



**Plessey
Semiconductors**

SL1600 SERIES

COMMUNICATIONS CIRCUITS

SL1626C

AUDIO AMPLIFIER AND VOGAD

The SL1626C is a silicon integrated circuit combining the functions of audio amplifier with voice operated gain adjusting device (VOGAD).

It is designed to accept signals from a low-sensitivity microphone and to provide an essentially constant output signal for a 60dB range of input.

The encapsulation is an 8-lead plastic dual-in-line package and the device is designed to operate from a 6V \pm 0.5 volt supply, over a temperature range of -30°C to $+70^{\circ}\text{C}$.

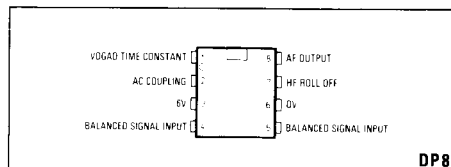


Fig. 1 Pin connections (top)

FEATURES

- Constant Output Signal
- Fast Attack
- Low Power Consumption
- Simple Circuitry

APPLICATIONS

- Audio AGC Systems
- Transmitter Overmodulation Prevention
- Speech Recording
- Level Setting Systems

ELECTRICAL CHARACTERISTICS

Test conditions (unless otherwise stated):

Input frequency 1kHz
Supply voltage $\pm 6\text{V}$
Temperature $+25^{\circ}\text{C}$

| Characteristic | Value | | | Unit | Conditions |
|--|-------|------|------|-------------------|--|
| | Min. | Typ. | Max. | | |
| VOGAD output level | 55 | 90 | 140 | mV rms | Balanced signal input 18mV rms |
| AF amplifier voltage gain | | 52 | | dB | Balanced signal input 72 μV rms |
| Quiescent current consumption | | 14 | 20 | mA | 6V supply |
| Decay time (see note 1) | | 1.0 | | s | Original balanced signal input 18mV rms |
| Attack time (see note 2) | | 20 | | ms | Original balanced signal input 1.8mV rms |
| Total harmonic distortion of VOGAD output | | 2 | | % | Balanced signal input 90mV rms |
| Differential input impedance | | 300 | | Ω | |
| Single-ended input impedance | | 180 | | Ω | |
| AF amplifier output resistance | | 50 | | Ω | |
| Minimum load resistance — AF amplifier o/p | | 1000 | | Ω | |
| VOGAD operating threshold (whisper threshold) at input | | 100 | | μV rms | |
| Input for 10% distortion | | 130 | | mV rms | |
| Supply line rejection at VOGAD o/p | | 15 | | dB | |
| Common mode signal handling | | 50 | | mV p-p | |

NOTES

- Decay time is the time for VOGAD output to return within 10% of original absolute level when signal input voltage is switched down 20dB.
- Attack time is the time for VOGAD output to return to within 10% of original absolute level when signal input voltage is switched up 20dB.

OPERATING NOTES

The SL1626 will operate from a range of supply voltages from 4V up to 12V.

The input stage is a differential class A-B stage with AGC terminal. The accurate balance of the input stage and high common-mode rejection ratio of the second stage gives an overall common-mode rejection ratio of greater than 30dB.

Typically, the amplifier will handle differential input signals of up to 375mV p-p. When used in the unbalanced mode either pin 4 or pin 5 may be used as the input, the other being decoupled to earth.

The LF cut-off of the amplifier is set by C1 and also by the values of coupling capacitors to the input pins (pin 4 and pin 5). Coupling capacitors should be used if the DC potential of the input is not floating with respect to earth.

The HF cut-off is set by C2 (see Fig. 3). The VOGAD threshold may be increased by connecting a 100 k Ω external conductance between pins 7 and 8. The threshold is increased by approximately 20dB for 1 mS of conductance; the value of C2 should be adjusted in conjunction with any threshold alteration in order to obtain the desired bandwidth.

C3 and R1 set the attack and decay rates of the VOGAD. In Fig. 3, $C3 = 47\mu\text{F}$ and $R1 = 1\text{M}\Omega$ which give an attack time constant (gain increasing) of 20ms and a decay rate of 20dB/s. $C1 = 2.2\mu\text{F}$ and $C2 = 4.7\text{nF}$ give a 3dB bandwidth of approximately 300Hz to 3kHz.

ABSOLUTE MAXIMUM RATINGS

Continuous supply voltage (positive) 12V

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

Ambient operating temperature -30°C to $+70^{\circ}\text{C}$

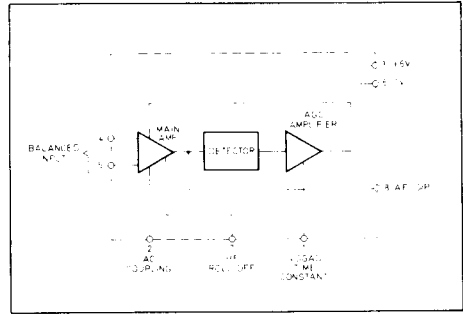


Fig. 2 Block diagram

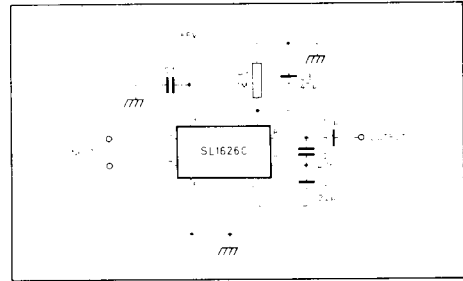


Fig. 3 Connection diagram for SL1626C used as a microphone amplifier