	Output-
5	Standby	Standby
6	Ch Input	Signal Input
7	GND (Input)	Signal Ground
8	N.C	No Connect (Do not apply voltage or current from outside.)
9	Volume	Volume

■ ABSOLUTE MAXIMUM RATING( $T_A=25^{\circ}\text{C}$ , Unless otherwise specified.)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage (DC)	$V_{CC}$	14.4	V
Output Current	$I_{out}$	1.0	A
Power Dissipation ( $T_A = 70^{\circ}\text{C}$ )	$P_D$	1.22	W
Storage Temperature (Note )	$T_{STG}$	-55 ~ +150	$^{\circ}\text{C}$
Operating Temperature (Note )	$T_{OPR}$	-25 ~ +70	$^{\circ}\text{C}$

Notes: 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 RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V_{CC}$	3.5 ~ 13.5	V

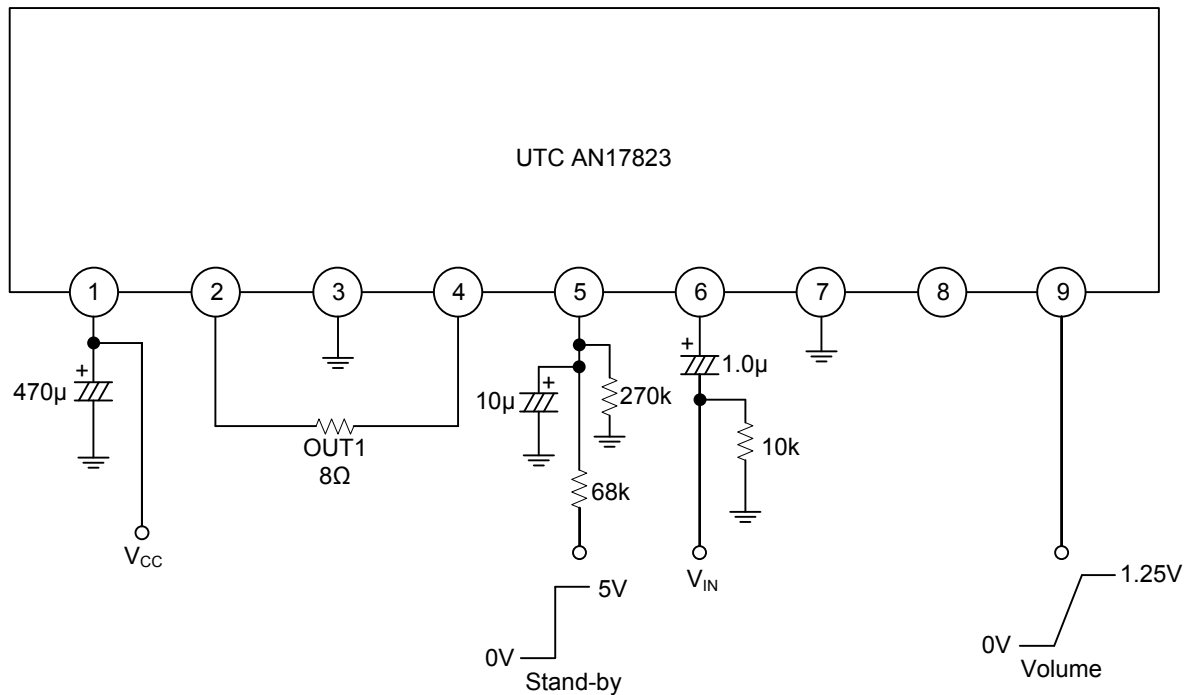
■ ELECTRICAL CHARACTERISTICS

( $T_A = 25^{\circ}\text{C}$ ,  $V_{CC}=8.0\text{V}$ , frequency=1kHz and  $R_L=8\Omega$ , Unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Quiescent Circuit Current	$I_{CQ}$	$V_{IN}=0\text{V}$ , $V_{ol}=0\text{V}$		20	60	mA
Standby Current	$I_{STB}$	$V_{IN}=0\text{V}$ , $V_{ol}=0\text{V}$		1	10	$\mu\text{A}$
Output Offset Voltage	$V_{OFF}$	$R_G=10\text{k}\Omega$ , $V_{ol}=0\text{V}$	-250	0	250	mV
Total Harmonic Distortion	THD	$P_O=0.5\text{W}$ , $V_{ol}=1.25\text{V}$		0.10	0.5	%
Maximum Power Output 1	$P_{O1}$	THD=10%, $V_{ol}=1.25\text{V}$	2.4	3.0		W
Maximum Power Output 2	$P_{O2}$	$V_{CC}=9\text{V}$ , THD=10%, $V_{ol}=1.25\text{V}$	3.2	4.0		W
Ripple Rejection Ratio (Note )	RR	$R_G=10\text{k}\Omega$ , $V_{ol}=0\text{V}$ $V_R=0.5\text{V}_{rms}$ , $f_r=120\text{Hz}$	30	50		dB
Output Noise Voltage (Note )	$V_{NO}$	$R_G=10\text{k}\Omega$ , $V_{ol}=0\text{V}$		0.10	0.4	mV <sub>rms</sub>
Volume Attenuation Ratio (Note )	Att	$P_O=0.5\text{W}$ , $V_{ol}=0\text{V}$	70	85		dB
Voltage Gain	$G_V$	$P_O=0.5\text{W}$ , $V_{ol}=1.25\text{V}$	31	33	35	dB
Middle Voltage Gain	$G_{VM}$	$P_O=0.5\text{W}$ , $V_{ol}=0.6\text{V}$	20.5	23.5	26.5	dB
Standby Pin Current	$I_{STB2}$	$V_{IN}=0\text{V}$ , $V_{STB}=3\text{V}$			25	$\mu\text{A}$
Volume Pin Current	$I_{VOL}$	$V_{IN}=0\text{V}$ , $V_{ol}=0\text{V}$	-12			$\mu\text{A}$
Input Impedance	$Z_i$	$V_{IN}=\pm 0.3\text{V}_{DC}$	24	30	36	k $\Omega$

Note: In measuring, the filter for the range of 15 Hz ~ 30 kHz (12 dB/OCT) is used.

### ■ TYPICAL APPLICATION CIRCUIT



### ■ APPLICATION INFORMATION

1. Make sure that the IC is free of any pin short-circuiting, ground short, and load short-circuiting.
2. Ground the radiation fin so that there will be no difference in electric potential between the radiation fin and ground.
3. The thermal protection circuit operates at a T<sub>J</sub> of approximately 150°C. The thermal protection circuit is reset automatically when the temperature drops.
4. Make sure that the heat radiation design is effective enough if the V<sub>CC</sub> is comparatively high or the IC operates high output power.
5. Connect only ground pin for signal sources to the signal GND pin of the amplifier on the previous stage.

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. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.