

# AN6876

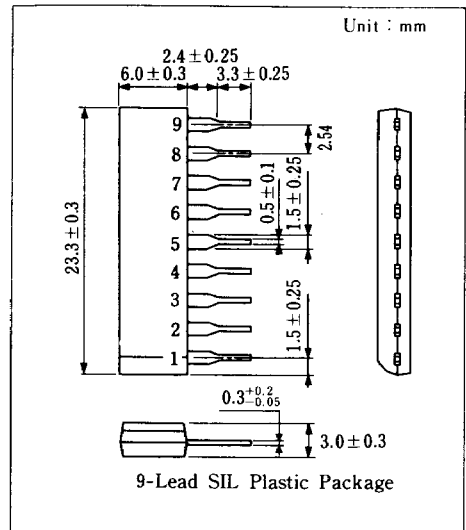
## 5-Dot LED Driver Circuit

### ■ Outline

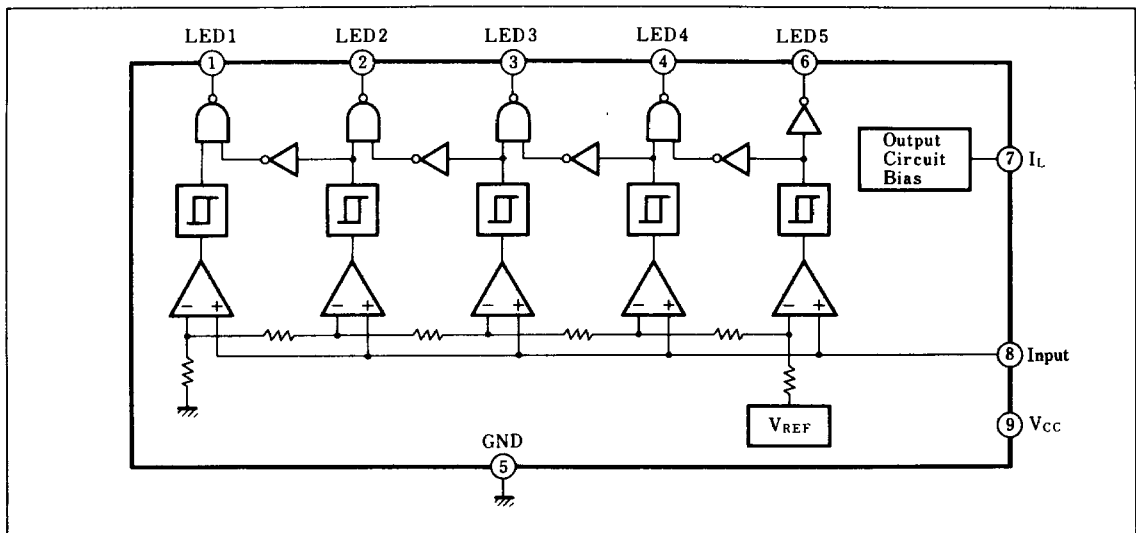
The AN6876 is an integrated circuit designed for driving 5-dot LED so that LED may light linearly for input signal. Because the adjust pin for output current is provided, the brightness of LED can be controlled.

### ■ Features

- 5-LED bar graph or dot display drive
- Linear response with respect to input
- Brightness externally adjustable
- High output current, suitable for green LED drive
- Lamp ON/OFF hysteresis, no flickering by noise



### ■ Block Diagram



### Pin

Pin No.	Pin Name	Pin No.	Pin Name
1	LED1 Output	6	LED5 Output
2	LED2 Output	7	LED Current Set Input
3	LED3 Output	8	Non Inverting Input
4	LED4 Output	9	V <sub>CC</sub>
5	GND		

### Absolute Maximum Ratings (T<sub>a</sub> = 25°C)

Item		Symbol	Rating		Unit
Voltage	Supply Voltage	V <sub>CC</sub>	-0.5	+18	V
	Circuit Voltage	V <sub>8-5</sub>	-0.5	+16	V
	Load Current Set Input Voltage	V <sub>7-5</sub>		+16	V
	Output Voltage* <sup>1</sup>	V <sub>o</sub>	-0.5	+16	V
Current	Supply Current* <sup>1</sup>	I <sub>CC</sub>	18		mA
	Load Current Set Input Current* <sup>2</sup>	I <sub>7</sub>	5		mA
	Output Current* <sup>1</sup>	I <sub>o</sub>	20		mA
Power Dissipation (T <sub>a</sub> = 75°C)		P <sub>D</sub>	550		mW
Temperature	Operating Ambient Temperature	T <sub>opr</sub>	-20 ~ +75		°C
	Storage Temperature	T <sub>stg</sub>	-55 ~ +150		°C

\*1 Output pins ①, ②, ③, ④ and ⑤

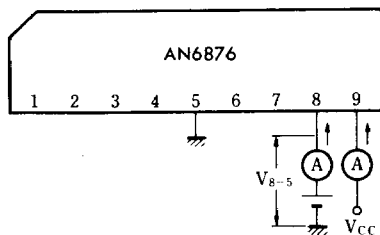
\*2 I<sub>7</sub> which can be set I<sub>o</sub> = 20mA is assumed to be the absolute rated value.

### Electrical Characteristics (T<sub>a</sub> = 25°C)

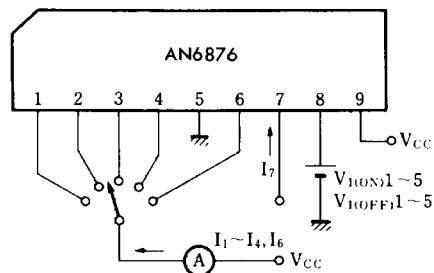
Item	Symbol	Test Circuit	Condition	min.	typ.	max.	Unit
Input Voltage (LED ON)	LED1	V <sub>I(ON)1</sub>	V <sub>CC</sub> = 16V	1.63	1.83	2.00	V
	LED2	V <sub>I(ON)2</sub>		2.20	2.43	2.64	V
	LED3	V <sub>I(ON)3</sub>		2.80	3.03	3.27	V
	LED4	V <sub>I(ON)4</sub>		3.38	3.64	3.88	V
	LED5	V <sub>I(ON)5</sub>		3.92	4.14	4.37	V
Load Current	Pin6	I <sub>6</sub>	V <sub>CC</sub> = 16V, V <sub>o</sub> = 1.2V, I <sub>7</sub> = 4.25mA	13	16		mA
	Pin1 ~ 4	I <sub>1</sub> ~ I <sub>4</sub>	V <sub>CC</sub> = 16V, V <sub>o</sub> = 2.5V, I <sub>7</sub> = 4.25mA	13	16		mA
	Pin1 ~ 4,6	I <sub>1</sub> ~ I <sub>4</sub> , I <sub>6</sub>	V <sub>CC</sub> = 16V, V <sub>o</sub> = 16V, I <sub>7</sub> = 4.25mA		16	19	mA
Input Current		I <sub>8</sub>	V <sub>CC</sub> = 16V, V <sub>8-5</sub> = 8.5V			50	μA
		I <sub>8</sub>	V <sub>CC</sub> = 16V, V <sub>8-5</sub> = 16V			5	mA
Supply Current		I <sub>9</sub>	V <sub>CC</sub> = 16V, V <sub>8-5</sub> = 16V			18	mA
Output Pin Leakage Current		I <sub>1</sub> ~ I <sub>4</sub> , I <sub>6</sub>	V <sub>CC</sub> = 16V, V <sub>o</sub> = 16V			15	μA

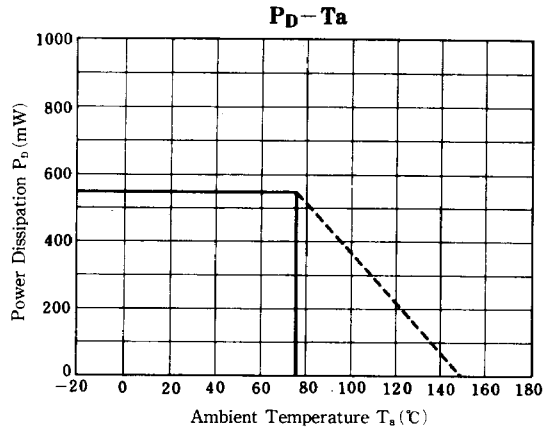
Note) Operating Supply Voltage Range : V<sub>CC(oper)</sub> = 12 ~ 16V

#### Test Circuit 1 (I<sub>8</sub>, I<sub>9</sub>)



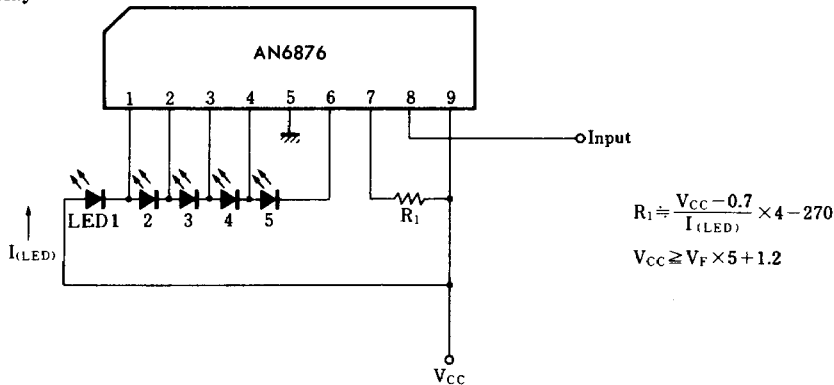
#### Test Circuit 2 (V<sub>I(ON)1-5</sub>, V<sub>I(OFF)1-5</sub>, I<sub>6</sub>, I<sub>1</sub> ~ I<sub>4</sub>)





■ Application Circuit

1. Bar Display



Note) When the voltage of Pin ⑥ is high for 5-dot LED ON, insert the resistor into the anode of LED, to reduce P<sub>D</sub>.

2. Dot Display

