



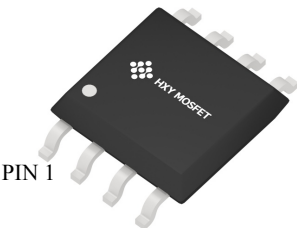
概述:

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。

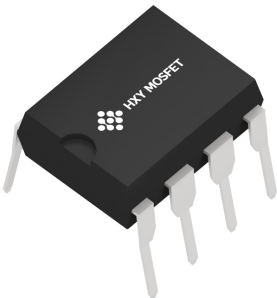
采用 DIP-8 或 SOP-8(SOIC-8)封装形式。

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 。

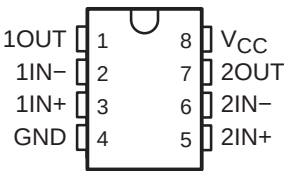


SOP8
(SOIC-8)



PIN 1
DIP-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，Tamb=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≤15V、Ta=25℃）	持续	
输入电流（VIN<-0.3V）	50	mA
工作环境温度	0 ~ 70	℃
贮存温度	-65 ~ 150	℃



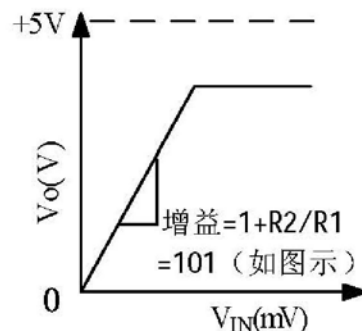
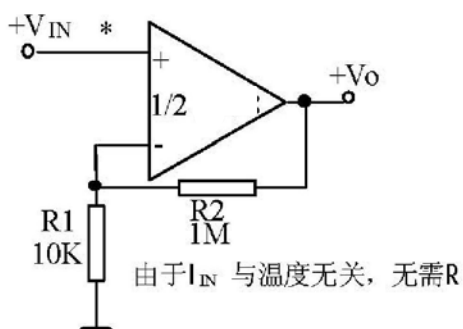
电特性 (若无其它规定, $V^+ = 5.0V$)

特 性		测试条件	规 范 值			单 位
			最小	典 型	最大	
输入失调电压		$T_a = 25^\circ C$		2	5	mV
输入偏流		$T_a = 25^\circ C$, $I_{IN}(+)$ 或 $I_{IN}(-)$, $V_{CM} = 0V$		45	150	nA
输入失调电流		$T_a = 25^\circ C$, $I_{IN}(+) - I_{IN}(-)$, $V_{CM} = 0V$		3	30	nA
输入共模电压范围		$T_a = 25^\circ C$, $V^+ = 24V$	0		$V^+ - 1.5$	V
电源电流		在整个温度范围上, $R_L = \infty$ 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		$V^+ = 15V$, $T_a = 25^\circ C$, $R_L \geq 2k\Omega$ (对于 $V_o = 1 \sim 11V$)	50	100		V/mV
共模抑制比		DC, $T_a = 25^\circ C$, $V_{CM} = 0 \sim V^+ - 1.5V$	65	90		dB
电源抑制比		DC, $T_a = 25^\circ C$, $V^+ = 5 \sim 24V$	65	100		dB
放大器之间的耦合系数		$T_a = 25^\circ C$, $f = 1 \sim 20kHz$ (所有的输入)		-120		dB
输出源电流		$V_{IN}(+) = 1V$, $V_{IN}(-) = 0V$, $V^+ = 15V$, $V_o = 2V$, $T_a = 25^\circ C$	20	40		mA
输出吸电流		$V_{IN}(-) = 1V$, $V_{IN}(+) = 0V$, $V^+ = 15V$, $V_o = 2V$, $T_a = 25^\circ C$	10	20		mA
		$V_{IN}(-) = 1V$, $V_{IN}(+) = 0V$, $V^+ = 15V$, $V_o = 200mV$, $T_a = 25^\circ C$	12	50		μA
对地短路电流		$V^+ = 15V$, $T_a = 25^\circ C$		40	60	mA
输入失调电压					7	mV
输入失调电压漂移		$R_s = 0\Omega$		7		$\mu V/^\circ C$
输入失调电流		$I_{IN}(+) - I_{IN}(-)$			100	nA
输入失调电流漂移		$R_s = 0\Omega$		10		pA/°C
输入偏置电流		$I_{IN}(+)$ 或 $I_{IN}(-)$		40	300	nA
输入共模电压范围		$V^+ = 24V$	0		$V^+ - 2$	V
大信号电压增益		$V^+ = 15V$, ($V_o = 1 \sim 11V$), $R_L \geq 2k\Omega$	25			V/mV
输 出 电 压 摆 幅	VOH	$V^+ = 24V$	$R_L = 2k\Omega$	20		V
			$R_L = 10k\Omega$	21	22	V
	VOL	$V^+ = 5V$, $R_L = 10k\Omega$		5	20	mV
输出电流		$V_{IN}(+) = 1V$, $V_{IN}(-) = 0V$, $V^+ = 15V$, $V_o = 2V$	10	20		mA
		$V_{IN}(-) = 1V$, $V_{IN}(+) = 0V$, $V^+ = 15V$, $V_o = 2V$	5	8		mA

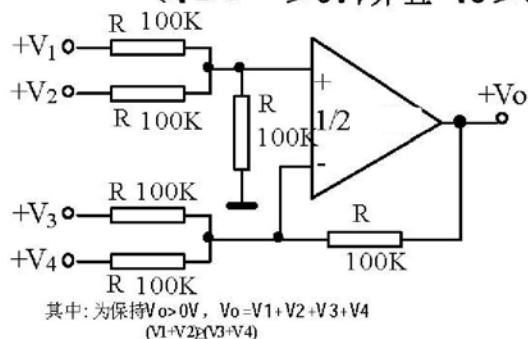


典型应用

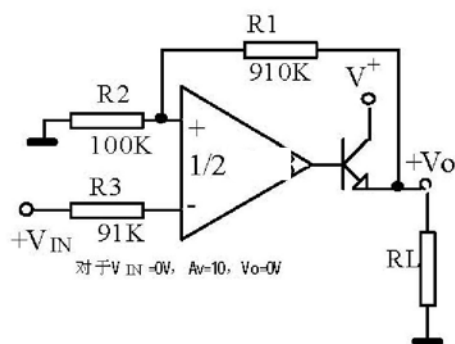
同相直流增益 (0V输入=0V输出)



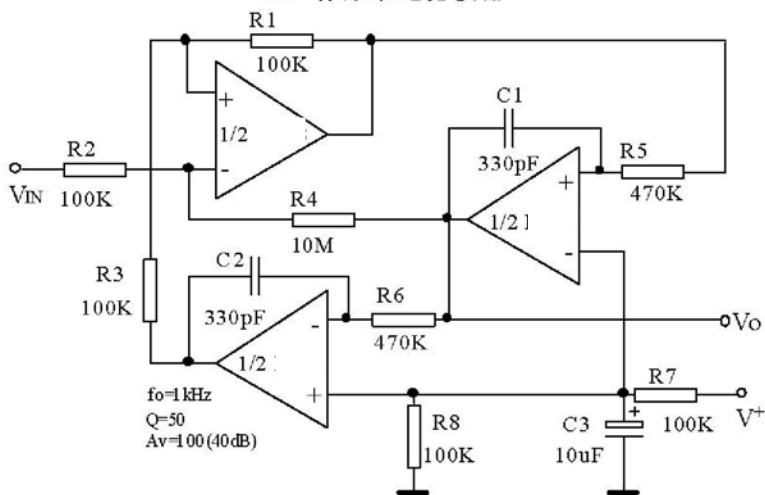
直流求和放大器
($V_{INs} \geq 0V$, 并且 $V_O \geq 0V$)



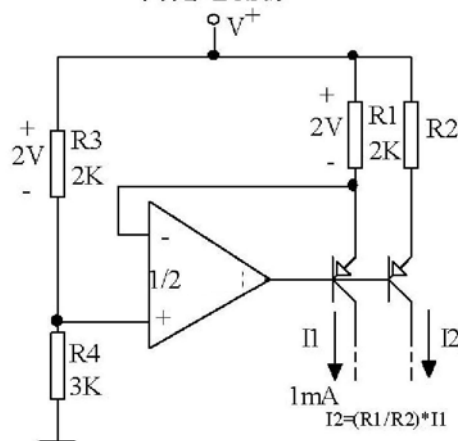
功率放大器



RC 有源带通滤波器

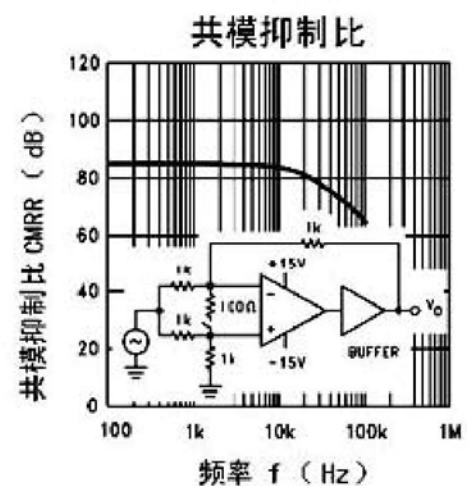
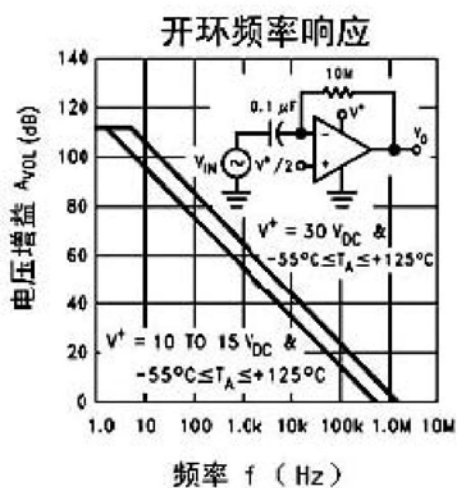
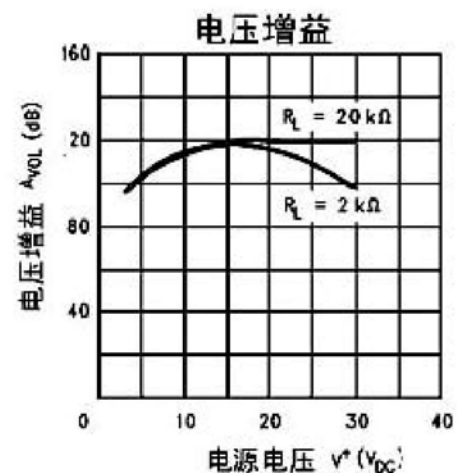
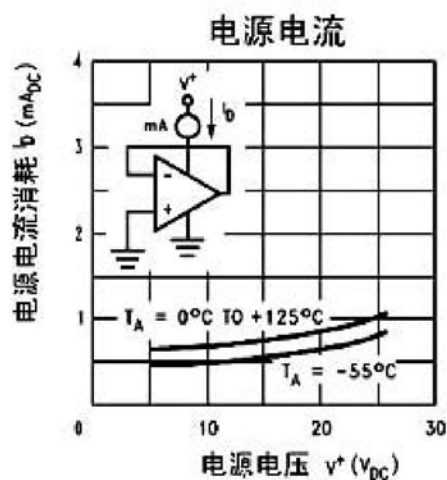
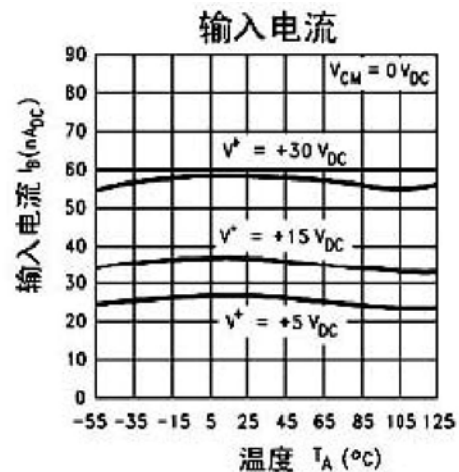
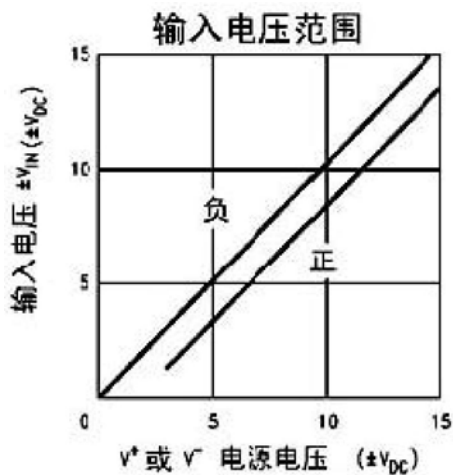


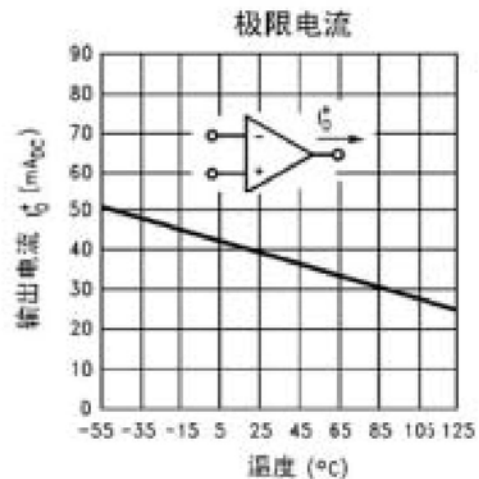
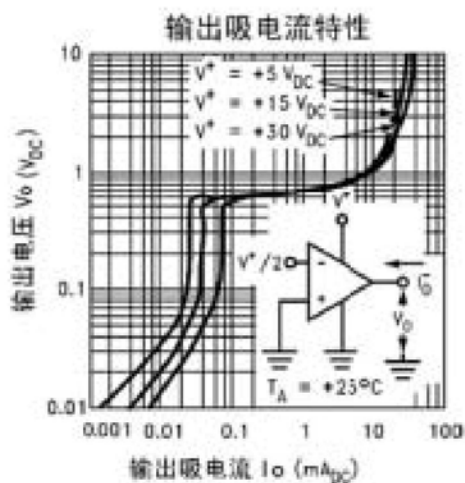
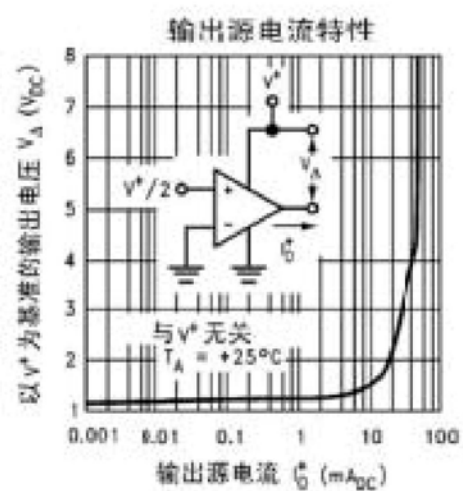
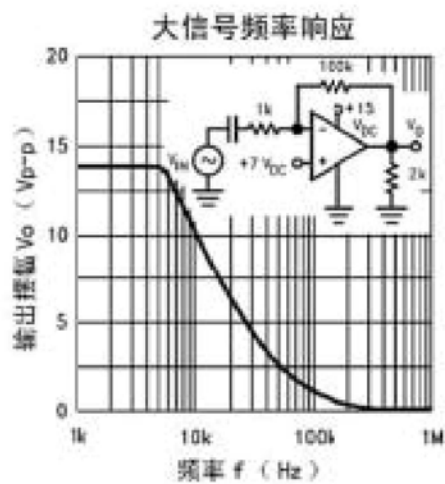
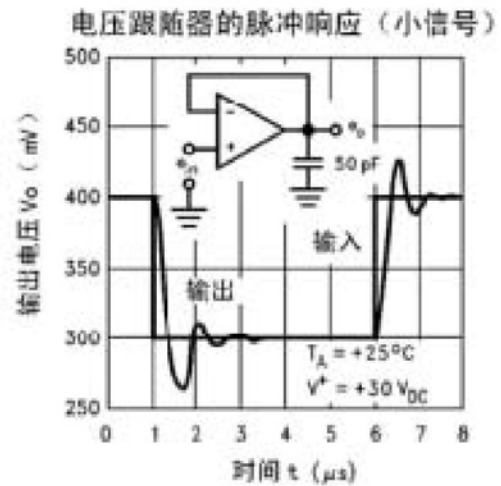
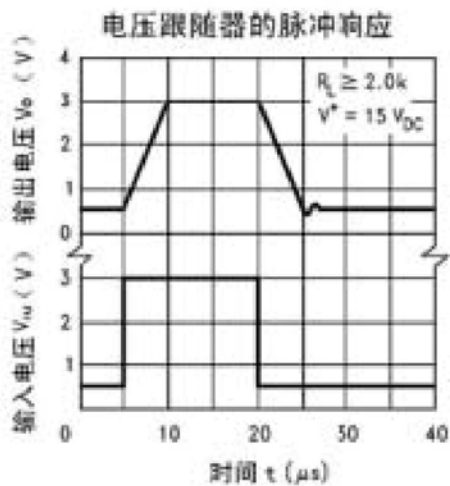
固定电流源





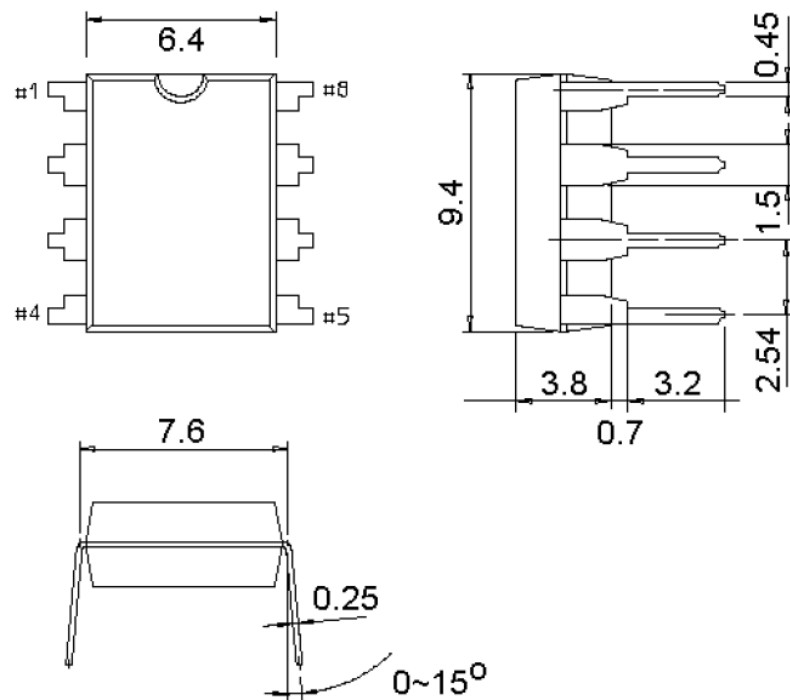
典型特性曲线



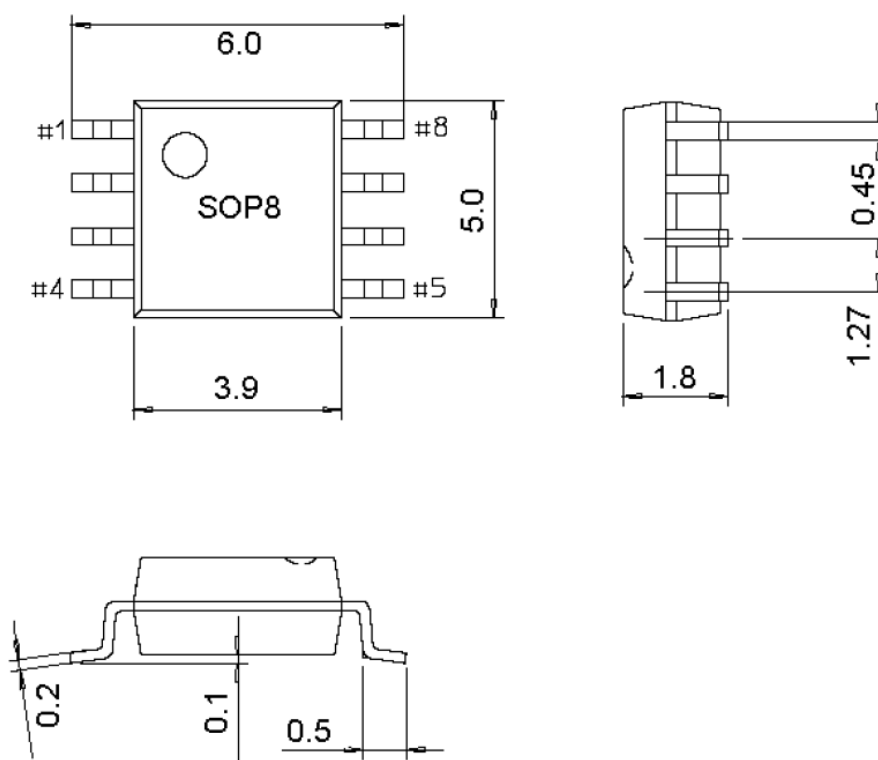




DIP-8



SOP-8





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