FUTURE PRODUCT TO BE ANNOUNCED

TYPES TL081AC AND TL081C JFET-INPUT OPERATIONAL AMPLIFIERS

JUNE 1976

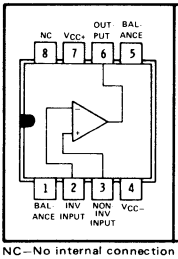
- JFET Input Stage
- High Input Impedance. . . $10^9\ \Omega$ Typ
- High Slew Rate Typically 9 V/μs
- Low Input Bias Current . . . 2 nA Typ
- Low Input Offset Current . . . 0.2 nA Typ
- No Frequency Compensation Required
- Continuous-Short-Circuit Protection
- Unity Gain Bandwidth . . . 3 MHz Typ
- No Latch-Up
- Low Power Consumption

description

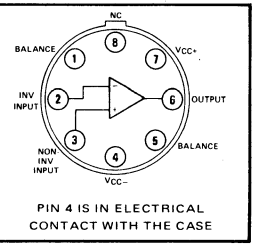
This monolithic JFET-input operational amplifier incorporates well-matched, high-voltage BI-FET technology (JFET's on the same chip with standard bipolar transistors). The device features low input bias and offset currents, low offset voltage and offset voltage temperature coefficient, coupled with offset adjustment that does not degrade temperature coefficient or common-mode rejection.

The TL081C is characterized for operation from 0°C to 70°C.

JG OR P
DUAL-IN-LINE PACKAGE
(TOP VIEW)



L
PLUG-IN PACKAGE
(TOP VIEW)



NC—No internal connection

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

Supply voltage V_{CC+} (see Note 1)	18 V
Supply voltage V_{CC-} (see Note 1)	−18 V
Differential input voltage (see Note 2)	±30 V
Input voltage (see Notes 1 and 3)	±15 V
Duration of output short-circuit (see Note 4)	unlimited
Continuous total dissipation at (or below) 25°C free-air temperature (see Note 5)	670 mW
Operating free-air temperature range	0°C to 70°C
Storage temperature range	−65°C to 150°C
Lead temperature 1/16 inch from case for 60 seconds: JG or L package	300°C
Lead temperature 1/16 inch from case for 10 seconds: P package	260°C

NOTES:
1. All voltage values, except differential voltages, are with respect to the zero reference level (ground) of the supply voltages where the zero reference level is the midpoint between V_{CC+} and V_{CC-}.
2. Differential voltages are at the noninverting input terminal with respect to the inverting input terminal.
3. The magnitude of the input voltage must never exceed the magnitude of the supply voltage or 15 volts, whichever is less.
4. The output may be shorted to ground or either supply. Temperature and/or supply voltages must be limited to ensure that the dissipation rating is not exceeded.
5. For operation above 25°C free-air temperature, refer to Dissipation Derating Curves, Section 2. This rating for the L package requires a heat sink that provides a thermal resistance from case to free-air, $R_{\theta CA}$, of not more than 105°C/W.

electrical characteristics, $V_{CC\pm}$ = ±15 V, T_A = 25°C (unless otherwise noted)

PARAMETER		TEST CONDITIONS†		TL081AC			TL081C			UNIT
				MIN	TYP	MAX	MIN	TYP	MAX	
V_{IO}	Input offset voltage	R_S = 50 Ω				6		10	15	mV
		R_S = 50 Ω,	T_A = full range			7.5		13	20	
α_{VIO}	Temperature coefficient of input offset voltage	R_S = 50 Ω,	T_A = full range		10			10		μV/°C
I_{IO}	Input offset current				0.2	0.5		0.2	0.5	nA
		T_A = full range			0.4	1		0.4	1	
I_{IB}	Input bias current				2	4		2	4	nA
		T_A = full range			3	6		3	6	
V_{ICR}	Common-mode input voltage range			+12 to −12			+10 to −10			V
V_{OPP}	Maximum peak-to-peak output voltage swing	T_A = full range	$R_L \geq 10$ kΩ	24	26		24	26		V
			$R_L \geq 2$ kΩ	20			20			
A_{VD}	Large-signal differential voltage amplification	R_L = 10 kΩ,	T_A = 25°C	25	200		25	200		V/mV
		V_O = ±10 V	T_A = full range	15			15			
r_i	Input resistance				10^9			10^9		Ω
CMRR	Common-mode rejection ratio	R_S = 10 kΩ		70	90		70	90		dB
k_{SVR}*	Supply voltage rejection ratio			70	80		70	80		dB
I_{CC}	Supply current	No load, No signal	T_A = 25°C		2	4		2	4	mA
			T_A = full range		3	6		3	6	

*$k_{SVR} = \Delta V_{CC\pm}/\Delta V_{IO}$.
†All characteristics are specified under open-loop operation, unless otherwise noted. Full range for T_A is 0°C to 70°C.

operating characteristics, V_{CC} = ±15 V, T_A = 25°C

PARAMETER		TEST CONDITIONS		TL081AC			TL081C			UNIT
				MIN	TYP	MAX	MIN	TYP	MAX	
SR	Slew rate at unity gain	V_I = 10 V, C_L = 100 pF	R_L = 2 kΩ,		9			9		V/μs

TEXAS INSTRUMENTS

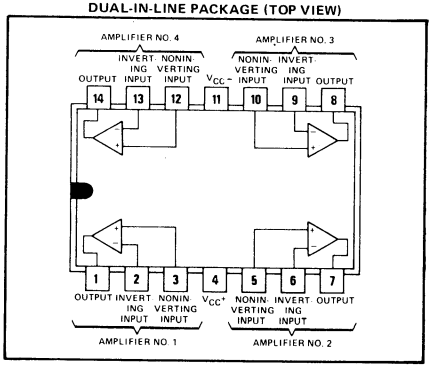
FUTURE PRODUCT
TO BE ANNOUNCED

TYPE TL084C
QUAD JFET-INPUT OPERATIONAL AMPLIFIER

JUNE 1976

- High Input Impedance – JFET Input Stage
- Continuous-Short-Circuit Protection
- Wide Common-Mode and Differential Voltage Ranges
- No Frequency Compensation Required
- Low Power Consumption
- No Latch-Up
- Gain and Phase Match Between Amplifiers
- High Slew Rate . . . 9 V/μs Typ

J OR N
DUAL-IN-LINE PACKAGE (TOP VIEW)



description

The TL084 is a monolithic quadruple JFET-input operational amplifier. The high slew rate, high input impedance, and low input bias and offset currents make this device excellent for high-speed analog applications. The output circuitry has been carefully balanced and symmetrically connected to minimize offset. This device is compatible with the LM324, MC3403, and HA4741 quadruple operational amplifier pinout.

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

Supply voltage, V_{CC+}	18 V
Supply voltage, V_{CC-}	−18 V
Input voltage	±15 V
Continuous total dissipation at (or below) 25°C free-air temperature	500 mW
Operating free-air temperature range	0°C to 70°C
Storage temperature range	−65°C to 150°C

electrical characteristics

		MIN	TYP	MAX	UNIT
Input offset voltage:	at 25°C		10	15	mV
	over temperature range			20	mV
Temperature coefficient of input offset voltage			10		μV/°C
Input offset current:	at 25°C		0.2	0.5	nA
	over temperature range			1	nA
Input bias current:	at 25°C		2	4	nA
	over temperature range			6	nA
Maximum peak to peak output voltage swing at 25°C		24	26		V
Large signal differential voltage amplification:	at 25°C	25	200		V/mV
	over temperature range	15			V/mV
Common-mode rejection ratio		70	90		dB
Supply voltage rejection ratio		70	80		dB
Supply current per amplifier			2	4	mA