



LinearDimensions
SEMICONDUCTOR

LND358

Dual Operational Amplifiers

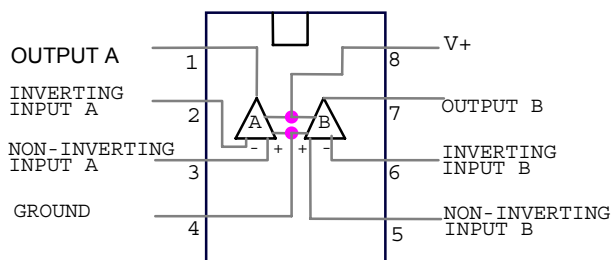
GENERAL DESCRIPTION

The LND358 consists of two independent, high gain, internally frequency compensated operational amplifiers. They were designed specifically to operate from a single power supply over a wide range of voltages. Operation from split power supplies is also possible and the low power supply current drain is independent of the magnitude of the power supply voltages.

Application areas include transducer amplifiers, DC gain blocks and all the conventional op amp circuits, which now can be more easily implemented in single power supply systems.

The LND358 is available in an 8pin DIP/SO package.

PIN CONFIGURATION



FEATURES

- Wide power supply range: (Single supply: 5V to 30V)(Dual supplies: $\pm 2.5V$ to $\pm 15V$)
- Very low supply current drain ($700\mu A$) independent of supply voltage.
- Input common-mode voltage range includes ground
- Available in 8 pin SO/ Dip package
- Internally frequency compensated for unity gain
- Large DC voltage gain(100dB)
- Wide bandwidth(unity gain)- 1MHz(temperature compensated)

ADVANTAGES

- Two internally compensated op amps
- Eliminates need for dual supplies
- Allows direct sensing near GND and V_{out} also goes to GND
- Compatible with all forms of logic
- Power drain suitable for battery operation
- Application areas: transducer amplifiers, dc gain blocks and all the conventional op amp circuits



ELECTRICAL CHARACTERISTICS

(at specified free-air temperature, $V_{CC}=5V$ (unless otherwise noted))

PARAMETER	TEST CONDITIONS*	LM358			UNIT	
		MIN	TYP	MAX		
V_{IO} Input offset voltage	$V_{CC}=5V$ to MAX $V_{IC}=V_{ICR}$ min, $V_O=1.4V$	25°C	3	7	mV	
		Full range		9		
αV_{IO} Average temperature coefficient of input offset voltage		Full range	7		$\mu V/^\circ C$	
I_{IO} Input offset current	$V_O=1.4V$	25°C	2	50	nA	
		Full range		150		
αI_{IO} Average temperature coefficient of input offset current		Full range	10		$pA/^\circ C$	
I_{IB} Input bias current	$V_O=1.4 V$	25°C	-20	-250	nA	
		Full range		-500		
V_{ICR} Common-mode input voltage range	$V_{CC}=5V$ to Max	25°C	0	$V_{CC} - 1.5$	V	
		Full range	0	$V_{CC} - 2$		
V_{OH} High-level output voltage	$R_L \geq K\Omega$	25°C		$V_{CC} - 1.5$	V	
	$V_{CC}=MAX, R_L=2k\Omega$	Full range	26			
	$V_{CC}=MAX, R_L \geq 10k\Omega$	Full Range	27	28		
V_{OL} Low-Level output voltage	$R_L \geq 10k\Omega$	Full range		5	20	mV
A_{VD} Large-Signal differential voltage amplification	$V_{CC} = 15V$ $V_O=1V$ to 11V, $R_L \geq 2k\Omega$	25°C	25	100	V/mV	
		Full range	15			
CMRR Common-mode rejection ratio	$V_{CC}=5V$ to MAX, $V_{IC} = V_{ICR}$ min	25°C	65	80	dB	
k_{SVR} Supply voltage rejection ratio ($\Delta V_{CC}/\Delta V_{IO}$)	$V_{CC} = 5V$ to MAX	25°C	65	100	dB	
V_{O1}/V_{O2} Crosstalk attention	$f=1kHz$ to 20 kHz	25°C		120	dB	

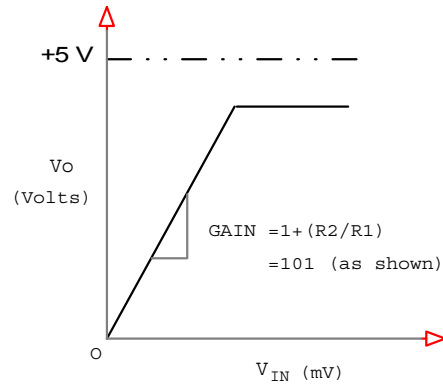
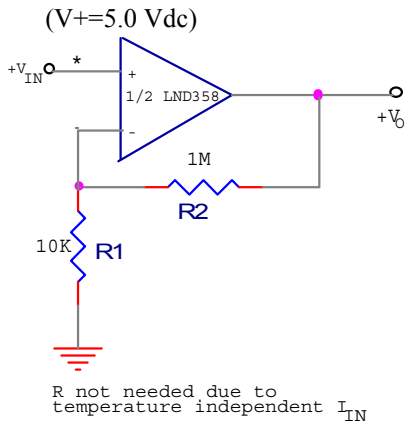


ELECTRICAL CHARACTERISTICS (continued)

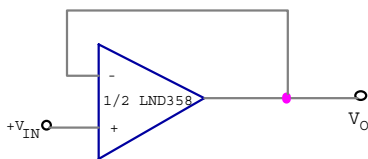
PARAMETER	TEST CONDITIONS*	LM358			UNIT	
		MIN	TYP	MAX		
I _o Output Current	V _{CC} =15V, V _{ID} =1V, V _O =0	25°	-20	-30	mA	
		Full Range	-10			
	V _{CC} =15V, V _{ID} =-1V, V _O =15V	25°	10	20		
		Full Range	5			
	V _{ID} =-1V, V _O =200mV	25°C	12	30	μA	
I _{OS} Short-circuit output current	V _{CC} at 5V, GND at -5V, V _O =0	25°C		±40	±60	mA
I _{CC} Supply current (two amplifiers)	V _O =2.5V, No load	Full Range		0.7	1.2	mA
	V _{CC} =MAX, V _O =0.5V _{CC} , No load	Full Range		1	2	

* All characteristics are measured under open-loop conditions with zero common-mode input voltage unless otherwise specified. MAX V_{CC} for testing purpose is 30V. Full range is 0 °C to 70°C

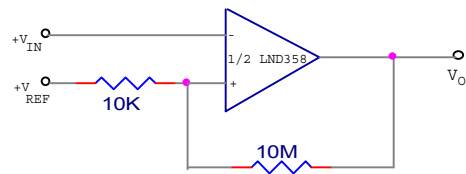
SOME TYPICAL APPLICATIONS



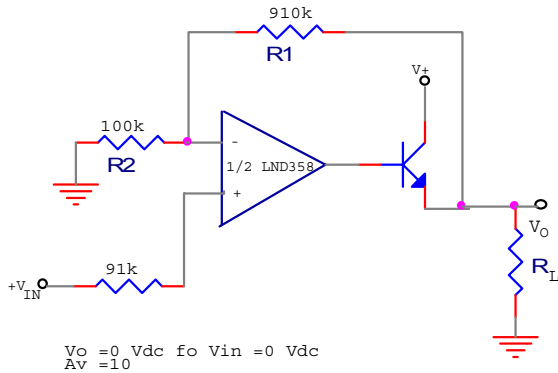
Non- Inverting DC Gain (0V Output)



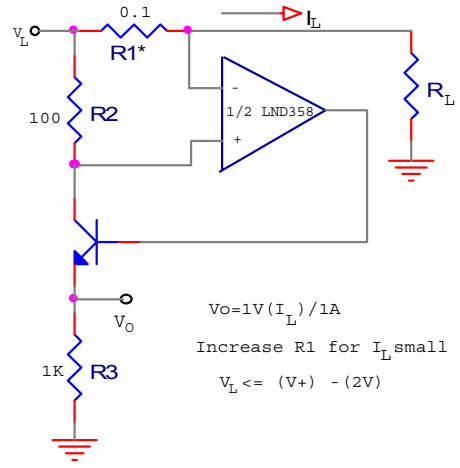
VOLTAGE FOLLOWER



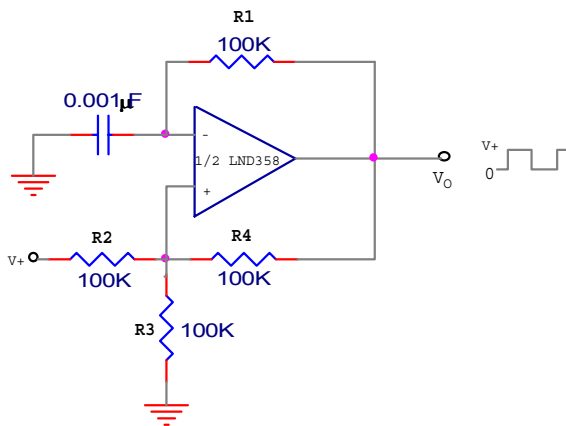
COMPARATOR WITH HYSTERESIS



POWER AMPLIFIER



CURRENT MONITOR



SQUAREWAVE OSCILLATOR

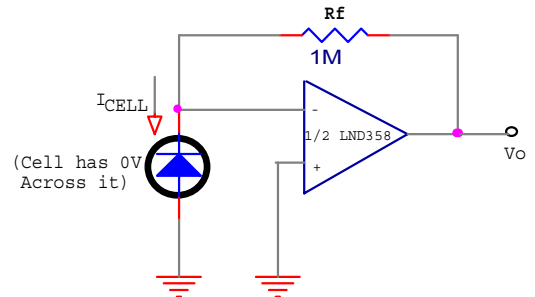
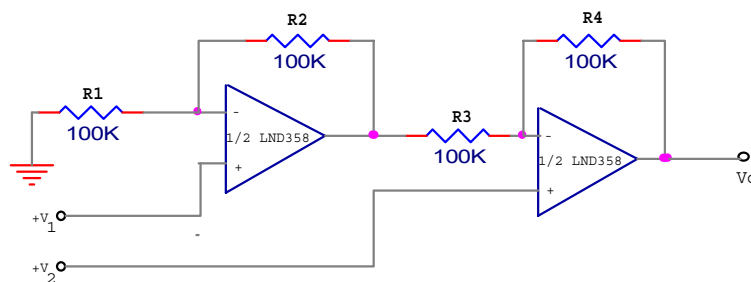
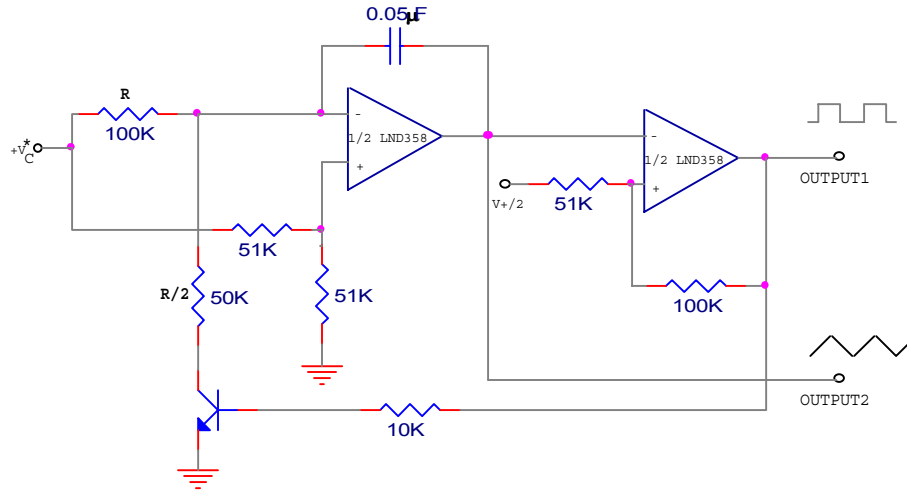


PHOTO VOLTAIC-CELL AMPLIFIER



HIGH INPUT Z, DC DIFFERENTIAL AMPLIFIER



* Wide Control Voltage Range : $0 \text{ Vdc} \leq V_c \leq (2 V^+ - 1.5 \text{ Vdc})$

VOLTAGE CONTROLLED OSCILLATOR