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SL6310C

500mW SWITCHABLE AUDIO AMPLIFIER/OP AMP

The SL6310C is a low power audio amplifier which can be switched off by applying a mute signal to the appropriate pin. Despite the low quiescent current consumption of 5mA (only 0.6mA when muted) a minimum output power of 400mW is available into an 8Ω load from a 9V supply.

FEATURES

- Can be Muted with High or Low State inputs
- Operational Amplifier Configuration
- Works Over Wide Voltage Range

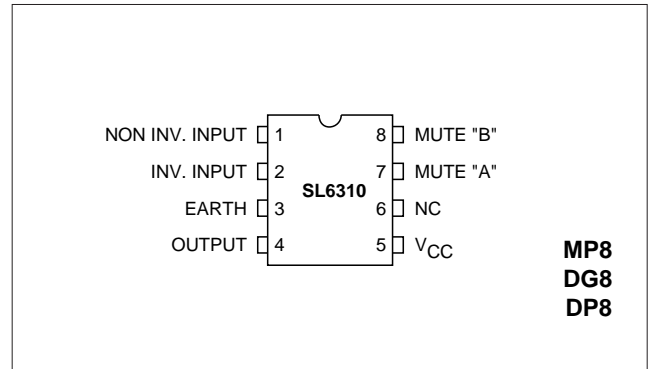


Fig. 1 Pin connections, SL6310 - (top view)

APPLICATIONS

- Audio Amplifier for Portable Receivers
- Power Op. Amp
- High Level Active Filter

QUICK REFERENCE DATA

- Supply Voltage: 4.5V to 13.6V
- Voltage Gain: 70dB
- Output into 8Ω on 9V Supply : 400mW (min.)

ABSOLUTE MAXIMUM RATINGS

Supply voltage: 15V
Storage temperature: -55°C to + 125°C

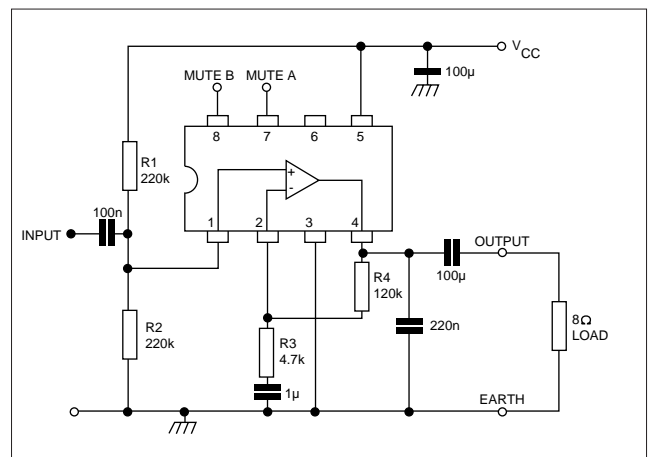


Fig. 2 SL6310 Test Circuit

SL6310C

ELECTRICAL CHARACTERISTICS

Test conditions (unless otherwise stated):

Supply voltage V_{CC} : 7V

Ambient temperature: -30°C to $+85^{\circ}\text{C}$

Mute facility : Pins 7 and 8 open circuit frequency = 1kHz

| Characteristics | Value | | | Units | Conditions |
|-----------------------------|-------|------|------|---------------|---|
| | Min. | Typ. | Max. | | |
| Supply current | | 5.0 | 7.5 | mA | |
| Supply current mute (A) | | 0.55 | 1 | mA | Pin 7 via 470k to earth |
| Supply current mute (B) | | 0.6 | 0.9 | mA | Pin 8 = V_{CC} |
| Input offset voltage | | 2 | 20 | mV | $R_s \leq 10k$ |
| Input offset current | | 50 | 500 | nA | |
| Input bias current (Note 1) | | 0.2 | 1 | μA | |
| Voltage gain | 40 | 70 | | dB | |
| Input voltage range | | 2.1 | | V | $V_{CC} = 4.5\text{V}$ |
| | | 10.6 | | V | $V_{CC} = 13\text{V}$ |
| CMRR | 40 | 60 | | dB | $R_s \leq 10K$ |
| Output power | 400 | 500 | | mW | $R_L = 8\Omega$ |
| THD | | 0.4 | 3 | % | $P_{OUT} = 400\text{mW}$, Gain = 28dB |

NOTE

- The input bias current flows out of pins 1 and 2 due to PNP input stage

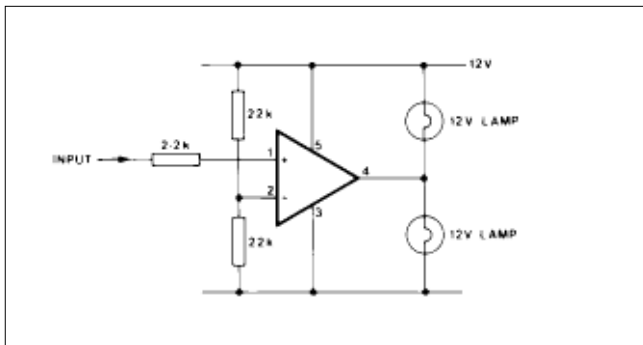


Fig. 3 SL6310 lamp driver

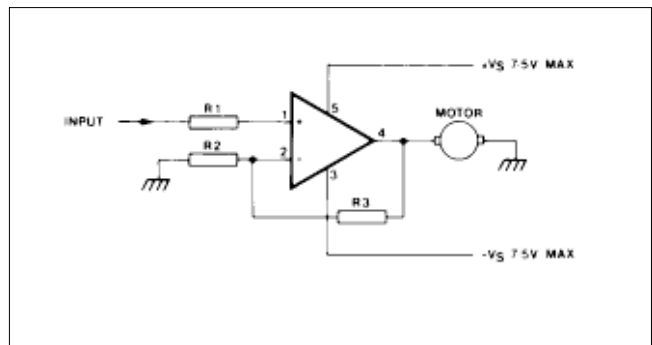


Fig. 4 SL6310 servo amplifier

OPERATING NOTES

Mute facility

The SL6310 has two mute control pins to allow easy interfacing to inputs of high or low levels. Mute control 'A', pin 7, is left open circuit or connected to a voltage within 0.65 volt of V_{CC} (via a $100k\Omega$ resistor) for normal operation. When the voltage on pin 7 is reduced to within 1 volt of earth (via a $100k\Omega$ resistor) the SL6310 is muted

Audio amplifier

As the SL6310 is an operational amplifier it is easy to obtain the voltage gain and frequency response required. To keep the input impedance high it is wise to feed the signal to the non-inverting input as shown in Fig.2. In this example the input impedance is approximately $100k\Omega$. The voltage gain is determined by the ratio $(R3 + R4)/R3$ and should be between 3 and 30 for best results. The capacitor in series with $R3$, together with the input and output coupling capacitors, determines the low frequency rolloff point. The upper frequency limit is set by the device but can be restricted by connecting a capacitor across $R4$.

Operational amplifier

It is impossible to list all the application possibilities in a single data sheet but the SL6310 offers considerable advantages over conventional devices in high output current applications such as lamp drivers (Fig.3) and servo amplifiers (Fig.4).

Buffer and output stages for signal generators are another possibility together with active filter sections requiring high output current.

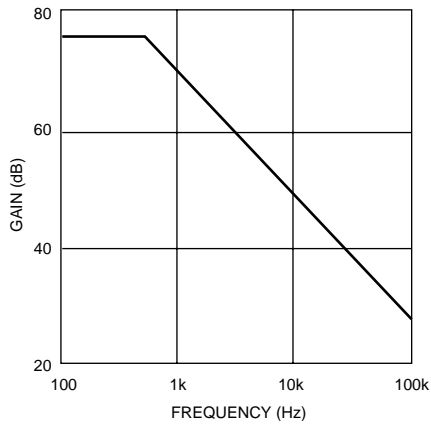


Fig. 5 Gain v. frequency

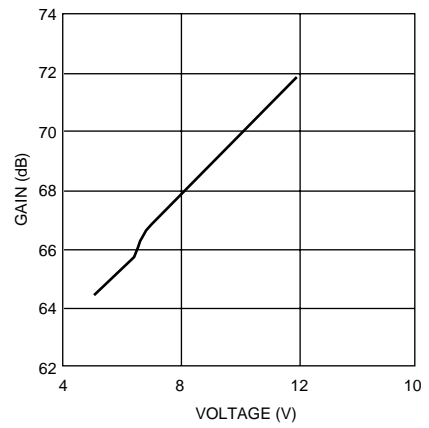


Fig. 6 Gain v. supply voltage

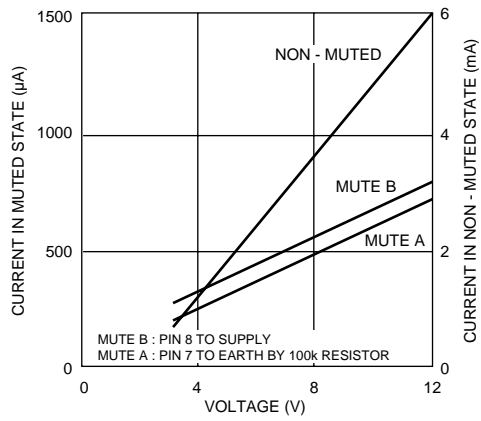


Fig. 7 Supply current v. supply voltage

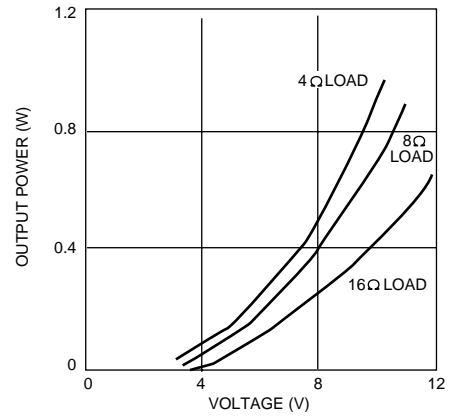


Fig. 8 Output power v. supply voltage at 5% (max) distortion