

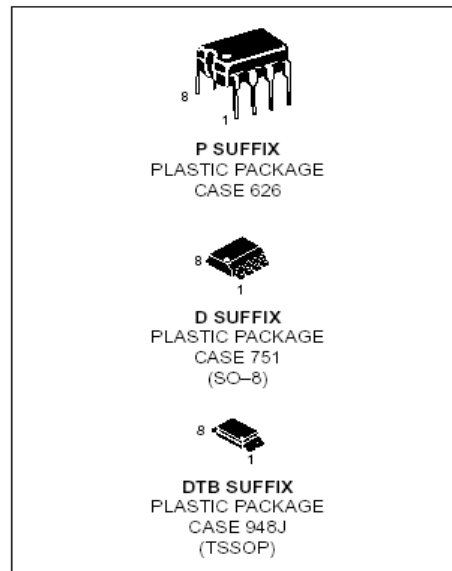
BL8602 Low Power Audio Amplifier

DESCRIPTION

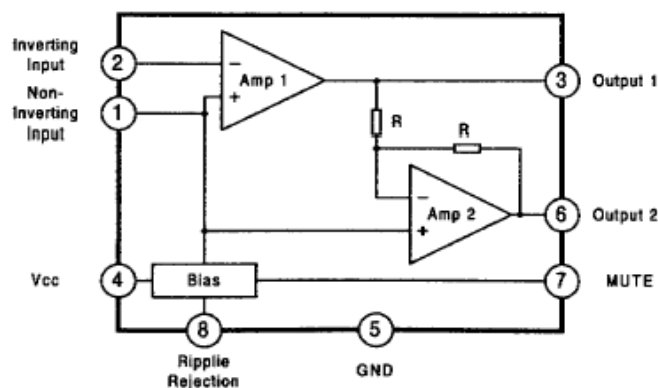
The BL8602 is a low power audio amplifier integrated circuit intended (primarily) for telephone applications, such as in speakerphones. It provides differential speaker outputs to maximize output swing at low supply voltages (2.0 V minimum). Coupling capacitors to the speaker are not required. The gain of this amplifier is controlled easily by two external resistors.

FEATURES

- * Wide operating supply voltage: $V_{CC}=2V\sim 16V$
- * Low quiescent supply current ($I_{CC}=2.2mA, typ$)
- * Medium output power ($P_o=250mW$ at $V_{CC}=6V$, $R_L=32\Omega$, $THD\leq 10\%$)
- * Load impedance range : $8\sim 100\Omega$
- * Mute function ($I_{CC}=55\mu A$, typ)
- * Minimum number of external parts required
- * Low distortion

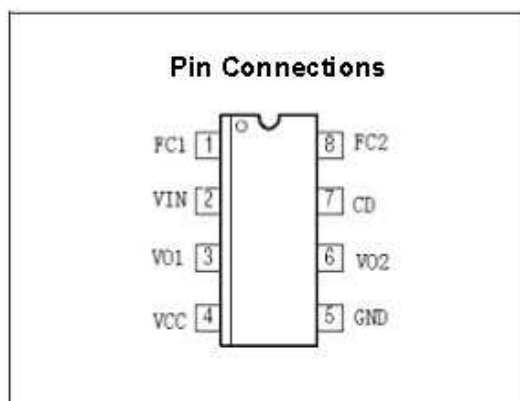


BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ C$)

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	V_{CC}	-1~18	V
Output Current	I_o	± 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_o	-1~ $V_{CC}+1$	V
Temperature Junction	T_j	-55~150	$^\circ C$

PIN CONNECTIONS

PIN FUNCTION DESCRIPTION

Symbol	Pin	Description
FC1	1	Analog ground for amplifiers. A 1.0uF capacitor at this pin (with a 5.0uF capacitor at Pin 2) provides (typically) 52dB 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 alternate input.
Vin	2	Amplifier input .The input capacitor and resistor set low frequency rolloff and input impedance. The feedback resistor is connected to this pin and Vo1.
Vo1	3	Amplifier Output#1. The dc level is $\approx (V_{cc}-0.7V)/2$.
Vcc	4	DC supply voltage (+2.0V to +16V) is applied to this pin.
GND	5	Ground pin for the entire circuit
Vo2	6	Amplifier Output#2. This signal is equal in amplitude, but 180° out-of-phase with that at Vo1. The dc level is $\approx (V_{cc}-0.7V)/2$.
CD	7	Chip Disable-Digital input. A Logic "0" (<0.8V) sets normal operation. A logic "1" ($\geq 2.0V$) sets the power down mode. Input impedance is nominally 90 k Ω .
FC2	8	A capacitor at this pin increase power supply rejection, and affects turn-on time. This pin can be left open if the capacitor at FC1 is sufficient.

RECOMMENDED OPERATION CONDITIONS(Ta=25℃)

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	Vcc	2~16	V
Load Impedance	Z _L	8~100	Ω
Peak Load Current	I _{L(peak)}	± 200	mA
Differential Gain(5KHz Bandwidth)	ΔG_v	0~46	dB
Voltage at Mute	V _{i(mute)}	0~Vcc	V
Ambient Temperature	Ta	-20~70	℃

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		2.2	4.0	mA
		V _{CC} =16V, Mute=0.8V		2.5	5.0	mA
		V _{CC} =3V, Mute=2V		55	100	uA
Output Voltage	V _O	R _L =16 Ω ,R _f =75K Ω				
		V _{CC} =3V	1.0	1.20	1.25	V
		V _{CC} =6V		2.8		V
		V _{CC} =12V		6.10		V
Output Offset Voltage	V _{OO}	V _{CC} =6V,R _f =75K Ω ,R _L =32 Ω	-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 _{bias}			-100	-200	nA
Equivalent Resistance	R _{EQ}	Pin 3	100	150		K Ω
		Pin 2	18	25		K Ω
AC PARAMETER						
Open Loop Gain of Amp 1. (f<100Hz)	G _{vop1}		80			dB
Close Loop Gain of Amp 2.	G _{vo2}	f=1KHz, R _L =32 Ω	-0.35	0	0.35	dB
Output Power	P _O	V _{CC} =3V, R _L =16 Ω ,THD≤10%	55			mW
		V _{CC} =6V, R _L =32 Ω ,THD≤10%	250			
		V _{CC} =12V, R _L =100 Ω , THD≤10%	400			
Total Harmonic Distortion(f=1KHz)	THD	V _{CC} =6V, R _L =32 Ω ,P _O =125mW		0.5	1.0	%
		V _{CC} ≥3V, R _L =8 Ω ,P _O =20mW		0.5		%
		V _{CC} ≥12V,R _L =32 Ω , P _O =200mW		0.6		%
Gain Bandwidth Product	GBW			1.5		MHz
Power Supply Rejection (V _{CC} =6V, △ V _{CC} =3V)	PSRR	C1=∞ ,C2=0.01uF	50			dB
		C1=0.1uF, C2=0, f=1KHz		12		dB
		C1=1uF, C2=5uF, f=1KHz		52		dB
Muting	G _v (mute)	Mute=2V, 1KHz<f<20KHz	70			dB
Chip Disable input Voltage						
Low	V _{IL}				0.8	V
High	V _{IH}		2.0			V

APPLICATION CIRCUIT

