



# LM258

## 概述

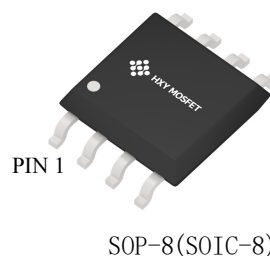
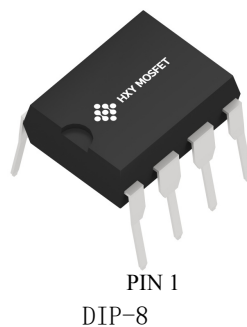
LM258是由两个独立的高增益运算放大器组成。可以是单电源工作，也可以是双电源工作，电源的功耗电流与电源电压大小无关。应用范围包括音频放大器、工业控制、DC增益部件和所有常规运算放大电路。

采用 DIP-8 和 SOP-8 封装形式。

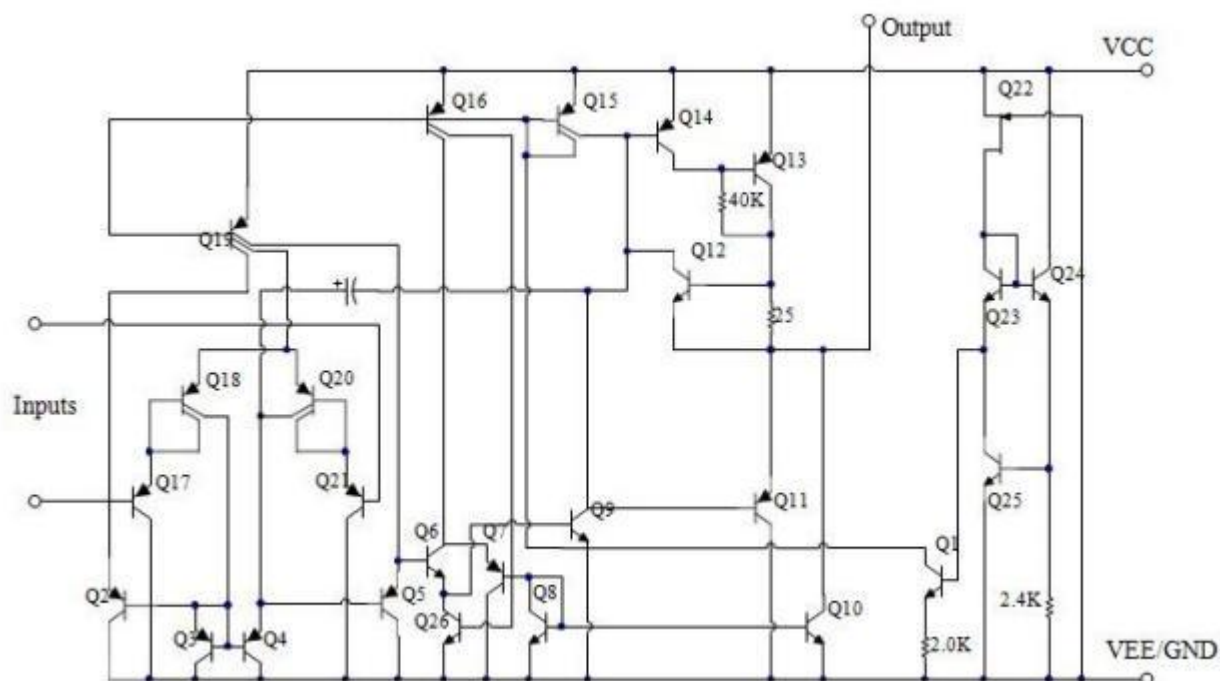
### 主要特点

- 可单电源或双电源工作
- 包含两个运算放大器
- 逻辑电路匹配
- 功耗小
- 频率范围宽

### 封装外形图



### 功能框图（每路运放）





## 管脚说明

| 管脚序号 | 管脚名称 | I/O | 描述      | 管脚排列图 |
|------|------|-----|---------|-------|
| 1    | OUT  | I   | 输出 1。   |       |
| 2    | IN-  | O   | 反向输入 1。 |       |
| 3    | IN+  | I   | 正向输入 1。 |       |
| 4    | GND  | P   | 地。      |       |
| 5    | IN+  | I   | 正向输入 2。 |       |
| 6    | IN-  | P   | 反向输入 2。 |       |
| 7    | OUT  | P   | 输出 2。   |       |
| 8    | VCC  | I   | 电源。     |       |

## 极限参数 (若无其它规定, $T_{amb}=25^{\circ}C$ )

| 参数                               |        | 标识        | 值                        |
|----------------------------------|--------|-----------|--------------------------|
| 电源电压                             |        | $V_{CC}$  | 32 或 $\pm 16V$           |
| 差分输入电压                           |        | $V_D$     | 32V                      |
| 输入电压                             |        | $V_{IN}$  | $-0.3 \sim V_{CC}$       |
| 功耗                               | DIP 封装 | $P_D$     | 830 mW                   |
|                                  | SOP 封装 |           | 530 mW                   |
| 输出端对地短路电流 (每路放大器, $V \leq 15V$ ) |        | $I_{STE}$ | 持续                       |
| 输入电流 ( $V_{IN} < -0.3V$ )        |        | $I_{IN}$  | 50mA                     |
| 最大工作结温                           |        | $T_J$     | $150^{\circ}C$           |
| 工作环境温度                           |        | $T_A$     | $0 \sim +70^{\circ}C$    |
| 贮存温度                             |        | $T_{stg}$ | $-65 \sim +150^{\circ}C$ |

## 电气特性

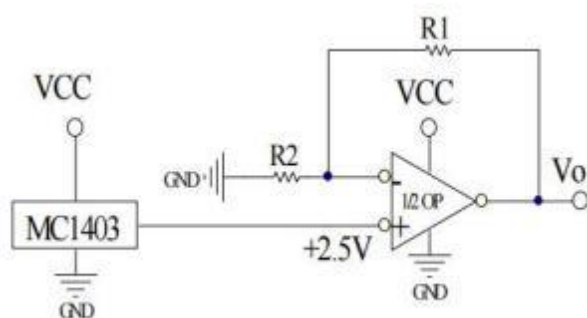
条件: (若无其它规定,  $V_{CC}=5.0V$ 。)

| 参数       | 测试条件                                                                             | Min            | 典型值      | Max          | 单位   |
|----------|----------------------------------------------------------------------------------|----------------|----------|--------------|------|
| 输入失调电压   | $T_a=25^{\circ}C$                                                                |                | $\pm 2$  | $\pm 5$      | mV   |
| 输入偏置电流   | $T_a=25^{\circ}C$ , $I_{IN}(+)$ 或 $I_{IN}(-)$ , $V_{CM}=0V$                      |                | $\pm 45$ | $\pm 250$    | nA   |
| 输入失调电流   | $T_a=25^{\circ}C$ , $I_{IN}(+) - I_{IN}(-)$ , $V_{CM}=0V$                        |                | $\pm 3$  | $\pm 50$     | nA   |
| 输入共模电压范围 | $T_a=25^{\circ}C$ , $V^+=30V$                                                    | 0              |          | $V_{CC}-1.5$ | V    |
| 电源电流     | $R_L = \infty$ 在所有运算放大器上                                                         | $V_{CC} = 30V$ | 1        | 2            | mA   |
|          |                                                                                  | $V_{CC} = 5V$  | 0.5      | 1.2          | mA   |
| 大信号电压增益  | $V_{CC}=15V$ , $T_a=25^{\circ}C$ ,<br>$R_L \geq 2k\Omega$ (对于 $V_o=1 \sim 11V$ ) | 25             | 100      |              | V/mV |
| 共模抑制比    | DC, $T_a=25^{\circ}C$ , $V_{CM}=0 \sim V_{CC}-1.5V$                              | 65             | 90       |              | dB   |
| 电源抑制比    | DC, $T_a=25^{\circ}C$ , $V_{CC} = 5 \sim 30V$                                    | 65             | 100      |              | dB   |

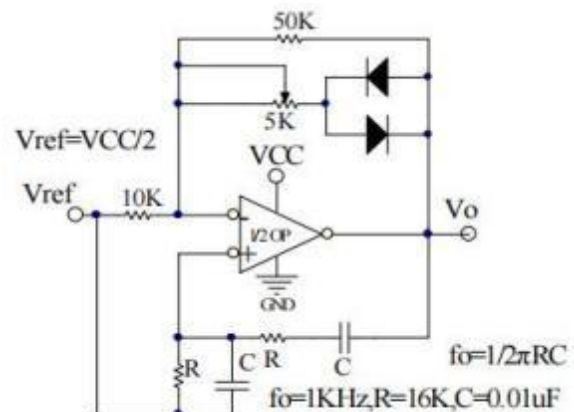


|        |                                                                      |    |    |    |         |
|--------|----------------------------------------------------------------------|----|----|----|---------|
| 输出源电流  | $V_{IN}(+)=1V, V_{IN}(-)=0V, V_{CC}=15V, V_O=2V, T_a=25^{\circ}C$    | 20 | 40 |    | mA      |
| 输出吸电流  | $V_{IN}(-)=1V, V_{IN}(+)=0V, V_{CC}=15V, V_O=2V, T_a=25^{\circ}C$    | 10 | 15 |    | mA      |
|        | $V_{IN}(-)=1V, V_{IN}(+)=0V, V_{CC}=15V, V_O=200mV, T_a=25^{\circ}C$ | 12 | 50 |    | $\mu A$ |
| 对地短路电流 | $V_{CC}=15V, T_a=25^{\circ}C$                                        |    | 40 | 60 | mA      |
| 输出电压摆幅 | $V_{OH}$                                                             |    |    |    |         |
|        | $V_{CC}=30V, R_L=2k\Omega$                                           | 26 |    |    | V       |
|        | $V_{CC}=30V, R_L=10k\Omega$                                          | 27 | 28 |    | V       |
|        | $V_{OL}$                                                             |    |    |    |         |
|        | $V_{CC}=5V, R_L=10k\Omega$                                           |    | 5  | 20 | mV      |

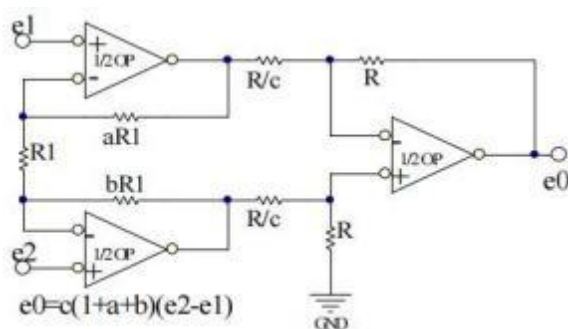
## 典型应用



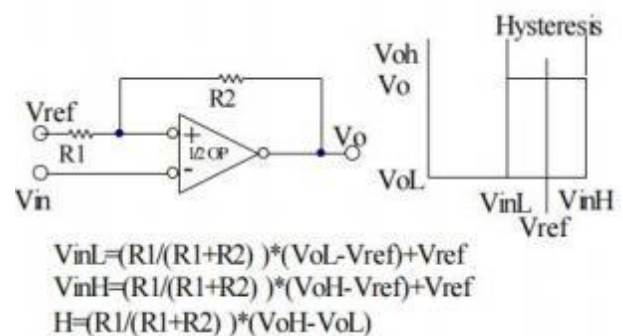
电压基准,  $V_O=2.5V (1+R_1/R_2)$



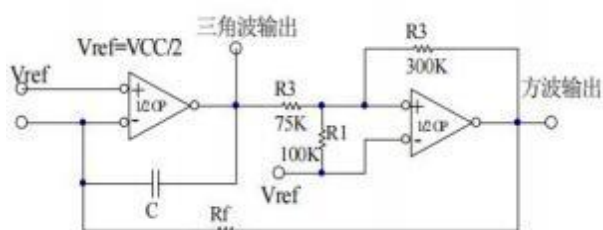
文氏桥振荡器



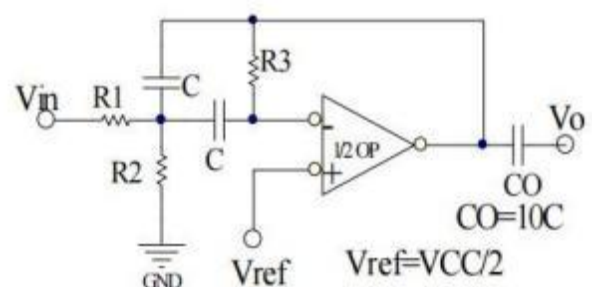
高阻抗差动放大器



迟滞比较器



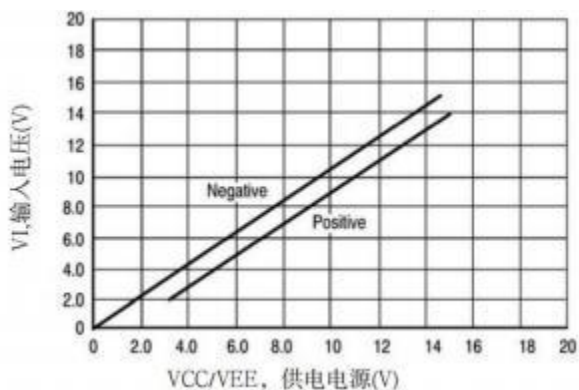
函数信号发生器



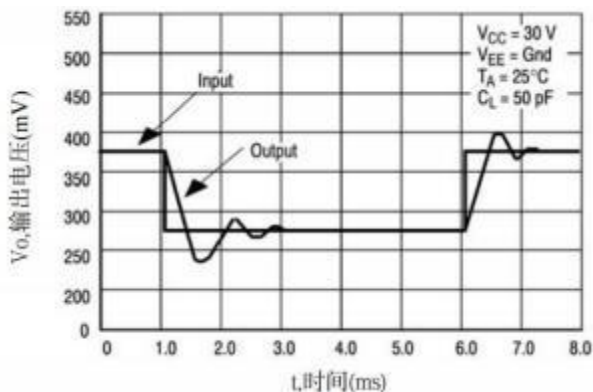
$f_o$  = center frequency 多反馈带通滤波器



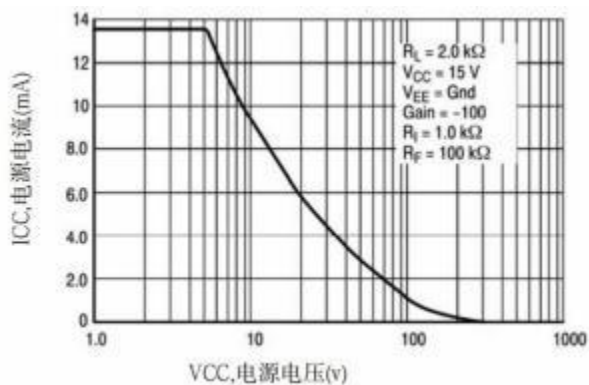
## 特性曲线



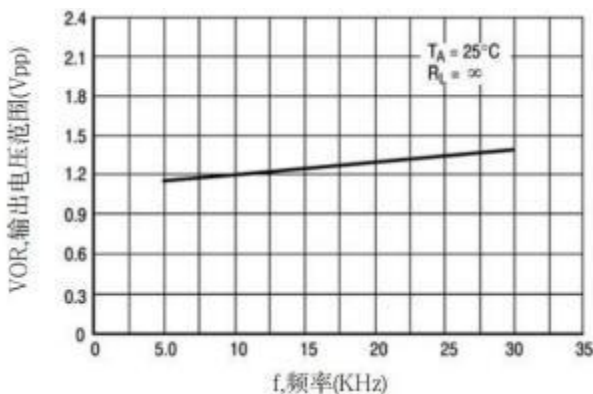
输入电压范围



小信号电压跟随器脉冲响应（同向）



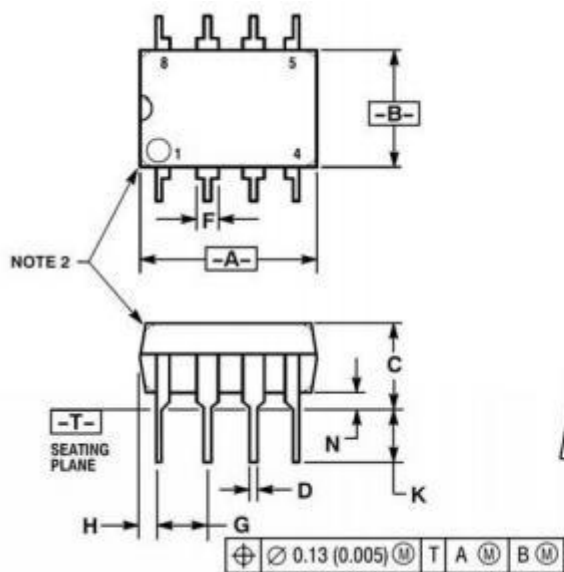
电源电流（静态功耗）



大信号频率响应



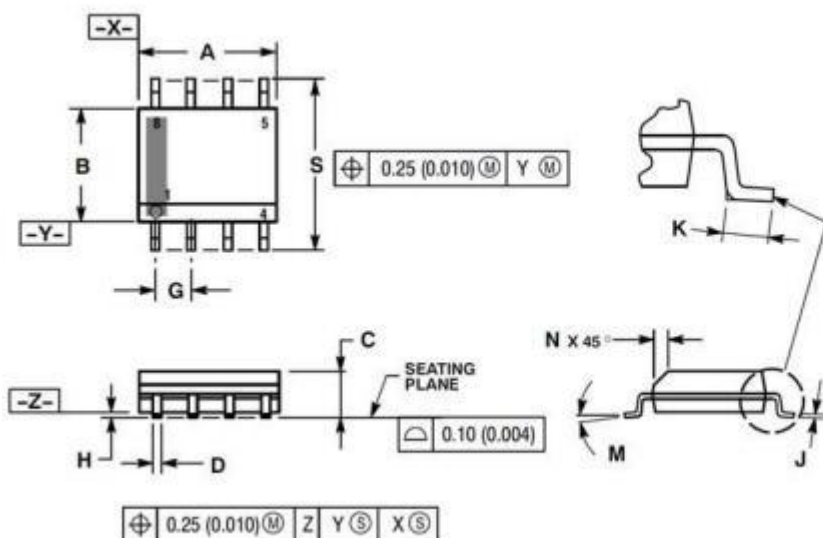
## 封装机械数据:



DIP8

- NOTES:
1. DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.
  2. PACKAGE CONTOUR OPTIONAL (ROUND OR SQUARE CORNERS).
  3. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.

| DIM | MILLIMETERS |           | INCHES |       |
|-----|-------------|-----------|--------|-------|
|     | MIN         | MAX       | MIN    | MAX   |
| A   | 9.40        | 10.16     | 0.370  | 0.400 |
| B   | 6.10        | 6.60      | 0.240  | 0.260 |
| C   | 3.94        | 4.45      | 0.155  | 0.175 |
| D   | 0.38        | 0.51      | 0.015  | 0.020 |
| E   | 1.02        | 1.78      | 0.040  | 0.070 |
| F   | 2.54 BSC    | 0.100 BSC |        |       |
| G   | 0.76        | 1.27      | 0.030  | 0.050 |
| H   | 0.20        | 0.30      | 0.008  | 0.012 |
| J   | 2.92        | 3.43      | 0.115  | 0.135 |
| K   | 7.62 BSC    | 0.300 BSC |        |       |
| L   | ---         | 10°       | ---    | 10°   |
| M   | 0.76        | 1.01      | 0.030  | 0.040 |



SOP8 (SOIC-8)

- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: MILLIMETER.
  3. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
  4. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
  5. DIMENSION D DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 (0.005) TOTAL IN EXCESS OF THE D DIMENSION AT MAXIMUM MATERIAL CONDITION.
  6. 751-01 THRU 751-06 ARE OBSOLETE. NEW STANDARD IS 751-07.

| DIM | MILLIMETERS |           | INCHES |       |
|-----|-------------|-----------|--------|-------|
|     | MIN         | MAX       | MIN    | MAX   |
| A   | 4.80        | 5.00      | 0.189  | 0.197 |
| B   | 3.80        | 4.00      | 0.150  | 0.157 |
| C   | 1.35        | 1.75      | 0.053  | 0.069 |
| D   | 0.33        | 0.51      | 0.013  | 0.020 |
| E   | 1.27 BSC    | 0.050 BSC |        |       |
| F   | 0.10        | 0.25      | 0.004  | 0.010 |
| G   | 0.19        | 0.25      | 0.007  | 0.010 |
| H   | 0.40        | 1.27      | 0.016  | 0.050 |
| I   | 0°          | 8°        | 0°     | 8°    |
| J   | 0.25        | 0.50      | 0.010  | 0.020 |
| K   | 5.80        | 6.20      | 0.228  | 0.244 |



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