Description

The LM358 contains two independent high gain operational amplifiers with internal compensation.

The two op-amps operate over a wide voltage range from a single power supply.Also use a split power supply.

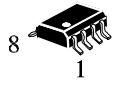
The device has low power supply voltage.The low power drain also makes the LM358 a good choice for battery operation.

When your project calls for a traditional op-amp function,now you can streanline your design with a simple any digital system or personal computer application,without requiring an extra 15V power supply just to have the interface electronics you need.

The LM358 is a versatile,rugged workhorse with a thousand-and-one use,from amplifying signals from a variety of transducers to dcgain blocks,,or any op-amp function.The attached pages offer some recipes rhat will have your project cooking in no time.

Features

- Internally frequency compensated for unity gain
- Large DC voltage gain:100dB Wide power supply range: 3V ~ 32V (or ±1.5V ~ ±16V)
- Input common-mode voltage range includes ground
- Large output voltage swing:0V DC to Vcc-1,5V DC
- Power drain suitable for battery operation
- Differential inpit voltage range equal to the power supply
- Low input offset voltage and offset current



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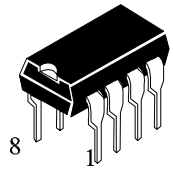

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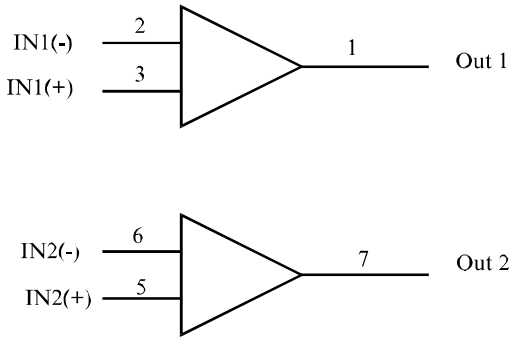
Package

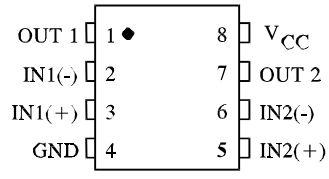
Internal Block Digram

Logic Diagram



PIN 4 = GND
PIN 8=V cc

Pin Assinment



Electrical Characteristics

at specified free-air temperature, Vcc = 5 V (unless otherwise noted)

Symbol	Parameter	Test conditions*		LM358			Units
				Min	Typ	Max	
V_{IO}	Input offset voltage	Vcc = 5 V to MAX, $V_{IC} = V_{ICR}$ min, Vo=1.4 V	25 °C		3	7	mV
			Full range			9	
αV_{IO}	Average temperature coefficient of input offset voltage		Full range		7		µV/°C
I_{IO}	Input offset current	Vo=1.4 V	25 °C		2	50	nA
			Full range			150	
αIIO	Average temperature coefficient of input offset current		Full range		10		pA/°C
I_{IB}	Input bias current	Vo=1.4 V	25 °C		-20	-250	nA
			Full range			-500	
V_{ICR}	Common-mode input voltage range	Vcc = 5 V to MAX	25° C	0 to Vcc-1.5			V
			Full range	0 to Vcc - 2			
V_{OH}	High-level output voltage	R_L ≥2 kΩ	25 °C	Vcc-1.5			V
		Vcc = MAX, R_L=2 kΩ	Full range	26			
		Vcc = MAX, R_L ≥ 10 kΩ	Full range	27	28		
	V_{OL} Low-level output voltage	R_L ≥ 10 kΩ	Full range		5	20	mV
A_{VD}	Large-signal differential voltage amplification	Vcc = 15 V, Vo=1V to 11 V, R_L ≥ 2 kΩ	25 °C	25	100		V/mV
			Full range	15			
CMRR	Common-mode rejection ratio	Vcc = 5 V to MAX, $V_{IC} = V_{ICR}$ min	25 °C	65	80		dB
k_{SVR}	Supply voltage rejection ratio ($\Delta Vcc/\Delta V_{IO}$)	Vcc = 5 V to MAX	25 °C	65	100		dB
Vo1 /Vo2	Crosstalk attenuation	f=1 kHz to 20 kHz	25 °C		120		dB
Io	Output current	Vcc = 15 V, V_{ID}=1 V, V_O= 0	25 °C	-20	-30		mA
			Full range	-10			
		Vcc = 15 V, V_{ID} = - 1 V, Vo = 15 V	25 °C	10	20		
			Full range	5			
		V_{ID} = - 1 V, Vo =200 mV	25 °C	12	30		µA
I_{OS}	Short-circuit output current	Vcc at 5 V, GND at -5 V,Vo=0	25 °C		±40	±60	mA
I_{CC}	Supply current (two amplifiers)	Vo - 2.5 V, No load	Full range		0.7	1.2	mA
		Vcc = MAX, Vo = 0.5Vcc, 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 purposes is 30 V. Full range is 0 °C to 70 °C.

Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_{CC}	Power Supply Voltages Single Supply Split Supplies	 32 ±16	V
V_{IDR}	Input Differential Voltage Range (1)	±32	V
V_{ICR}	Input Common Mode Voltage Range	-0.3 to 32	V
t_S	Short-Circuit duration of Output	100	ms
I_{IN}	Input Current, per pin (2)	50	mA
T_J	Junction Temperature Plastic Packages	150	°C
Tstg	Storage Temperature (T_A= +25ºC) Plastic Packages	-55 to +125	°C
T_L	Lead Temperature, 1mm from Case for 10 Seconds	260	°C

Maximum Ratings are those values beyond which damage to the device may occur.
Functional operation should be restricted to the Recommended Operating Conditions.
Notes:

1. Split Power Supplies.
2. V_{IN} <-0.3V. This input current will only exist when voltage at any of the input leads is driven negative.

Typcal Peformance Characteristics

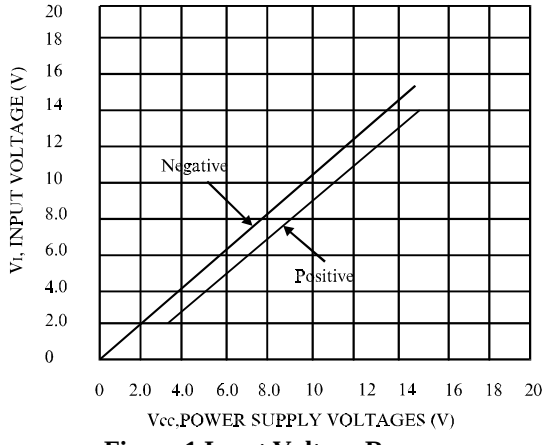


Figure 1.Input Voltage Range

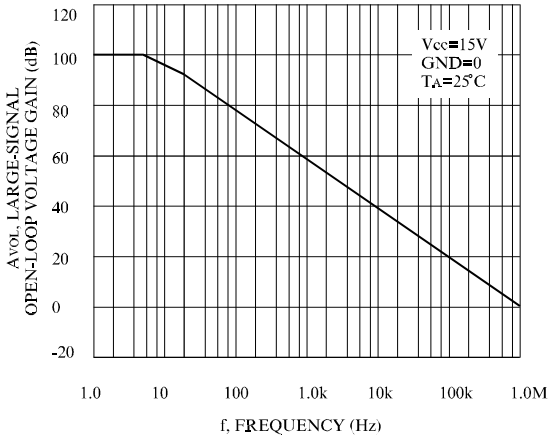


Figure 2. Open-Loop Frequency

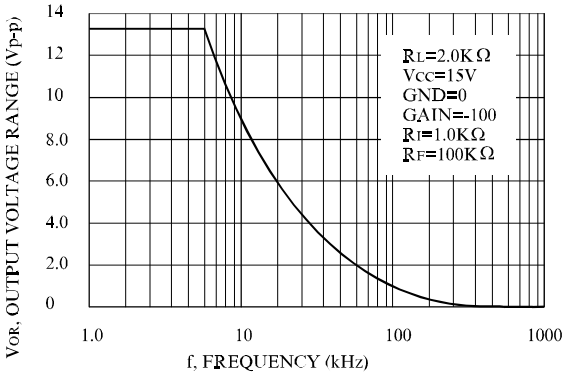


Figure 3. Large-Signal Frequency Response

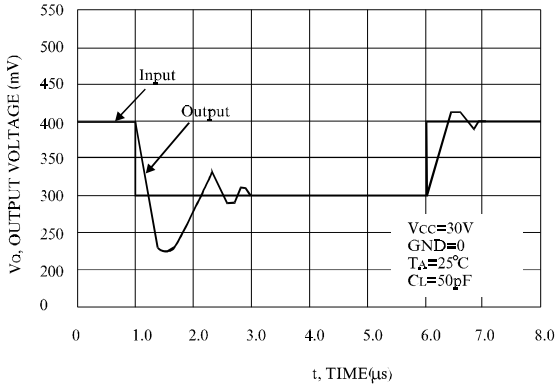


Figure 4. Small-Signal Voltage Follower Pulse Response (Noninverting)

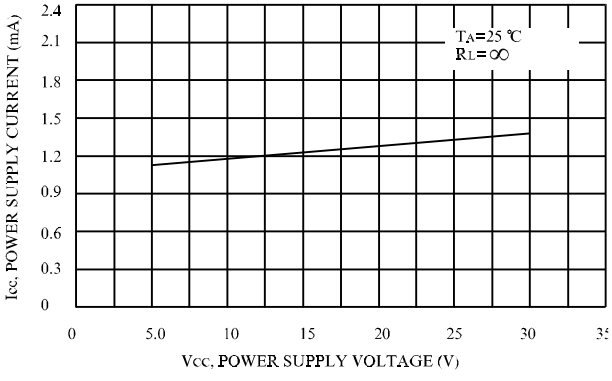


Figure 5. Power Supply Current versus Powe r

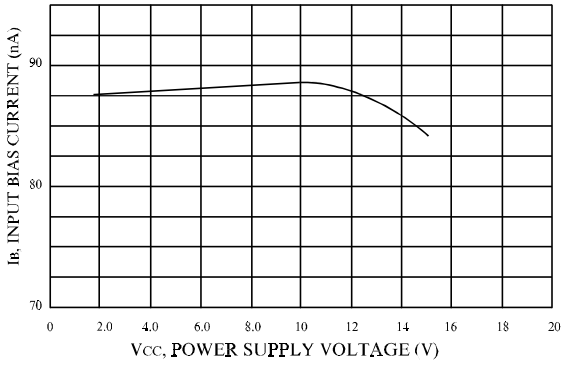


Figure 6. Input Bias Current versus Power Supply Voltage

Ordering Information

ORDERING NUMB	PACKAGE	MARKING
LM358	DIP - 8 / SOP - 8	LM358

Address：北京市海淀区永定路 88 号长银大厦 6A06--6A07

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