



LH0061/LH0061C 0.5 Amp Wide Band Operational Amplifier

General Description

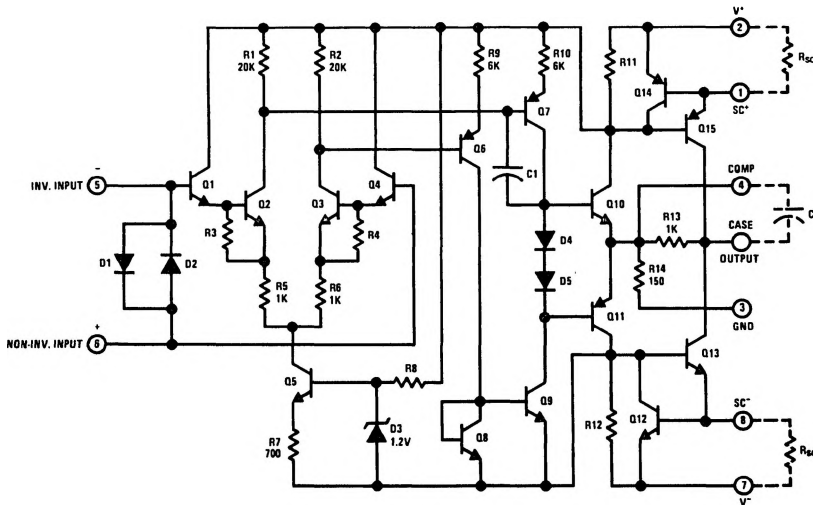
The LH0061/LH0061C is a wide band, high speed, operational amplifier capable of supplying currents in excess of 0.5 ampere at voltage levels of $\pm 12V$. Output short circuit protection is set by external resistors, and compensation is accomplished with a single external capacitor. With a suitable heat sink the device is rated at 20W.

The wide bandwidth and high output power capabilities of the LH0061/LH0061C make it ideal for such applications as AC servos, deflection yoke drivers, capstan drivers, and audio amplifiers. The LH0061 is guaranteed over the temperature range $-55^{\circ}C$ to $+125^{\circ}C$; whereas, the LH0061C is guaranteed from $-25^{\circ}C$ to $+85^{\circ}C$.

Features

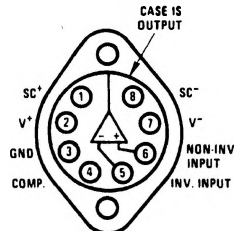
- Output current 0.5A
- Wide large signal bandwidth 1 MHz
- High slew rate 70V/ μs
- Low standby power 240 mW
- Low input current 300 nA Max

Schematic and Connection Diagrams



TL/K/6861-1

TO-3 Package



Top View

Order Number LH0061CK
See NS Package Number K08A

TL/K/6861-2

Absolute Maximum Ratings

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications. (Note 5)

Supply Voltage	±18V
Power Dissipation	See Curve
Differential Input Current (Note 2)	±10 mA
Input Voltage (Note 3)	±15V

Peak Output Current	2A
Output Short Circuit Duration (Note 4)	Continuous
Operating Temperature Range	
LH0061	-55°C to +125°C
LH0061C	-25°C to +85°C
Storage Temperature Range	-65°C to +150°C
Lead Temperature (Soldering, 10 sec.)	260°C
ESD rating to be determined.	

DC Electrical Characteristics (Note 1)

Parameter	Conditions	Limits						Units
		LH0061			LH0061C			
		Min	Typ	Max	Min	Typ	Max	
Input Offset Voltage	$R_S \leq 10 \text{ k}\Omega$, $T_C = 25^\circ\text{C}$, $V_S = \pm 15\text{V}$ $R_S \leq 10 \text{ k}\Omega$, $V_S = \pm 15\text{V}$		1.0	4.0 6.0		3.0	10 15	mV mV
Voltage Drift with Temperature	$R_S \leq 10 \text{ k}\Omega$		5			5		$\mu\text{V}/^\circ\text{C}$
Offset Voltage Change with Output Power			5			5		$\mu\text{V}/\text{watt}$
Input Offset Current	$T_C = 25^\circ\text{C}$		30	100 300		50	200 500	nA nA
Offset Current Drift with Temperature			1			1		$\text{nA}/^\circ\text{C}$
Input Bias Current	$T_C = 25^\circ\text{C}$		100	300 1.0		200	500 1.0	nA μA
Input Resistance	$T_C = 25^\circ\text{C}$	0.3	1.0		0.3	1.0		M Ω
Input Capacitance			3			3		pF
Common Mode Rejection Ratio	$R_S \leq 10 \text{ k}\Omega$, $\Delta V_{CM} = \pm 10\text{V}$	70	90		60	80		dB
Input Voltage Range	$V_S = \pm 15\text{V}$	±11			±11			V
Power Supply Rejection Ratio	$R_S \leq 10 \text{ k}\Omega$, $\Delta V_S = \pm 10\text{V}$	70	80		50	70		dB
Voltage Gain	$V_S = \pm 15\text{V}$, $V_O = \pm 10\text{V}$ $R_L = 1 \text{ k}\Omega$, $T_C = 25^\circ\text{C}$ $V_S = \pm 15\text{V}$, $V_O = \pm 10\text{V}$ $R_L = 20\Omega$	50	100		25	50		V/mV V/mV
Output Voltage Swing	$V_S = \pm 15\text{V}$, $R_L = 20\Omega$	±10	±12		±10	±12		V
Output Short Circuit Current	$V_S = \pm 15\text{V}$, $T_C = 25^\circ\text{C}$, $R_{SC} = 1.0\Omega$		600			600		mA
Power Supply Current	$V_S = \pm 15\text{V}$, $V_{OUT} = 0$		7	10		10	15	mA
Power Consumption	$V_S = \pm 15\text{V}$, $V_{OUT} = 0$		210	300		300	450	mW

AC Electrical Characteristics ($T_C = 25^\circ\text{C}$, $V_S = \pm 15\text{V}$, $C_C = 3000\text{ pF}$)

Parameter	Conditions	Limits						Units
		LH0061			LH0061C			
		Min	Typ	Max	Min	Typ	Max	
Slew Rate	$A_V = +1, R_L = 100\Omega$	25	70		25	70		$\text{V}/\mu\text{s}$
Power Bandwidth	$R_L = 100\Omega$		1			1		MHz
Small Signal Transient Response			30			30		ns
Small Signal Overshoot			5	20		10	30	%
Settling Time (0.1%)	$\Delta V_{IN} = 10\text{V}, A_V = +1$		0.8			0.8		μs
Overload Recovery Time			1			1		μs
Harmonic Distortion	$f = 1\text{ kHz}, P_O = 0.5\text{W}$		0.2			0.2		%

Note 1: Specifications apply for $\pm 5\text{V} \leq V_S \leq \pm 18\text{V}$, $C_C = 3000\text{ pF}$, and $-55^\circ\text{C} \leq T_C \leq +125^\circ\text{C}$ for the LH0061K and $-25^\circ\text{C} \leq T_C \leq +85^\circ\text{C}$ for the LH0061CK. Typical values are for $T_C = 25^\circ\text{C}$.

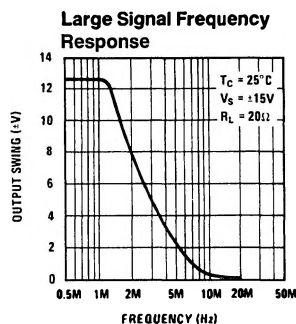
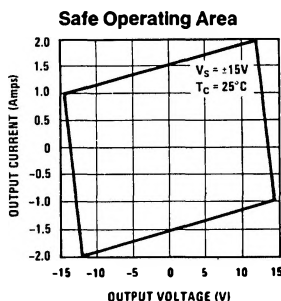
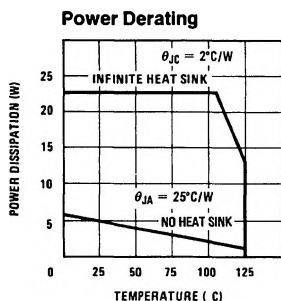
Note 2: The inputs are shunted with back-to-back diodes for overvoltage protection. Excessive current will flow if a differential voltage in excess of 1V is applied between the inputs without limiting resistors.

Note 3: For supply voltages less than $\pm 15\text{V}$, the absolute maximum input voltage is equal to the supply voltage.

Note 4: Rating applies as long as package power rating is not exceeded.

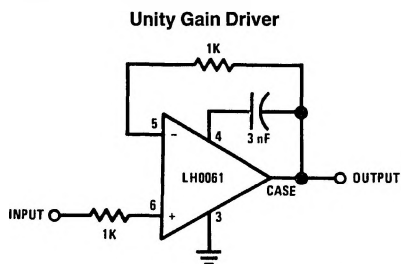
Note 5: Refer to RETS0061K for LH0061K military specifications.

Typical Performance Characteristics

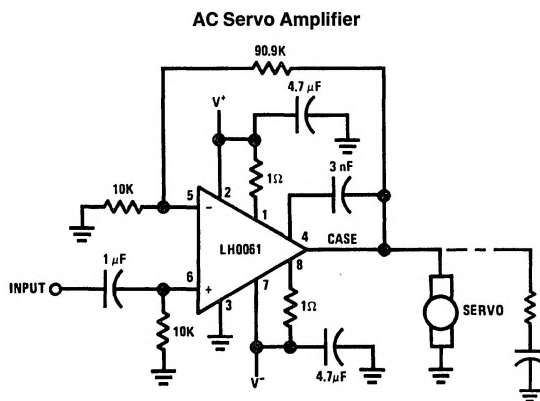


TL/K/6861-3

Typical Applications



TL/K/6861-4



TL/K/6861-5