

**SPATIAL, STEREO, PSEUDO-STEREO PROCESSOR****TDA3810****Preliminary****DESCRIPTION**

The TDA3810 is an integrated circuit which can provide three switched functions for radio and television equipment: spatial sound from a stereo source; stereo sound from a stereo source; pseudo-stereo sound from a mono source.

**FEATURES**

- Three switched functions:  
spatial  
stereo  
pseudo-stereo
- Muting circuit prevents LED flickering
- LED driving outputs (pins 7 and 8)
- TTL compatible inputs for selecting operating mode

**ABSOLUTE MAXIMUM RATINGS**

| SYMBOL AND PARAMETER                      | RATING       | UNIT |
|-------------------------------------------|--------------|------|
| $V_{CC}$ Supply voltage (pin 18)          | 18           | V    |
| $I_{CC}$ Supply current (pin 18)          | 12           | mA   |
| $T_{STG}$ Storage temperature range       | -25 to +150  | °C   |
| $T_A$ Operating ambient temperature range | - 20 to + 70 | °C   |
| Thermal Resistance                        |              |      |
| $R_{th\ cr-a}$ From crystal to ambient    | 80           | K/W  |

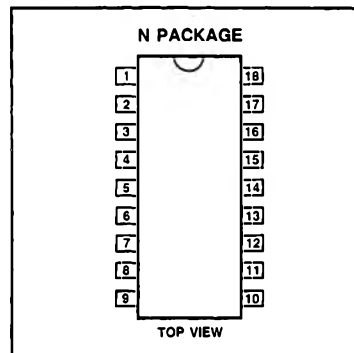
**TRUTH TABLE**

| MODE               | CONTROL INPUT STATE |        | LED SPATIAL<br>PIN 7 | LED PSEUDO<br>PIN 8 |
|--------------------|---------------------|--------|----------------------|---------------------|
|                    | PIN 11              | PIN 12 |                      |                     |
| Mono pseudo-stereo | HIGH                | LOW    | Off                  | On                  |
| Spatial stereo     | HIGH                | HIGH   | On                   | Off                 |
| Stereo             | LOW                 | X      | Off                  | Off                 |

LOW = 0 to 0.8V (the less positive voltage)

HIGH = 2V to  $V_{CC}$  (the more positive voltage)

X = state is don't care

**PIN CONFIGURATION****FUNCTIONAL PIN DESCRIPTION**

| PIN NO. | NAME AND FUNCTION              |
|---------|--------------------------------|
| 1       | $V_{REF}$                      |
| 2       | Left channel input             |
| 3       | Left channel buffer output     |
| 4       | Left channel spatial feedback  |
| 5       | Left channel pseudo feedback   |
| 6       | Left channel output            |
| 7       | Spatial indicator driver       |
| 8       | Pseudo indicator driver        |
| 9       | Mute                           |
| 10      | Ground                         |
| 11      | S1                             |
| 12      | S2                             |
| 13      | Right channel output           |
| 14      | Right channel pseudo feedback  |
| 15      | Right channel spatial feedback |
| 16      | Right channel buffer output    |
| 17      | Right channel input            |
| 18      | $V_{DD}$                       |



**SPATIAL, STEREO, PSEUDO-STEREO PROCESSOR****TDA3810****Preliminary****DC ELECTRICAL CHARACTERISTICS**  $V_{CC} = 12V$ ;  $T_A = 25^\circ C$ ; Test circuit Figure 1 stereo mode (pin 11 to ground) unless otherwise specified.

| SYMBOL AND PARAMETER               | TEST CONDITION                            | TDA3810 |     |      | UNIT       |
|------------------------------------|-------------------------------------------|---------|-----|------|------------|
|                                    |                                           | Min     | Typ | Max  |            |
| $V_{CC}$ Supply voltage range      | (Pin 18)                                  | 4.5     |     | 16.5 | V          |
| $V_{CC}$ Supply current            |                                           |         | 6   | 12   | mA         |
| $V_S$ Reference voltage            |                                           | 5.3     | 6   | 6.7  | V          |
| $V_{i(rms)}$ Input voltage         | (Pin 2 or 17) THD = 0.2%                  |         |     | 2    | V          |
| $R_i$ Input resistance             | (Pin 2 or 17)                             | 50      | 75  |      | k $\Omega$ |
| $G_v$ Voltage gain $V_o/V_i$       |                                           |         | 0   |      | dB         |
| $\alpha$ Channel separation (R/L)  |                                           | 60      | 70  |      | dB         |
| THD Total harmonic distortion      | $f = 40$ to $16000$ Hz; $V_{o(rms)} = 1V$ |         | 0.1 |      | %          |
| RR Power supply ripple rejection   |                                           |         | 50  |      | dB         |
| $V_{n(rms)}$ Noise output voltage  | (Unweighted) left and right output        |         | 10  |      | $\mu V$    |
| Spatial mode (Pins 11 and 12 HIGH) |                                           |         |     |      |            |
| $\alpha$ Antiphase crosstalk       |                                           |         | 50  |      | %          |
| $G_v$ Voltage gain                 |                                           | 1.4     | 2.4 | 3.4  | dB         |

**PSEUDO-STEREO MODE** The quality and strength of the pseudo-stereo effect is determined by external filter components.

| SYMBOL AND PARAMETER          | TEST CONDITION   | TDA3810 |     |     | UNIT       |
|-------------------------------|------------------|---------|-----|-----|------------|
|                               |                  | Min     | Typ | Max |            |
| Control inputs                | (Pins 11 and 12) |         |     |     |            |
| $R_i$ Input resistance        |                  | 70      | 120 |     | k $\Omega$ |
| $-I_i$ Switching current      |                  |         | 35  | 100 | $\mu A$    |
| LED drivers (Pins 7 and 8)    |                  |         |     |     |            |
| $-I_o$ Output current for LED |                  | 10      | 12  | 15  | mA         |
| $V_F$ Forward voltage         |                  |         |     | 6   | V          |

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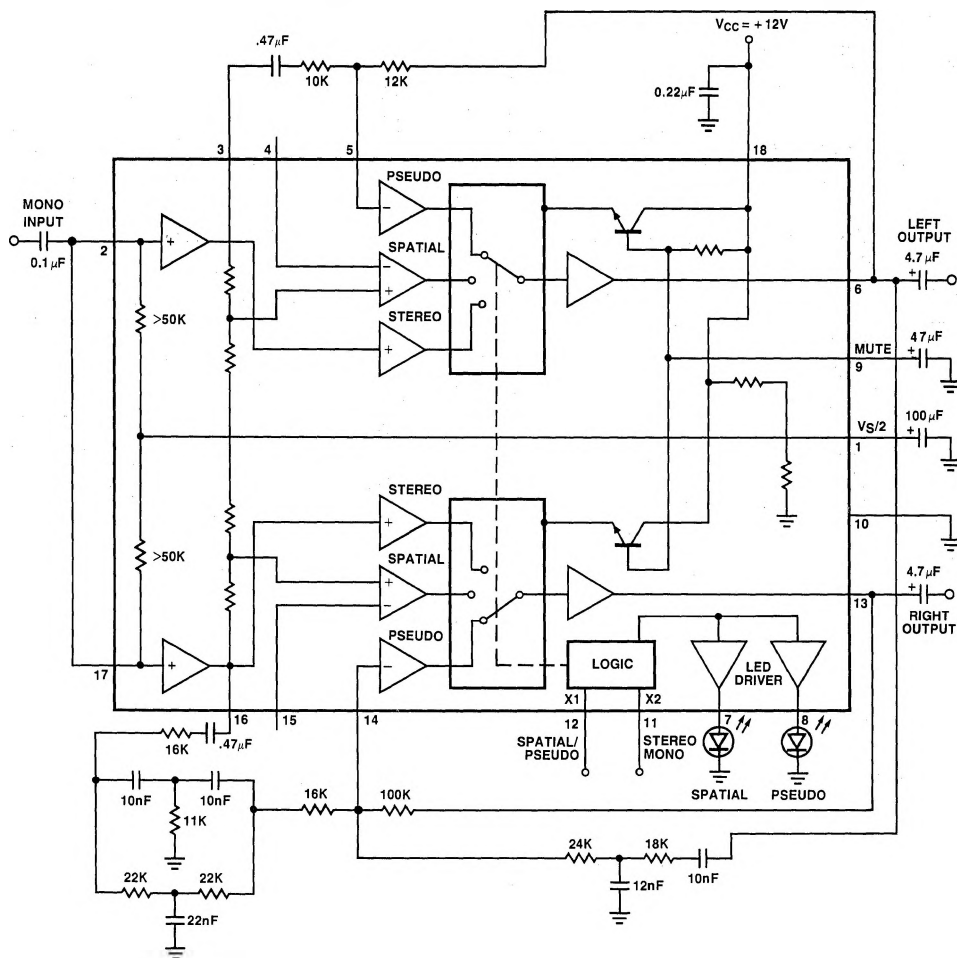
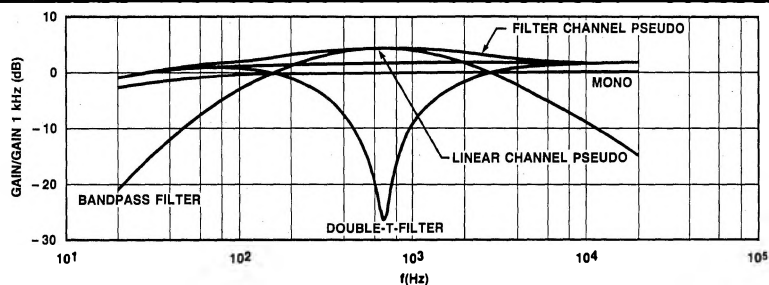


Figure 1. Pseudo Filter I

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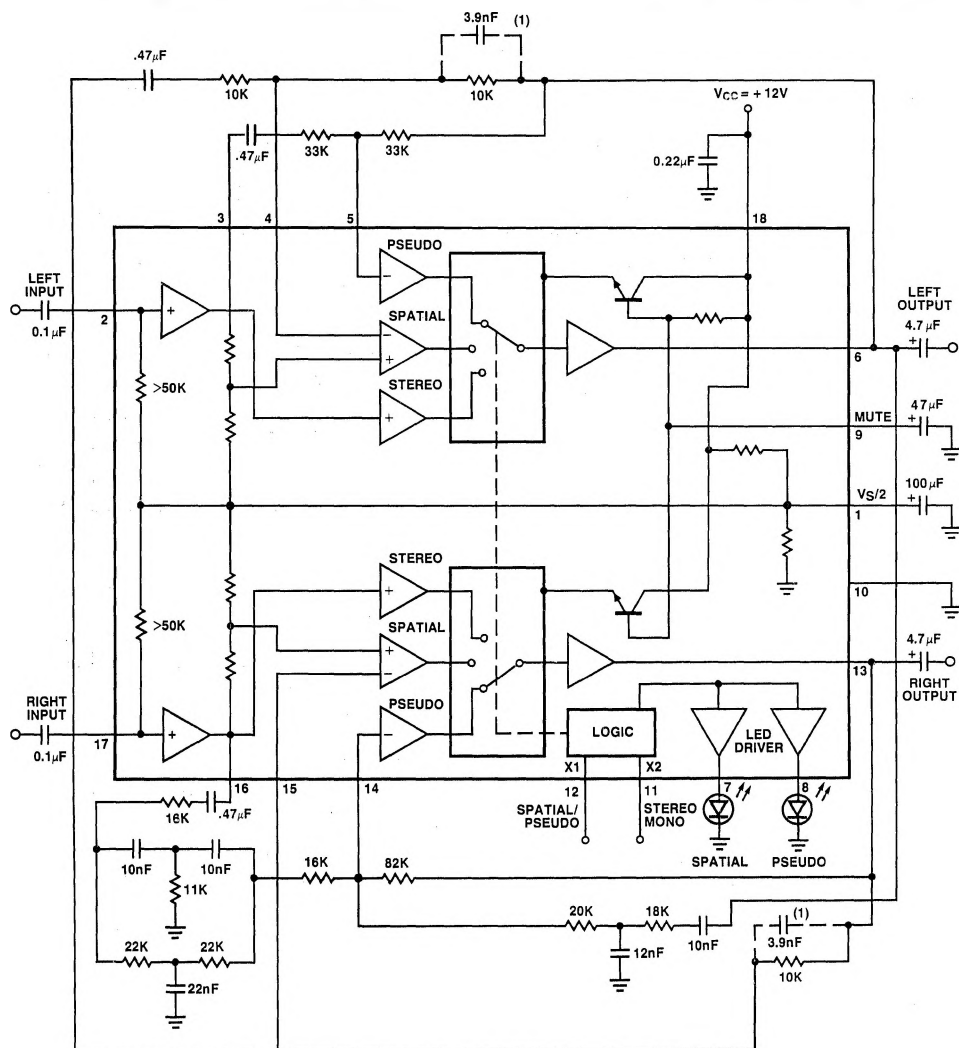
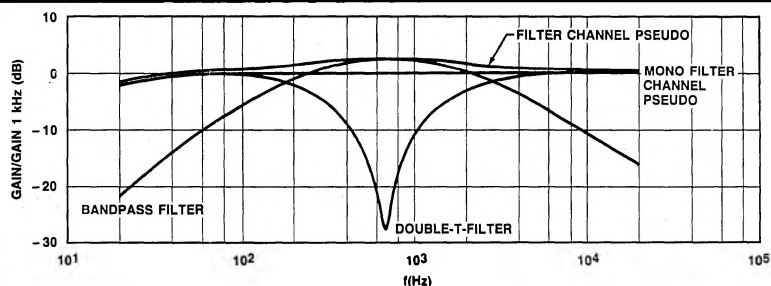


Figure 2. Pseudo Filter II

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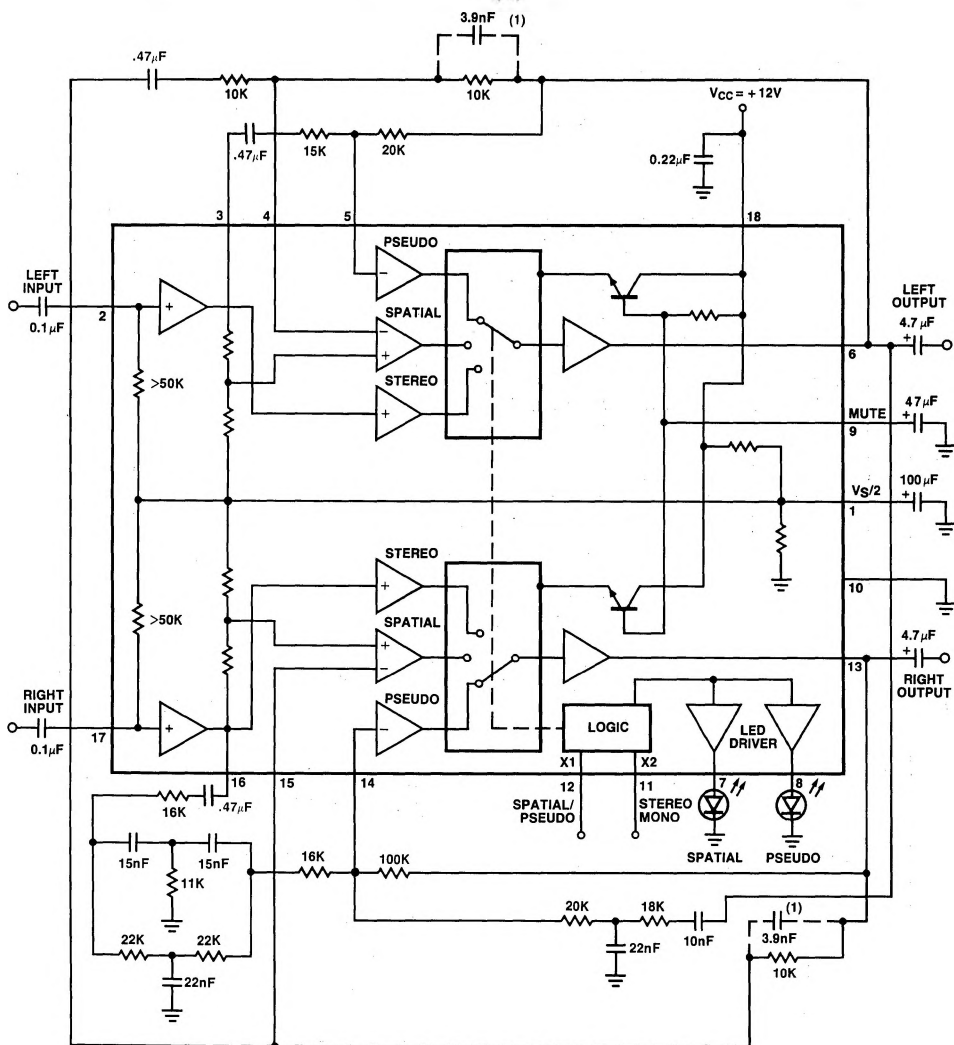
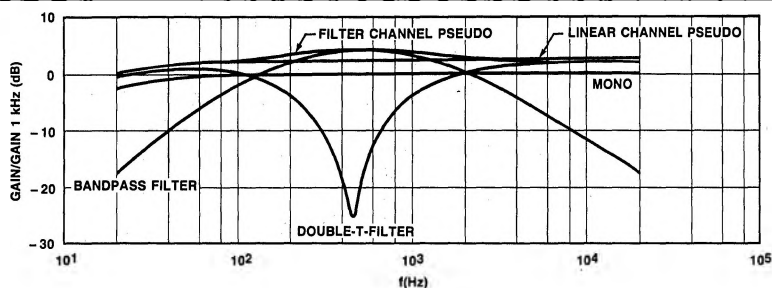


Figure 3. Pseudo Filter III