



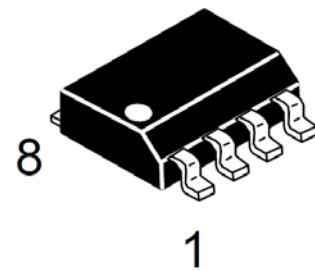
概述:

LM2904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。

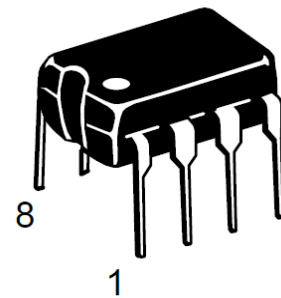
采用 DIP-8 或 SOP-8 封装形式。

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。

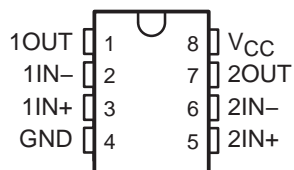


DIP-8



SOP-8

功能框图和管脚排列图



极限值（绝对最大额定值，若无其它规定，T_{amb}=25℃）

参数名称	数值	单位
电源电压	24 或 ±12	V
差分输入电压	24	V
输入电压	-0.3 ~ 24	V
输出端对地短路电流（1 放大器）（V _o ≤15V、T _a =25℃）	持续	
输入电流（V _{IN} <-0.3V）	50	mA
工作环境温度	0 ~ 70	℃
贮存温度	-65 ~ 150	℃



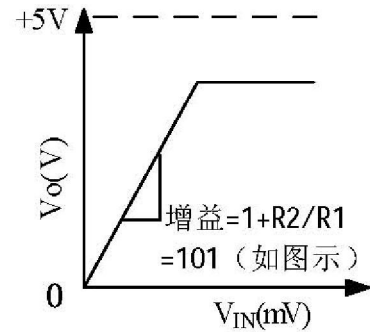
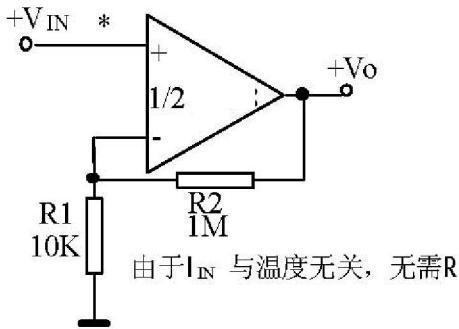
电特性 (若无其它规定, $V^+ = 5.0V$)

特性	测试条件		规范值			单位
			最小	典型	最大	
输入失调电压	Ta=25°C			2	5	mV
输入偏流	Ta=25°C, IIN(+)或 IIN (-), VCM=0V			45	150	nA
输入失调电流	Ta=25°C, IIN(+) - IIN (-), VCM=0V			3	30	nA
输入共模电压范围	Ta=25°C, V ⁺ =24V		0		V ⁺ -1.5	V
电源电流	在整个温度范围上, RL=∞在所有运算放大器上,		V ⁺ =24V	1	2	mA
			V ⁺ =5V	0.5	1.2	
大信号电压增益	V ⁺ =15V, Ta=25°C, RL≥2kΩ(对于 Vo=1~11V)		50	100		V/mV
共模抑制比	DC, Ta=25°C, VCM=0~V ⁺ -1.5V		65	90		dB
电源抑制比	DC, Ta=25°C, V ⁺ =5~24V		65	100		dB
放大器之间的耦合系数	Ta=25°C, f=1~20kHz (所有的输入)			-120		dB
输出源电流	VIN(+)=1V, VIN(-)=0V, V ⁺ =15V, Vo=2V, Ta=25°C		20	40		mA
输出吸电流	VIN(-)=1V, VIN(+)=0V, V ⁺ =15V, Vo=2V, Ta=25°C		10	20		mA
	VIN(-)=1V, VIN(+)=0V, V ⁺ =15V, Vo=200mV, Ta=25°C		12	50		μA
对地短路电流	V ⁺ =15V, Ta=25°C			40	60	mA
输入失调电压					7	mV
输入失调电压漂移	Rs=0Ω			7		μV/°C
输入失调电流	IIN(+) - IIN (-)				100	nA
输入失调电流漂移	Rs=0Ω			10		pA/°C
输入偏置电流	IIN(+)或 IIN (-)			40	300	nA
输入共模电压范围	V ⁺ =24V		0		V ⁺ -2	V
大信号电压增益	V ⁺ =15V, (Vo=1~11V), RL≥2kΩ		25			V/mV
输出电压摆幅	VOH	V ⁺ =24V	RL=2kΩ	20		V
			RL=10kΩ	21	22	V
	VOL	V ⁺ =5V, RL=10kΩ			5	20
输出电流	VIN(+)=1V, VIN(-)=0V, V ⁺ =15V, Vo=2V		10	20		mA
	VIN(-)=1V, VIN(+)=0V, V ⁺ =15V, Vo=2V		5	8		mA

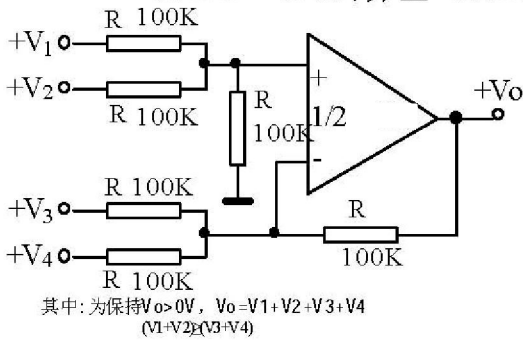


典型应用

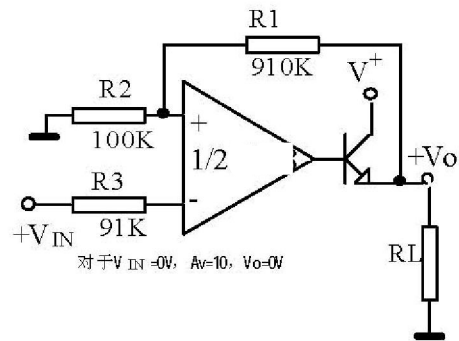
同相直流增益 (0V输入=0V输出)



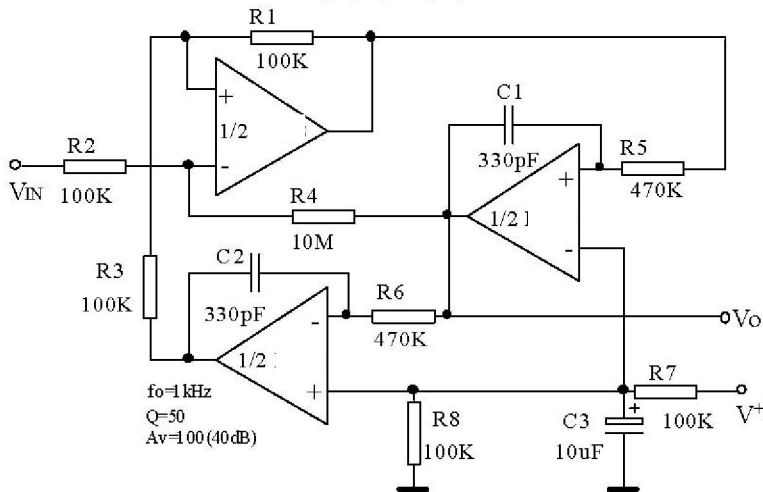
直流求和放大器
($V_{INs} \geq 0V$, 并且 $V_o \geq 0V$)



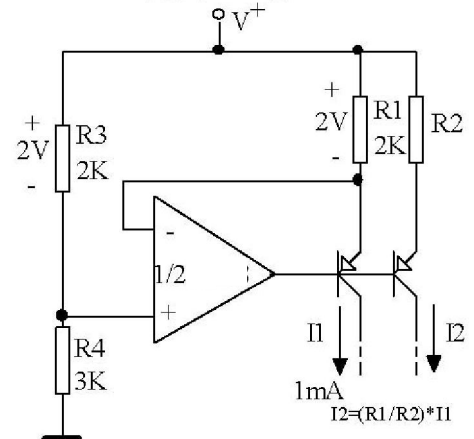
功率放大器



RC 有源带通滤波器

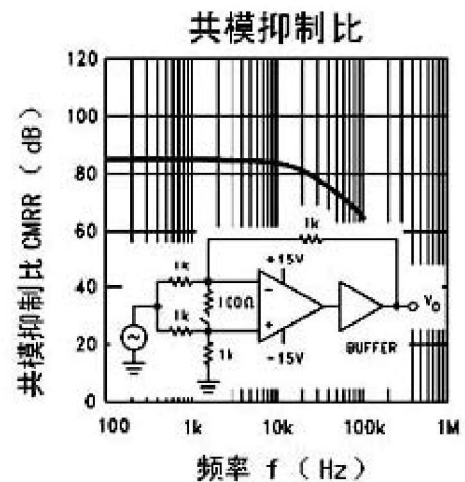
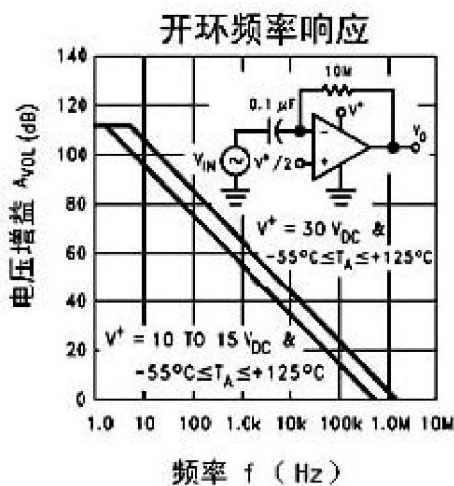
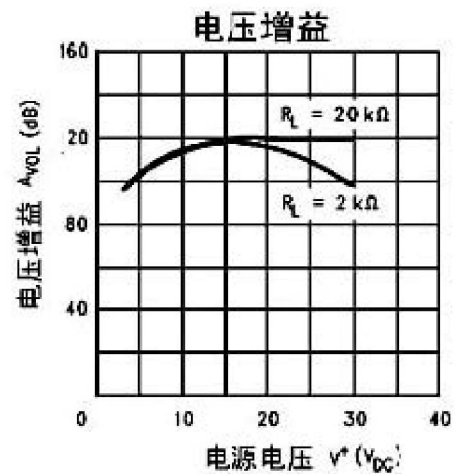
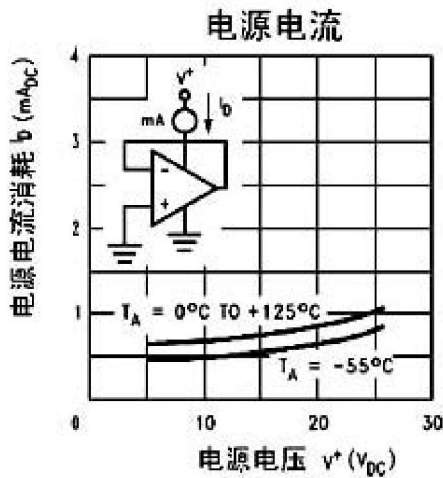
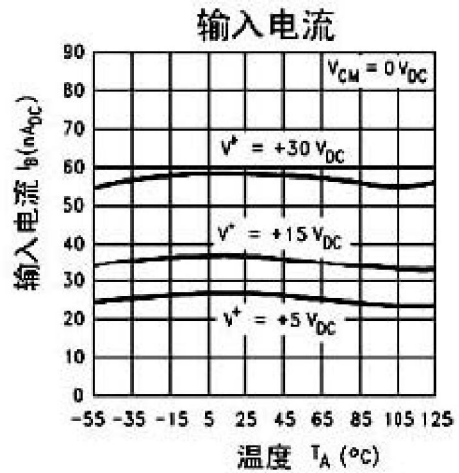
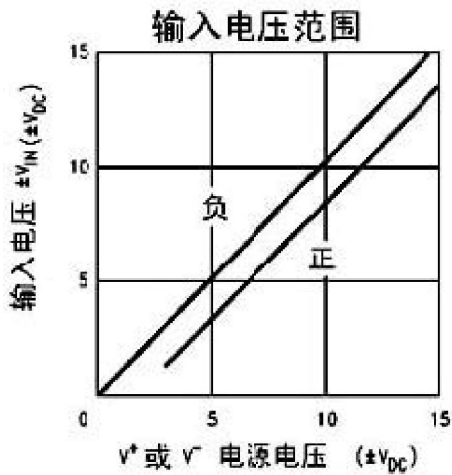


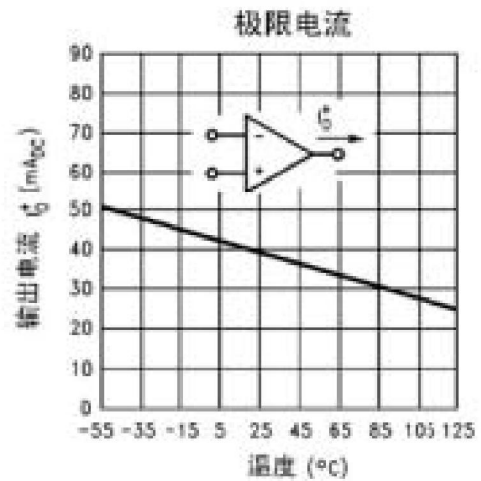
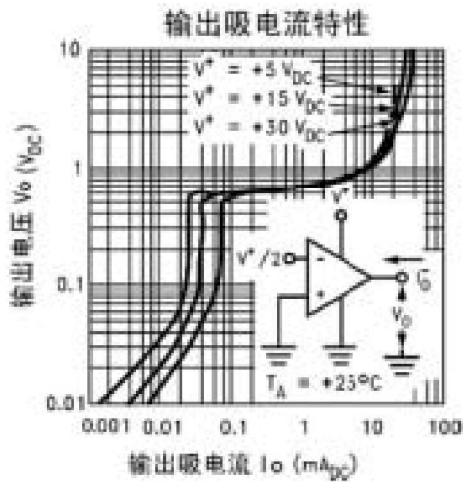
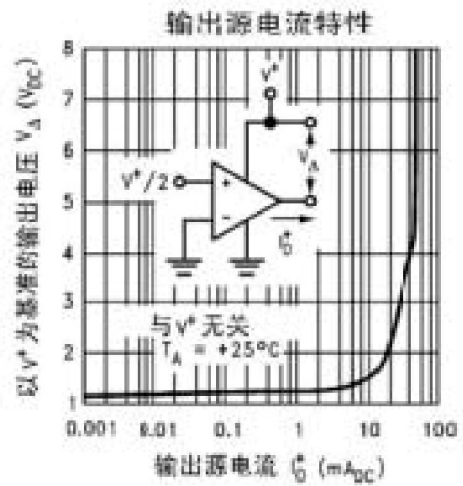
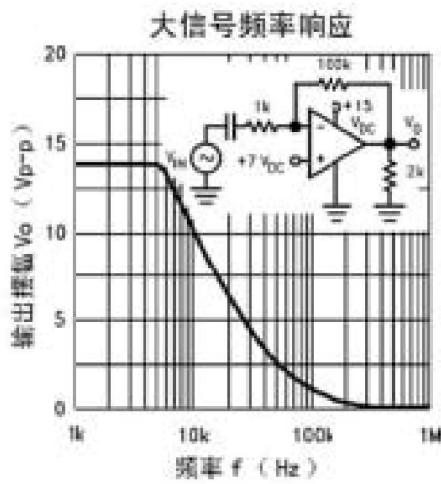
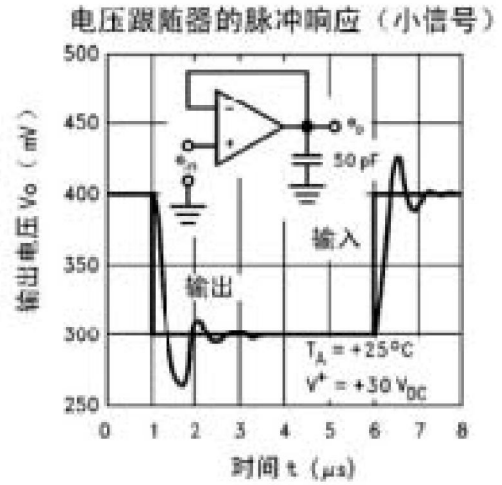
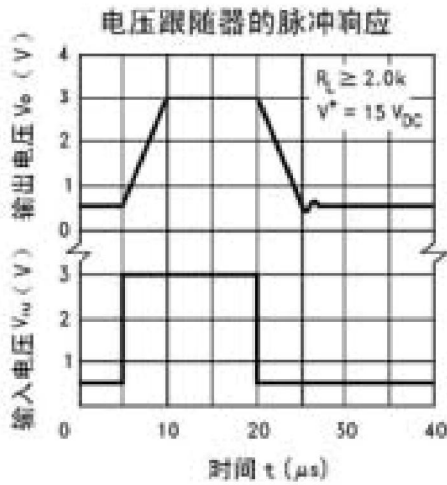
固定电流源





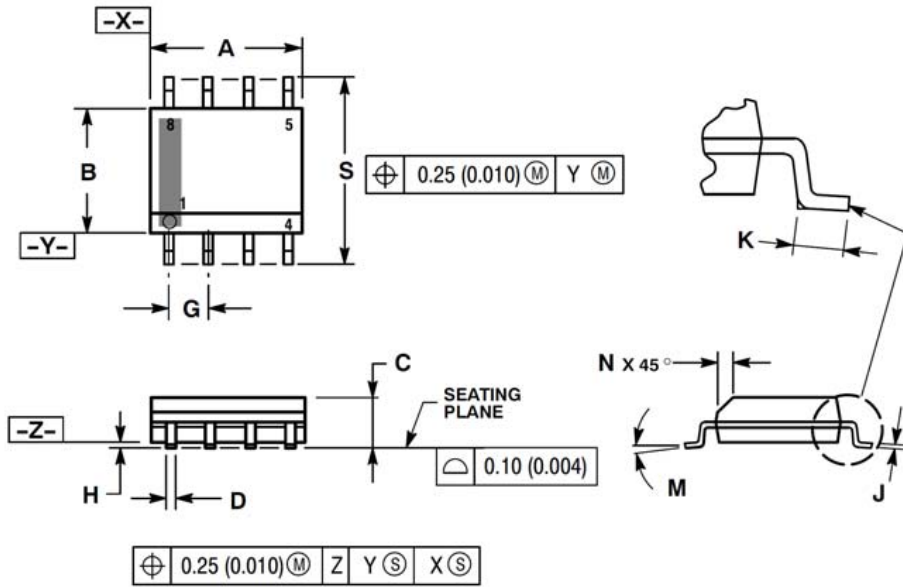
典型特性曲线







SOP-8

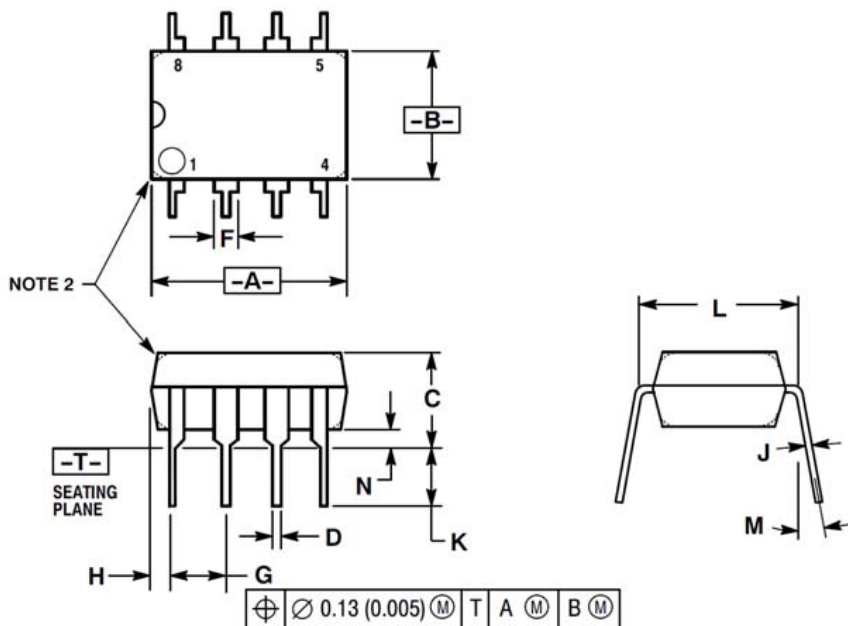


NOTES:

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
G	1.27 BSC		0.050 BSC	
H	0.10	0.25	0.004	0.010
J	0.19	0.25	0.007	0.010
K	0.40	1.27	0.016	0.050
M	0° - 8°		0° - 8°	
N	0.25	0.50	0.010	0.020
S	5.80	6.20	0.228	0.244

DIP-8



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
F	1.02	1.78	0.040	0.070
G	2.54 BSC		0.100 BSC	
H	0.76	1.27	0.030	0.050
J	0.20	0.30	0.008	0.012
K	2.92	3.43	0.115	0.135
L	7.62 BSC		0.300 BSC	
M	--- 10°		--- 10°	
N	0.76	1.01	0.030	0.040



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