

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

## BA6124 / BA6124F

The BA6124 and BA6124F are driver ICs for LED VU level meters in stereo equipment and other display applications. The ICs display the input level (range:  $-10\text{dB}$  to  $+6\text{dB}$ ) on a 5-point, bar-type LED display.

The circuit 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 power supply voltage fluctuations.

### ●Applications

VU meters, 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 power supply voltage fluctuates.
- 3) Built-in reference voltage means that power supply voltage fluctuations do not effect the display.
- 4) Wide operating power supply voltage range (3.5V to 16V) for a wide range of applications.
- 5) Low PCB space requirements. Comes in a compact package and requires few external components.

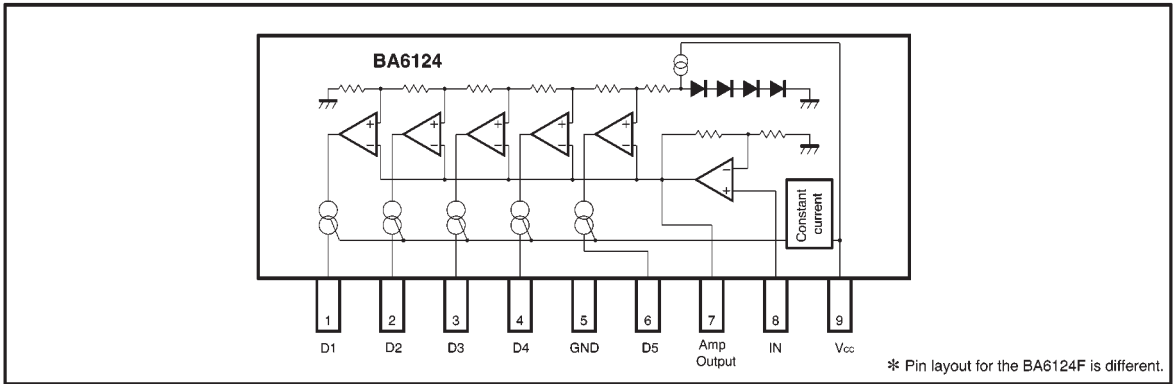
### ●Absolute maximum ratings ( $T_a = 25^\circ\text{C}$ )

Parameter		Symbol	Limits	Unit
Power supply voltage		$V_{cc}$	18	V
Power dissipation	BA6124	$P_d$	500*1	mW
	BA6124F		300*2	
Operating temperature		$T_{opr}$	$-25 \sim +60$	$^\circ\text{C}$
Storage temperature		$T_{stg}$	$-55 \sim +125$	$^\circ\text{C}$
Junction temperature		$T_j$	150	$^\circ\text{C}$

\*1 Reduced by 5mW for each increase in  $T_a$  of  $1^\circ\text{C}$  over  $25^\circ\text{C}$ .

\*2 Reduced by 3mW for each increase in  $T_a$  of  $1^\circ\text{C}$  over  $25^\circ\text{C}$ .

● Block diagram



● Electrical characteristics (unless otherwise noted,  $T_a = 25^\circ\text{C}$ ,  $V_{CC} = 6.0\text{V}$ , and  $f = 1\text{kHz}$ )

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Power supply voltage	$V_{CC}$	3.5	6	16	V	—
Quiescent current	$I_Q$	—	5	8	mA	$V_{IN}=0\text{V}$
Comparator level 1	$V_{C1}$	-11.5	-10	-8.5	dB	—
Comparator level 2	$V_{C2}$	-6	-5	-4	dB	—
Comparator level 3	$V_{C3}$	—	0	—	dB	Adjustment point
Comparator level 4	$V_{C4}$	2.5	3	3.5	dB	—
Comparator level 5	$V_{C5}$	5	6	7	dB	—
Sensitivity	$V_{IN}$	74	85	96	$\text{mV}_{\text{rms}}$	$V_{C3}$ on level
LED current	$I_{LED}$	11	15	18.5	mA	—
Input bias current	$I_{NO}$	—	0.3	1.0	$\mu\text{A}$	—

● Measurement circuit

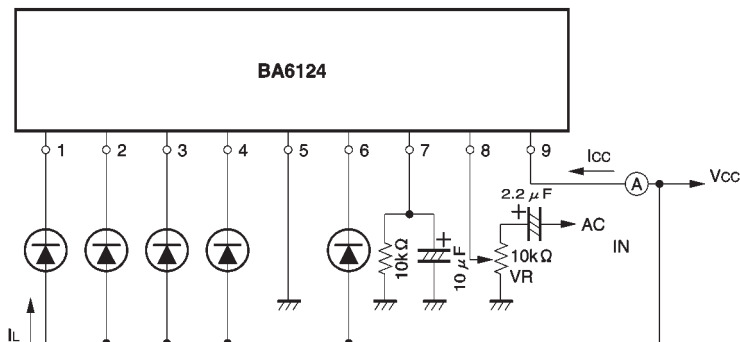


Fig. 1

●Electrical characteristics curves (Ta = 25°C)

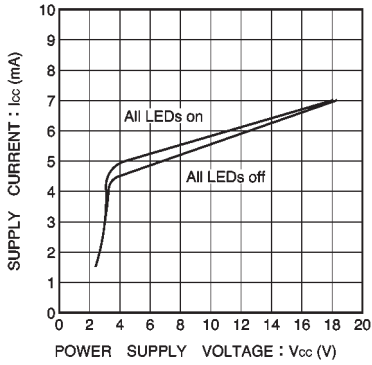


Fig. 2 Supply current vs. power supply voltage

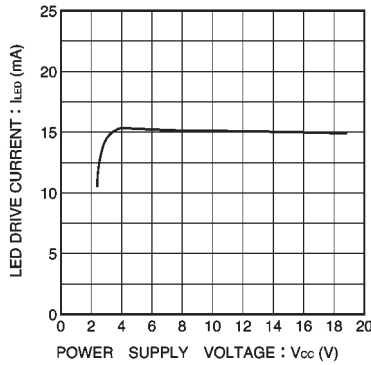


Fig. 3 LED drive current vs. power supply voltage

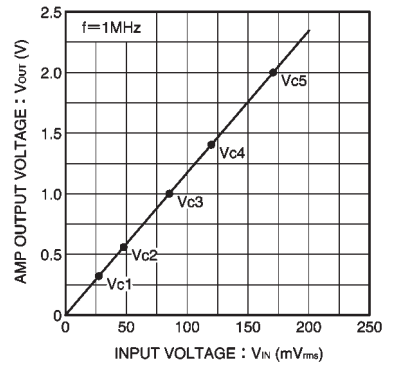


Fig. 4 Rectifier amplifier output voltage vs. input voltage

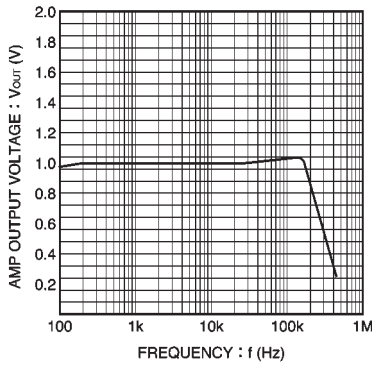


Fig. 5 Rectifier amplifier output voltage vs. frequency

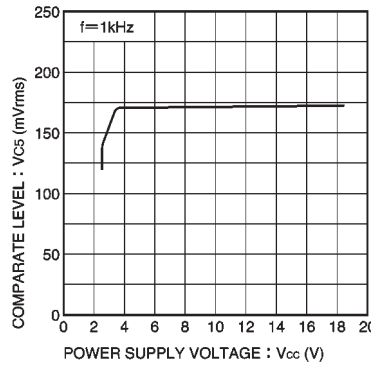


Fig. 6 Comparator level vs. power supply voltage

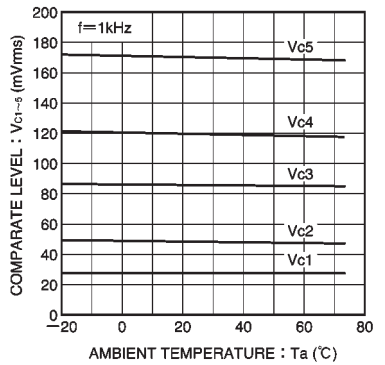


Fig. 7 Comparator level vs. ambient temperature

●External dimensions

