



## AN17823

Preliminary

LINEAR INTEGRATED CIRCUIT

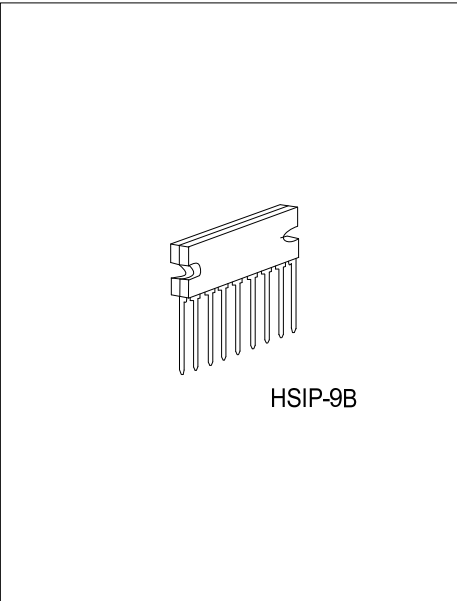
### BTL 4.0W X 1CH POWER AMPLIFIER

#### 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



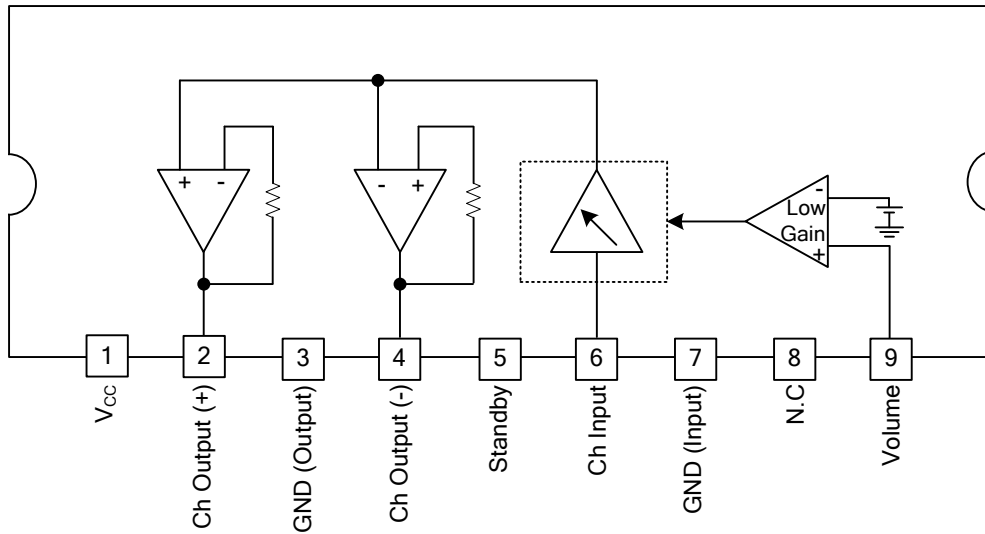
#### ORDERING INFORMATION

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

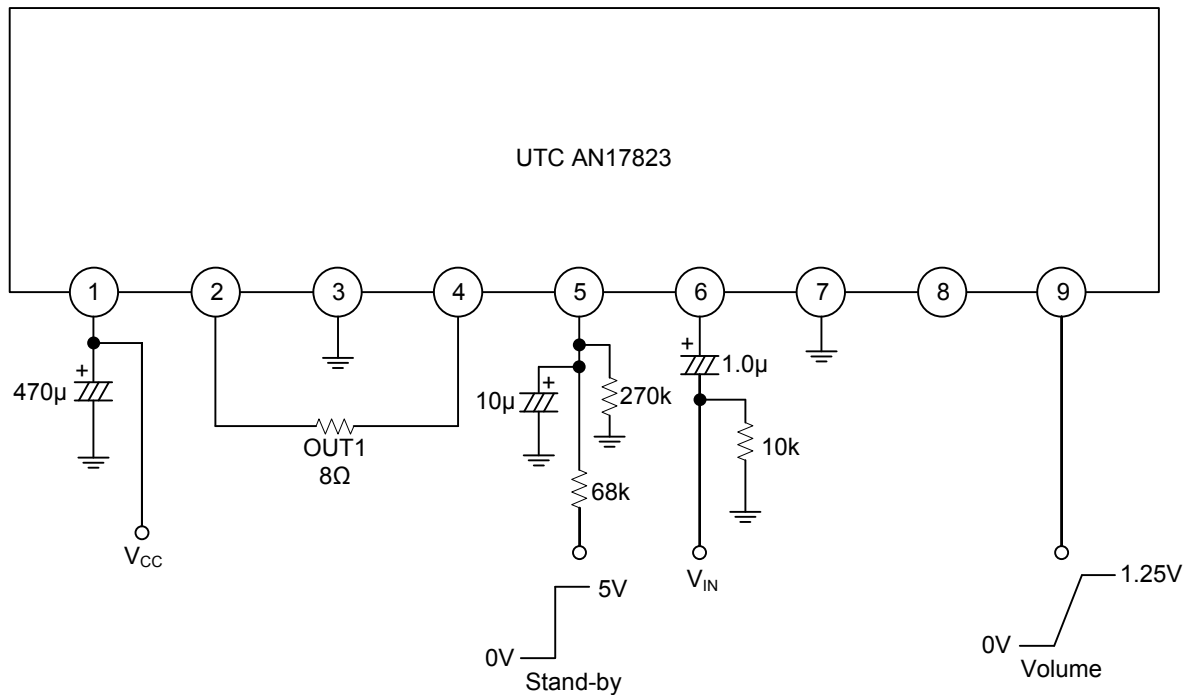
■ ELECTRICAL CHARACTERISTICS

( $T_A = 25^{\circ}\text{C}$ ,  $V_{CC}=8.0\text{V}$ , 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.

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