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

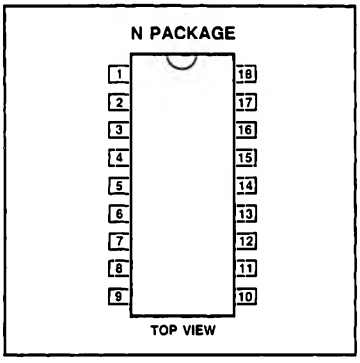
SYMBOL AND PARAMETER		RATING	UNIT
V_{CC}	Supply voltage (pin 18)	18	V
I_{CC}	Supply current (pin 18)	12	mA
T_{STG}	Storage temperature range	−25 to +150	°C
T_A	Operating ambient temperature range	− 20 to + 70	°C
Thermal Resistance			
$R_{th\ cr\text{-}a}$	From crystal to ambient	80	K/W

TRUTH TABLE

MODE	CONTROL INPUT STATE		LED SPATIAL PIN 7	LED PSEUDO 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}

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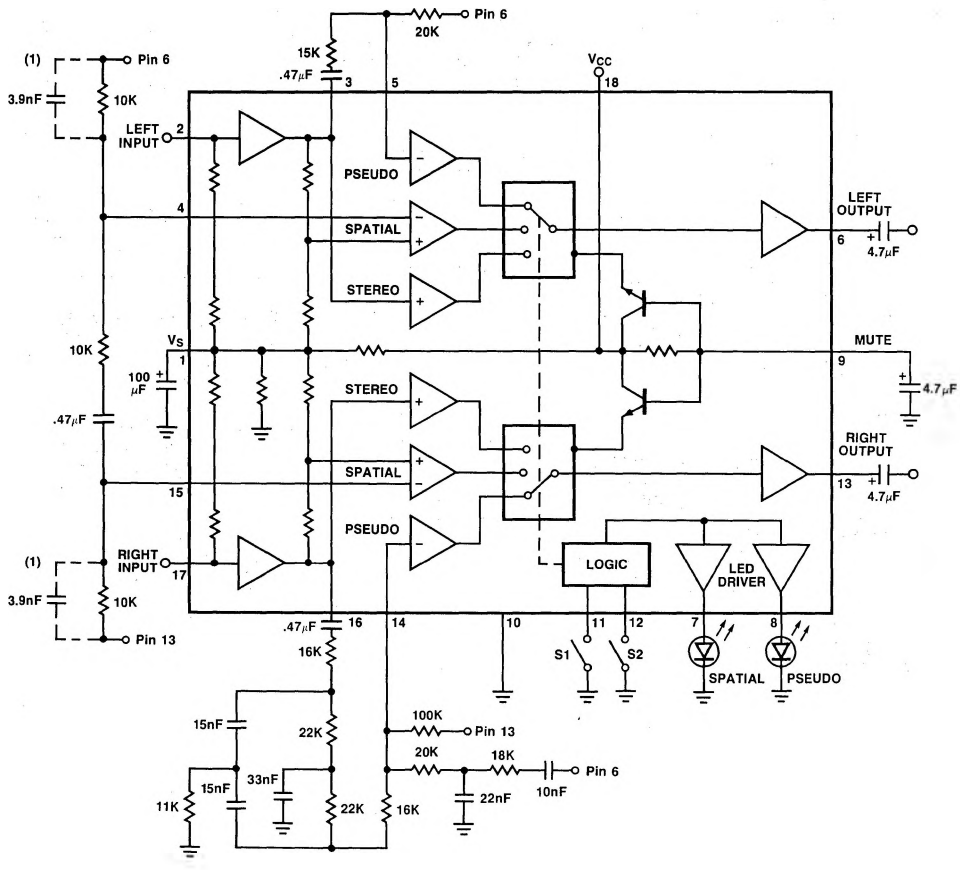
BLOCK DIAGRAM



(1) Recommended in spatial mode for correction of high frequency (optimal performance)

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DC ELECTRICAL CHARACTERISTICS V_{CC} = 12V; T_A = 25°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		kΩ
G_v	Voltage gain V_o/V_i			0		dB
α	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		μV
Spatial mode (Pins 11 and 12 HIGH)						
α	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		kΩ
$-I_i$	Switching current			35	100	μA
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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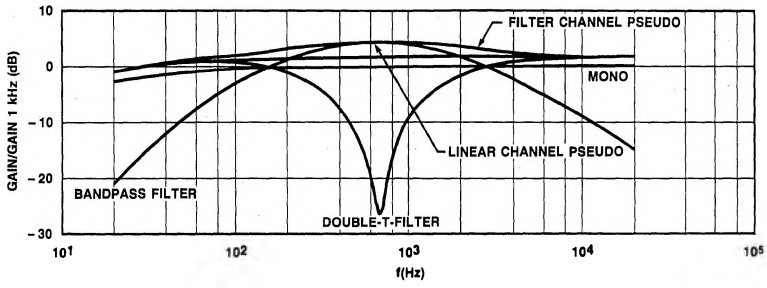

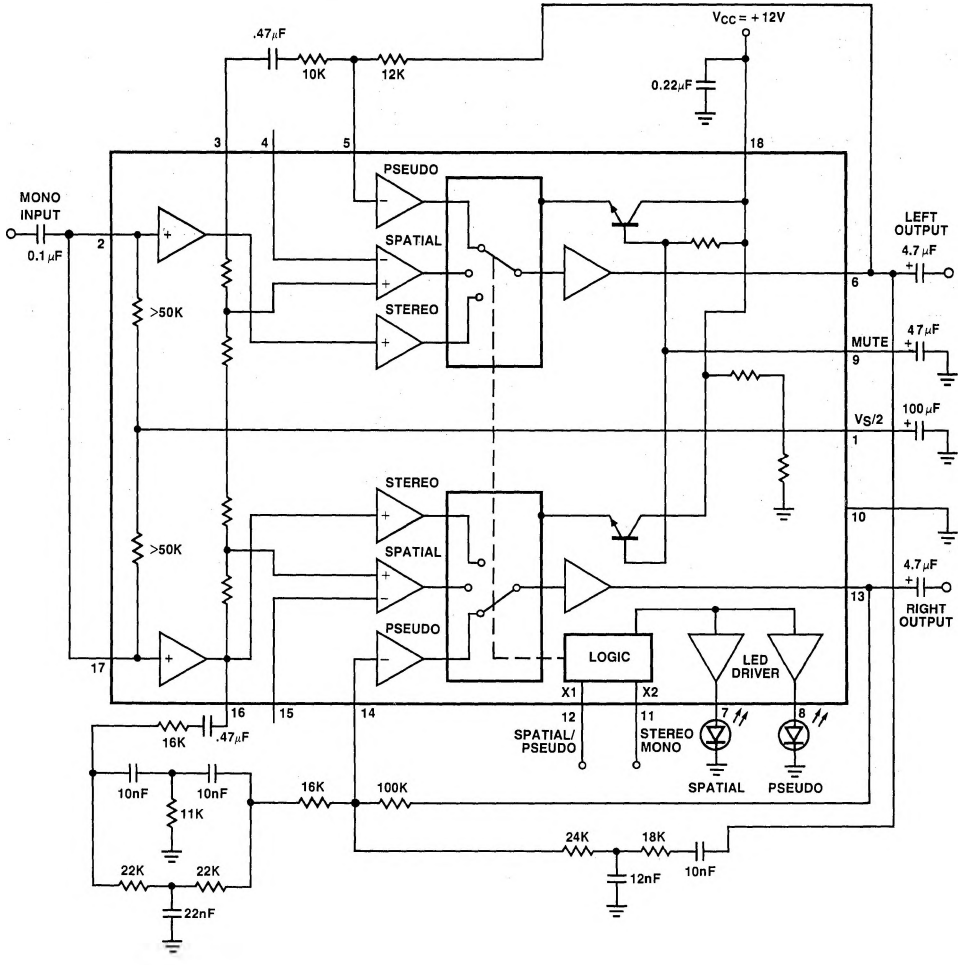

Figure 1. Pseudo Filter I

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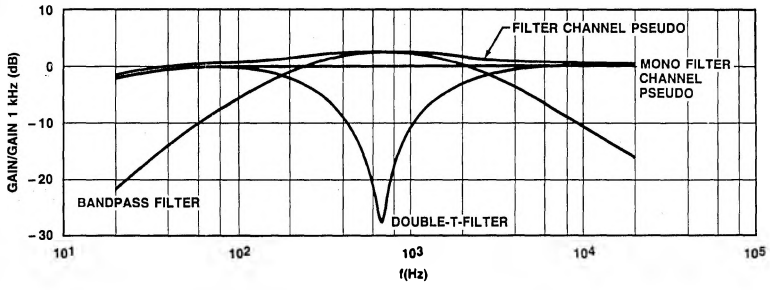

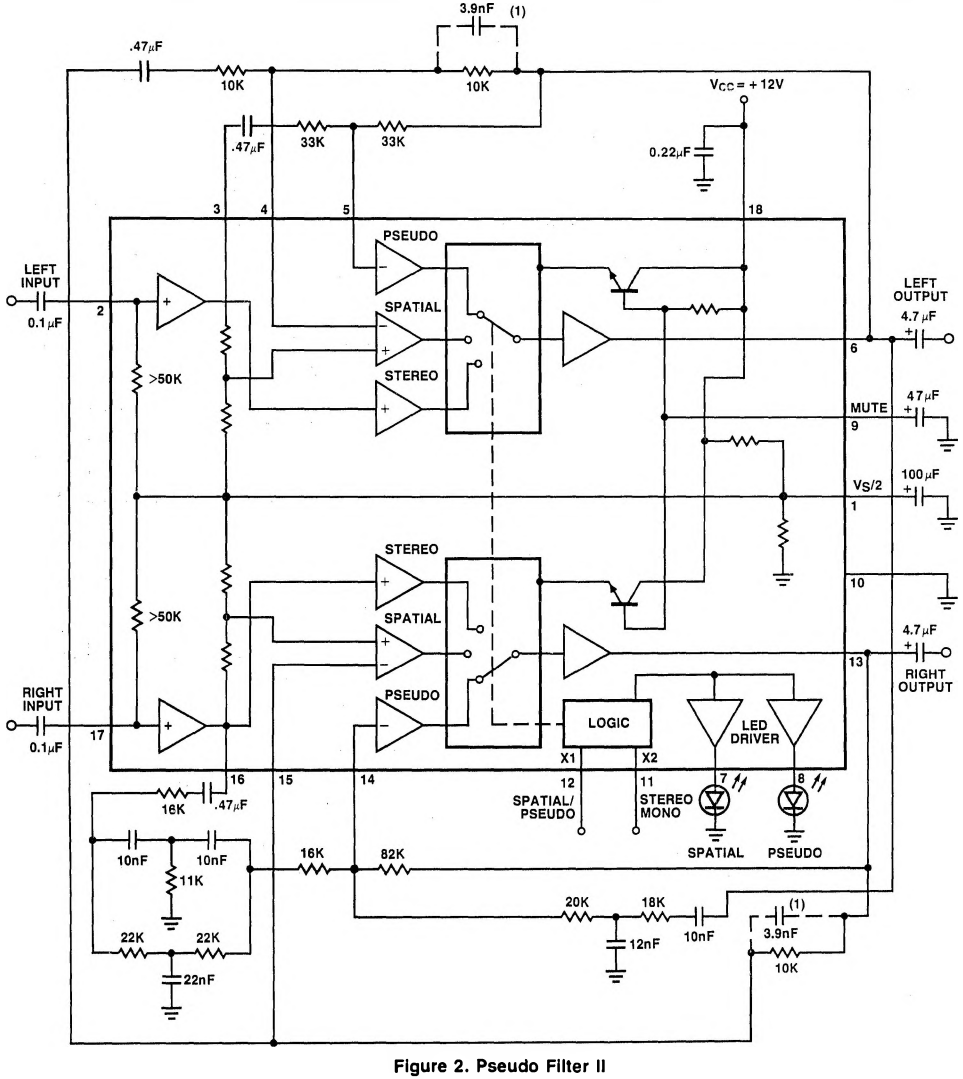

Figure 2. Pseudo Filter II

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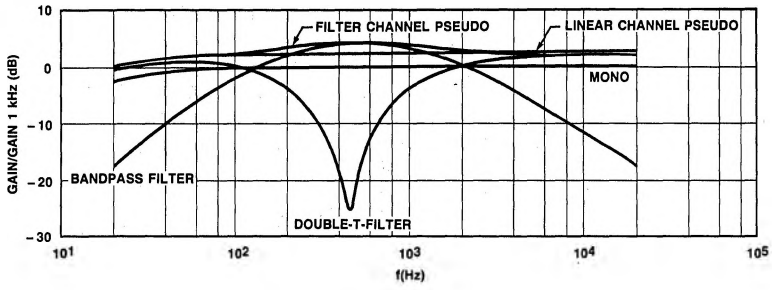

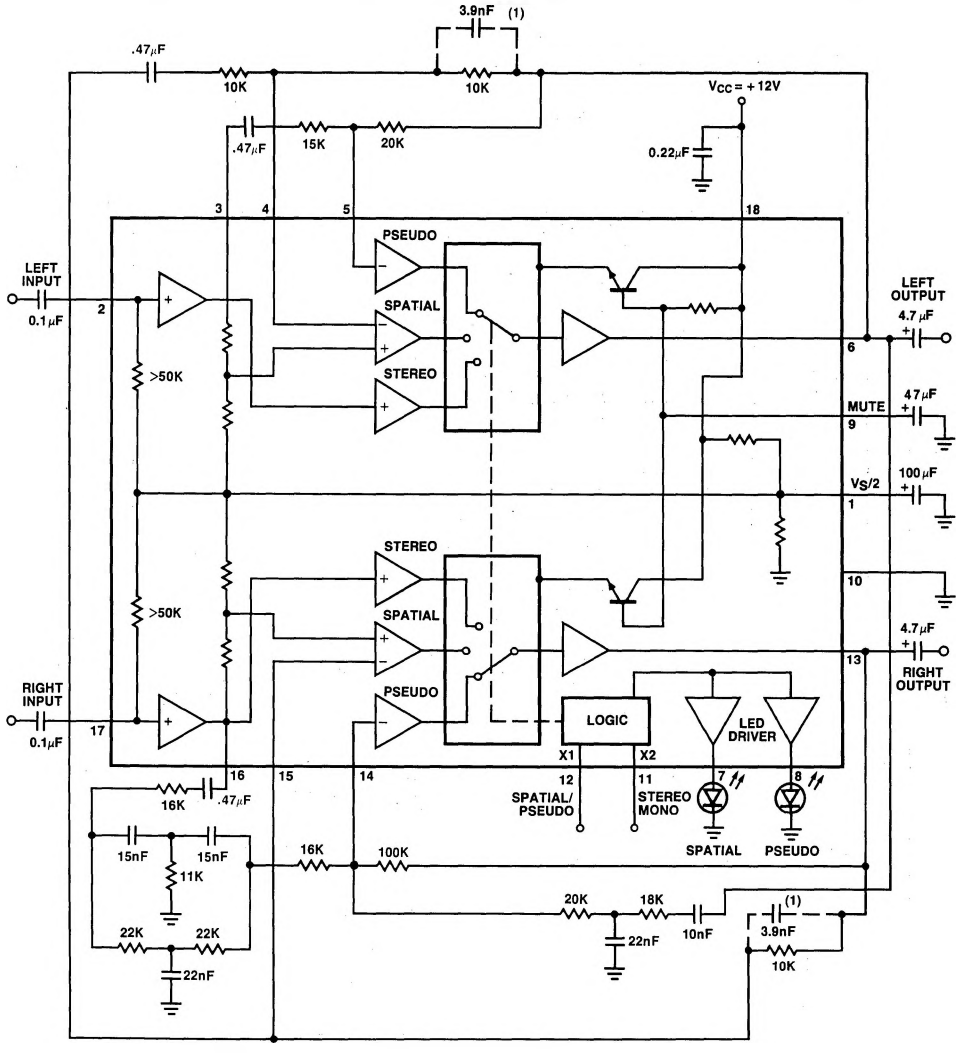

Figure 3. Pseudo Filter III