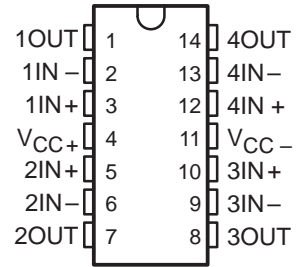


- Low Input Bias Current . . . 50 pA Typ
- Low Input Noise Current
0.01 pA/√Hz Typ
- Low Total Harmonic Distortion
- Low Supply Current . . . 8 mA Typ
- Gain Bandwidth . . . 3 MHz Typ
- High Slew Rate . . . 13 V/μs Typ
- Pin Compatible With the LM348

D OR N PACKAGE
(TOP VIEW)



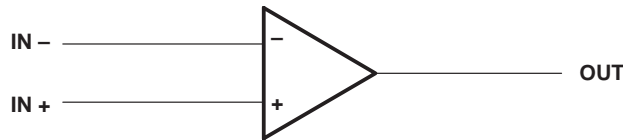
description

These devices are low-cost, high-speed, JFET-input operational amplifiers. They require low supply current yet maintain a large gain-bandwidth product and a fast slew rate. In addition, their matched high-voltage JFET inputs provide very low input bias and offset current.

The LF347 and LF347B can be used in applications such as high-speed integrators, digital-to-analog converters, sample-and-hold circuits, and many other circuits.

The LF347 and LF347B are 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 (N)
0°C to 70°C	10 mV	LF347D	LF347N
	5 mV	LF347BD	LF347BN

The D packages are available taped and reeled. Add R suffix to the device type (e.g., LF347DR).

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	See Dissipation Rating Table
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.

PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

LF347, LF347B

JFET-INPUT

QUAD OPERATIONAL AMPLIFIERS

SLOS013B – MARCH 1987 – REVISED AUGUST 1994

DISSIPATION RATING TABLE

PACKAGE	$T_A \leq 25^\circ\text{C}$ POWER RATING	DERATING FACTOR	DERATE ABOVE T_A	$T_A = 70^\circ\text{C}$ POWER RATING
D	608 mW	7.6 mW/°C	61°C	608 mW
N	680 mW	N/A	N/A	680 mW

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, $V_{CC\pm} = \pm 15\text{ V}$ (unless otherwise specified)

PARAMETER	TEST CONDITIONS	T_A^\dagger	LF347			LF347B			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
V_{IO} Input offset voltage	$V_{IC} = 0$, $R_S = 10\text{ k}\Omega$	25°C	5	10		3	5	mV	
		Full range			13		7		
α_{VIO} Average temperature coefficient of input offset voltage	$V_{IC} = 0$, $R_S = 10\text{ k}\Omega$		18			18		$\mu\text{V}/^\circ\text{C}$	
I_{IO} Input offset current \ddagger	$V_{IC} = 0$	25°C	25	100		25	100	pA	
		70°C		4			4	nA	
I_{IB} Input bias current \ddagger	$V_{IC} = 0$	25°C	50	200		50	200	pA	
		70°C		8			8	nA	
V_{ICR} Common-mode input voltage range			± 11	-12 to 15		± 11	-12 to 15	V	
V_{OM} Maximum peak output voltage swing	$R_L = 10\text{ k}\Omega$		± 12	± 13.5		± 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	100		50	100	V/mV	
		Full range	15			25			
r_i Input resistance	$T_A = 25^\circ\text{C}$		10^{12}			10^{12}		Ω	
CMRR Common-mode rejection ratio	$R_S \leq 2\text{ k}\Omega$		70	100		80	100	dB	
k_{SVR} Supply-voltage rejection ratio	See Note 2		70	100		80	100	dB	
I_{CC} Supply current			8	11		8	11	mA	

† Full range is 0°C to 70°C.

\ddagger 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, $V_{CC\pm} = \pm 15\text{ V}$

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			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		$\text{pA}/\sqrt{\text{Hz}}$



IMPORTANT NOTICE

Texas Instruments and its subsidiaries (TI) reserve the right to make changes to their products or to discontinue any product or service without notice, and advise customers to obtain the latest version of relevant information to verify, before placing orders, that information being relied on is current and complete. All products are sold subject to the terms and conditions of sale supplied at the time of order acknowledgement, including those pertaining to warranty, patent infringement, and limitation of liability.

TI warrants performance of its semiconductor products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are utilized to the extent TI deems necessary to support this warranty. Specific testing of all parameters of each device is not necessarily performed, except those mandated by government requirements.

CERTAIN APPLICATIONS USING SEMICONDUCTOR PRODUCTS MAY INVOLVE POTENTIAL RISKS OF DEATH, PERSONAL INJURY, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE ("CRITICAL APPLICATIONS"). TI SEMICONDUCTOR PRODUCTS ARE NOT DESIGNED, AUTHORIZED, OR WARRANTED TO BE SUITABLE FOR USE IN LIFE-SUPPORT DEVICES OR SYSTEMS OR OTHER CRITICAL APPLICATIONS. INCLUSION OF TI PRODUCTS IN SUCH APPLICATIONS IS UNDERSTOOD TO BE FULLY AT THE CUSTOMER'S RISK.

In order to minimize risks associated with the customer's applications, adequate design and operating safeguards must be provided by the customer to minimize inherent or procedural hazards.

TI assumes no liability for applications assistance or customer product design. TI does not warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right of TI covering or relating to any combination, machine, or process in which such semiconductor products or services might be or are used. TI's publication of information regarding any third party's products or services does not constitute TI's approval, warranty or endorsement thereof.