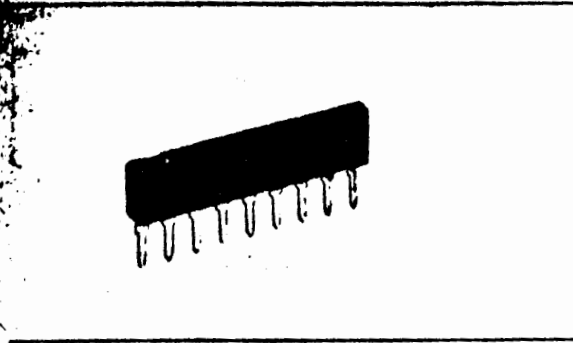


LED VU Level Meter Driver  
BA6124

ROHM

*Another  
Same*



Dimensions (mm)

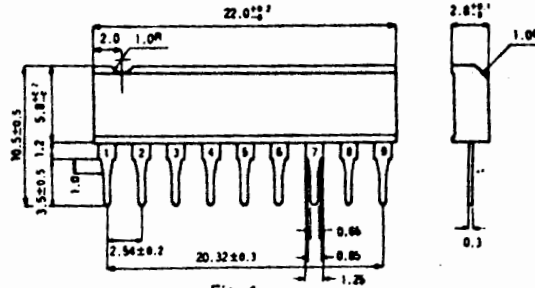


Fig. 1

Block Diagram

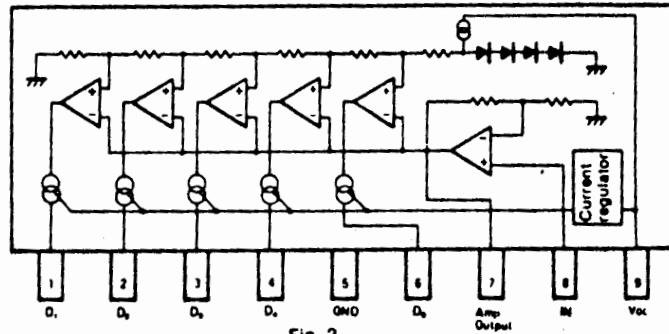


Fig. 2

The BA6124 is a monolithic integrated circuit consisting of a VU level meter driver developed for use in radio cassette tape recorders and other audio products. It is capable of driving 5 LEDs to form a bar display of input level in the range -10dB ~ +6dB. The internal circuitry makes use of rectifying amplifiers, thus enabling direct input of AC signals in addition to eliminating variations in LED drive current with respect to supply voltage variations, thus allowing direct LED drive.

Features

1. Rectifying amplifiers are used to allow direct AC or DC signal inputs.
2. LED drive current is regulated to eliminate variations in LED current with respect to supply voltage variations.
3. The reference voltage is determined internally to eliminate output display variations with variations of supply voltage.
4. Wide supply voltage range (3.5 ~ 16V) enables a wide range of applications.
5. Housed in a 9-pin SIP package and requires few externally connected components, thus conserving PC board space.

Absolute Maximum Ratings (T<sub>a</sub> = 25°C)

Parameter	Symbol	Limits	Unit
Supply voltage	V <sub>CC</sub>	18	V
Power dissipation	P <sub>d</sub>	1100*	mW
Operating temperature	T <sub>opr</sub>	-25 ~ +80	°C
Storage temperature	T <sub>stg</sub>	-55 ~ +125	°C
Junction temperature	T <sub>j</sub>	+150	°C

\* Derating is done at 11mW/°C for operation above T<sub>a</sub> = 25°C.

Electrical Characteristics (T<sub>a</sub> = 25°C, V<sub>CC</sub> = 6.0V, f = 1kHz)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions	Test circuit
Supply voltage	V <sub>CC</sub>	3.5	6	16	V <sub>PC</sub>		Fig. 3
Supply current	I <sub>CC</sub>	—	5	8	mA	V <sub>IN</sub> = 0	Fig. 3
Comparator level 1 (pin 1)	V <sub>c1</sub>	-11.5	-10	-8.5	dB		Fig. 3
Comparator level 2 (pin 2)	V <sub>c2</sub>	-6	-5	-4	dB		Fig. 3
Comparator level 3 (pin 3)	V <sub>c3</sub>	—	0	—	dB	adjustment point	Fig. 3
Comparator level 4 (pin 4)	V <sub>c4</sub>	+2.5	+3	+3.5	dB		Fig. 3
Comparator level 5 (pin 6)	V <sub>c5</sub>	+5	+6	+7	dB		Fig. 3
Sensitivity	V <sub>m</sub>	74	85	96	mV <sub>rms</sub>	V <sub>CC</sub> on-state level	Fig. 3
LED Current	I <sub>LED</sub>	11	15	18.5	mA		Fig. 3
Input bias current	I <sub>NO</sub>	—	0.3	1.0	μA		Fig. 3

Applications

1. VU meters
2. Signal meters
3. Other display



Fig. 7 Amplifier output voltage vs. frequency

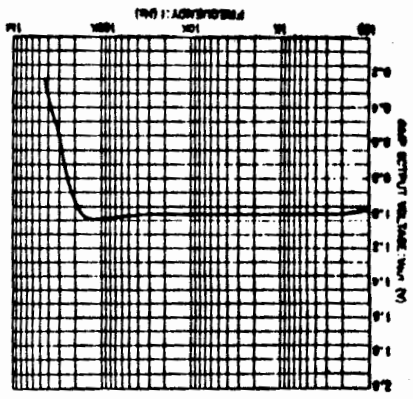


Fig. 8 Comparator level vs. supply voltage

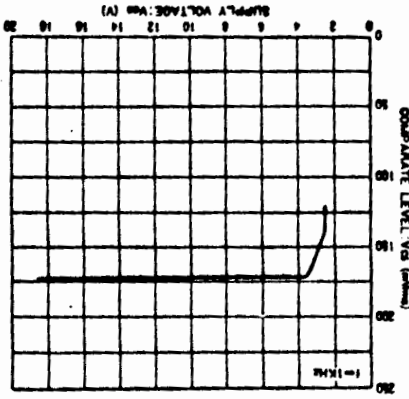


Fig. 9 Comparator level vs. ambient temperature

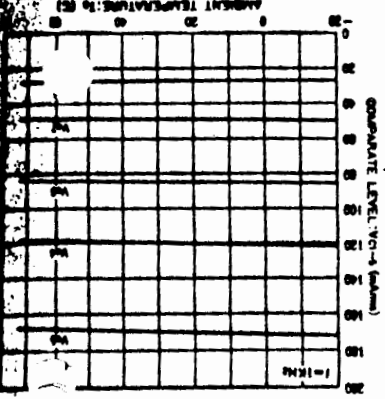


Fig. 4 Supply current vs. supply voltage

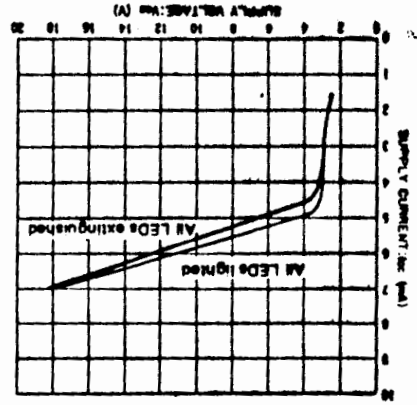


Fig. 5 LED Drive current vs. supply voltage

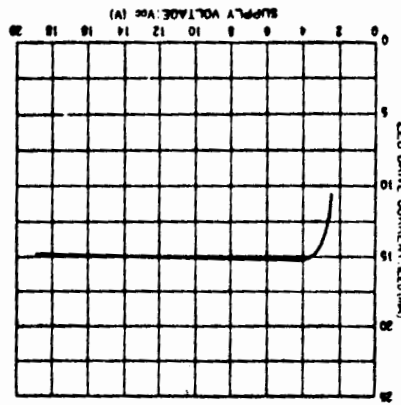
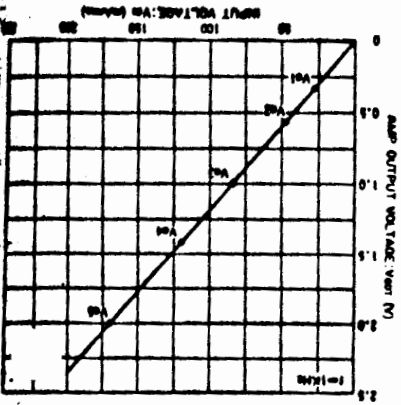
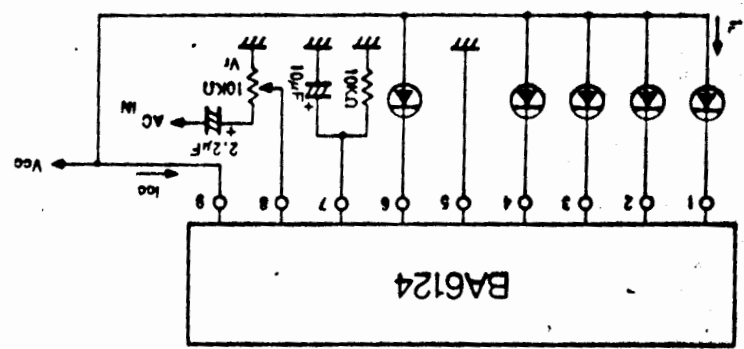


Fig. 6 Amplifier output voltage vs. input voltage



Electrical Characteristic Curves

Fig. 3



Test Circuit

## Application Example

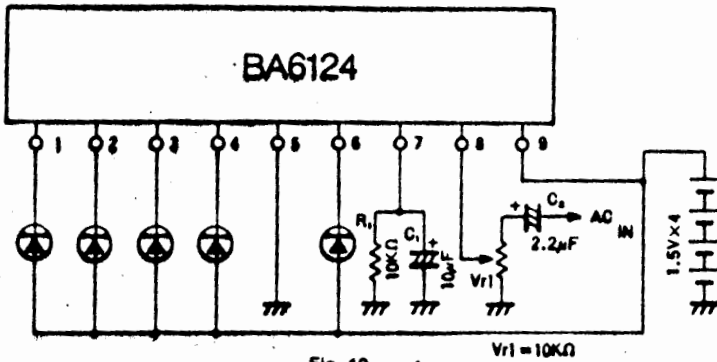


Fig. 10

By changing the time constant of  $C_1$  and  $C_2$ , the response time (attack time and release time) may be varied.  $C_2$  is a coupling capacitor. The input level is adjusted by means of  $VR_1$ .  $VR_1$  is adjusted so that any arbitrary level input will become the 0dB point. To limit LED current, as shown in Fig. 11 (1), a resistance is connected in parallel with the LED or, as shown in Fig. 11 (2), a resistance is connected in series with the LED. In addition, for the method shown in Fig. 11 (2), LED current will vary depending upon the supply voltage variations.

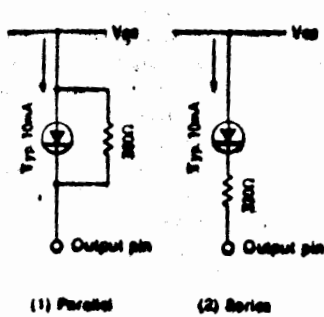


Fig. 11

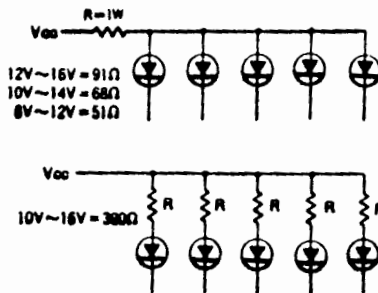


Fig. 12

Note: For operation at supply voltages greater than 9V, the LED current supply line should be shunted by a resistor, or a heatsink should be applied to assure that power dissipation does not exceed  $P_{A \text{ max}}$  (see Fig. 12)

BA6124 =  
AN6884