

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

## BA6104

The BA6104 is a monolithic driver IC for LED level meters applications.

The IC has five comparators that operate in equally-spaced steps in response to the input voltage, and drive bar-display output LEDs.

When the reference voltage generator is not set (pin 7 open), the comparators operate in 200mV (approx.) steps, so an input level of about 1V lights all of the LEDs. By connecting external resistors between pin 7 and GND, and pin 7 and  $V_{CC}$ , this level can be adjusted over the range 0.5V to 3.0V.

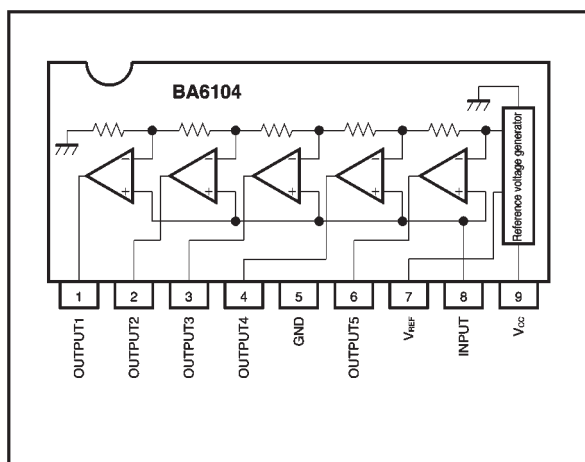
### ● Applications

Signal meters, tuning meters and voltage checkers.

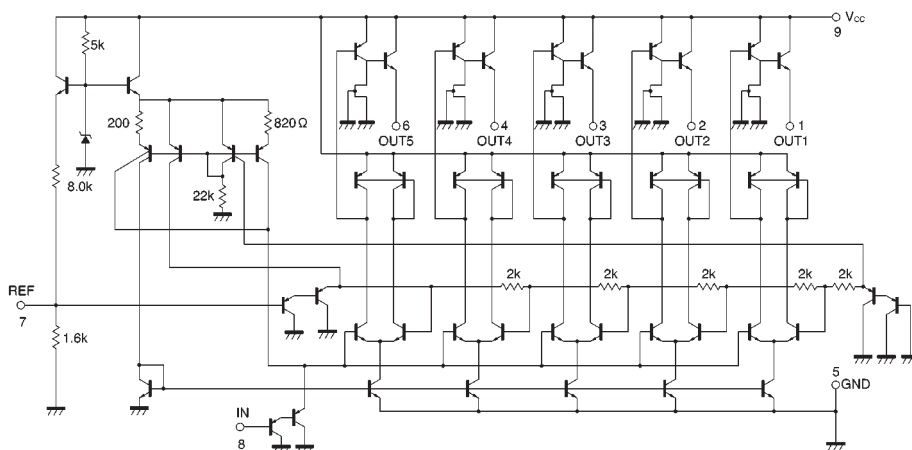
### ● Features

- 1) Drives an LED bar display in proportion to the input level.
- 2) The output current can be set to a maximum of 15mA using external resistors, allowing free selection of the type and color of the LEDs.
- 3) The input level at which all LEDs light can be set in the range 0.5V to 3.0V using external resistors.
- 4) High input impedance.
- 5) Easy-to-handle 9-pin SIP package.

### ● Block diagram



● Internal circuit configuration



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

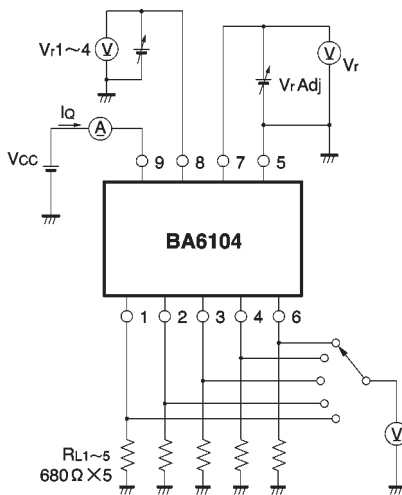
Parameter	Symbol	Limits	Unit
Power supply voltage	$V_{CC}$	18	V
Power dissipation	$P_d$	500*	mW
Operating temperature	$T_{opr}$	$-20 \sim +75$	$^\circ\text{C}$
Storage temperature	$T_{stg}$	$-55 \sim +125$	$^\circ\text{C}$
Maximum input voltage	$V_{IN}$	4.5	V
Maximum LED drive current	$I_{DL}$	20	mA

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

● Electrical characteristics (unless otherwise noted,  $T_a = 25^\circ\text{C}$  and  $V_{CC} = 12\text{V}$ )

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Power supply voltage	$V_{CC}$	9	12	15	V	—
Quiescent current	$I_Q$	—	3	6	mA	LED current not included, $R_L = \infty$ , $V_{IN} = 0\text{V}$
Comparator level 1	$V_{r1}$	130	200	270	mV	After setting $V_r = 1.0\text{V}$
Comparator level 2	$V_{r2}$	330	400	470	mV	After setting $V_r = 1.0\text{V}$
Comparator level 3	$V_{r3}$	530	600	670	mV	After setting $V_r = 1.0\text{V}$
Comparator level 4	$V_{r4}$	730	800	870	mV	After setting $V_r = 1.0\text{V}$
Setting range to light all LEDs	$V_r$	0.93	1.0	1.07	V	After setting $V_r = 1.0\text{V}$ Decision at $V_{TL} > 8.0\text{V}$
LED drive current	$I_{DL}$	—	—	15	mA	—

## ● Measurement circuit



## ● External dimensions (Units: mm)

