



KA8602

LINEAR INTEGRATED CIRCUIT

LOW VOLTAGE AUDIO POWER AMPLIFIER

DESCRIPTION

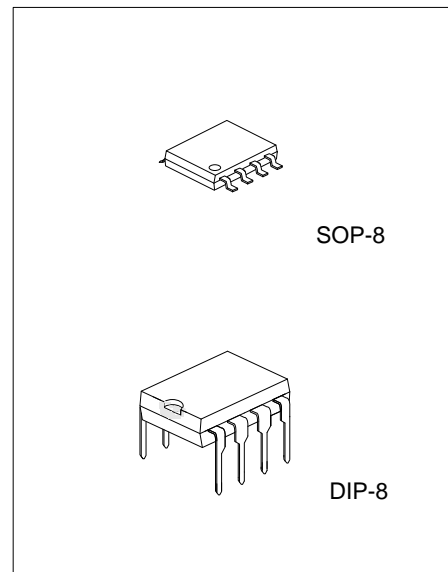
The UTC **KA8602** is the audio power amplifier available for low voltage. The UTC **KA8602** supplies differential outputs for maximizing output swing at low voltages. The UTC **KA8602** does not need coupling capacitors to the speaker. The gain of this amplifier is controlled easily by two external resistors.

FEATURES

- *Wide operating supply voltage: $V_{CC}=2V\sim 16V$
- *Low quiescent supply current($I_{CC}=2.7mA$, typ)
- *Medium output power ($P_{OUT}=250mW$ at $V_{CC}=6V$, $R_L=32ohm$, THD=10%)
- *Load impedance range: 8~100ohm
- *Mute function ($I_{CC}=65\mu A$, typ)
- *Minimum number of external parts required.
- *Low distortion

ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
KA8602L-D08-T	KA8602G-D08-T	DIP-8	Tube
KA8602L-S08-R	KA8602G-S08-R	SOP-8	Tape Reel
KA8602L-S08-T	KA8602G-S08-T	SOP-8	Tube

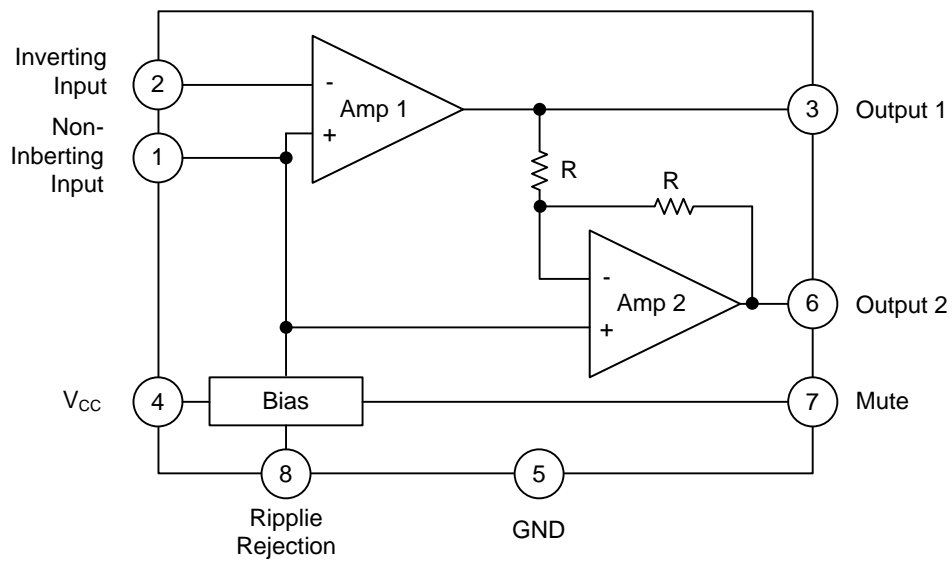


<p>KA8602L-D08-T</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Lead Free</p>	<p>(1) R: Tape Reel, T: Tube</p> <p>(2) D08: DIP-8, S08: SOP-8</p> <p>(3) G:Halogen Free, L: Lead Free</p>
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■ PIN CONFIGURATIONS

PIN	NAME	DESCRIPTION
1	Input(+)	Analog Ground for the amplifiers. A 1 μ F capacitor at this pin (with a 5 μ F capacitor at pin 8) provides 52dB (typ) of power supply rejection. Turn-on time of the circuit is affected by the capacitor on this pin. This pin can be used as an alternative input.
2	Input(-)	Amplifier input. The input capacitor and resistor set low frequency roll-off and input impedance. The feedback resistor is connected between this pin and output 1.
3	Output 1	Amplifier 1's output. The DC level is about $(V_{CC}-0.7V)/2$.
4	V _{CC}	DC supply voltage is applied to this pin ($V_{CC}=2\sim 16V$).
5	GND	Ground pin.
6	Output 2	Amplifier 2's output. This signal is equal in amplitude, but 180° out of phase with that output 1, the DC level is about $(V_{CC}-0.7V)/2$.
7	Mute	This pin can be used to power down the IC to conserve power, or for muting, or both. When at a logic "LOW" (less than 0.8V), the IC is enabled for normal operation. When at a logic "HIGH" (2V to V _{CC}), the IC is disabled. If Mute is open, that is equivalent to a logic "LOW".
8	Ripple Rejection	A capacitor at this pin increase power supply rejection, and affects turn-on time. This pin can be left open if the capacitor at pin 1 is sufficient.

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V _{CC}	-1~18	V
Output Current	I _{OUT}	+250	mA
Maximum Input, Ripple Rejection, Mute Pin Voltage	V _{I(max)}	-1~V _{CC} +1	V
Applied Output Voltage(Output Pin When Disabled)	V _{OUT}	-1~V _{CC} +1	V
Temperature Junction	T _J	-55 ~ +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.

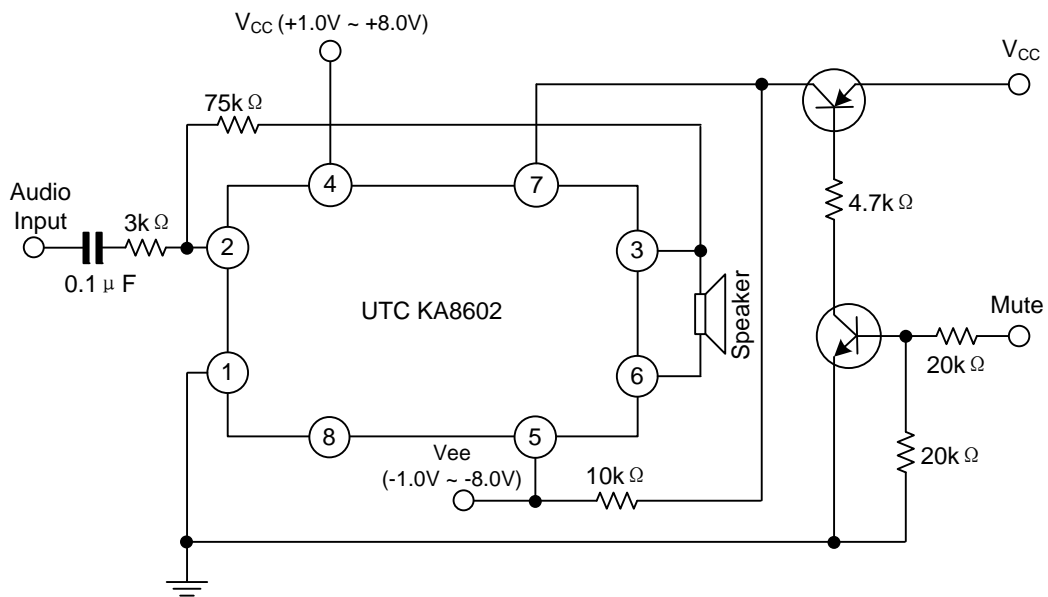
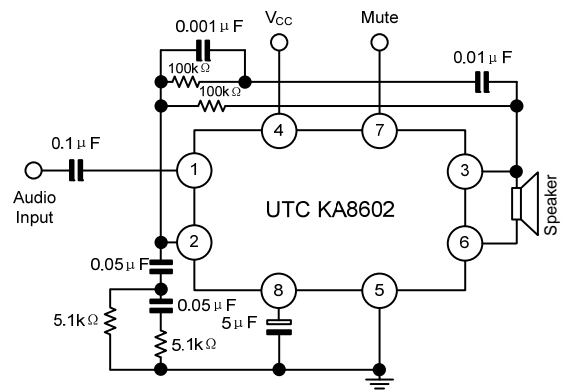
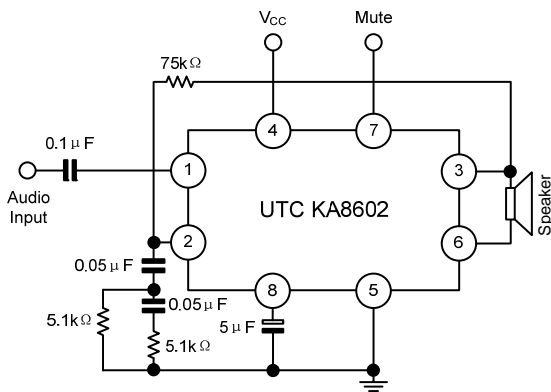
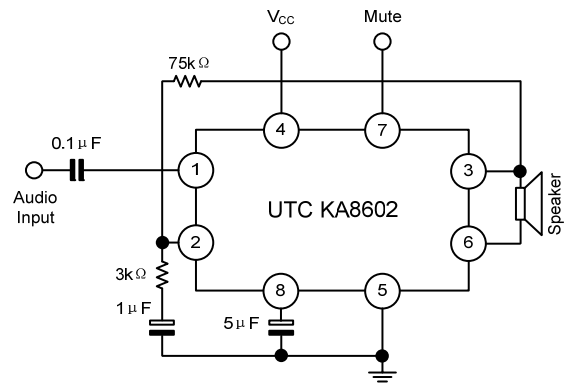
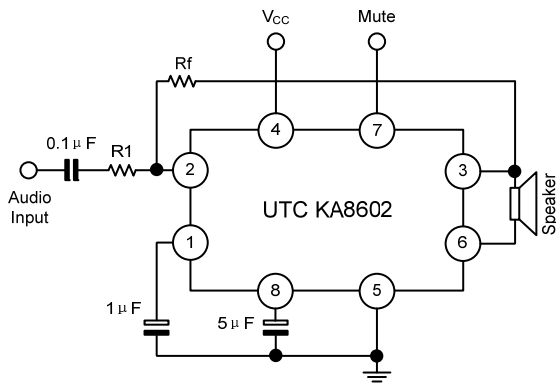
■ RECOMMENDED OPERATION CONDITIONS (T_A=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V _{CC}	2~16	V
Voltage at Mute	V _{I(MUTE)}	0~V _{CC}	V
Peak Load Current	I _{L(PEAK)}	±200	mA
Load Impedance	Z _L	8~100	Ω
Differential Gain (5KHz Bandwidth)	ΔG _V	0~46	dB
Ambient Temperature	T _A	-20~+70	°C

■ ELECTRICAL CHARACTERISTICS (V_{CC}=6V, T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
DC PARAMETER						
Operating Current	I _{CC}	V _{CC} =3V, Mute=0.8V		2.7	4	mA
		V _{CC} =16V, Mute=0.8V		3.3	5	mA
		V _{CC} =3V, Mute=2V		65	100	μA
Output Voltage	V _{OUT}	V _{CC} =3V, R _L =16Ω, R ₁ =75KΩ	1	1.15	1.25	V
		V _{CC} =6V, R _L =16Ω, R ₁ =75KΩ		2.65		V
		V _{CC} =12V, R _L =16Ω, R ₁ =75KΩ		5.65		V
Output Offset Voltage	V _{O(OFF)}	V _{CC} =6V, R _F =75KΩ, R _L =32Ω	-30	0	30	mV
Output High Level	V _{OH}	2V<V _{CC} <16V, I _{OUT} =-75mA		V _{CC} -1		V
Output Low Level	V _{OL}	2V<V _{CC} <16V, I _{OUT} =75mA		0.16		V
Input Bias Current	I _{I(BIAS)}			-100	-200	nA
Equivalent Resistance	R _{EQ}	Pin 1	100	150	220	KΩ
		Pin 8	18	25	40	KΩ
AC PARAMETER						
Open Loop Gain of Amp. 1	G _{V1}		80			dB
Open Loop Gain of Amp. 2	G _{V2}	f=1KHz, R _L =32Ω	-0.35	0	0.35	dB
Output Power	P _{OUT}	V _{CC} =3V, R _L =6Ω, THD<10%	55			mW
		V _{CC} =6V, R _L =32Ω, THD<10%	250			mW
		V _{CC} =12V, R _L =100Ω, THD<10%	400			mW
Total Harmonic Distortion (f=1KHz)	THD	V _{CC} =6V, R _L =32Ω, P _{OUT} =125mW		0.5	1	%
		V _{CC} <3V, R _L =8Ω, P _{OUT} =20mW		0.5		%
		V _{CC} <12V, R _L =32Ω, P _{OUT} =200mW		0.6		%
Gain Bandwidth Product	GBW			1.5		MHz
Power Supply Rejection (V _{CC} =6V, ΔV _{CC} =3V)	PSRR	C1=∞, C2=0.01μF	50			dB
		C1=0.1μF, C2=0, f=1KHz		12		dB
		C1=1μF, C2=5μF, f=1KHz		52		dB
Muting	G _{V(MUTE)}	Mute=2V, 1KHz<f<20KHz	70			dB

APPLICATION CIRCUIT



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