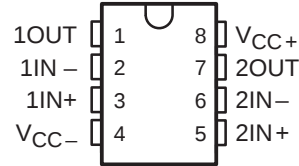


LF412C DUAL JFET-INPUT OPERATIONAL AMPLIFIER

SLOS010B – MARCH 1987 – REVISED AUGUST 1994

- Low Input Bias Current . . . 50 pA Typ
- Low Input Noise Current
0.01 pA/√Hz Typ
- Low Supply Current . . . 4.5 mA Typ
- High Input impedance . . . $10^{12} \Omega$ Typ
- Internally Trimmed Offset Voltage
- Wide Gain Bandwidth . . . 3 MHz Typ
- High Slew Rate . . . 13 V/μs Typ

D OR P PACKAGE
(TOP VIEW)



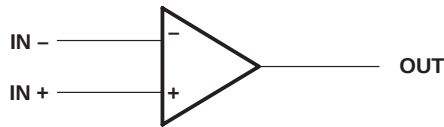
description

This device is a low-cost, high-speed, JFET-input operational amplifier with very low input offset voltage and a specified maximum input offset voltage drift. It requires low supply current yet maintains a large gain bandwidth product and a fast slew rate. In addition, the matched high-voltage JFET input provides very low input bias and offset currents.

The LF412C can be used in applications such as high-speed integrators, digital-to-analog converters, sample-and-hold circuits, and many other circuits.

The LF412C is characterized for operation from 0°C to 70°C.

symbol (each amplifier)



AVAILABLE OPTIONS

T _A	V _{IO} max AT 25°C	PACKAGE	
		SMALL OUTLINE (D)	PLASTIC DIP (P)
0°C to 70°C	3 mV	LF412CD	LF412CP

The D packages are available taped and reeled. Add the suffix R to the device type (ie., LF412CDR).

absolute maximum ratings over operating free-air temperature range (unless otherwise noted)

Supply voltage, V _{CC+}	18 V
Supply voltage, V _{CC-}	-18 V
Differential input voltage, V _{ID}	±30 V
Input voltage, V _I (see Note 1)	±15 V
Duration of output short circuit	unlimited
Continuous total power dissipation	500 mW
Operating temperature range	0°C to 70°C
Storage temperature range	-65°C to 150°C
Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds	260°C

NOTE 1: Unless otherwise specified, the absolute maximum negative input voltage is equal to the negative power supply voltage.

LF412C

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recommended operating conditions

	MIN	MAX	UNIT
Supply voltage, V_{CC+}	3.5	18	V
Supply voltage, V_{CC-}	-3.5	-18	V

electrical characteristics over operating free-air temperature range, $V_{CC\pm} = \pm 15$ V (unless otherwise specified)

PARAMETER	TEST CONDITIONS	$T_A^\dagger$	MIN	TYP	MAX	UNIT
V_{IO} Input offset voltage	$V_{IC} = 0$, $R_S = 10\text{ k}\Omega$	25°C		1	3	mV
α_{VIO} Average temperature coefficient of input offset voltage	$V_{IC} = 0$, $R_S = 10\text{ k}\Omega$			10	20 [‡]	$\mu\text{V}/^\circ\text{C}$
I_{IO} Input offset current [§]	$V_{IC} = 0$	25°C		25	100	pA
		70°C			4	nA
I_{IB} Input bias current [§]	$V_{IC} = 0$	25°C		50	200	pA
		70°C			8	nA
V_{ICR} Common-mode input voltage range			± 11	-11.5 to 14.5		V
V_{OM} Maximum peak output voltage swing	$R_L = 10\text{ k}\Omega$		± 12	± 13.5		V
A_{VD} Large-signal differential voltage	$V_O = \pm 10\text{ V}$, $R_L = 2\text{ k}\Omega$	25°C	25	200		V/mV
		Full range	15	200		
r_i Input resistance	$T_A = 25^\circ\text{C}$			10 ¹²		Ω
CMRR Common-mode rejection ratio	$R_S \leq 10\text{ k}\Omega$		70	100		dB
k_{SVR} Supply-voltage rejection ratio	See Note 2		70	100		dB
I_{CC} Supply current				4.5	6.8	mA

[†] Full range is 0°C to 70°C.

[‡] At least 90% of the devices meet this limit for α_{VIO} .

[§] Input bias currents of a FET-input operational amplifier are normal junction reverse currents, which are temperature sensitive. Pulse techniques must be used that will maintain the junction temperatures as close to the ambient temperature as possible.

NOTE 2: Supply-voltage rejection ratio is measured for both supply magnitudes increasing or decreasing simultaneously.

operating characteristics, $V_{CC\pm} = \pm 15$ V, $T_A = 25^\circ\text{C}$

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
V_{O1}/V_{O2} Crosstalk attenuation	$f = 1\text{ kHz}$		120		dB
SR Slew rate		8	13		V/ μs
B_1 Unity-gain bandwidth		2.7	3		MHz
V_n Equivalent input noise voltage	$f = 1\text{ kHz}$, $R_S = 20\Omega$		18		$\text{nV}/\sqrt{\text{Hz}}$
I_n Equivalent input noise current	$f = 1\text{ kHz}$		0.01		$\text{pA}/\sqrt{\text{Hz}}$



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