

LED level meter driver, 5-point, VU scale

BA6154

The BA6154 is a driver IC for LED VU level meters in stereo equipment and other display applications. The IC displays the input level (range : -10dB to $+6\text{dB}$) on a 5-point, bar-type LED display. The BA6137 includes a rectifier amplifier allowing direct AC input, and has constant-current outputs, so it can directly drive the LEDs without variations in LED current due to supply voltage fluctuations.

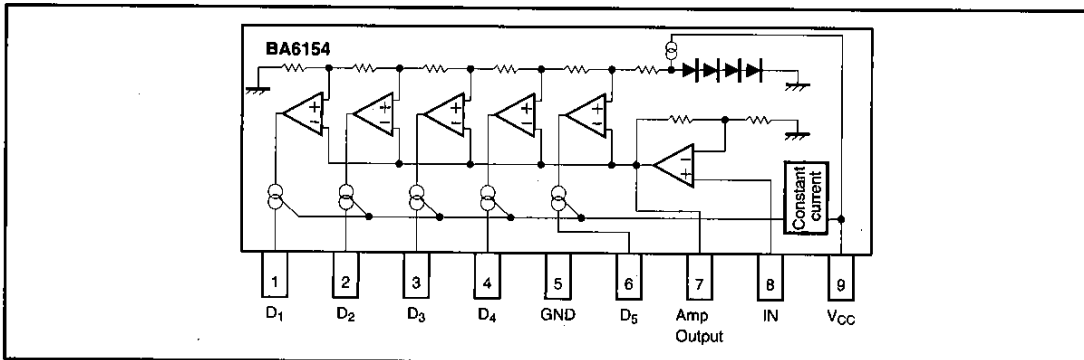
●Applications

VU meters, signal meters, and other display devices.

●Features

- 1) Rectifier amplifier allows either AC or DC input.
- 2) Rectifier amplifier has high gain (26dB), so operation at low input level is possible.
- 3) Constant-current outputs for constant LED current when the supply voltage fluctuates.
- 4) Built-in reference voltage means that power supply voltage fluctuations do not effect the display.
- 5) Wide operating voltage range (3.5V to 16V) for a wide range of applications.
- 6) Low PCB space requirements. Comes in a compact 9-pin SIP package and requires few external components.

●Block diagram



● Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit
Supply voltage	V _{CC}	18	V
Power dissipation	P _d	800*	mW
Operating temperature	T _{opr}	-25~60	°C
Storage temperature	T _{stg}	-55~125	°C
Junction temperature	T _J	150	°C

* Reduced by 6.4mW for each increase in Ta of 1°C over 25°C.

● Electrical characteristics (unless otherwise specified Ta = 25°C, V_{CC} = 6.0V, and V_r = 1kHz)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions	Measurement Circuit
Operating voltage range	V _{CC}	3.5	6	16	V	—	Fig.1
Quiescent current	I _Q	—	5	8	mA	V _{IN} =0V	Fig.1
Control level 1	V _{C1}	-13	-10	-7	dB	—	Fig.1
Control level 2	V _{C2}	-6.5	-5	-3.5	dB	—	Fig.1
Control level 3	V _{C3}	—	0	—	dB	Adjustment point	Fig.1
Control level 4	V _{C4}	2.5	3	3.5	dB	—	Fig.1
Control level 5	V _{C5}	5	6	7	dB	—	Fig.1
Sensitivity	V _{IN}	36	45	54	mV _{rms}	V _{C3} on level	Fig.1
LED current	I _{LED}	11	15	18.5	mA	—	Fig.1
Input bias current	I _{INQ}	—	0.3	1.0	μA	—	Fig.1

● Measurement circuit

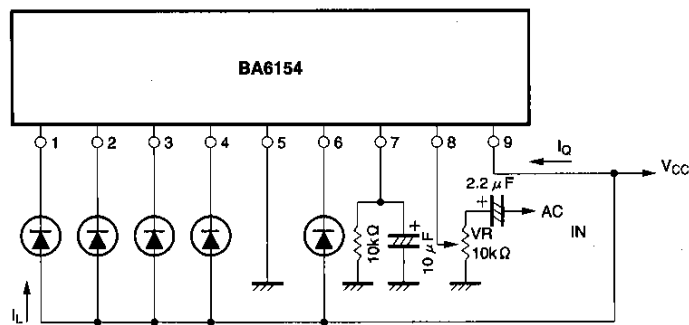


Fig. 1

●Application example

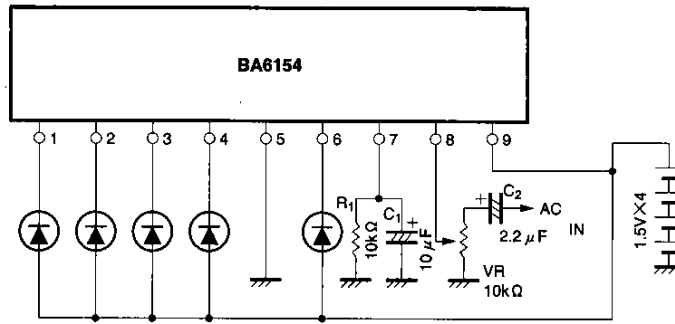


Fig. 2

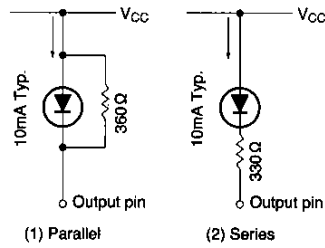


Fig. 3

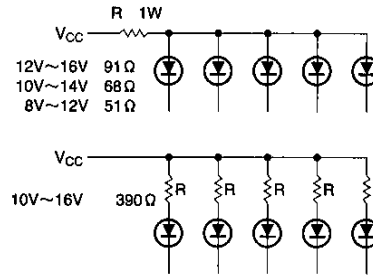


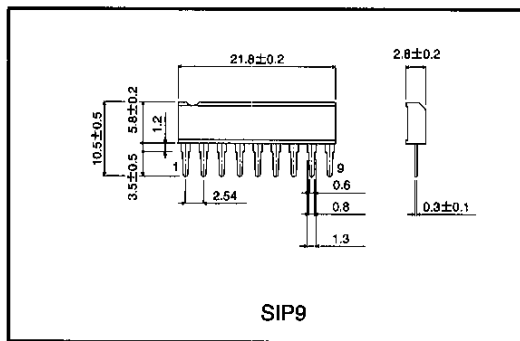
Fig. 4

The response time (attack and release time) can be changed by varying the values of C_1 and C_2 . C_2 is a coupling capacitor, and the potentiometer VR varies the input level. Input a fixed voltage level and adjust the potentiometer so that the LED lights at 0dB. To reduce the LED current, connect a resistor either in parallel (Fig. 3 (1)) or in series (Fig. 3 (2)) with the LED.

If a resistor is connected in series with the LED, the LED current will change if the supply voltage fluctuates.

Note: If the power supply voltage exceeds 9V, insert a resistor in series with the LED current supply line, or connect a heat sink so that the maximum power dissipation P_d Max. is not exceeded (see Fig. 4).

●External dimensions (Unit: mm)



SIP9