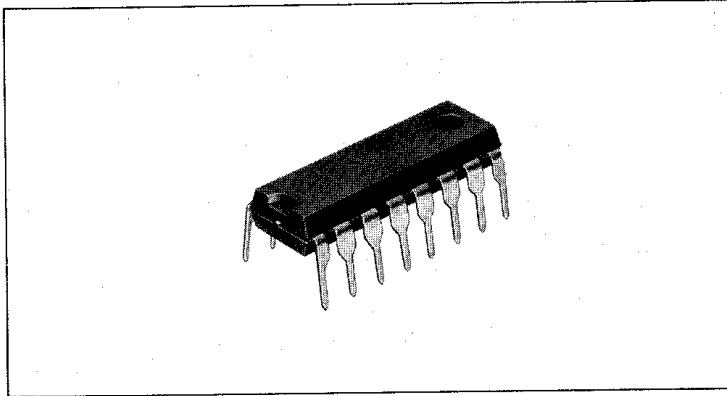


12-Point Fluorescent Display VU Bar Level Meter Driver BA6146



Dimensions (mm)

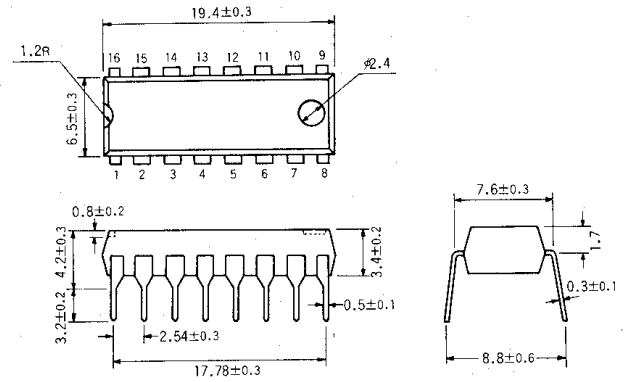


Fig. 1

The BA6146 is a monolithic integrated circuit consisting of a fluorescent display level meter driver. The display range is $-20\text{dB} \sim +8\text{dB}$, forming a VU display in 12 steps. A built-in rectifying amplifier with low offset is used to eliminate the necessity for offset adjustments. In addition a muting function is provided to enable the elimination of noise or abnormal operation when the power supply is switched on and off.

Features

1. A built-in rectifying amplifier with low offset is used to eliminate the necessity for offset adjustments.
2. A muting function is provided internally.
3. The input rectifying amplifier may be used with both DC and AC input signals.
4. Wide supply voltage range, with operation possible as low as $V_{CC} = 7.5\text{V}$.
5. Low power consumption (I_{CC} is typically 4mA)

Applications

1. Tape deck VU meters
2. VU meters for amplifiers or other audio products

Block Diagram

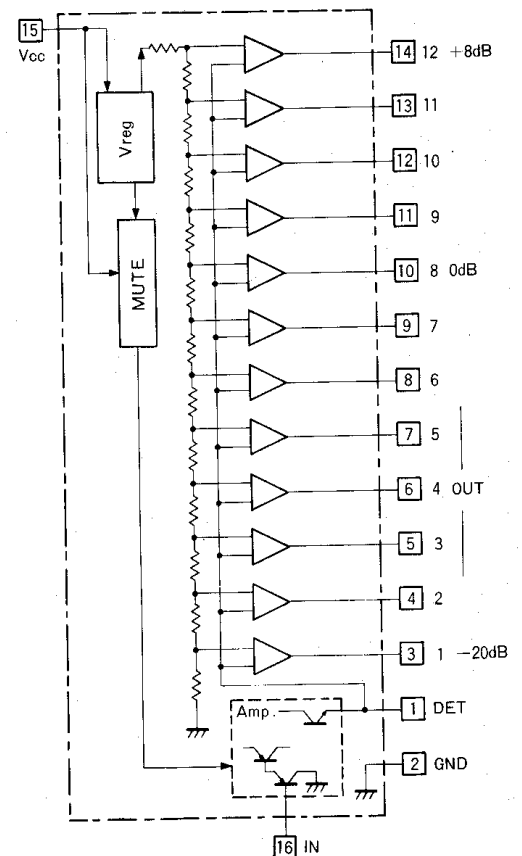


Fig. 2

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Limits	Unit
Supply voltage	V_{CC}	20	V
Power dissipation	P_d	550*	mW
Operating temperature	T_{opr}	$-25 \sim +75$	$^\circ\text{C}$
Storage temperature	T_{stg}	$-40 \sim +12$	$^\circ\text{C}$
Maximum output current	$I_{OU Tmax}$	2	mA

* Derating is done at 5.5mW/ $^\circ\text{C}$ for operation above $T_a = 25^\circ\text{C}$.

Electrical Characteristics (Unless otherwise noted, $T_a = 25^\circ\text{C}$, $V_{CC} = 18\text{V}$)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions	Test circuit
Supply voltage	V_{CC}	7.5	18	20	V		Fig. 3
Supply current	I_{CC}	—	4	8	mA	$V_{IN} = 0$	Fig. 3
Input sensitivity	V_{IN}	65	100	140	mVrms	Comparator level Pin 8 on-state level	Fig. 3
Comparator level 1	V_{c1}	-24	-20	-16	dB	Pin 3 on	Fig. 3
Comparator level 2	V_{c2}	-17.5	-15	-12.5	dB	Pin 4 on	Fig. 3
Comparator level 3	V_{c3}	-11.5	-10	-8.5	dB	Pin 5 on	Fig. 3
Comparator level 4	V_{c4}	-8	-7	-6	dB	Pin 6 on	Fig. 3
Comparator level 5	V_{c5}	-6	-5	-4	dB	Pin 7 on	Fig. 3
Comparator level 6	V_{c6}	-4	-3	-2	dB	Pin 8 on	Fig. 3
Comparator level 7	V_{c7}	-1.5	-1	-0.5	dB	Pin 9 on	Fig. 3
Comparator level 8	V_{c8}	—	0	—	dB	Pin 10 on at 0dB	Fig. 3
Comparator level 9	V_{c9}	+0.5	+1	+1.5	dB	Pin 11 on	Fig. 3
Comparator level 10	V_{c10}	+2	+3	+4	dB	Pin 12 on	Fig. 3
Comparator level 11	V_{c11}	+4	+5	+6	dB	Pin 13 on	Fig. 3
Comparator level 12	V_{c12}	+6.5	+8	+9.5	dB	Pin 14 on	Fig. 3

Test Circuit

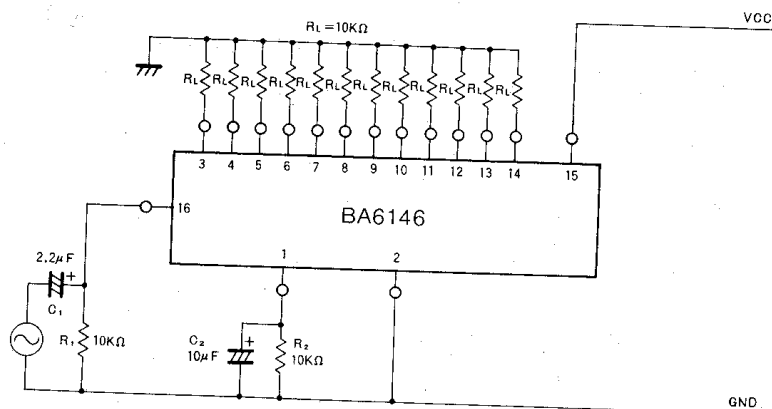


Fig. 3

Externally Connected Components

- Input Bias Resistor: R_1**
 The value of this resistor becomes the input impedance of this circuit. If this value is made too high, the DC bias voltage will increase, and the input offset value will increase, thus affecting the comparator levels. The recommended value is $10\text{k}\Omega$.
- FL Operating Level Discharge Time Constant Determining Resistor and Capacitor: R_2, C_2**
 This resistor and capacitor combination determines the recovery time T_R , approximated by the following expression.

The attack time is related to the IC internal charging capacity and the value of C_2 . With $C_2 = 10\mu\text{F}$ it is approximately 3ms and with $C_2 = 22\mu\text{F}$ it is approximately 7ms. If R_2 is made much larger than $10\text{k}\Omega$, the comparator level will shift down. The recommended range for R_2 is $10\text{k} \sim 25\text{k}\Omega$.

$$T_R = 2.3 \cdot R_2 \cdot C_2$$