

# AN6882

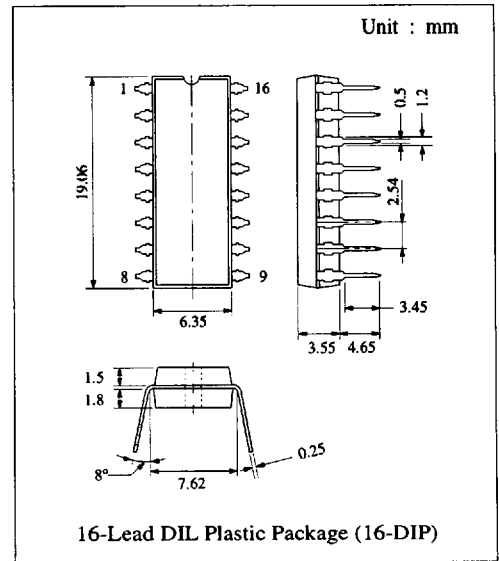
## 7-Dot LED Driver Circuit

### ■ Description

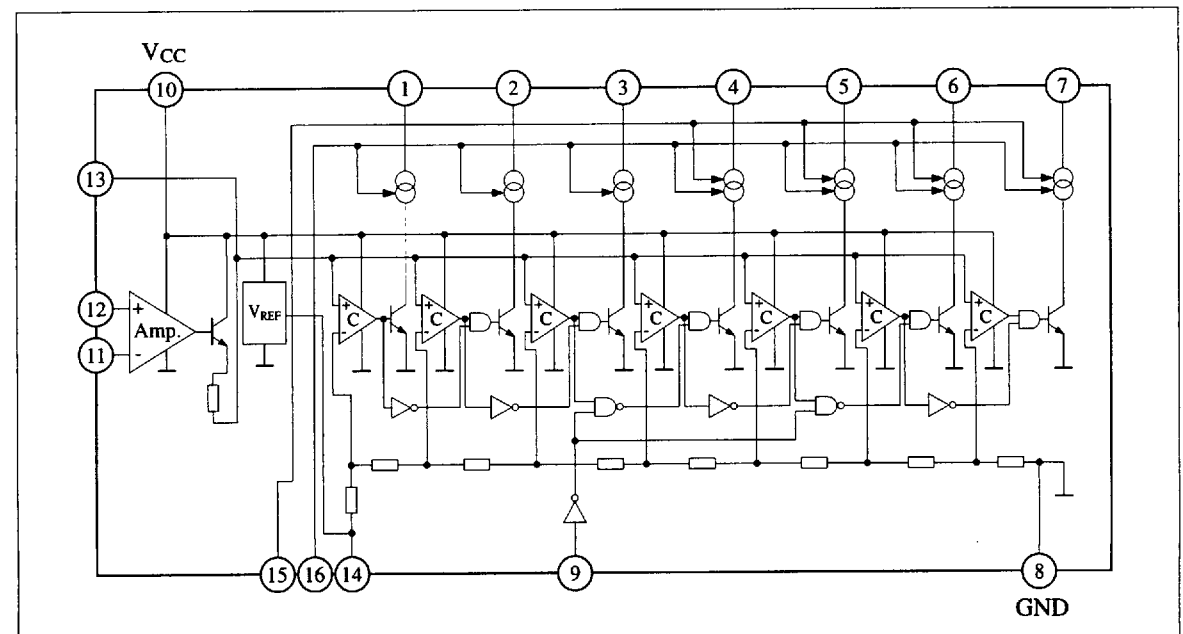
The AN6882 is a monolithic integrated circuit driving 7-LED and is capable of logarithmic dot or bar display for input signal. It incorporates rectification amp. which is capable of gain adjustment by external resistance. Because the output is the constant current pull-in type, the constant current value can be variable by changing external resistance.

### ■ Features

- Wide range of operating voltage:  
 $V_{CC(opr.)} = 6.2V \sim 16V$
- Wide range of constant current:  $0mA \sim 20mA$
- Power consumption can be reduced due to series connection of LEDs
- 7-LED bar or dot graph display drive



### ■ Block Diagram



### ■ Absolute Maximum Ratings (Ta=25°C)

Item		Symbol	Rating		Unit
Voltage	Supply Voltage	V <sub>CC</sub>	18		V
	Circuit Voltage	V <sub>13</sub>	7.5		V
	Op. Amp. Input Voltage	V <sub>in</sub>	-0.5	V <sub>CC</sub>	V
	LED Output Pin Voltage	V <sub>OUT(D)</sub>	V <sub>CC</sub>		V
Current	Supply Current	I <sub>CC</sub>	15		mA
	LED Output Pin Current	I <sub>OUT(D)</sub>	30		mA
	Ref. Voltage Output Current	I <sub>REF</sub>	10		mA
Power Dissipation (Ta ≤ 75°C)		P <sub>D</sub>	530		mW
Operating Ambient Temperature		Topr	-30 ~ +75		°C
Storage Temperature		Tstg	-55 ~ +150		°C

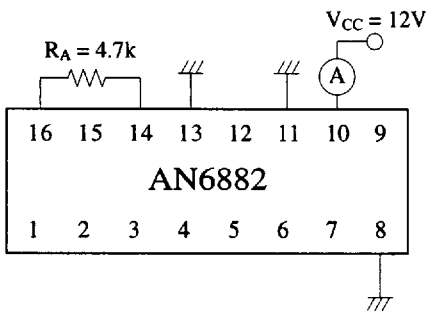
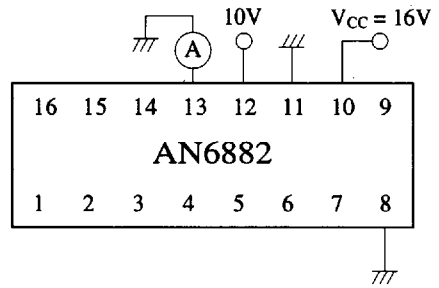
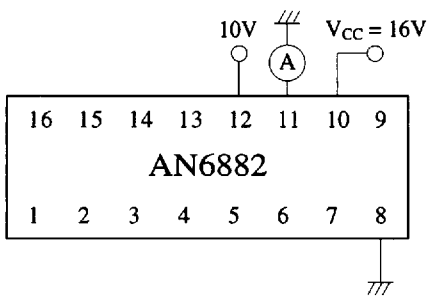
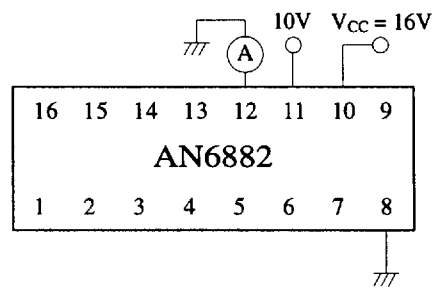
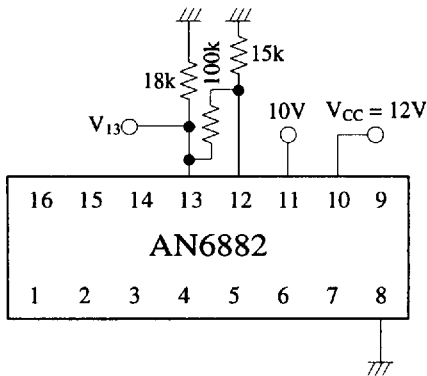
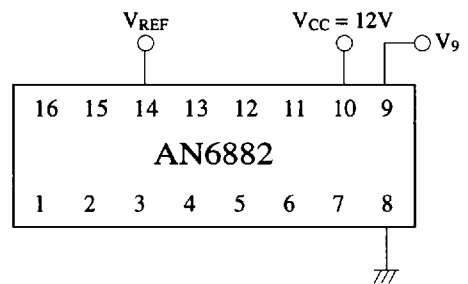
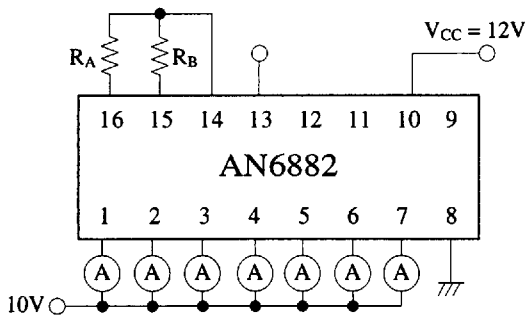
Operating Supply Voltage Range: V<sub>CC</sub> = 6.2V ~ 16.0V

### ■ Electrical Characteristics (V<sub>CC</sub>=12V, Ta=25°C)

Item	Symbol	Test Circuit	Condition	min.	typ.	max.	Unit
Supply Current	I <sub>CC</sub>	1	V <sub>11</sub> = V <sub>13</sub> = 0V, R <sub>A</sub> = 4.7kΩ		5	10	mA
Input Bias Current	I <sub>Bias13</sub>	2	V <sub>CC</sub> = 16V, V <sub>11</sub> = 0V, V <sub>12</sub> = 10V	-12			μA
	I <sub>Bias11</sub>	3	V <sub>CC</sub> = 16V, V <sub>11</sub> = 0V, V <sub>12</sub> = 10V	-3			μA
	I <sub>Bias12</sub>	4	V <sub>CC</sub> = 16V, V <sub>11</sub> = 10V, V <sub>12</sub> = 0V	-3			μA
Output Offset Voltage	V <sub>(Offset)13</sub>	5	V <sub>11</sub> = 0V, V <sub>G</sub> = 16.5dB			75	mV
Reference Voltage	V <sub>REF</sub>	6		2.4	2.7	2.9	V
D Pin Output Current	I <sub>D1-7</sub>	7	V <sub>11</sub> = 2.7V, R <sub>A</sub> = 10kΩ	4.2	7.1	10	mA
	I <sub>D4-7</sub>	7	V <sub>11</sub> = 2.7V, R <sub>A</sub> = 10kΩ, R <sub>B</sub> = 22kΩ	6.3	10.6	15	mA
D Pin Leak Current	I <sub>D1-7</sub>	7	V <sub>13</sub> = 0V, R <sub>A</sub> = 4.7kΩ			20	μA
Voltage Gain	V <sub>G</sub>	5	V <sub>11</sub> = 500mV, R <sub>1</sub> = 18kΩ, R <sub>2</sub> = 100kΩ, R <sub>3</sub> = 15kΩ	15.7		19.7	dB
Switching Pin Voltage	V <sub>9</sub>	6		0.45		0.8	V

### ■ Pin

Pin No.	Pin Name	Pin No.	Pin Name
1	LED 1 Output	9	Switching Pin
2	LED 2 Output	10	V <sub>CC</sub>
3	LED 3 Output	11	Non Inverting Input
4	LED 4 Output	12	Inverting Input
5	LED 5 Output	13	Amp. Output
6	LED 6 Output	14	Reference Voltage
7	LED 7 Output	15	LED Current Setting Input (B)
8	GND	16	LED Current Setting Input (A)

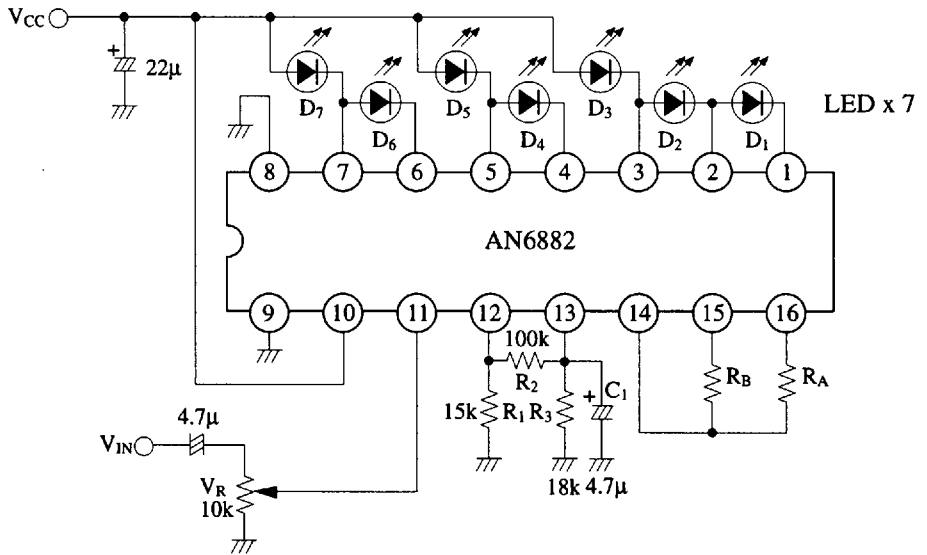
Test Circuit 1 ( $I_{CC}$ )Test Circuit 2 ( $I_{Bias13}$ )Test Circuit 3 ( $I_{Bias11}$ )Test Circuit 4 ( $I_{Bias12}$ )Test Circuit 5 ( $V_{O(offset)13}$ )Test Circuit 6 ( $V_{REF}$ ,  $V_9$ )Test Circuit 7 ( $I_{D1-7}$ ,  $I_{D4-7}$ )

■ LED ON Level Standard Value (dB)

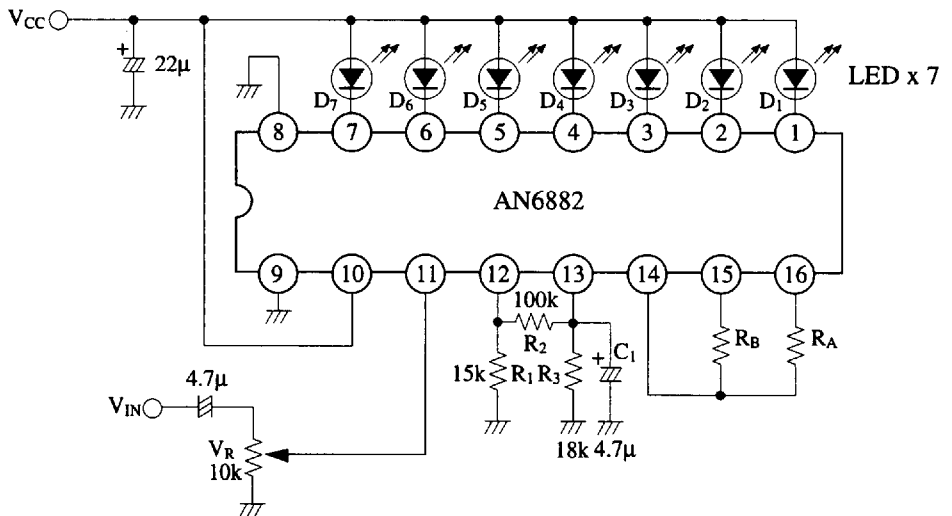
D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	D <sub>7</sub>
6	3	0	-3	-6	-10	-20

■ Application Circuit

Bar Display



Dot Display



■ Characteristics Curve

