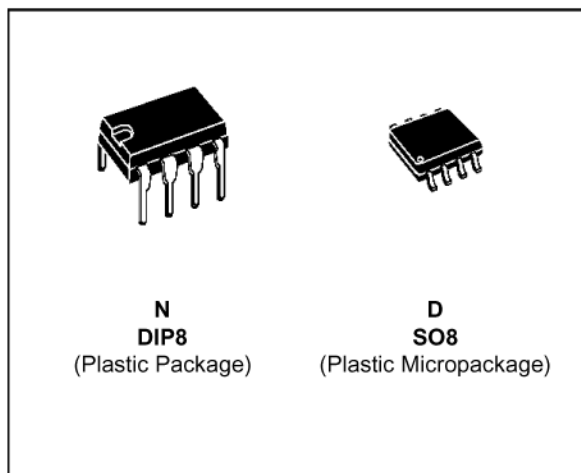


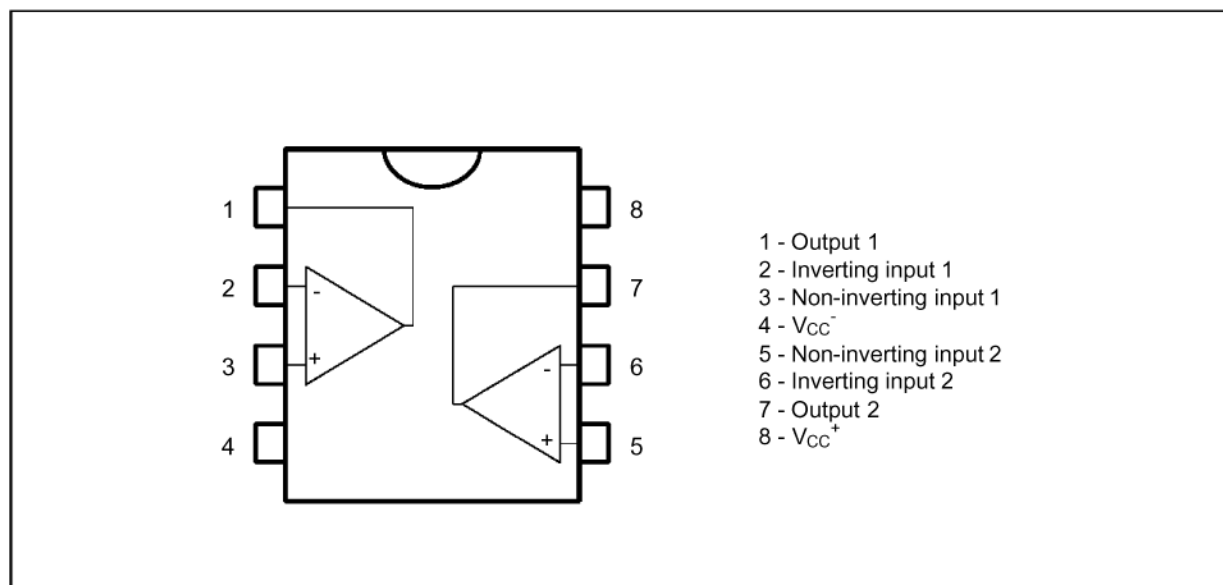
TL062

LOW POWER J-FET DUAL OPERATIONAL AMPLIFIER

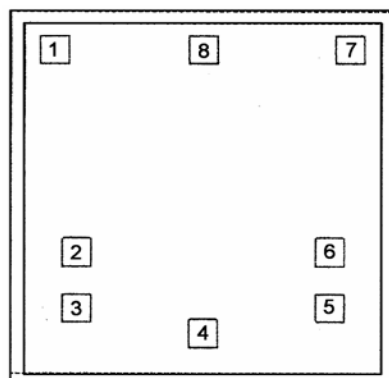
- VERY LOW POWER CONSUMPTION : 200 μ A
- WIDE COMMON-MODE (UP TO V_{CC}^+) AND DIFFERENTIAL VOLTAGE RANGES
- LOW INPUT BIAS AND OFFSET CURRENTS
- OUTPUT SHORT-CIRCUIT PROTECTION
- HIGH INPUT IMPEDANCE J-FET INPUT STAGE
- INTERNAL FREQUENCY COMPENSATION
- LATCH UP FREE OPERATION
- HIGH SLEW RATE : 3.5V/ μ s



PIN CONNECTIONS (top view)



PAD LOCATION

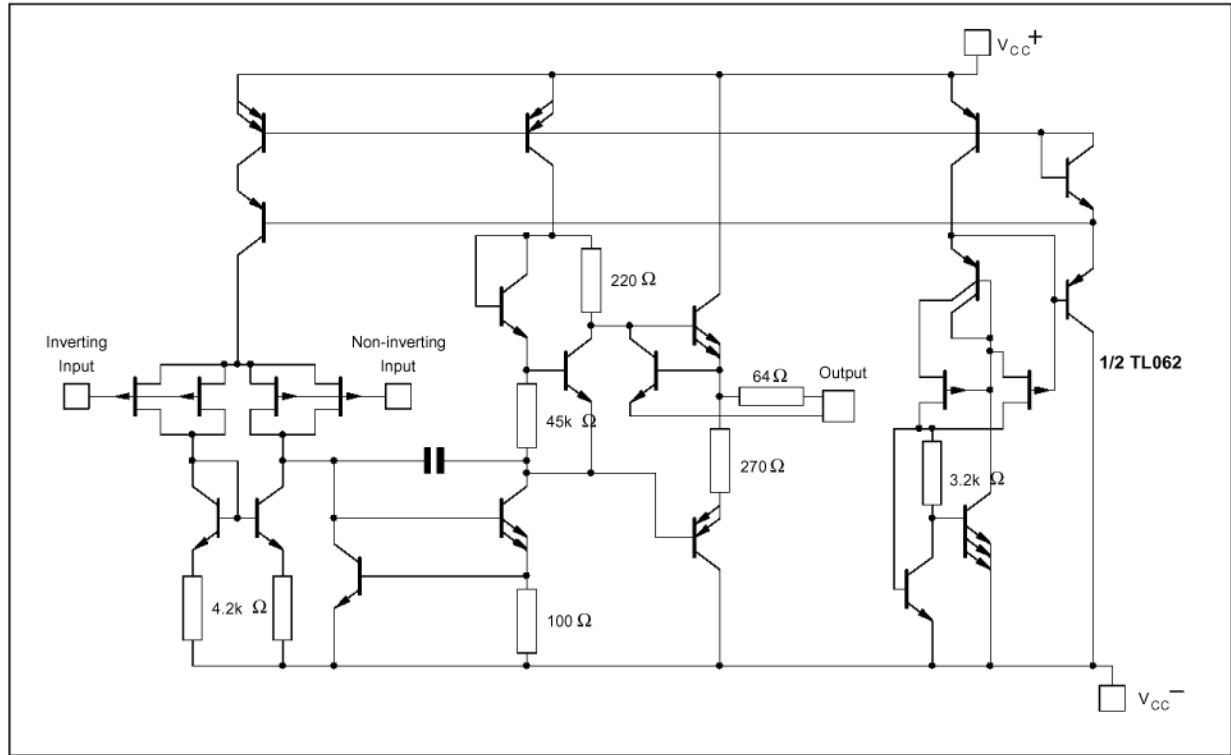


Die size 1.6x1.6 mm

Pad	Pad Name	X μ m	Y μ m
1	Output 1	180	1433
2	Inverting input 1	269	567
3	Non-inverting input 1	269	327
4	V_{CC}^-	800	220
5	Non-inverting input 2	1331	328
6	Inverting input 2	1331	566
7	Output 2	1420	1433
8	V_{CC}^+	800	1433

TL062

SCHEMATIC DIAGRAM



MAXIMUM RATINGS

Symbol	Parameter	TL062	Unit
V_{CC}	Supply Voltage - (note 1)	± 18	V
V_i	Input Voltage - (note 3)	± 15	V
V_{id}	Differential Input Voltage - (note 2)	± 30	V
P_{tot}	Power Dissipation	680	mW
	Output Short-Circuit Duration (Note 4)	Infinite	
T_{oper}	Operating Free-Air Temperature Range	0 to +70	$^{\circ}\text{C}$
T_{stg}	Storage Temperature Range	- 65 to + 150	$^{\circ}\text{C}$

- Notes :**
1. All voltage values, except differential voltage, 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 non-inverting 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 to either supply. Temperature and/or supply voltages must be limited to ensure that the dissipation rating is not exceeded.

TL062

ELECTRICAL CHARACTERISTICS

$V_{CC} = \pm 15V$, $T_{amb} = 25^{\circ}C$ (unless otherwise specified)

Symbol	Parameter	TL062			Unit
		Min.	Typ.	Max.	
V_{io}	Input Offset Voltage ($R_s = 50\Omega$) $T_{amb} = 25^{\circ}C$ $T_{min.} \leq T_{amb} \leq T_{max.}$		3	15 20	mV
DV_{io}	Temperature Coefficient of Input Offset Voltage ($R_s = 50\Omega$)		10		$\mu V/^{\circ}C$
I_{io}	Input Offset Current * $T_{amb} = 25^{\circ}C$ $T_{min.} \leq T_{amb} \leq T_{max.}$		5	200 5	pA nA
I_{ib}	Input Bias Current * $T_{amb} = 25^{\circ}C$ $T_{min.} \leq T_{amb} \leq T_{max.}$		30	400 10	pA nA
V_{icm}	Input Common Mode Voltage Range	± 11	+15 -12		V
V_{OPP}	Output Voltage Swing ($R_L = 10k\Omega$) $T_{amb} = 25^{\circ}C$ $T_{min.} \leq T_{amb} \leq T_{max.}$	20 20	27		V
A_{vd}	Large Signal Voltage Gain ($R_L = 10k\Omega$, $V_o = \pm 10V$) $T_{amb} = 25^{\circ}C$ $T_{min.} \leq T_{amb} \leq T_{max.}$	3 3	6		V/mV
GBP	Gain Bandwidth Product ($T_{amb} = 25^{\circ}C$, $R_L = 10k\Omega$ $C_L = 100pF$)		1		MHz
R_i	Input Resistance		10^{12}		Ω
CMR	Common Mode Rejection Ratio ($R_s = 50\Omega$)	70	76		dB
SVR	Supply Voltage Rejection Ratio ($R_s = 50\Omega$)	70	95		dB
I_{cc}	Supply Current (Per Amplifier) ($T_{amb} = 25^{\circ}C$, no load, no signal)		200	250	μA
V_{O1}/V_{O2}	Channel Separation ($A_v = 100$, $T_{amb} = 25^{\circ}C$)		120		dB
P_D	Total Power Consumption (Each Amplifier) ($T_{amb} = 25^{\circ}C$, no load, no signal)		6	7.5	mW

* 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 temperature as close to the ambient temperature as possible.

ELECTRICAL CHARACTERISTICS (continued)

$V_{CC} = \pm 15V$, $T_{amb} = 25^{\circ}C$

Symbol	Parameter	TL062			Unit
		Min.	Typ.	Max.	
SR	Slew Rate ($V_i = 10V$, $R_L = 10k\Omega$, $C_L = 100pF$, $A_v = 1$)	1.5	3.5		V/ μs
t_r	Rise Time ($V_i = 20mV$, $R_L = 10k\Omega$, $C_L = 100pF$, $A_v = 1$)		0.2		μs
K_{OV}	Overshoot Factor ($V_i = 20mV$, $R_L = 10k\Omega$, $C_L = 100pF$, $A_v = 1$) (see figure 1)		10		%
e_n	Equivalent Input Noise Voltage ($R_s = 100\Omega$, $f = 1KHz$)		42		$\frac{nV}{\sqrt{Hz}}$