

GENERAL PURPOSE DUAL J-FET OPERATIONAL AMPLIFIER

■ Description

The TTESEMI TL062 is a high speed J-FET input dual operational amplifier. It incorporates well matched, high voltage J-FET and bipolar transistors in a monolithic integrated circuit. The device features high slew rates, low input bias and offset current, and low offset voltage temperature coefficient.

■ Features

- * Low input bias and offset current
- * Wide common-mode (up to V_{CC}^+) and differential voltage range
- * Output short-circuit protection
- * High input impedance J-FET input stage
- * Internal frequency compensation
- * Latch up free operation, and very low power consumption
- * Typical supply current: $400\mu A$

■ Applications

- White Goods (Refrigerators, Washing Machines)
- Hand-held Monitoring Systems
- Configuration Control and Print Support
- Transducer Interfaces
- Battery-Powered Applications

■ Functional Block Diagram

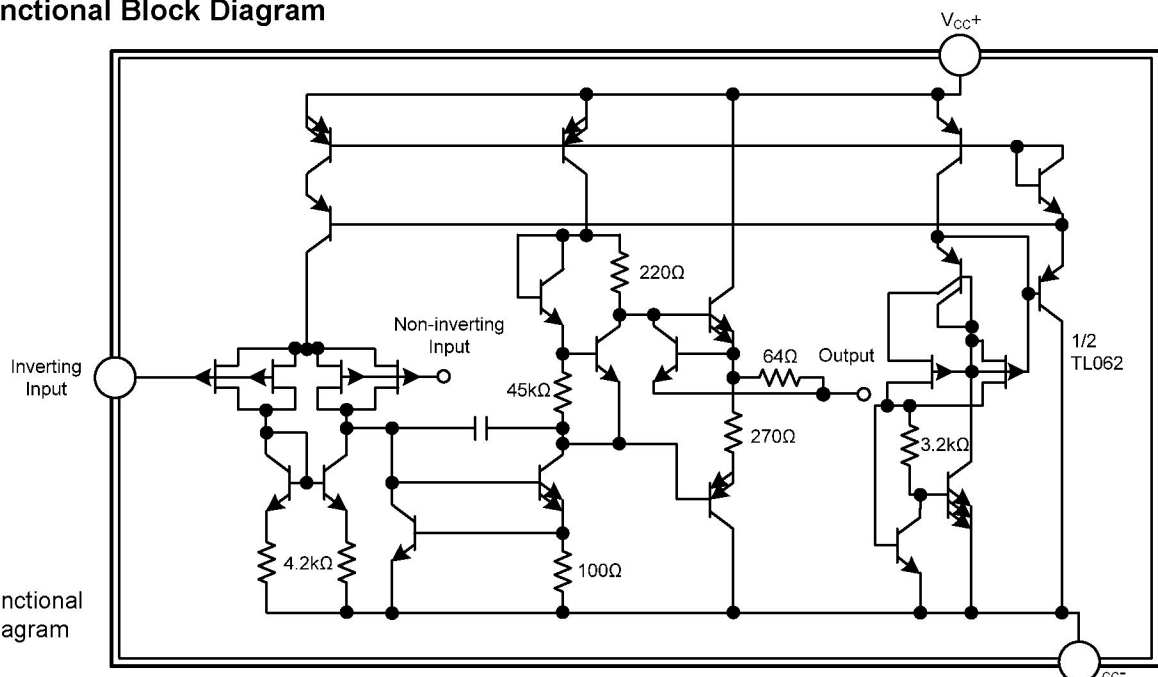


Fig1. Functional Block Diagram

Ordering Information

Part Number	Package	Packing	Temperature(TA)	Package Qty	Remark
TLC062CDR	SOIC-8	Reel	0°C~70°C	2500	
TLC062IDR	SOIC-8	Reel	-40°C~85°C	2500	

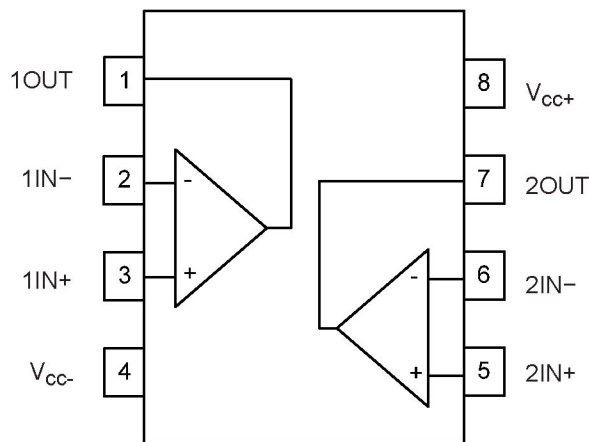
Pin Assignment


Fig2. SOIC-8 Package

Pin Description

NAME	PIN	I/O	DESCRIPTION
1IN+	3	I	Non-inverting input, Channel 1
1IN-	2	I	Inverting input, Channel 1
1OUT	1	O	Output, Channel 1
2IN+	5	I	Non-inverting input, Channel 2
2IN-	6	I	Inverting input, Channel 2
2OUT	7	O	Output, Channel 2
V _{cc+}	8	—	Positive (highest) supply
V _{cc-}	4	—	Negative (lowest) supply

■ ABSOLUTE MAXIMUM RATINGS

(TA=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage (Note 2)		V _{CC}	±18	V
Input Voltage (Note 3)		V _{IN}	±15	V
Differential Input Voltage (Note 4)		V _{ID}	±30	V
Power Dissipation	SOP-8	P _D	440	mW
Output Short-Circuit Duration (Note 5)			Infinite	
Operating Temperature		T _{OPR}	0 ~ +70	°C
Storage Temperature Range		T _{STG}	-65 ~ +150	°C

- Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2. 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+}.
3. The magnitude of the input voltage must never exceed the magnitude of the supply voltage or 15 volts, whichever is less.
4. Differential voltages are at the non-inverting input terminal with respect to the inverting input terminal.
5. 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.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOP-8	θ _{JA}	125	°C/W
Junction to Case	SOP-8	θ _{JC}	40	°C/W

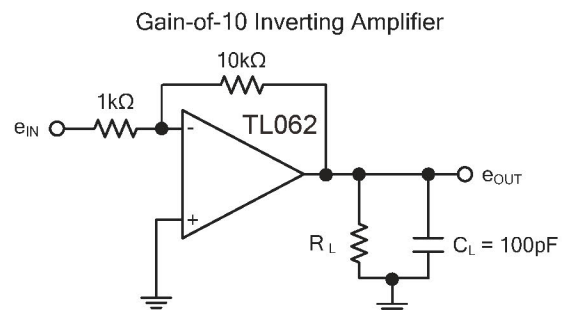
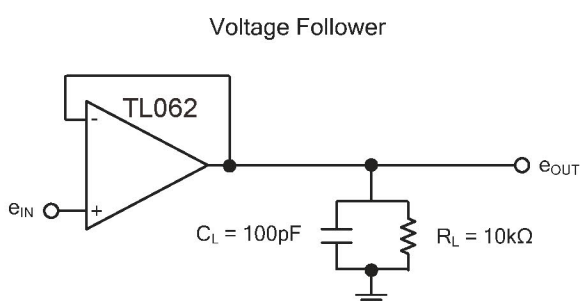
■ Electrical Characteristics

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

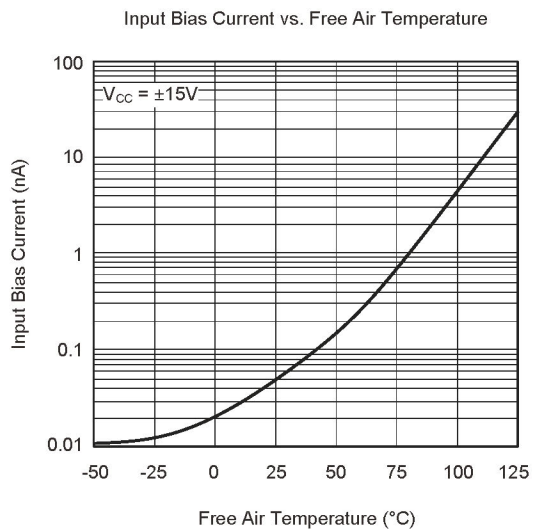
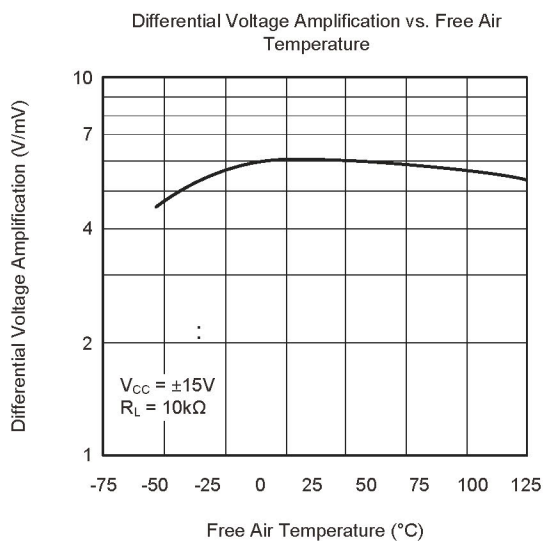
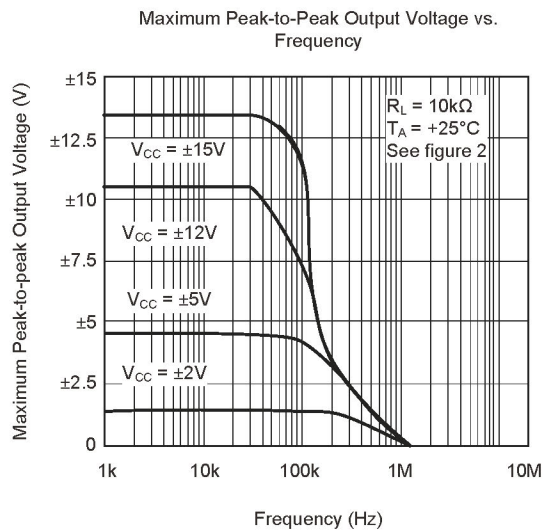
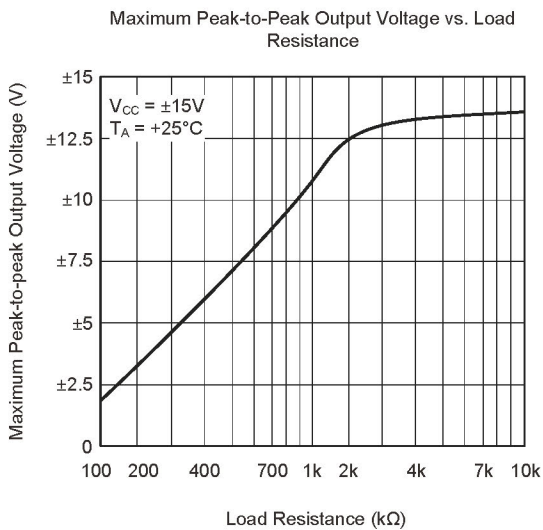
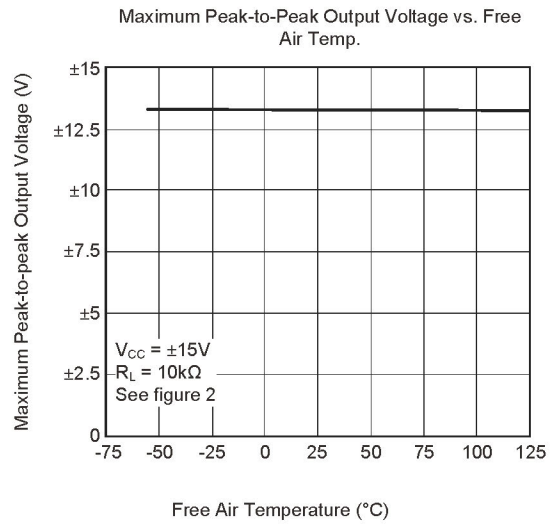
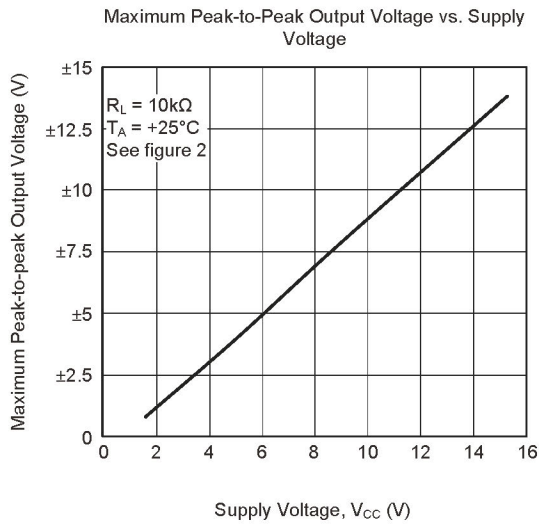
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Input Offset Voltage	$V_{I(OFF)}$	$R_S=50\Omega$	$T_A=25^\circ C$		3	15	mV
			$T_{MIN} \leq T_A \leq T_{MAX}$			20	mV
Input Common Mode Voltage	$V_{I(CM)}$		± 11	-12~+15		V	
Output Voltage Swing	$V_{O(SW)}$	$R_L=10k\Omega$, $C_L=100pF$	$T_A=25^\circ C$	± 10	± 13.5		V
			$T_{MIN} \leq T_A \leq T_{MAX}$	± 10			V
Large Signal Voltage Gain	G_V	$R_L=10\Omega$, $V_{OUT}=\pm 10V$	$T_A=25^\circ C$	3	6		V/mV
			$T_{MIN} \leq T_A \leq T_{MAX}$	3			V/mV
Temperature Coefficient of Input Offset Voltage	$\Delta V_{I(OFF)}$	$R_S=50\Omega$		10		$\mu V/^\circ C$	
Supply Current	I_{CC}	$T_A=25^\circ C$, no load, no signal		400	500	μA	
Input Offset Current*	$I_{I(OFF)}$	$T_A=25^\circ C$		5	200	pA	
		$T_{MIN} \leq T_A \leq T_{MAX}$			5	nA	
Input Bias Current*	$I_{I(BIAS)}$	$T_A=25^\circ C$		30	400	pA	
		$T_{MIN} \leq T_A \leq T_{MAX}$			10	nA	
Gain Bandwidth Product	GB_W	$T_A=25^\circ C$, $R_L=10k\Omega$, $C_L=100pF$		1		MHz	
Input Resistance	R_{IN}			10^{12}		Ω	
Common Mode Rejection Ratio	CMR	$R_S=50\Omega$	70	76		dB	
Supply Voltage Rejection Ratio	SVR	$R_S=50\Omega$	70	95		dB	
Slew Rate	SR	$V_{IN}=10V$, $R_L=10k\Omega$, $C_L=100pF$, $G_V=1$	0.91	1.1		V/ μs	
Channel Separation	$\frac{V_{O1}}{V_{O2}}$	$G_V=100$, $T_A=25^\circ C$		120		dB	
Total Power Consumption		$T_A=25^\circ C$, no load, no signal		6	7.5	mW	
Rise Time	t_R	$V_{IN}=20mV$, $R_L=10k\Omega$, $C_L=100pF$, $G_V=1$		0.2		μs	
Overshoot Factor	K_{OV}	$V_{IN}=20mV$, $R_L=10k\Omega$, $C_L=100pF$, $G_V=1$		10		%	
Equivalent Input Noise Voltage	eN	$R_S=100\Omega$, $f=1KHz$		42			

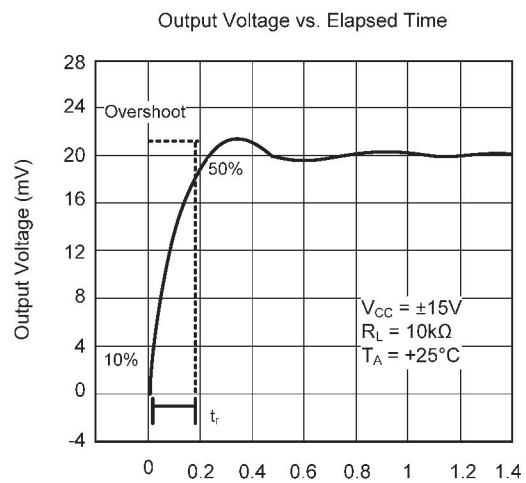
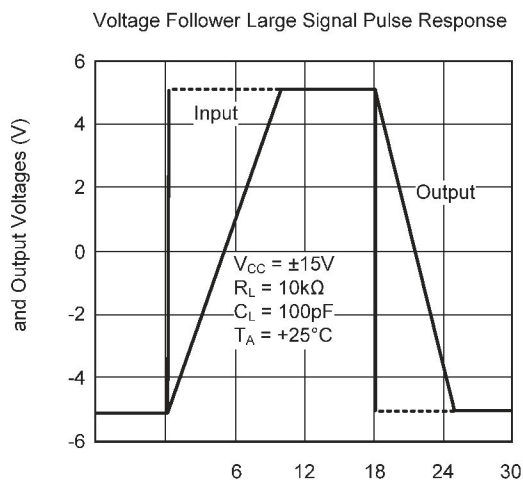
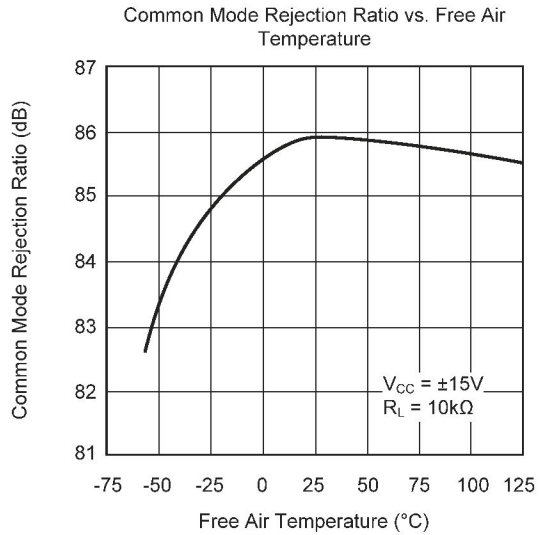
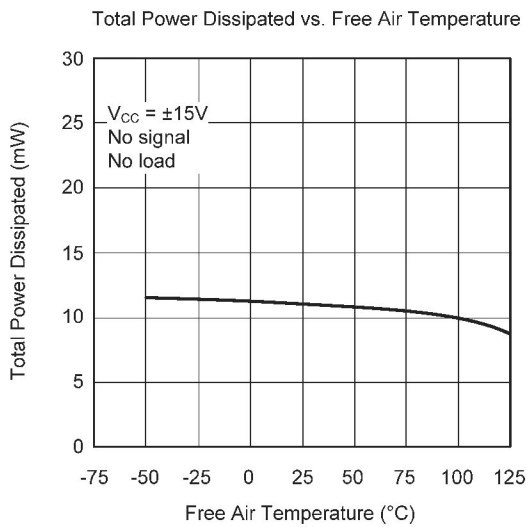
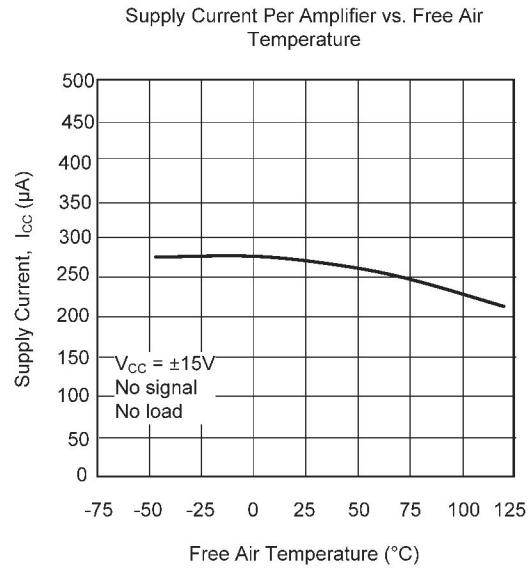
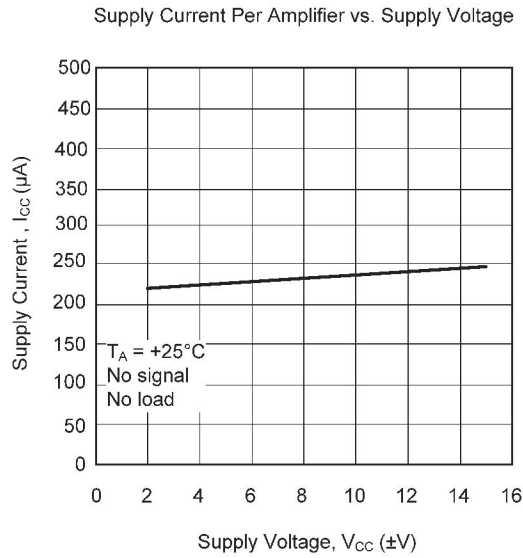
Note: The Input bias currents of a FET-input operational amplifier are normal junction reverse currents, which are temperature sensitive. Pulse techniques must be used that will maintain the junction temperature as close to the ambient temperature as possible.

■ PARAMETER MEASUREMENT INFORMATION



■ **TYPICAL CHARACTERISTICS**



■ TYPICAL CHARACTERISTICS (Cont.)


PACKAGE OUTLINE SOIC - 8, 1.75 mm max height

