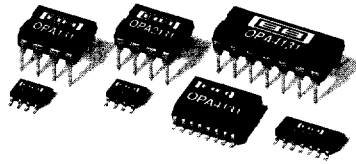


For Immediate Assistance, Contact Your Local Salesperson



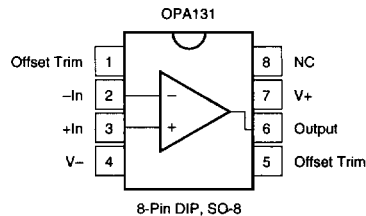
OPA131
OPA2131
OPA4131

www.burr-brown.com/databook/OPA131.html

General Purpose FET-INPUT OPERATIONAL AMPLIFIERS

FEATURES

- FET INPUT: $I_b = 50\text{pA max}$
- LOW OFFSET VOLTAGE: $750\mu\text{V max}$
- WIDE SUPPLY RANGE: $\pm 4.5\text{V to } \pm 18\text{V}$
- SLEW RATE: $10\text{V}/\mu\text{s}$
- WIDE BANDWIDTH: 4MHz
- EXCELLENT CAPACITIVE LOAD DRIVE
- SINGLE, DUAL, QUAD VERSIONS

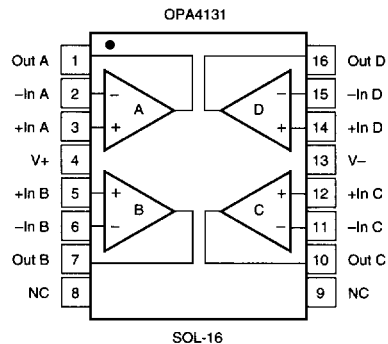
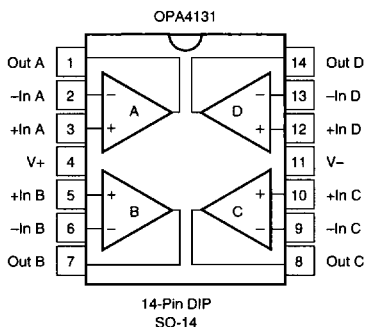
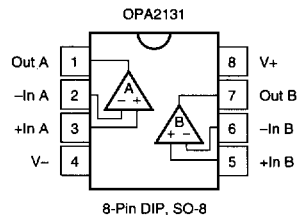


DESCRIPTION

The OPA131 series of FET-input op amps provides high performance at low cost. Single, dual and quad versions in industry-standard pinouts allow cost-effective design options.

The OPA131 series offers excellent general purpose performance, including low offset voltage, drift, and good dynamic characteristics.

Single, dual and quad versions are available in DIP and SOIC packages. Performance grades include commercial and industrial temperature ranges.



International Airport Industrial Park • Mailing Address: PO Box 11400, Tucson, AZ 85734 • Street Address: 6730 S. Tucson Blvd., Tucson, AZ 85706 • Tel: (520) 746-1111 • Twx: 910-952-1111
Internet: <http://www.burr-brown.com/> • FAX Line: (800) 548-6133 (US/Canada Only) • Cable: BBRCORP • Telex: 066-6491 • FAX: (520) 889-1510 • Immediate Product Info: (800) 548-6132

Or, Call Customer Service at 1-800-548-6132 (USA Only)

SPECIFICATIONS

At $T_A = +25^\circ\text{C}$, $V_S = \pm 15\text{V}$, and $R_L = 2\text{k}\Omega$, unless otherwise noted.

PARAMETER	CONDITION	OPA131PA, UA OPA2131PA, UA OPA4131PA, UA, NA			OPA131PJ, UJ OPA2131PJ, UJ OPA4131PJ, NJ			UNITS
		MIN	TYP	MAX	MIN	TYP	MAX	
OFFSET VOLTAGE Input Offset Voltage OPA131P, U models only vs Temperature ⁽¹⁾ vs Power Supply OPA131P, U models only	Operating Temperature Range $V_S = \pm 4.5\text{V to } \pm 18\text{V}$		± 0.2	± 1		*	± 1.5	mV mV $\mu\text{V}/^\circ\text{C}$ $\mu\text{V/V}$ $\mu\text{V/V}$
				± 2	± 10		*	*
INPUT BIAS CURRENT⁽²⁾ Input Bias Current vs Temperature Input Offset Current	$V_{CM} = 0\text{V}$ $V_{CM} = 0\text{V}$		+5 See Typical Curve ± 1	± 50 ± 50		*	*	pA pA
NOISE Input Voltage Noise Noise Density, $f = 10\text{Hz}$ $f = 100\text{Hz}$ $f = 1\text{kHz}$ $f = 10\text{kHz}$ Current Noise Density, $f = 1\text{kHz}$			21 16 15 15 3			*	*	$\text{nV}/\sqrt{\text{Hz}}$ $\text{nV}/\sqrt{\text{Hz}}$ $\text{nV}/\sqrt{\text{Hz}}$ $\text{nV}/\sqrt{\text{Hz}}$ $\text{fA}/\sqrt{\text{Hz}}$
INPUT VOLTAGE RANGE Common-Mode Voltage Range Common-Mode Rejection OPA131P, U models only	$V_{CM} = -12\text{V to } +14\text{V}$	(V-)+3 70 80	80 86	(V+)-1	*	*	*	V dB dB
INPUT IMPEDANCE Differential Common-Mode	$V_{CM} = 0\text{V}$		$10^{10} \parallel 1$ $10^{12} \parallel 3$			*	*	$\Omega \parallel \text{pF}$ $\Omega \parallel \text{pF}$
OPEN-LOOP GAIN Open-Loop Voltage Gain OPA131P, U models only	$V_O = -12\text{V to } +12\text{V}$	94 100	110 110		*	*		dB dB
FREQUENCY RESPONSE Gain-Bandwidth Product Slew Rate Settling Time 0.1% 0.01% Total Harmonic Distortion + Noise	$G = -1, 10\text{V Step}, C_L = 100\text{pF}$ $G = -1, 10\text{V Step}, C_L = 100\text{pF}$ 1kHz, $G = 1, V_O = 3.5\text{Vrms}$		4 10 1.5 2 0.0008			*	*	MHz V/ μs μs μs %
OUTPUT Voltage Output, Positive Negative Short-Circuit Current		(V+)-3 (V-)+3	(V+)-2.5 (V-)+2.5 ± 25		*	*	*	V V mA
POWER SUPPLY Specified Operating Voltage Operating Voltage Range Quiescent Current (per amplifier)	$I_O = 0$	± 4.5	± 15 ± 1.5	± 18 ± 1.75	*	*	*	V V mA
TEMPERATURE RANGE Operating Range Storage Thermal Resistance, θ_{JA} 8-Pin DIP SO-8 Surface-Mount 14-Pin DIP SO-14, SOL-16 Surface-Mount		-40 -40		+85 +125	0 *		+70 *	$^\circ\text{C}$ $^\circ\text{C}$ $^\circ\text{C/W}$ $^\circ\text{C/W}$ $^\circ\text{C/W}$ $^\circ\text{C/W}$

* Specifications same as OPA131PA, OPA131UA.

NOTES: (1) Guaranteed by wafer test. (2) High-speed test at $T_J = 25^\circ\text{C}$.

OPA131, 2131, 4131

2

OPERATIONAL AMPLIFIERS

The information provided herein is believed to be reliable; however, BURR-BROWN assumes no responsibility for inaccuracies or omissions. BURR-BROWN assumes no responsibility for the use of this information, and all use of such information shall be entirely at the user's own risk. Prices and specifications are subject to change without notice. No patent rights or licenses to any of the circuits described herein are implied or granted to any third party. BURR-BROWN does not authorize or warrant any BURR-BROWN product for use in life support devices and/or systems.



For Immediate Assistance, Contact Your Local Salesperson

ABSOLUTE MAXIMUM RATINGS

Supply Voltage, V+ to V-	.....	36V
Input Voltage	..... (V-) -0.7V to (V+) +0.7V	
Output Short-Circuit ⁽¹⁾	Continuous
Operating Temperature	.....	-40°C to +125°C
Storage Temperature	.....	-40°C to +125°C
Junction Temperature	.....	150°C
Lead Temperature (soldering, 10s)	.....	300°C

NOTE: (1) Short-circuit to ground, one amplifier per package.



ELECTROSTATIC DISCHARGE SENSITIVITY

This integrated circuit can be damaged by ESD. Burr-Brown recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

PACKAGE/ORDERING INFORMATION

PRODUCT	PACKAGE	PACKAGE DRAWING NUMBER ⁽¹⁾	TEMPERATURE RANGE
Single			
OPA131PJ	8-Pin Plastic DIP	006	0 to +70°C
OPA131PA	8-Pin Plastic DIP	006	-40°C to +85°C
OPA131P	8-Pin Plastic DIP	006	-40°C to +85°C
OPA131UJ	SO-8 Surface-Mount	182	0 to +70°C
OPA131UA	SO-8 Surface-Mount	182	-40°C to +85°C
OPA131U	SO-8 Surface-Mount	182	-40°C to +85°C
Dual			
OPA2131PJ	8-Pin Plastic DIP	006	0 to +70°C
OPA2131PA	8-Pin Plastic DIP	006	-40°C to +85°C
OPA2131UJ	SO-8 Surface-Mount	182	0 to +70°C
OPA2131UA	SO-8 Surface-Mount	182	-40°C to +85°C
Quad			
OPA4131PJ	14-Pin Plastic DIP	010	0 to +70°C
OPA4131PA	14-Pin Plastic DIP	010	-40°C to +85°C
OPA4131UA	SOL-16 Surface-Mount	211	-40°C to +85°C
OPA4131NJ	SO-14 Surface-Mount	235	0 to +70°C
OPA4131NA	SO-14 Surface-Mount	235	-40°C to +85°C

NOTE: (1) For detailed drawing and dimension table, please see end of data sheet, or Appendix C of Burr-Brown IC Data Book.

