

AN1084, AN1084S

Quadruple J-FET Input Operational Amplifiers

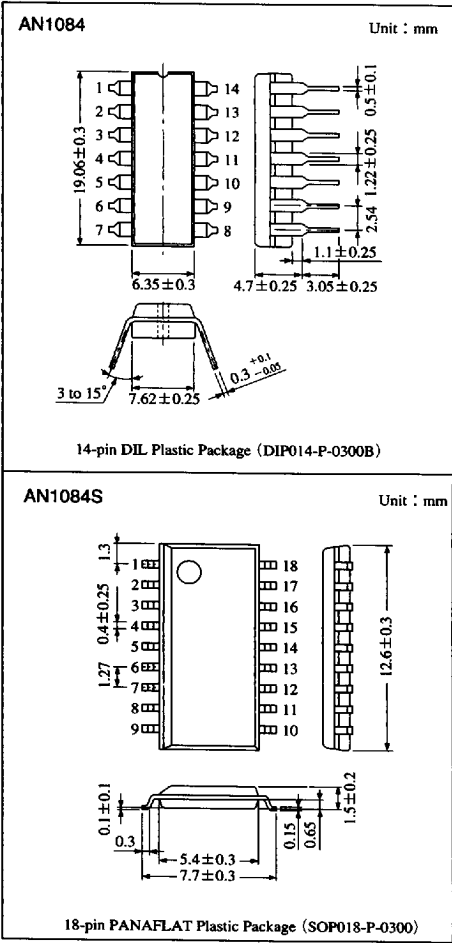
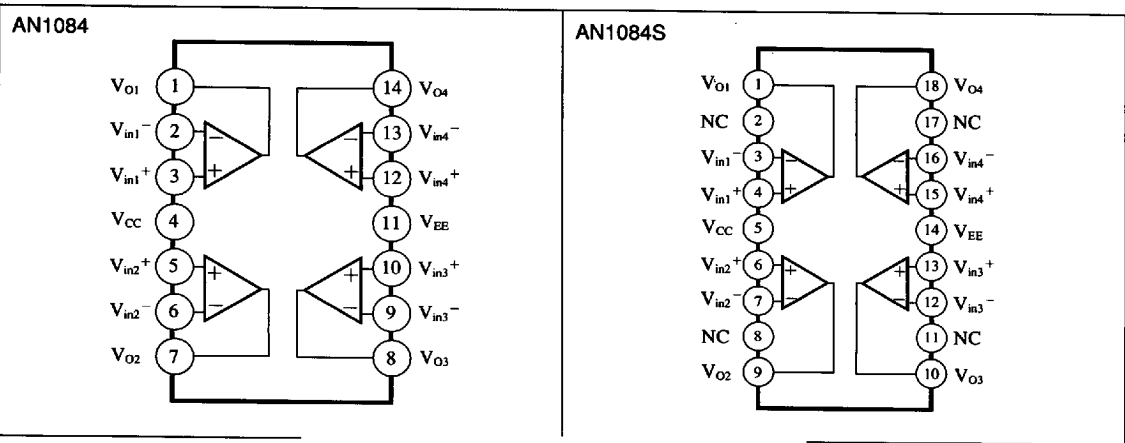
Overview

The AN1084 and the AN1084S are quadruple operational amplifiers with input stages consisting of P-ch 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 : $I_{bias}=30pA$ typ.
- Low offset current : $I_{IO}=5pA$ typ.
- High impedance : $10^{12}\Omega$
- High voltage gain : $G_V=106dB$ typ.
- Wide range of supply voltage : $\pm 5V$ to $\pm 18V$
- Phase compensation circuit built-in

Block Diagrams



Operational
Amplifiers

■ Pin Descriptions

〈AN1084〉

Pin No.	Pin name	Pin No.	Pin name
1	Ch.1 output	8	Ch.3 output
2	Ch.1 inverting input	9	Ch.3 inverting input
3	Ch.1 non inverting input	10	Ch.3 non inverting input
4	V _{CC}	11	V _{EE}
5	Ch.2 non inverting input	12	Ch.4 non inverting input
6	Ch.2 inverting input	13	Ch.4 inverting input
7	Ch.2 output	14	Ch.4 output

〈AN1084S〉

Pin No.	Pin name	Pin No.	Pin name
1	Ch.1 output	10	Ch.3 output
2	NC	11	NC
3	Ch.1 inverting input	12	Ch.3 inverting input
4	Ch.1 non inverting input	13	Ch.3 non inverting input
5	V _{CC}	14	V _{EE}
6	Ch.2 non inverting input	15	Ch.4 non inverting input
7	Ch.2 inverting input	16	Ch.4 inverting input
8	NC	17	NC
9	Ch.2 output	18	Ch.4 output

■ Absolute Maximum Ratings (Ta=25°C)

Parameter		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 to +75	°C
Storage temperature	AN1084	T _{stg}	−55 to +150	°C
	AN1084S		−55 to +125	

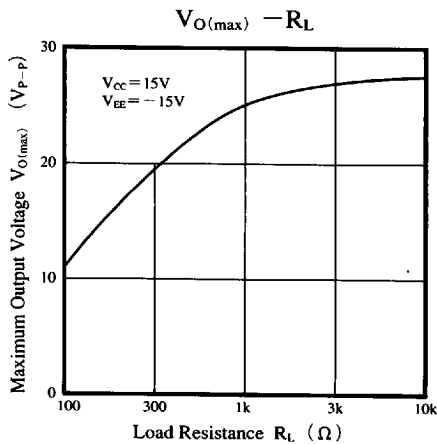
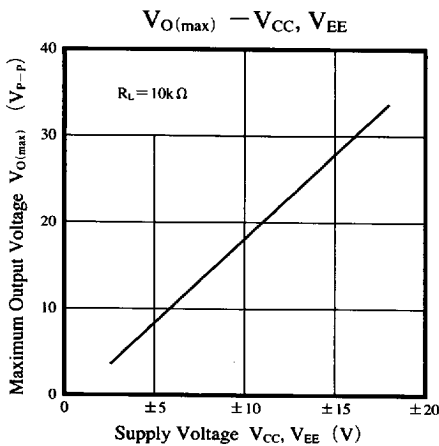
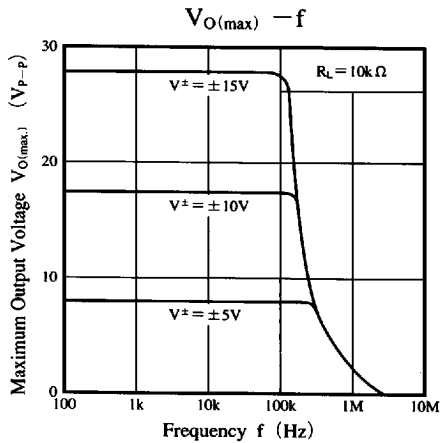
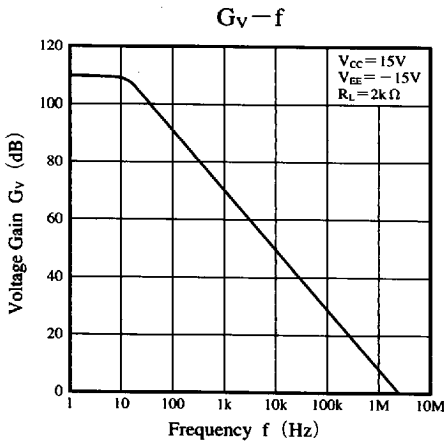
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■ Electrical Characteristics (V_{CC}=15V, V_{EE}=−15V, T_a=25°C)

Parameter	Symbol	Condition	min	typ	max	Unit
Input offset voltage	V _{I(offset)}	R _S ≤50Ω	—	2	10	mV
Input offset current	I _{IO}		—	5	200	pA
Input bias current	I _{bias}		—	30	400	pA
Voltage gain	G _V	R _L =2kΩ, V _O =±10V	88	106	—	dB
Maximum output voltage	V _{O(max)}	R _L ≥10kΩ	±12	±14	—	V
Maximum output voltage	V _{O(max)}	R _L ≥2kΩ	±10	±12.5	—	V
Common-mode input voltage range	V _{CM}		±10	—	—	V
Common-mode rejection ratio	CMR		70	76	—	dB
Supply voltage rejection ratio	SVR		70	76	—	dB
Power consumption	P _C	R _L =∞	—	250	336	mW
Slew rate	SR	R _L ≥2kΩ	—	11	—	V/μs
Zero-cross frequency	f _(T)	A _V =1	—	3	—	MHz
Equivalent input noise voltage	V _{ni}	R _S =100Ω, B=10Hz to 30kHz	—	4	—	μVrms

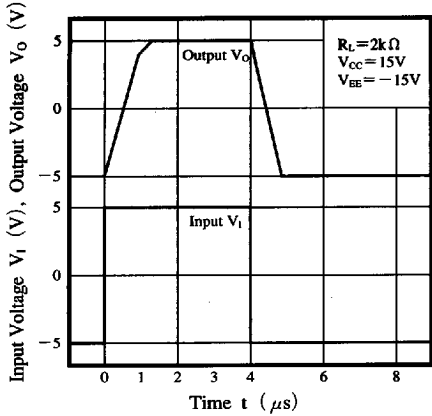
■ Characteristics Curve



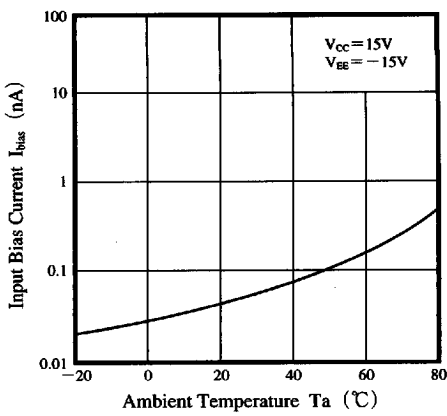
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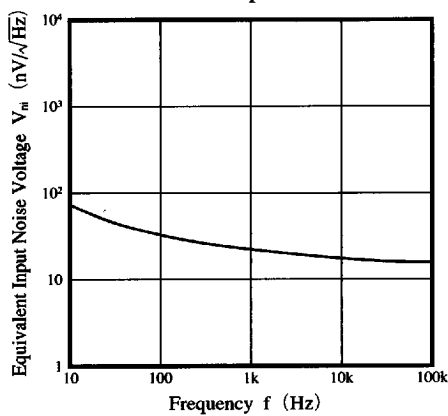
Transfer Characteristics



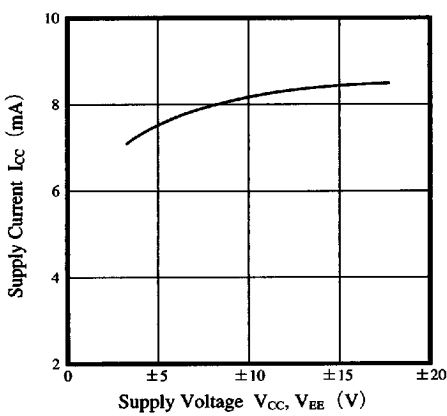
$I_{bias} - T_a$



Noise Spectrum



$I_{CC} - V_{CC}, V_{EE}$



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