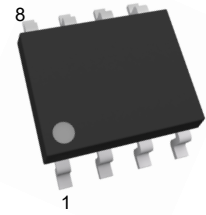


Description

The LM358 consists of two independent and high-gain operational amplifier . It can work under single power supply or dual power supply, and the magnitude of current is not affected by the magnitude of the power supply voltage. Its applications include audio amplifiers, industrial controls, DC gain and all conventional operational amplifier circuit.

The LM358 available in SOP-8 package.

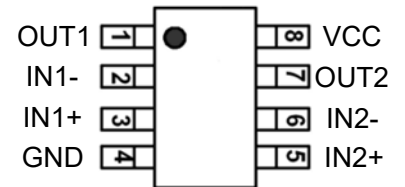
SOP-8



Feature

- Can work under single supply or dual supply
- Including two operational amplifiers
- Logical circuit matching
- Low power dissipation
- Wide frequency range

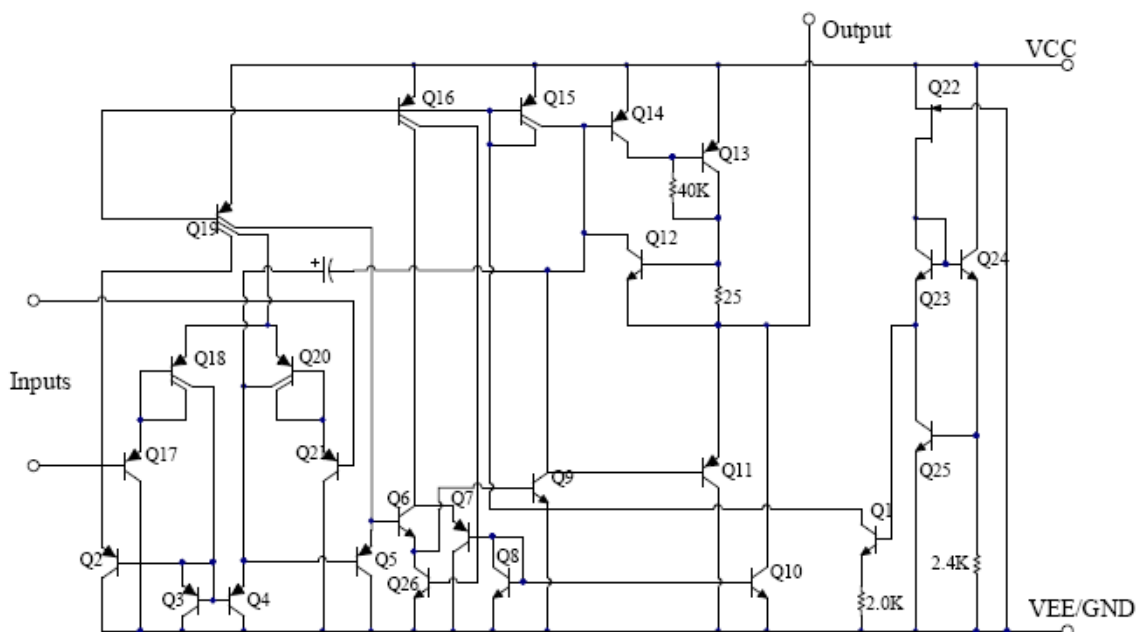
Pin Assignment



Pin Function

Pin No.	Symbol	Function	Pin No.	Symbol	Function
1	OUT1	The output of the first operational amplifier	5	IN2+	The non-inverting input of the second operational amplifier
2	IN1-	The inverting input of the first operational amplifier	6	IN2-	The inverting input of the second operational amplifier
3	IN1+	The non-inverting input of the first operational amplifier	7	OUT2	The output of the second operational amplifier
4	GND	ground	8	VCC	the power supply

Block Diagram



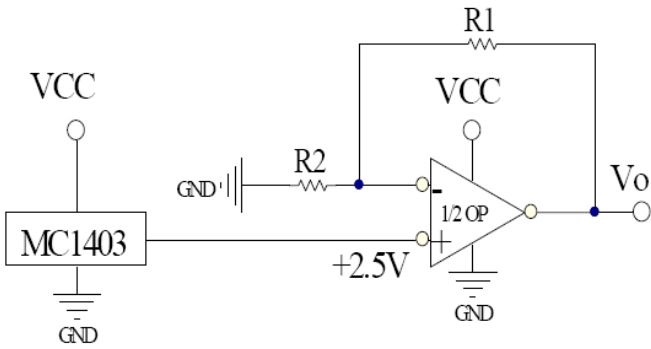
Absolute Maximum Ratings (at $T_A = 25^\circ\text{C}$)

Parameter	Symbol	Value	Unit
Supply Voltage	V_{CC}	± 16	V
		32	
Differential Input Voltage	$V_{I(DIFF)}$	32	V
Common-mode Input Voltage	V_{ICR}	-0.3~32	V
Short-circuit Output Current to Ground (Each channel amplifier, $V \leq 15V$)	I_{OG}	Continuous	--
Input Current ($V_{IN} \leq 0.3V$)	I_{IN}	50	mA
Junction Temperature	T_J	150	$^\circ\text{C}$
Maximum Power Dissipation	P_D	530	mW
Operating Temperature Range	T_{OPR}	0~70	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-65~150	$^\circ\text{C}$

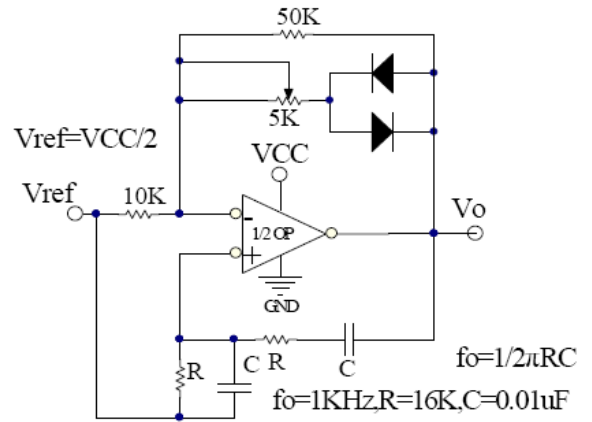

Electrical Characteristics
 $T_a = 25^\circ\text{C}$, $V_{CC}=5\text{V}$, unless otherwise noted

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Input offset voltage	V_{OS}	$T_a=25^\circ\text{C}$	--	± 2	± 5	mV
Input offset current	I_{OS}	$T_a=25^\circ\text{C}$, $I_{IN(-)} \text{ or } I_{IN(+)}$, $V_{CM}=0\text{V}$	--	± 3	± 50	nA
Low input bias current	I_B	$T_a=25^\circ\text{C}$, $I_{IN(-)} - I_{IN(+)}$, $V_{CM}=0\text{V}$	--	± 45	± 250	nA
Common-mode input voltage rang	V_{CM}	$T_a=25^\circ\text{C}$, $V^+=30\text{V}$	0	--	$V_{CC}-1.5$	V
Large-signal differential voltage amplification	A_{VD}	$R_L \geq 2\text{K}\Omega$, $V_{CC}=15\text{V}$, ($V_O=1\sim 11\text{V}$)	25	100	--	V/mV
Common mode rejection	CMRR	DC, $V_{CM}=0\sim V_{CC}-1.5\text{V}$	65	90	--	dB
Power supply rejection	PSRR	DC, $V_{CC}=5\sim 30\text{V}$	65	100	--	dB
Output sink current	I_{SINK}	$V_{IN(-)} = 1\text{V}$, $V_{IN(+)} = 0\text{V}$, $V_{CC}=15\text{V}$, $V_O=2\text{V}$	10	15	--	mA
		$V_{IN(-)} = 1\text{V}$, $V_{IN(+)} = 0\text{V}$, $V_{CC}=15\text{V}$, $V_O=0.2\text{V}$	12	20	--	μA
Output Current Sourcing	I_{SOURCE}	$V_{IN(+)} = 1\text{V}$, $V_{IN(-)} = 0\text{V}$, $V_{CC}=15\text{V}$, $V_O=2\text{V}$	20	40	--	mA
Short-circuit current to ground	I_G	$V_{CC}=15\text{V}$	--	40	60	mA
Supply current	I_{CC}	$R_L = \infty$, $V_{CC}=5\text{V}$	--	0.5	1.2	mA
		$R_L = \infty$, $V_{CC}=30\text{V}$	--	1	2	
Output voltage swing	V_{OH}	$V_{CC}=30\text{V}$, $R_L=2\text{K}\Omega$	26	--	--	V
		$V_{CC}=30\text{V}$, $R_L=10\text{K}\Omega$	27	28	--	V
	V_{OL}	$V_{CC}=5\text{V}$, $R_L=10\text{K}\Omega$	--	5	20	mV

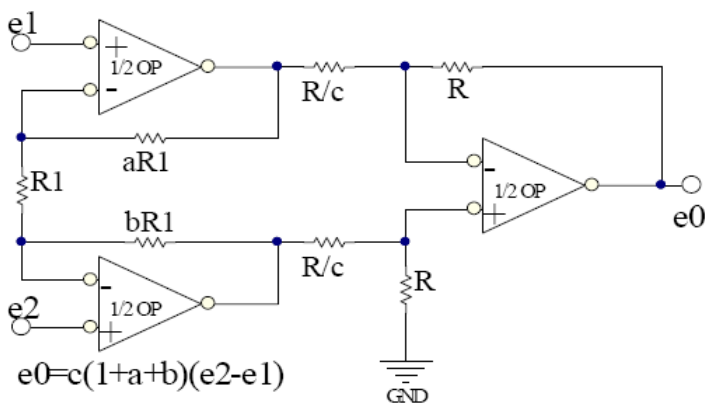
Typical Application Circuit



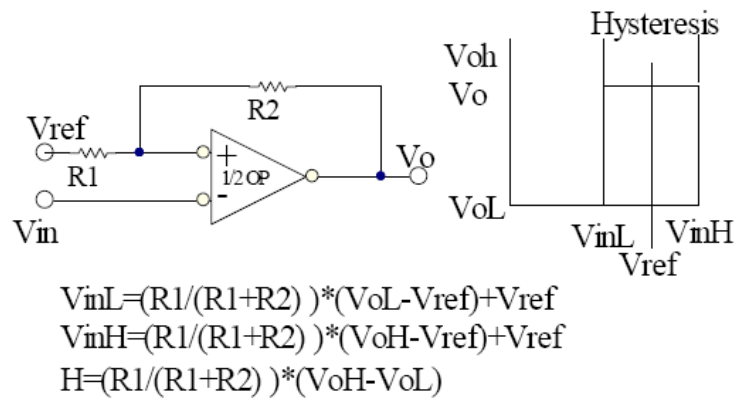
Voltage reference, $V_o = 2.5V(1 + R1/R2)$



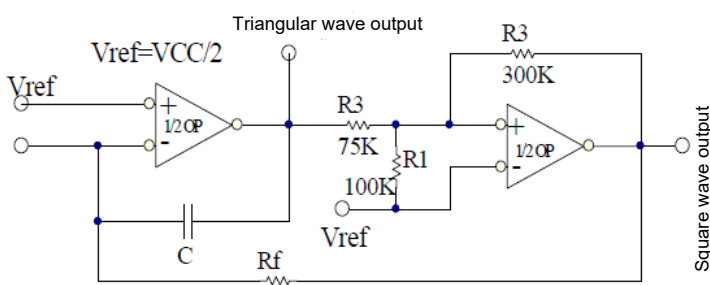
Wien bridge oscillator circuit



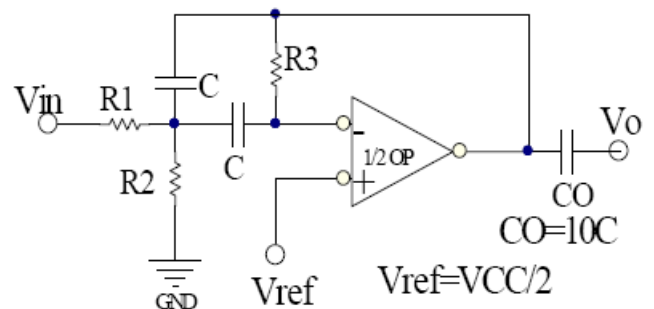
High impedance differential amplifier



Hysteresis comparator

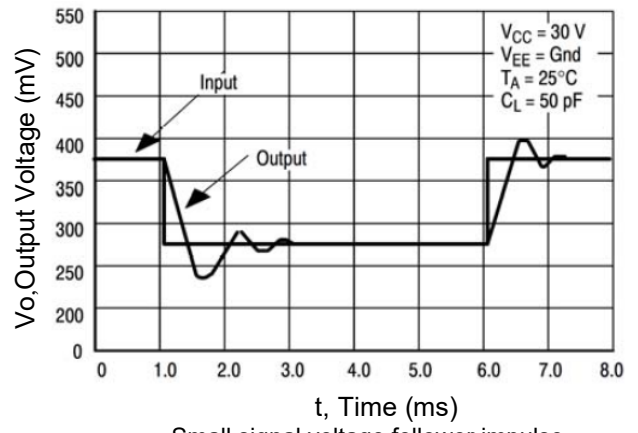
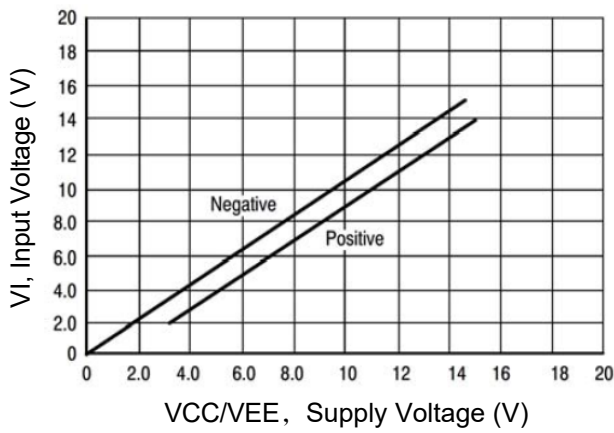


Function Generator

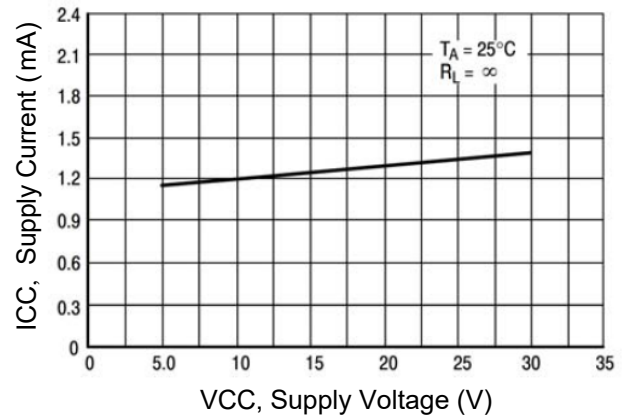
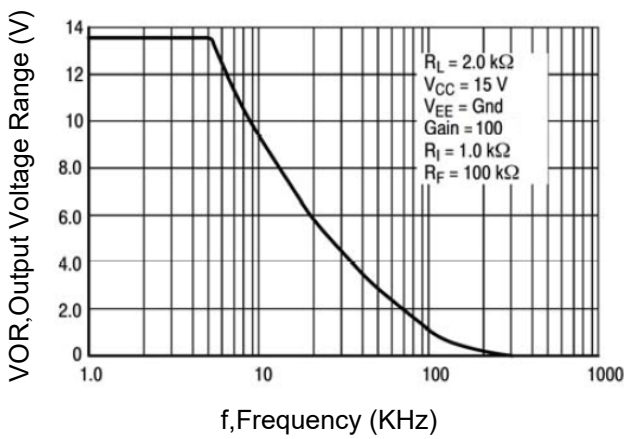


$f_o = \text{center frequency}$
Multiple-feedback bandpass filter

Typical characteristic curve



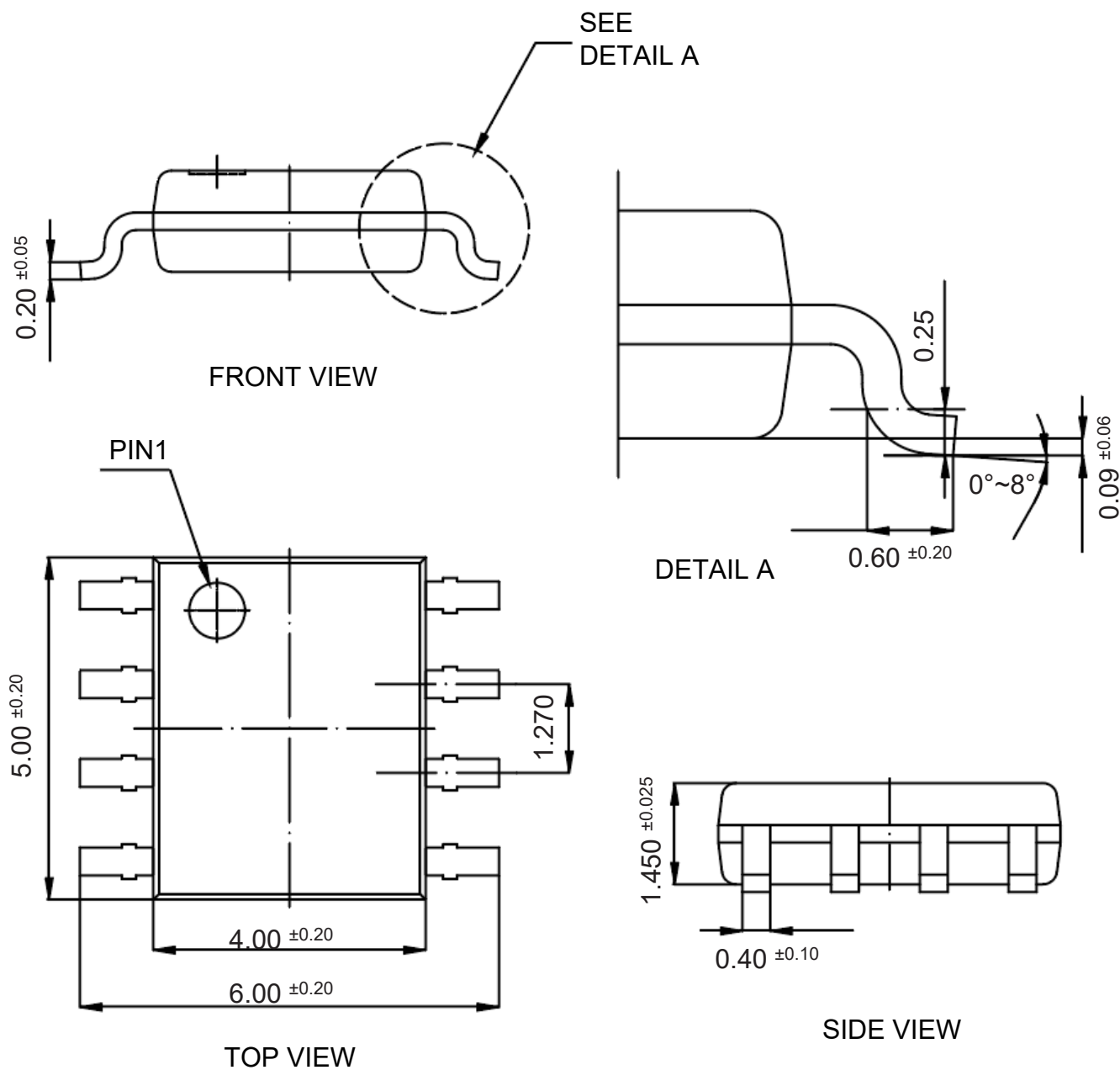
Small signal voltage follower impulse response (same direction)



Package Outline

SOP-8

Dimensions in mm



Ordering Information

Device	Package	Shipping
LM358	SOP-8	4,000PCS/Reel&13inches