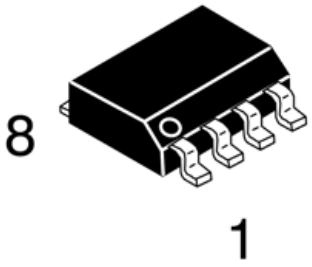
General Description

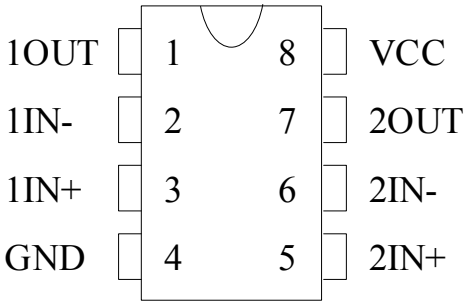
The LM358DR-CN series consists of two independent, high gain, internally frequency compensated operational amplifiers which were designed specifically to operate from a single power supply over a wide range of voltages. Operation from split power supplies is also possible and the low power supply current drain is independent of the magnitude of the power supply voltage.

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. For example, the LM358DR-CN series can be directly operated off of the standard +5V power supply voltage which is used in digital systems and will easily provide the required interface electronics without requiring the additional ±15V power supplies.



SOP8

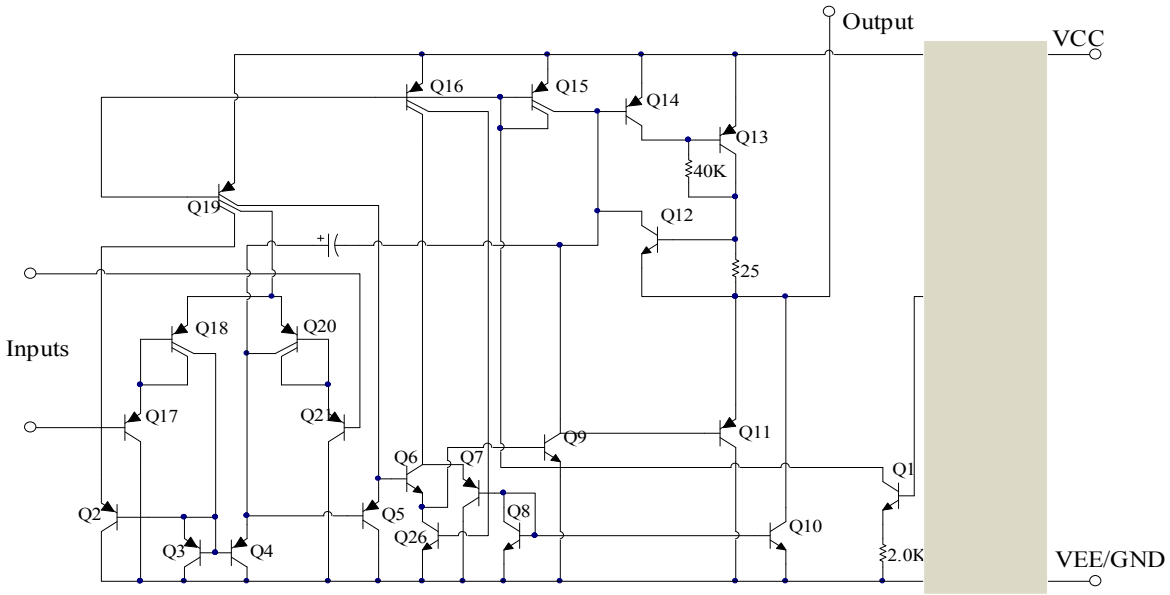
PIN CONNECTIONS



Features

- Wide power supply range:
  - Single supply: 4V to 32V
  - or dual supplies: ±2V to ±16V
- Very low supply current drain (500 μA)—essentially independent of supply voltage
- Wide bandwidth (unity gain): 1 MHz
- Low Input Bias Currents
- Common Mode Range Extends to Negative Supply

Schematic Diagram（One-Half of Circuit Shown）



MAXIMUM RATINGS(TA = +25℃, unless otherwise noted.)

Rating		Value	Unit
Power Supply Voltages		32 or ±16	V
Input Differential Voltage Range		32	V
Input Common Mode Voltage Range		-0.3 ～ VCC	V
Power Dissipation (Note1)	DIP8	830	mW
	SOP8	530	
Output Short Circuit Duration （One Amplifier）（V≤15V,Ta=25℃）		Continuous	
Input Current（VIN<-0.3V）		50	mA
Junction Temperature		150	℃
Operating Temperature Range		0 ～ 70	℃
Storage Temperature Range		-65 ～ 150	℃

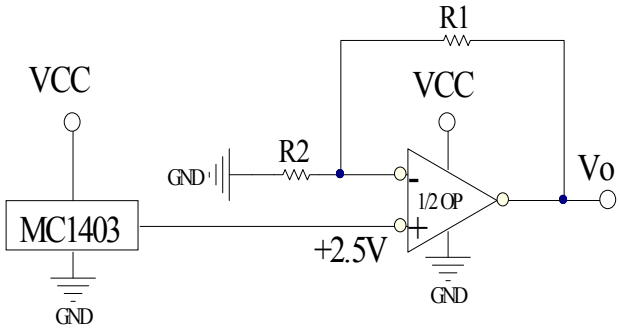
Note1：LM358DR-CN must be derated based on a +150°C maximum junction temperature.

ELECTRICAL CHARACTERISTICS （Vcc=5.0V, TA = +25℃, unless otherwise noted.）

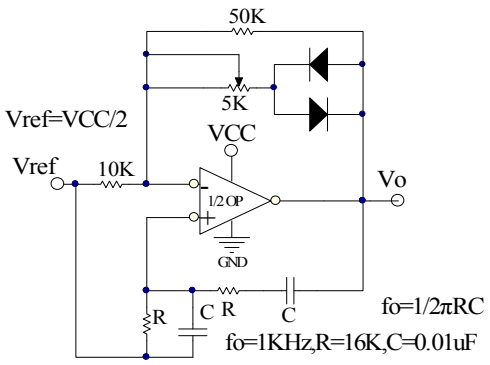
Parameter	Conditions	LM358			Units
		Min	Typ	Max	
Input Offset Voltage	Ta=25℃, VCC = 5.0 V to 30 V, VO =1.4 V,		2	5	mV
Input Bias Current	Ta=25℃，IIN(+)或 IIN（-），VCM=0V		45	250	nA
Input Offset Current	Ta=25℃，IIN(+) - IIN（-），VCM=0V		3	50	nA
Input Common Mode Voltage Range	Ta=25℃，V^+=30V	0		Vcc -1.5	V

Power Supply Current	RL=∞, Total Device	Vcc =30V		1	2	mA
		Vcc =5V		0.5	1.2	mA
Large Signal Open Loop Voltage Gain	Vcc =15V，Ta=25℃，RL≥2kΩ（for Vo=1~11V）		25	100		V/mV
Common Mode Rejection	DC，Ta=25℃，VCM=0~Vcc-1.5V		65	90		dB
Power Supply Rejection	DC，Ta=25℃，Vcc =5~30V		65	100		dB
Output Source Current	VIN(+)=1V,VIN(-)=0V,Vcc=15V,Vo=2V,Ta=25℃		20	40		mA
Output Sink Current	VIN(-)=1V,VIN(+)=0V,Vcc=15V,Vo=2V,Ta=25℃		10	15		mA
	VIN(-)=1V,VIN(+)=0V,Vcc=15V,Vo=200mV, Ta=25℃		12	50		μA
Output Short Circuit to Ground	Vcc=15V， Ta=25℃			40	60	mA
Output Voltage Swing VOH	Vcc=30V	RL=2kΩ	26			V
	Vcc=30V	RL=10kΩ	27	28		V
Output Voltage Swing VOL	Vcc=5V，RL=10kΩ			5	20	mV

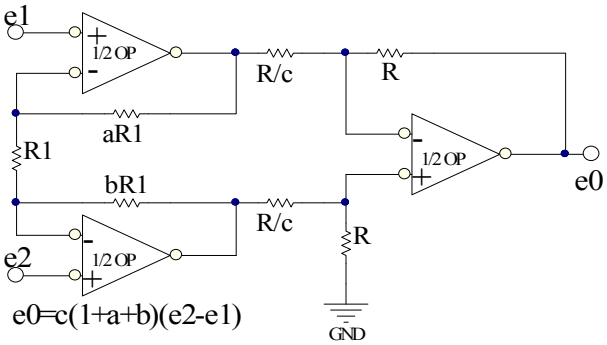
Typical Applications



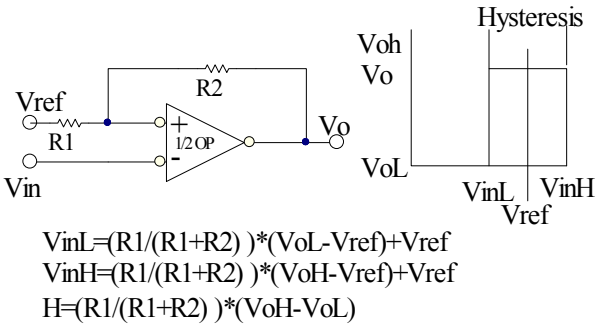
Voltage Reference，Vo=2.5V（1+R1/R2）



Wien Bridge Oscillator

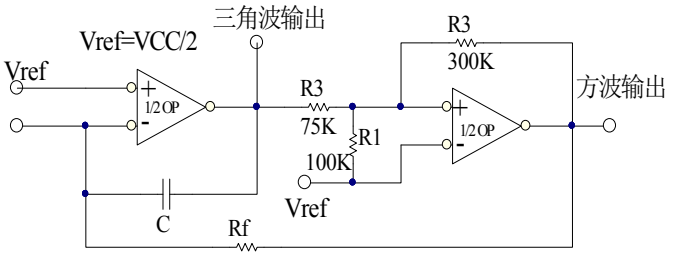


High Impedance Differential Amplifier

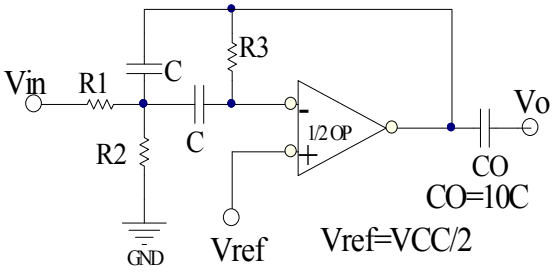


VinL=(R1/(R1+R2))*(VoL-Vref)+Vref
VinH=(R1/(R1+R2))*(VoH-Vref)+Vref
H=(R1/(R1+R2))*(VoH-VoL)

Comparator with Hysteresis



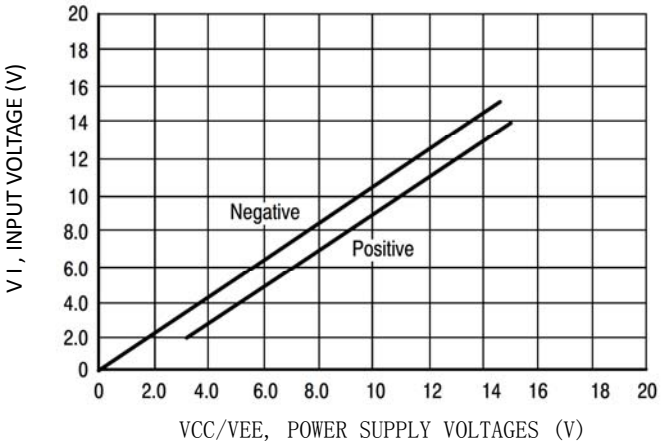
Function Generator



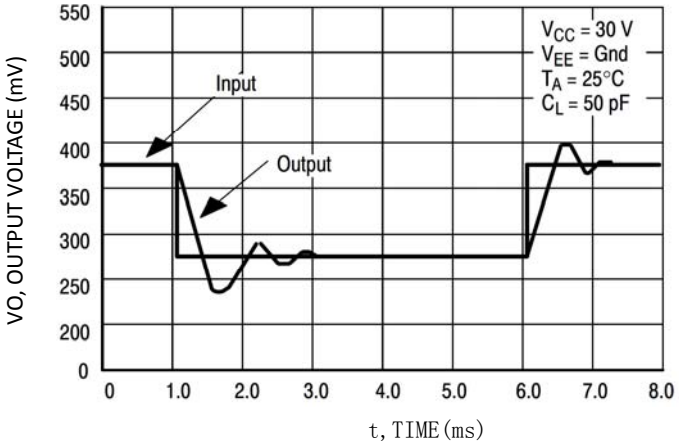
fo = center frequency

Multiple Feedback Bandpass Filter

Typical Performance Characteristics

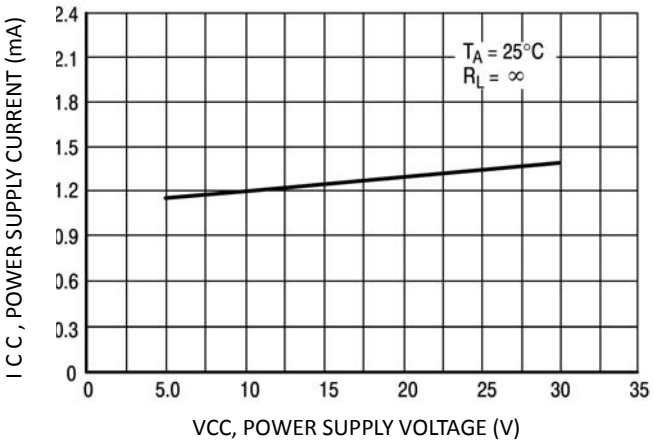


Input Voltage Range

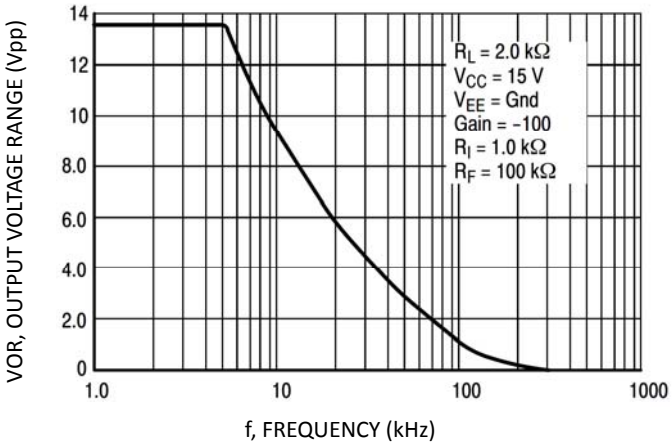


Small Signal Voltage Follower Pulse Response

(Noninverting)

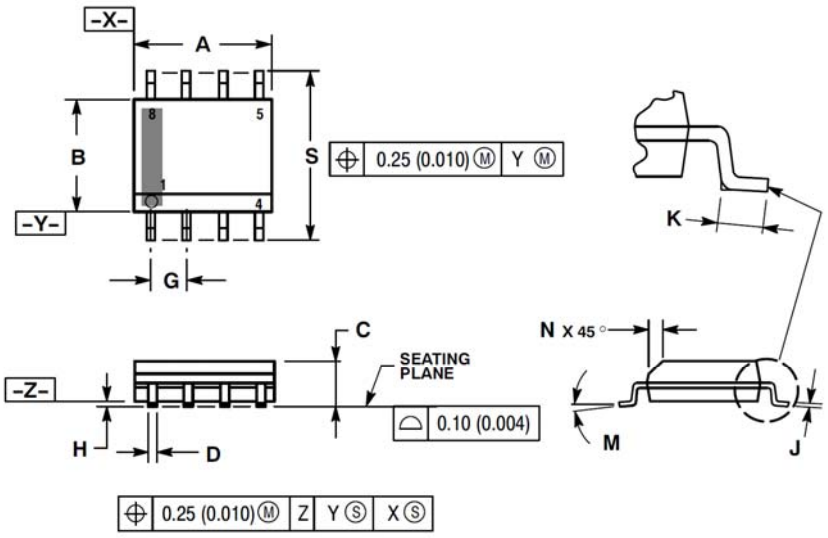


Power Supply Current versus Power Supply Voltage



Large-Signal Frequency Response

Physical Dimensions



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
4. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
5. DIMENSION D DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 (0.005) TOTAL IN EXCESS OF THE D DIMENSION AT MAXIMUM MATERIAL CONDITION.
6. 751-01 THRU 751-06 ARE OBSOLETE. NEW STANDARD IS 751-07.

	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
A	4.80	5.00	0.189	0.197
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.053	0.069
D	0.33	0.51	0.013	0.020
G	1.27 BSC		0.050 BSC	
H	0.10	0.25	0.004	0.010
J	0.19	0.25	0.007	0.010
K	0.40	1.27	0.016	0.050
M	0°	8°	0°	8°
N	0.25	0.50	0.010	0.020
S	5.80	6.20	0.228	0.244

SOP8

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