

AN1084, AN1084S

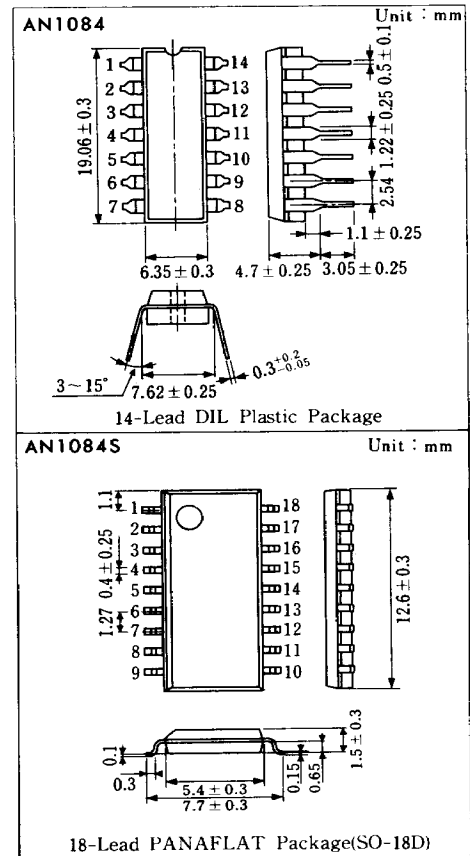
Quadruple J-FET Input Operational Amplifiers

■ Outline

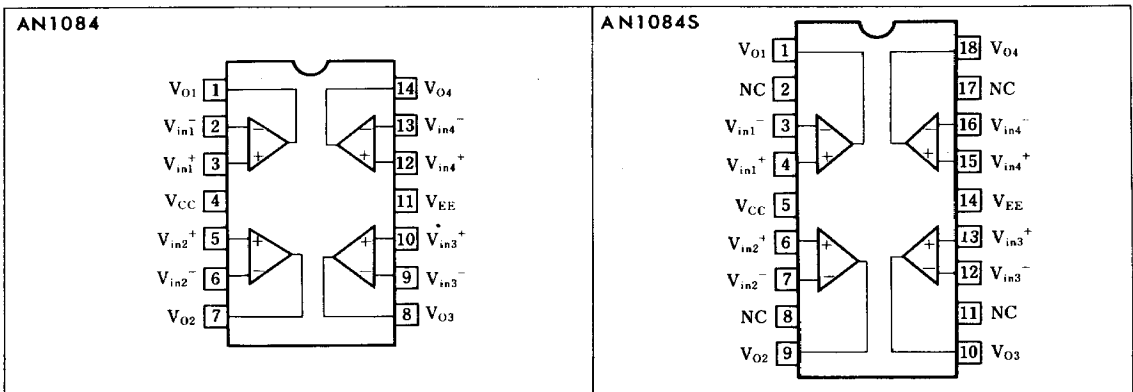
The AN1084 and the AN1084S are quadruple operational amplifiers with input stages consisting of Pch J-FET adopting the ion implantation process, realizing high speed response, high input impedance and low input bias current. Therefore, they can be applied widely to general control equipment and medical equipment such as integrators, sample & hold circuits and high input impedance buffers.

■ Features

- High slew rate : $SR=11V/\mu s$ typ.
- Low input bias current : $I_{BIS}=30pA$ typ.
- Low offset current : $I_{io}=5pA$ typ.
- High impedance : $10^{12}\Omega$
- High gain : $G_v=106dB$ typ.
- Wide range of supply voltage : $\pm 5V \sim \pm 18V$
- Phase compensation circuit



■ Block Diagrams



■ Pin

<AN1084>

Pin No.	Pin Name
1	Ch. 1 Output
2	Ch. 1 Invert Input
3	Ch. 1 Non Invert Input
4	V _{CC}
5	Ch. 2 Non Invert Input
6	Ch. 2 Invert Input
7	Ch. 2 Output
8	Ch. 3 Output
9	Ch. 3 Invert Input
10	Ch. 3 Non Invert Input
11	V _{EE}
12	Ch. 4 Non Invert Input
13	Ch. 4 Invert Input
14	Ch. 4 Output

<AN1084S>

Pin No.	Pin Name
1	Ch. 1 Output
2	NC
3	Ch. 1 Invert Input
4	Ch. 1 Non Invert Input
5	V _{CC}
6	Ch. 2 Non Invert Input
7	Ch. 2 Invert Input
8	NC
9	Ch. 2 Output
10	Ch. 3 Output
11	NC
12	Ch. 3 Invert Input
13	Ch. 3 Non Invert Input
14	V _{EE}
15	Ch. 4 Non Invert Input
16	Ch. 4 Invert Input
17	NC
18	Ch. 4 Output

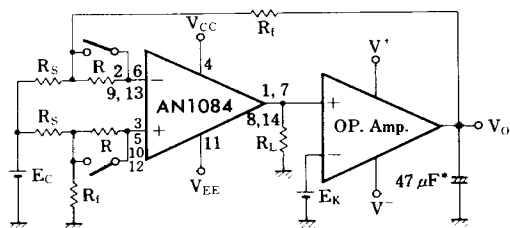
■ Absolute Maximum Ratings (T_a = 25°C)

Item		Symbol	Rating	Unit
Voltage	Supply Voltage	V _{CC}	±18	V
	Differential Input Voltage	V _{ID}	±30	V
	Common-Mode Input Voltage	V _{ICM}	±15	V
Power Dissipation	AN1084	P _D	570	mW
	AN1084S		420	
Operating Ambient Temperature		T _{opr}	−20 ~ +75	°C
Storage Temperature	AN1084	T _{stg}	−55 ~ +150	°C
	AN1084S		−55 ~ +125	

■ Electrical Characteristics (V_{CC} = 15V, V_{EE} = −15V, T_a = 25°C)

Item	Symbol	Test Circuit	Condition	min.	typ.	max.	Unit
Input Offset Voltage	V _{I(offset)}	1	R _S ≤ 50Ω		2	10	mV
Input Offset Current	I _{IO}	1			5	200	pA
Input Bias Current	I _{Bias}	1			30	400	pA
Voltage Gain	G _V	1		88	106		dB
Maximum Output Voltage	V _{O(max.)}	2	R _L ≥ 10kΩ	±12	±13.5		V
Maximum Output Voltage	V _{O(max.)}	2	R _L ≥ 2kΩ	±10	±12		V
Common-Mode Input Voltage Range	V _{CM}	3		±10			V
Common-Mode Rejection Ratio	CMR	1		70	76		dB
Supply Voltage Rejection Ratio	SVR	1		70	76		dB
Power Consumption	P _C	4	R _L = ∞		250	336	mW
Slew Rate	SR	5	R _L ≥ 2kΩ		11		V/μs
Unity-gain Band Width	f _(T)	6	A _V = 1		3		MHz
Equivalent Input Noise Voltage	V _{nl}	7	R _S = 100Ω, B = 10Hz ~ 30kHz		4		μV _{rms}

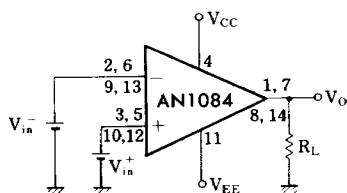
Test Circuit 1 ($V_{I(offset)}$, I_{IO} , I_{Bias} , G_V , CMR , SVR)



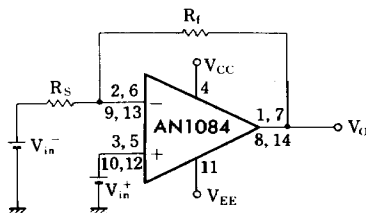
Note) For the connection method of the AN1084S, see the block diagram.

*Bipolar should be used (NP)

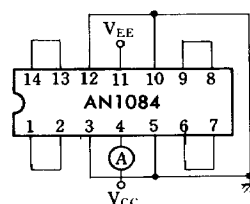
Test Circuit 2 ($V_{O(max.)}$)



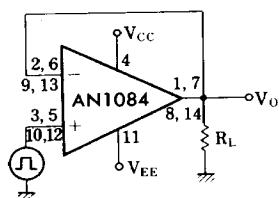
Test Circuit 3 (V_{CM})



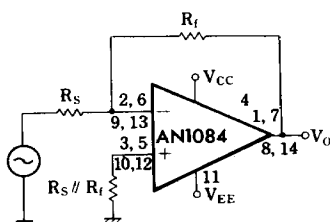
Test Circuit 4 (P_C)



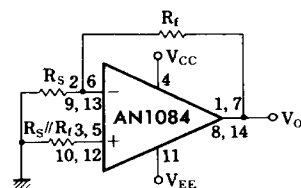
Test Circuit 5 (SR)



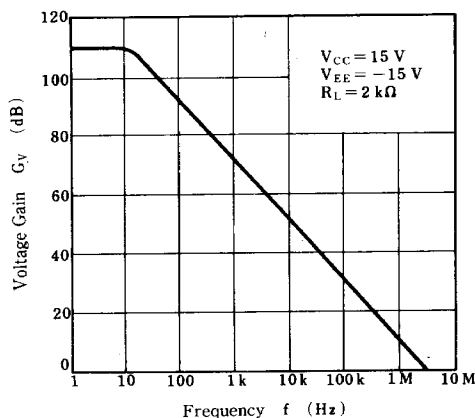
Test Circuit 6 (f_T)



Test Circuit 7 (V_{ni})



$G_V - f$



$V_{O(max.)} - f$

