

通用 J-FET 输入双运算放大器GN082C

概述

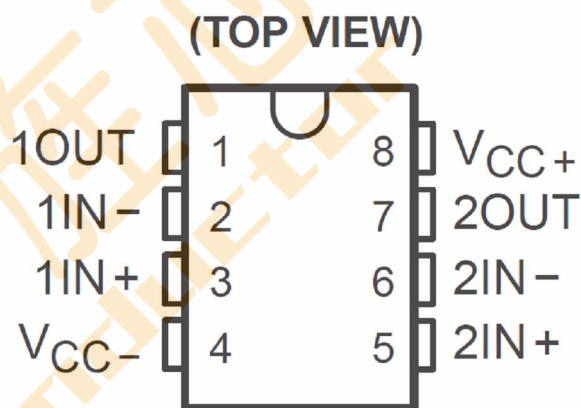
GN082C 是一款高速 J-FET 输入的双运算放大器，由高压 J-FET 和双极晶体管构成。具有高的转换速率、低的输入偏置电流和失调电流及具有很低的失调电压温度系数。工作范围 $0^{\circ}\text{C}—70^{\circ}\text{C}$ 。

GN082C提供了 DIP8 和 SOP8 封装形式。

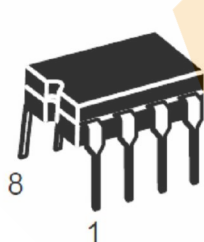
主要特点:

- 较低功耗
- 宽的共模和差模输入电压范围
- 低的输入偏置电流和失调电流
- 输出短路电流保护
- 高输入阻抗
- 高转换速率
- 高增益带宽积，高达4MHz

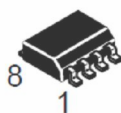
引脚图



封装:

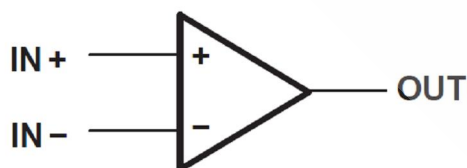


P SUFFIX

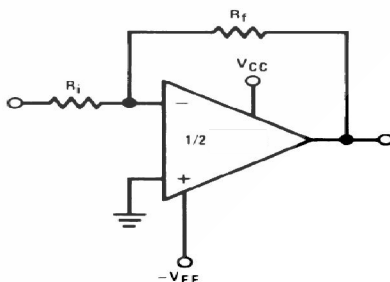


D SUFFIX

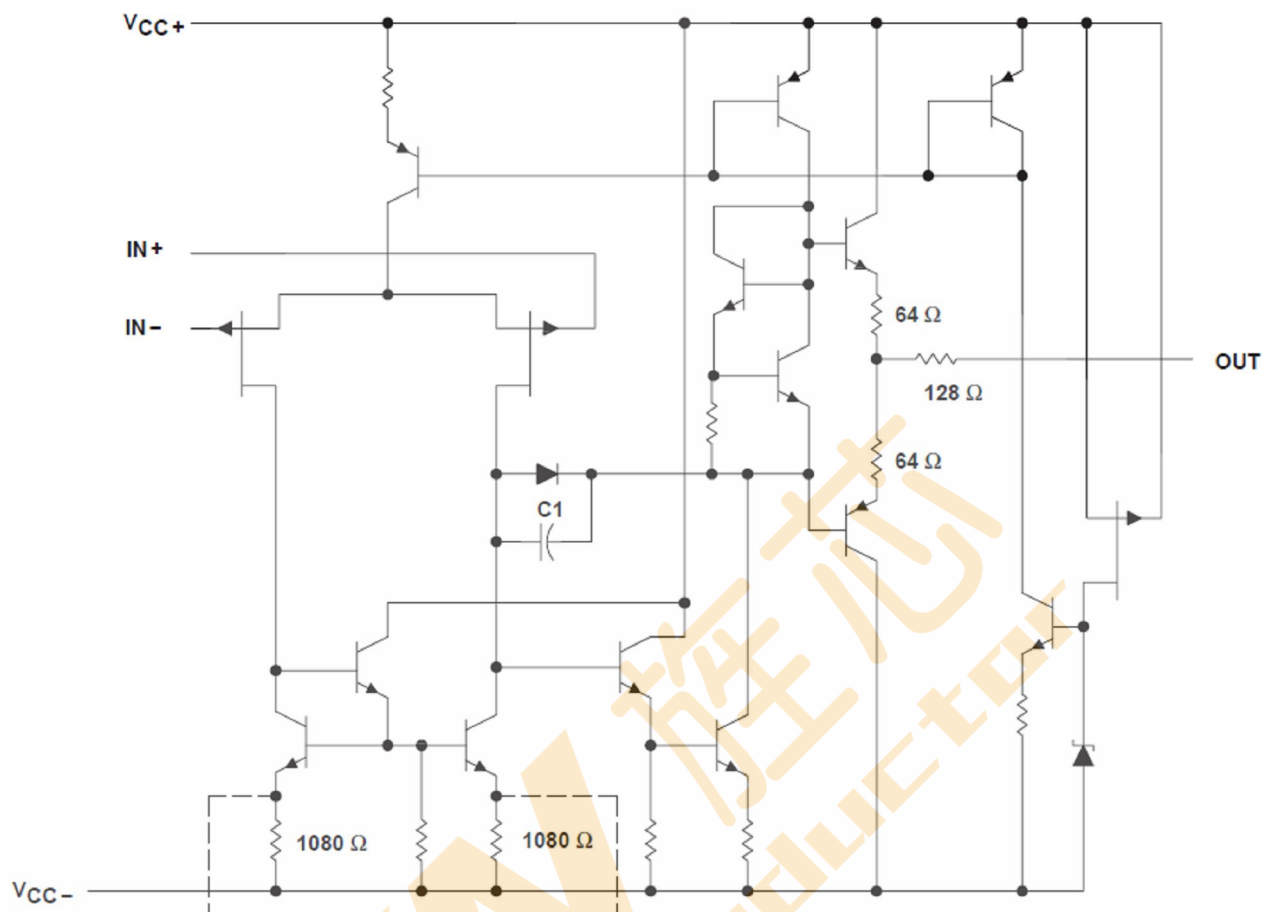
符号: (每路运放)



典型连接



内部框图（每路运放）



极限参数:

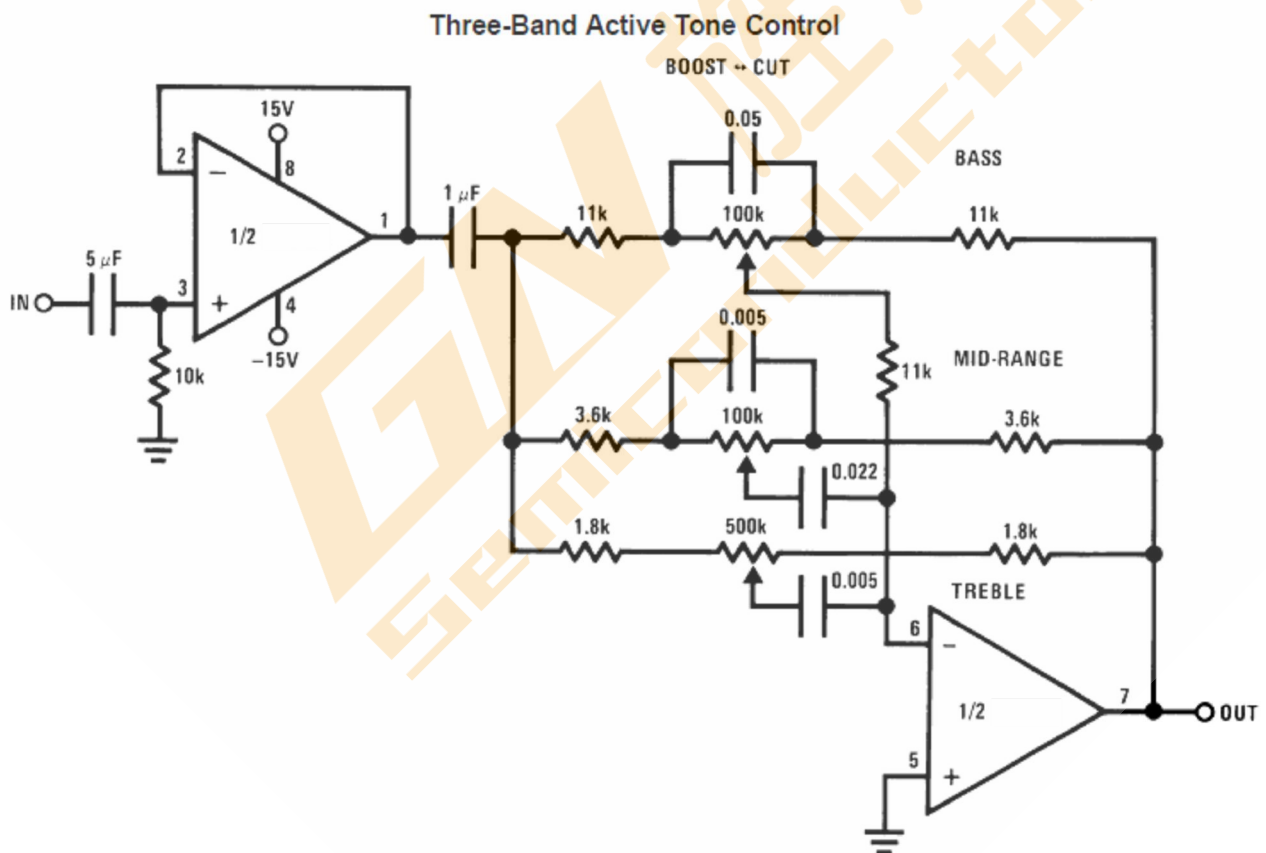
符号	描述	极限值	单位
Vcc	电源电压	±18	V
Vi	输入电压	±14	V
Vid	差模输入电	±28	V
Toper	工作温度	0—70	℃
Tstg	储藏温度	-65—150	℃

电气参数 (Vcc=±15, Tamp=25℃ 特殊情况另外说明)

符号	参数名称	测试条件	测试值			单位
			Min	Typ	Max	
Vio	失调电压	Vo=0V		3	6	mV
Iio	输入失调电	Vo=0V			1.5	nA
Iib	输出偏置电	Vo=0V			2.5	nA
Vicr	输入共模电压		-12	±11	15	V
Vom	输出电压峰值	RL = 10 kΩ	±12	±13.5		V

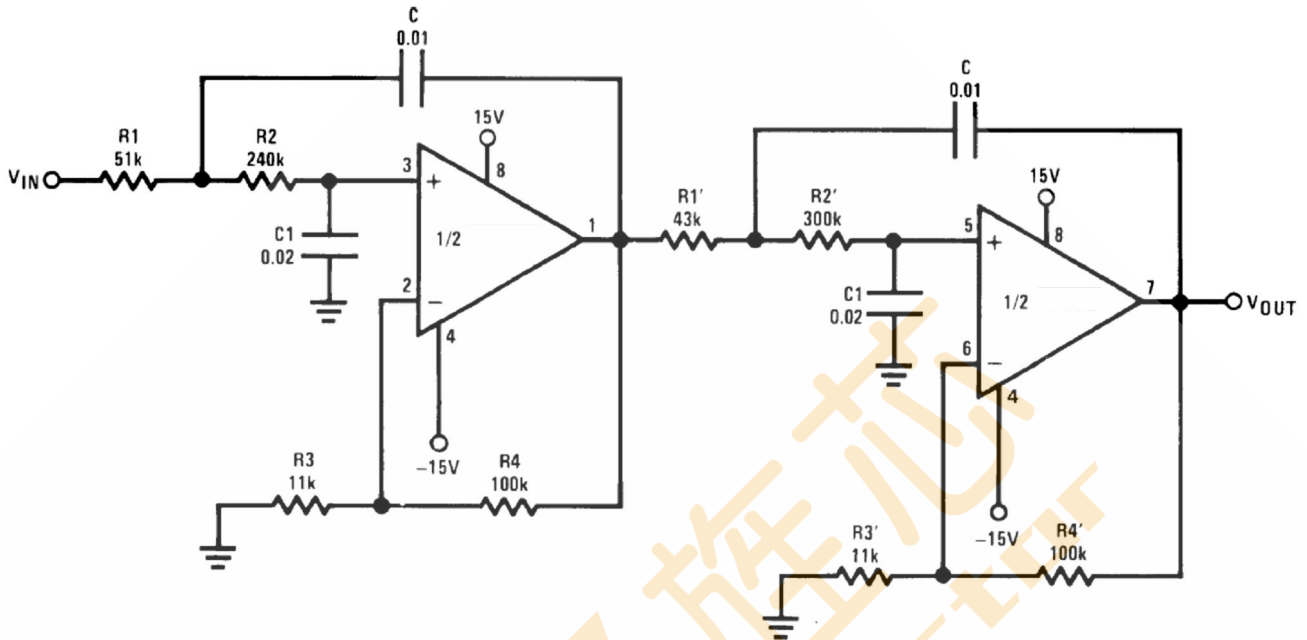
		$R_L \geq 2\text{ k}\Omega$	± 10	± 12.5		
AVD	大信号电压增益	$R_L \geq 2\text{ k}\Omega, V_O = \pm 10\text{ V}$	80	95		dB
B1	增益带宽积			3		MHz
CMRR	共模抑制比		70	85		dB
kSVR	电源抑制比	$V_{CC} = \pm 15\text{ V to } \pm 9\text{ V}$ $V_O=0\text{ V}$	70	86		dB
ICC	静态电流-每通道			1.4	2.8	mA
SR	转换速率	$V_I = 10\text{ V},$	8	13		V/ μs
tr	上升时间			0.05		μs

应用电路图典型（GN081 图示为 GN082 C 的一半，即其中的一路运算放大器） 1）三段音调控制
Three-Band Active Tone Control



2) 四阶低通滤波

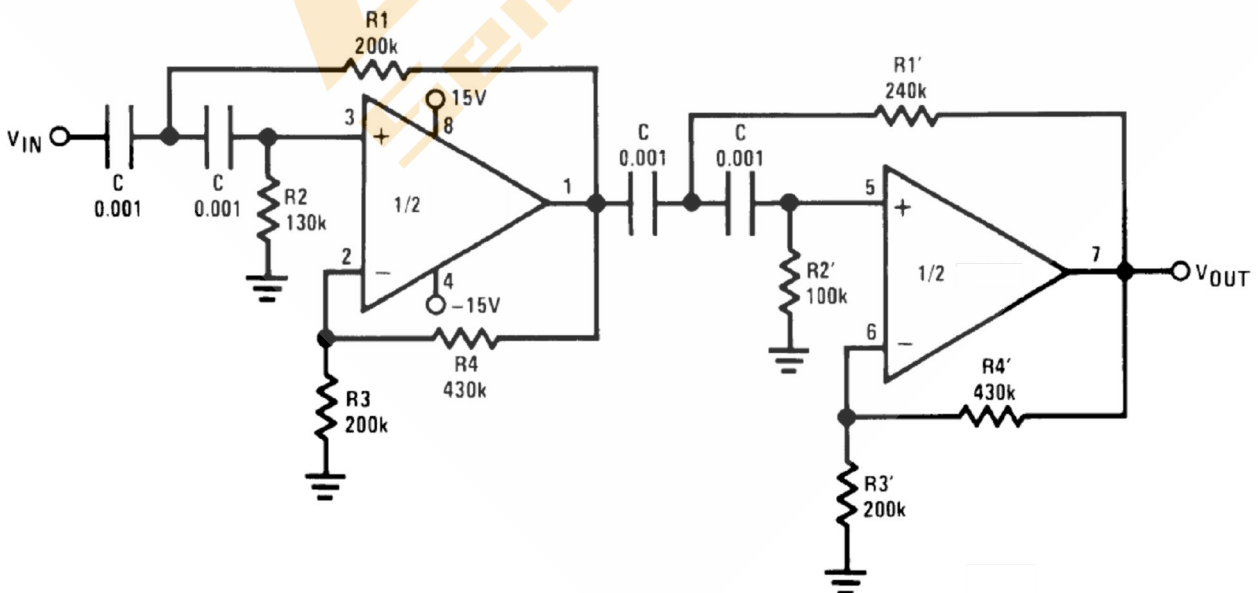
Fourth Order Low Pass Butterworth Filter



- Corner frequency (f_c) = $\sqrt{\frac{1}{R_1 R_2 C C_1}} \cdot \frac{1}{2\pi} = \sqrt{\frac{1}{R_1' R_2' C C_1}} \cdot \frac{1}{2\pi}$
- Passband gain (H_0) = $(1 + R_4/R_3) (1 + R_4'/R_3')$
- First stage $Q = 1.31$
- Second stage $Q = 0.541$
- Circuit shown uses nearest 5% tolerance resistor values for a filter with a corner frequency of 100 Hz and a passband gain of 100
- Offset nulling necessary for accurate DC performance

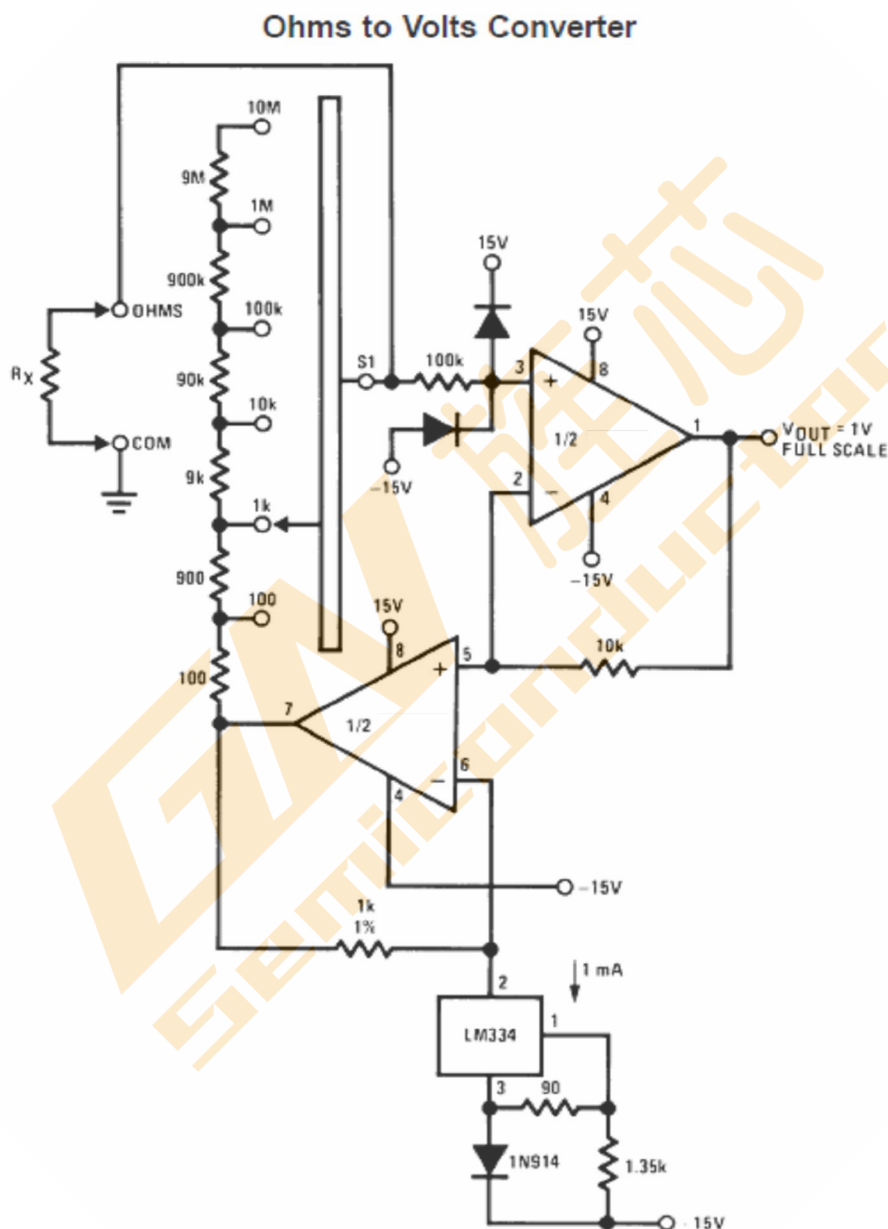
3) 四阶高通滤波

Fourth Order High Pass Butterworth Filter



- Corner frequency (f_c) = $\sqrt{\frac{1}{R_1 R_2 C^2}} \cdot \frac{1}{2\pi} = \sqrt{\frac{1}{R_1' R_2' C^2}} \cdot \frac{1}{2\pi}$
- Passband gain (H_0) = $(1 + R_4/R_3) (1 + R_4'/R_3')$
- First stage Q = 1.31
- Second stage Q = 0.541
- Circuit shown uses closest 5% tolerance resistor values for a filter with a corner frequency of 1 kHz and a passband gain of 10

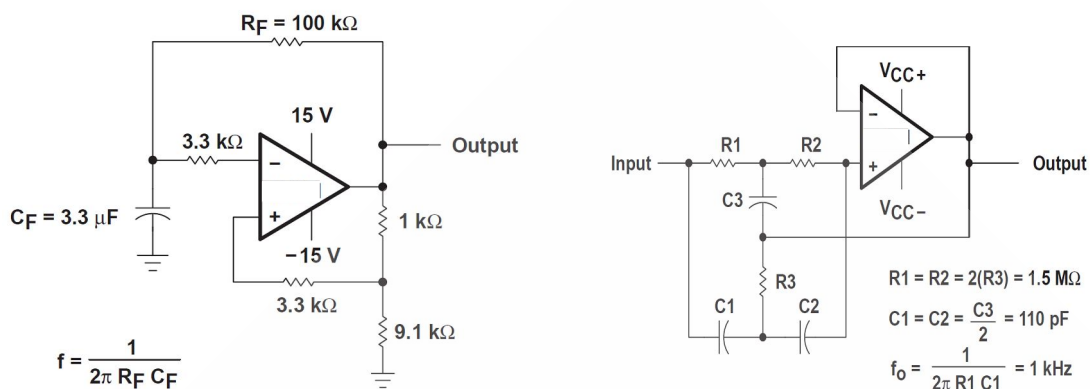
4) 电阻电压转换



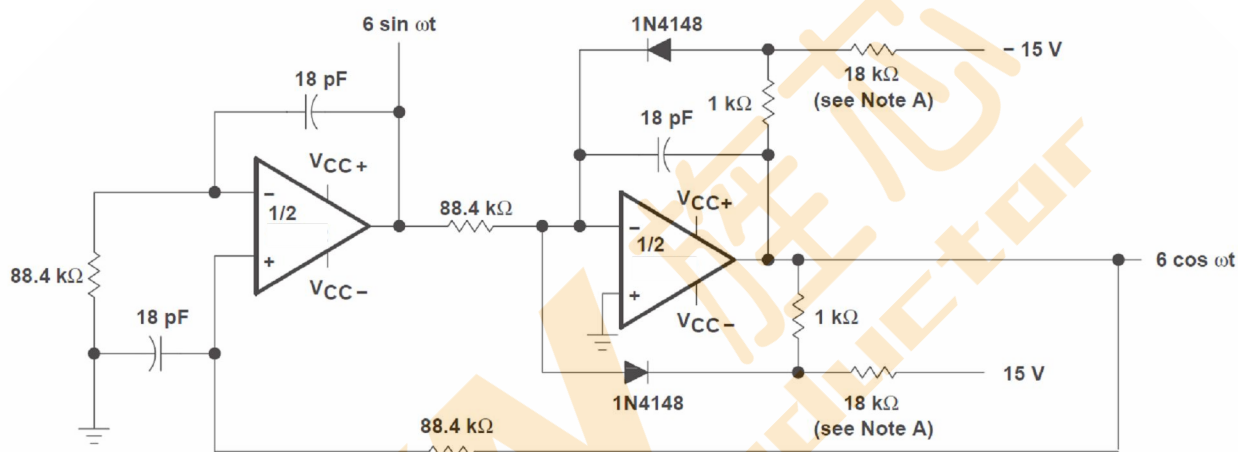
$$V_O = \frac{1V}{R_{LADDER}} \times R_X$$

Where R_{LADDER} is the resistance from switch S1 pole to pin 7 of the GN082C

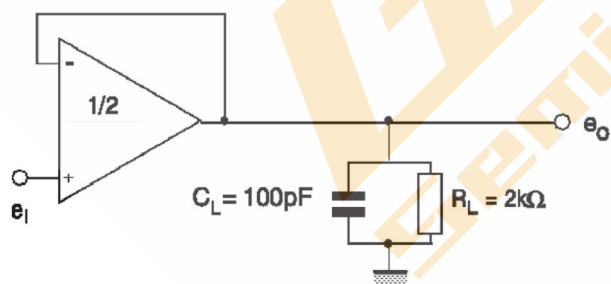
5) 典型线路



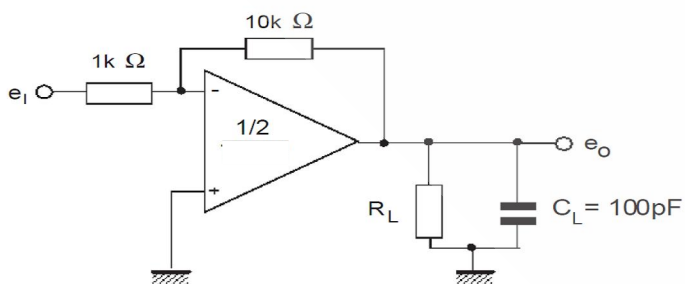
6) 100 kHz 的正交振荡器 100-KHz Quadrature Oscillator



7) 电压跟随器 Voltage Follower



8) 增益为 10 反相放大器 Gain-of-10 Inverting Amplifier



相关封装信息

