J-FET Input Quad Operational Amplifiers

GENERAL DESCRIPTION

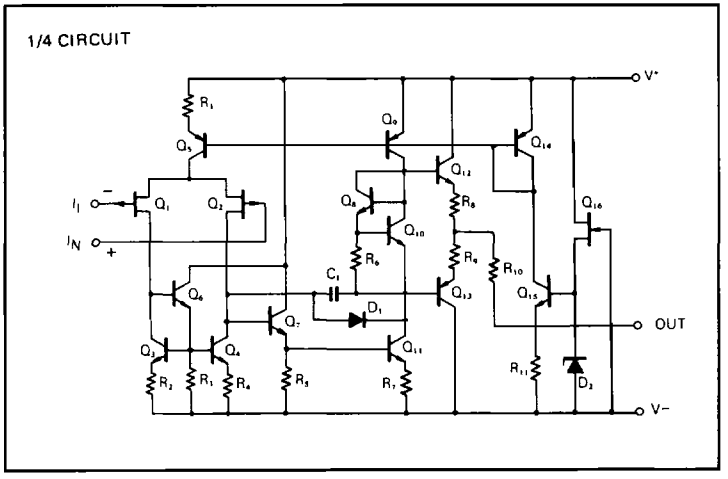
The μPC804, 4084, are quad operational amplifiers incorporating well matched ion implant P-channel JFET on the same chip with standard bipolar transistors. The key features of these op amps are very low input bias current and high slew rate ten times faster than conventional general purpose op amps. By these features μPC804, 4084, are excellent choices for wide variety of applications including integrator, active filter, pulse amp, etc.

Two kinds of ICs are available according to reliability, the μPC804 for industry, the μPC4084 for commercial.

FEATURES

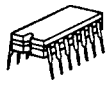
- Wide Common-Mode and Differential Input Voltage Ranges
- Low Input Bias and Offset Currents
- Output Short-Circuit Protection
- High Input Impeadance . . . J-FET INPUT Stage
- Internal Frequency Compensation
- High Slew Rate . . .11 V/μs Typ.
- Latch Up Free Operation
- TL 084 Direct Replacement

EQUIVALENT CIRCUIT



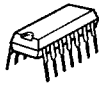
ORDERING INFORMATION

μPC804D



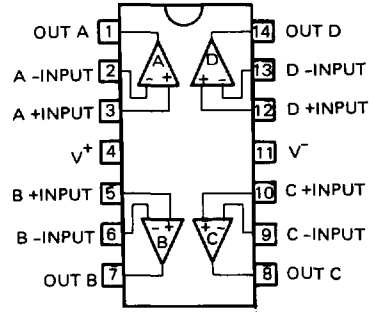
14 pin Ceramic DIP
(Dual In-Line Package)

μPC804C/μPC4084C



14 pin Plastic Molded DIP
(Dual In-Line Package)

CONNECTION DIAGRAM (Top View)



μPC804D
μPC804C
μPC4084C

ABSOLUTE MAXIMUM RATINGS (Ta =25°C)

PARAMETER		μPC804	μPC4084	UNIT
Voltage between V^+ and V^-		36	36	V
Power Dissipation*	D Package	900	–	mW
	C Package	570	570	
Differential Input Voltage		±30	±30	V
Input Voltage (Note 1)		±15	±15	V
Output Short Circuit Duration		Indefinite	Indefinite	s
Operating Temperature Range	D Package	–20 to +80	–	°C
	C Package	–20 to +70	0 to + 70	
Storage Temperature Range	D Package	–55 to +150	–	°C
	C Package	–55 to +125	–55 to +125	

Note 1. For supply voltages less than ±15V, the absolute maximum input voltage is equal to the supply voltage.

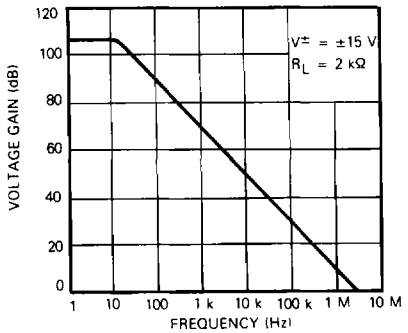
* See thermal information in chapter 11.

ELECTRICAL CHARACTERISTICS (Ta = 25°C, $V^{\pm}$ = ±15 V)

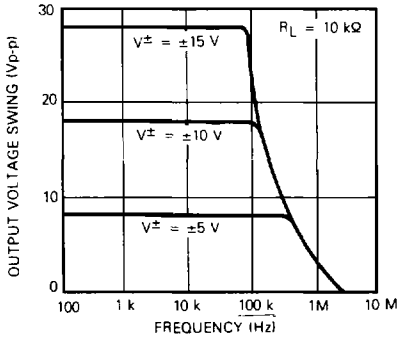
CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Input Offset Voltage		5.0	15.0	mV	Rs ⩽ 50Ω
Input Offset Current		5	200	pA	
Input Bias Current		30	400	pA	
Large Signal Voltage Gain	25	200		V/mV	R_L ⩾ 2 kΩ, Vo = ±10 V
Supply Current		8.0	11.2	mA	All Amplifiers
Common Mode Rejection Ratio	70	76		dB	
Supply Voltage Rejection Ratio	70	76		dB	
Output Voltage Swing	±12	±13.5		V	R_L ⩾ 10 kΩ
Output Voltage Swing	±10	±12		V	R_L ⩾ 2 kΩ
Common Mode Input Voltage Range	±10			V	
Slew Rate		11		V/μs	Av = 1
Input Equivalent Noise Voltage		25		$nV/\sqrt{Hz}$	f = 1 kHz, Rs = 100 Ω
Unity Gain Bandwidth		3		MHz	
Input Offset Voltage			20	mV	Rs ⩽ 50Ω Ta = Topt
Temperature Coefficient of Input Offset Voltage		10		μV/°C	Ta = Topt
Input Bias Current			10	nA	Ta = Topt
Input Offset Current			5	nA	Ta = Topt
Channel Separation		120		dB	

TYPICAL PERFORMANCE CHARACTERISTICS (Ta = 25°C)

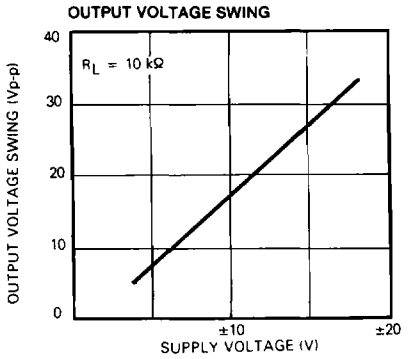
OPEN LOOP FREQUENCY RESPONSE



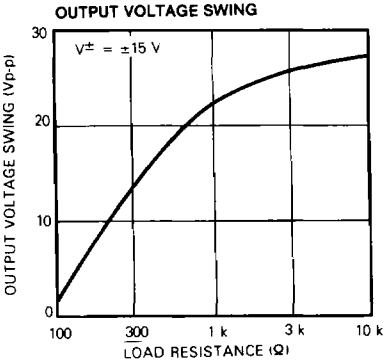
LARGE SIGNAL FREQUENCY RESPONSE



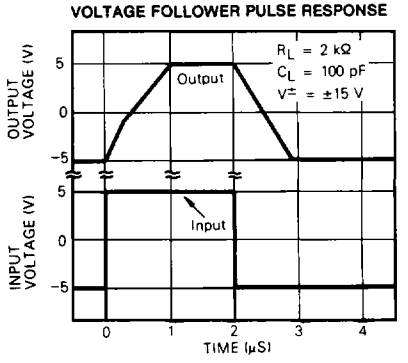
OUTPUT VOLTAGE SWING



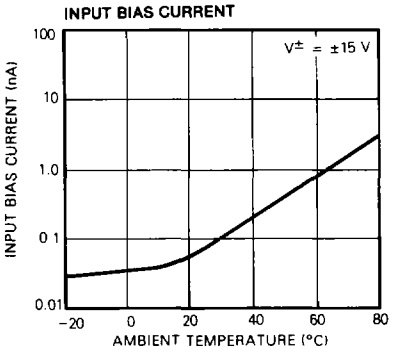
OUTPUT VOLTAGE SWING



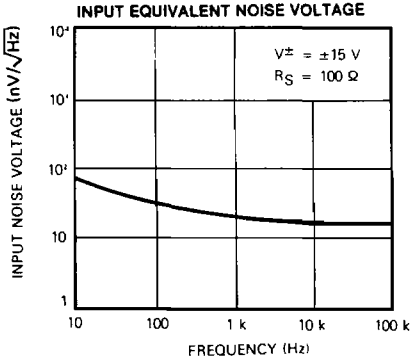
VOLTAGE FOLLOWER PULSE RESPONSE



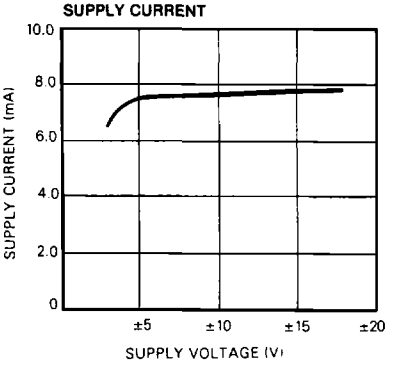
INPUT BIAS CURRENT



INPUT EQUIVALENT NOISE VOLTAGE



SUPPLY CURRENT



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