

# LED level meter driver, 5-point, linear scale

## BA6125

The BA6125 is a driver IC for LED VU level meters in stereo equipment and other display applications.

The IC displays the input level on five LEDs. The display level range is  $35\text{mV}_{\text{rms}}$  to  $175\text{mV}_{\text{rms}}$  in five equally-spaced  $35\text{mV}_{\text{rms}}$  steps.

The BA6125 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.

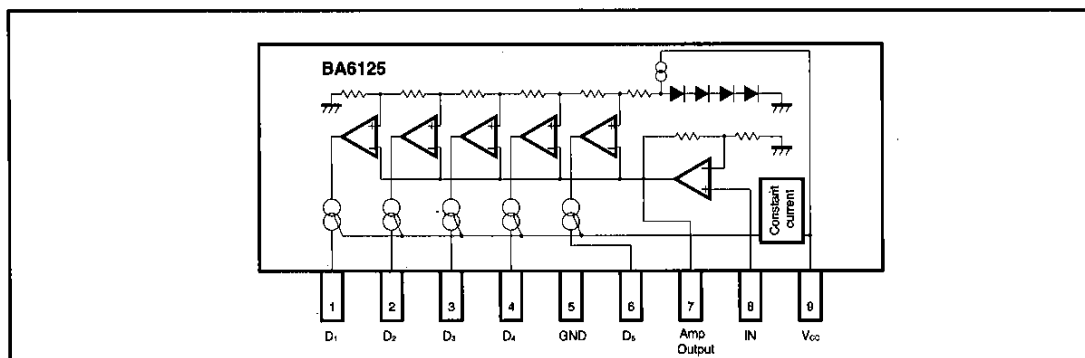
### ● Applications

Parity checkers, signal meters, and other display devices.

### ● Features

- 1) Rectifier amplifier allows either AC or DC input.
- 2) Constant-current outputs for constant LED current when the supply voltage fluctuates.
- 3) Built-in reference voltage means that power supply voltage fluctuations do not effect the display.
- 4) Wide operating voltage range (3.5V to 16V) for a wide range of applications.
- 5) 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 <sub>CC</sub>	18	V
Power dissipation	P <sub>d</sub>	800*	mW
Operating temperature	T <sub>opf</sub>	-25~60	°C
Storage temperature	T <sub>stg</sub>	-55~125	°C
Junction temperature	T <sub>J</sub>	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<sub>CC</sub> = 6.0V, and f = 1kHz)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions	Measurement Circuit
Operating voltage range	V <sub>CC</sub>	3.5	6	16	V	—	Fig.1
Quiescent current	I <sub>Q</sub>	—	5	8	mA	V <sub>IN</sub> =0V	Fig.1
Sensitivity	V <sub>IN</sub>	—	105	—	mV <sub>rms</sub>	V <sub>CC</sub> on level	Fig.1
Control level 1	V <sub>C1</sub>	—	1/3V <sub>C3</sub>	—	mV <sub>rms</sub>	—	Fig.1
Control level 2	V <sub>C2</sub>	—	2/3V <sub>C3</sub>	—	mV <sub>rms</sub>	—	Fig.1
Control level 3	V <sub>C3</sub>	—	V <sub>C3</sub>	—	mV <sub>rms</sub>	Adjustment point	Fig.1
Control level 4	V <sub>C4</sub>	—	4/3V <sub>C3</sub>	—	mV <sub>rms</sub>	—	Fig.1
Control level 5	V <sub>C5</sub>	—	5/3V <sub>C3</sub>	—	mV <sub>rms</sub>	—	Fig.1
LED current	I <sub>LED</sub>	11	15	18.5	mA	—	Fig.1
Input bias current	I <sub>IN0</sub>	—	0.3	1.0	μA	—	Fig.1

● Measurement circuit

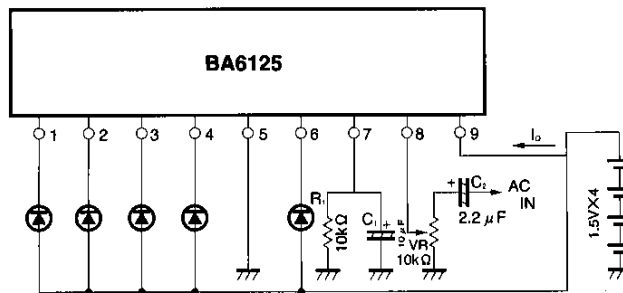


Fig. 1

Level meter drivers

Audio accessory components

●Application example

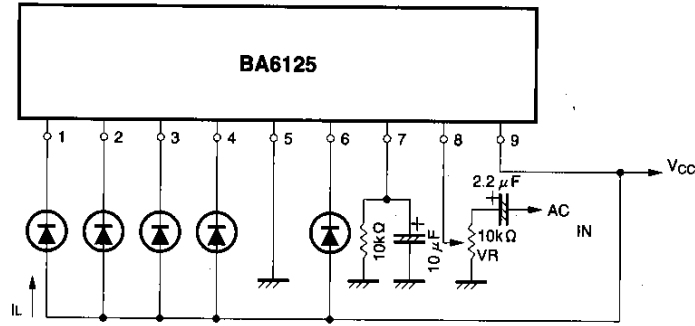


Fig. 2

●Application example

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 the voltage level that you desire for the center point, and adjust the potentiometer so that the third LED ( $V_{c3}$ ) lights.

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.

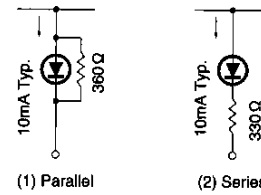


Fig. 3

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).

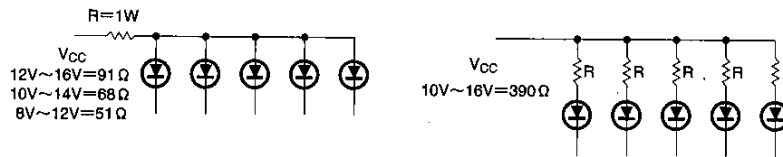


Fig. 4

●Use with DC input

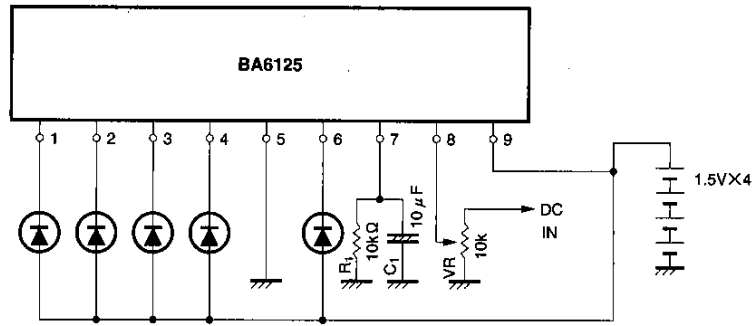


Fig. 5

Use the potentiometer shown in Fig. 5 to adjust the input level. Adjust the potentiometer so that the third LED ( $V_{C3}$ ) lights for the desired input level.

For large input levels, input via pin 7 is also possible. In this case, the dispersion in comparator level is less than in the case of input via pin 8. Note that, if the resistance value of the  $100k\Omega$  potentiometer shown in Fig. 6 is made too small, the discharge time constant determined by  $C_1$  and  $R_1$  will change, and the response time will vary. The maximum input level for pin 7 is 5V.

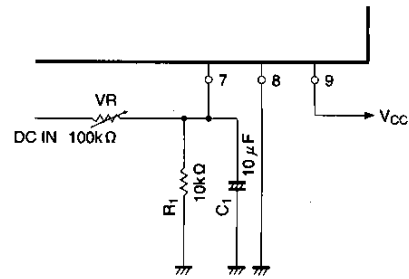
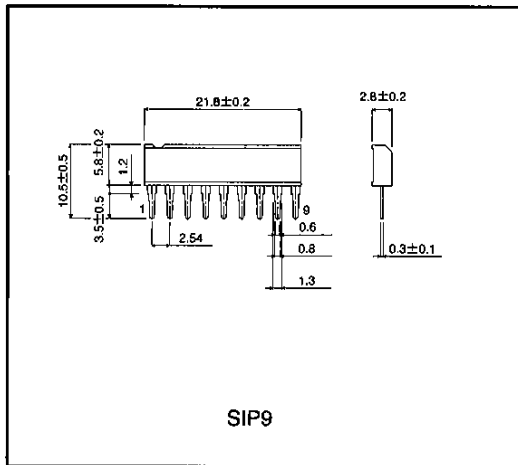


Fig. 6

Comparator level	$V_{C1}$	$V_{C2}$	$V_{C3}$	$V_{C4}$	$V_{C5}$	Unit
Pin 7 input (typ.)	0.4	0.8	1.2	1.6	2.0	V

●External dimensions (Unit: mm)



SIP9