

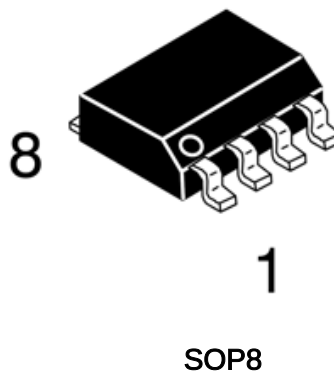
General Description

The LM258DR-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.

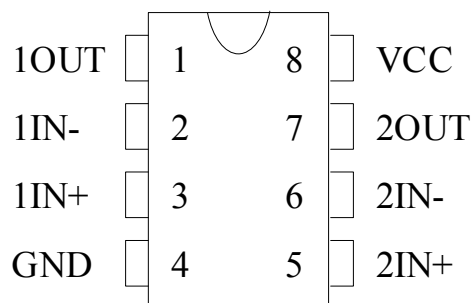
Application areas include transducer amplifiers, dc gain blocks and all the conventional op amp circuits which now can be more easily implemented in single power supply systems. For example, the LM258DR-CN series can be directly operated off of the standard +5V power supply voltage which is used in digital systems and will easily provide the required interface electronics without requiring the additional $\pm 15V$ power supplies.

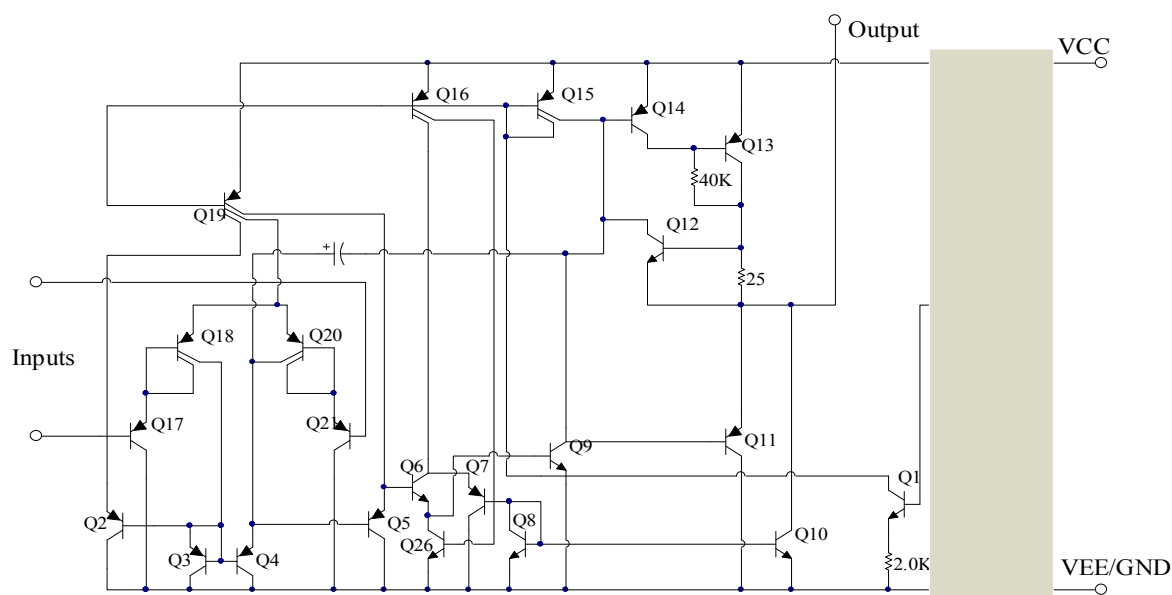
Features

- Wide power supply range:
 - Single supply: 4V to 32V
 - or dual supplies: $\pm 2V$ to $\pm 16V$
- 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



PIN CONNECTIONS



Schematic Diagram (One-Half of Circuit Shown)

MAXIMUM RATINGS(TA = +25°C, 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	SOP8	530	mW
Output Short Circuit Duration (One Amplifier) (V $\leq$ 15V, Ta=25°C)		Continuous	
Input Current (VIN<-0.3V)		50	mA
Junction Temperature		150	°C
Operating Temperature Range		-25 ~ 85	°C
Storage Temperature Range		-65 ~ 150	°C

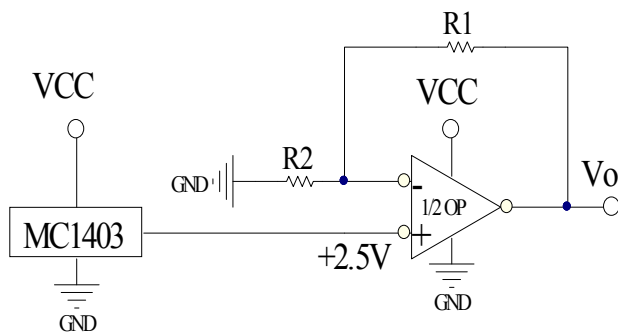
Note1: LM258DR-CN must be derated based on a +150°C maximum junction temperature.

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

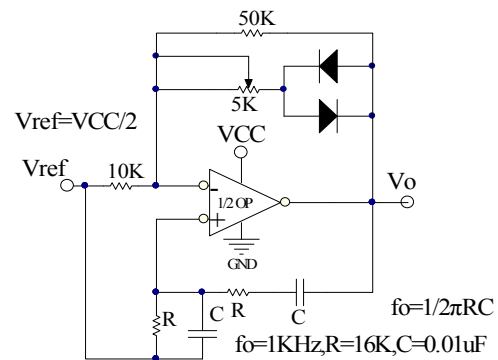
Parameter	Conditions	Min	Typ	Max	Units
Input Offset Voltage	Ta=25°C, VCC = 5.0 V to 30 V, VO =1.4 V,		2	5	mV
Input Bias Current	Ta=25°C, IIN(+)或 IIN (-), VCM=0V		45	250	nA
Input Offset Current	Ta=25°C, IIN(+) - IIN (-), VCM=0V		3	50	nA
Input Common Mode Voltage Range	Ta=25°C, V ⁺ =30V	0		Vcc -1.5	V

Power Supply Current	Supply	$R_L = \infty$, Total Device	$V_{CC} = 30V$		1	2	mA
			$V_{CC} = 5V$		0.5	1.2	mA
Large Signal Open Loop Voltage Gain		$V_{CC} = 15V$, $T_a = 25^\circ C$, $R_L \geq 2k\Omega$ (for $V_o = 1 \sim 11V$)	25	100			V/mV
Common Mode Rejection		DC, $T_a = 25^\circ C$, $V_{CM} = 0 \sim V_{CC} - 1.5V$	65	90			dB
Power Supply Rejection		DC, $T_a = 25^\circ C$, $V_{CC} = 5 \sim 30V$	65	100			dB
Output Source Current		$V_{IN(+)} = 1V$, $V_{IN(-)} = 0V$, $V_{CC} = 15V$, $V_o = 2V$, $T_a = 25^\circ C$	20	40			mA
Output Sink Current		$V_{IN(-)} = 1V$, $V_{IN(+)} = 0V$, $V_{CC} = 15V$, $V_o = 2V$, $T_a = 25^\circ C$	10	15			mA
		$V_{IN(-)} = 1V$, $V_{IN(+)} = 0V$, $V_{CC} = 15V$, $V_o = 200mV$, $T_a = 25^\circ C$	12	50			μA
Output Short Circuit to Ground		$V_{CC} = 15V$, $T_a = 25^\circ C$		40	60		mA
Output Voltage Swing	VOH	$V_{CC} = 30V$	$R_L = 2k\Omega$	26			V
		$V_{CC} = 30V$	$R_L = 10k\Omega$	27	28		V
	VOL	$V_{CC} = 5V$, $R_L = 10k\Omega$			5	20	mV

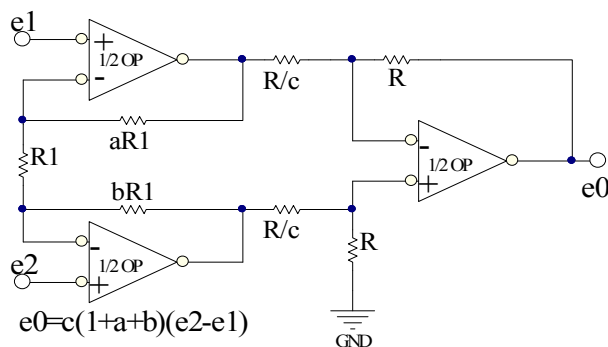
Typical Applications



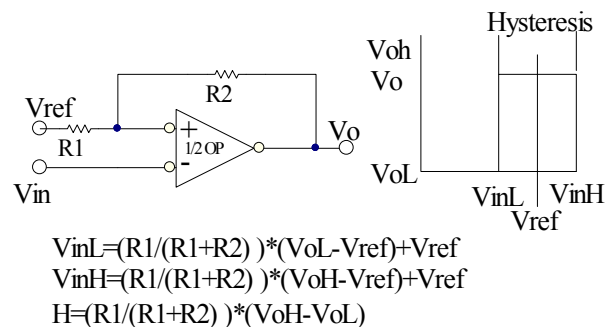
Voltage Reference, $V_o = 2.5V (1 + R_1/R_2)$



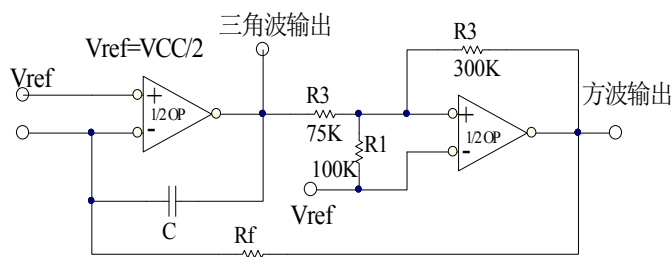
Wien Bridge Oscillator



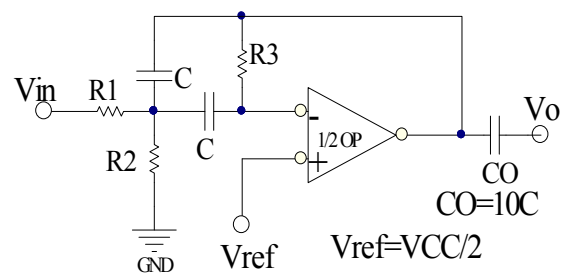
High Impedance Differential Amplifier



Comparator with Hysteresis

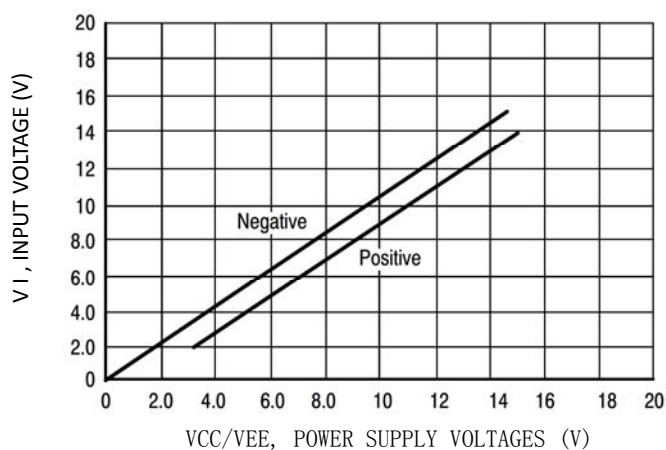


Function Generator

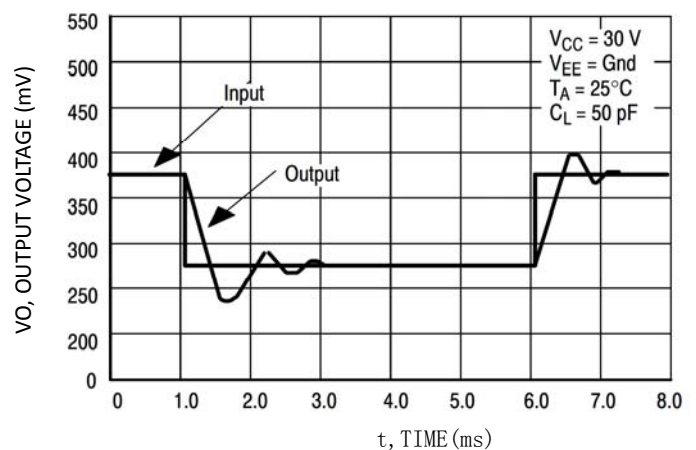
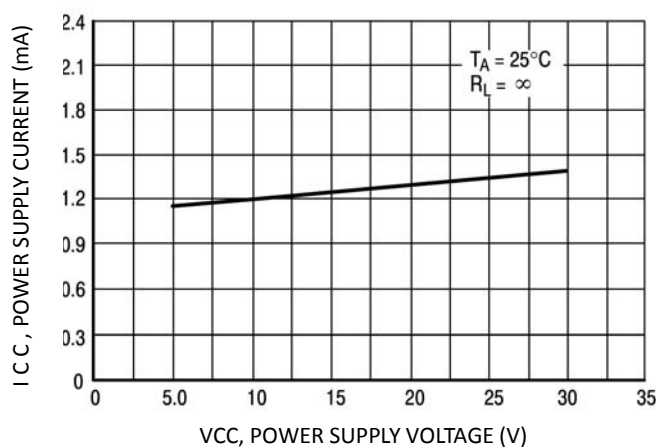

 f_o = center frequency

Multiple Feedback Bandpass Filter

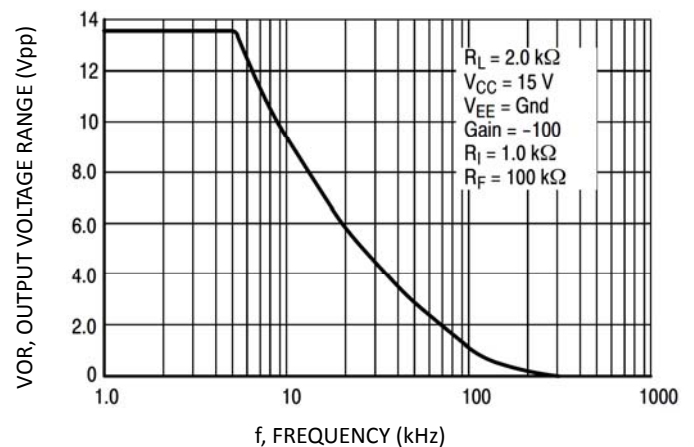
Typical Performance Characteristics



Input Voltage Range

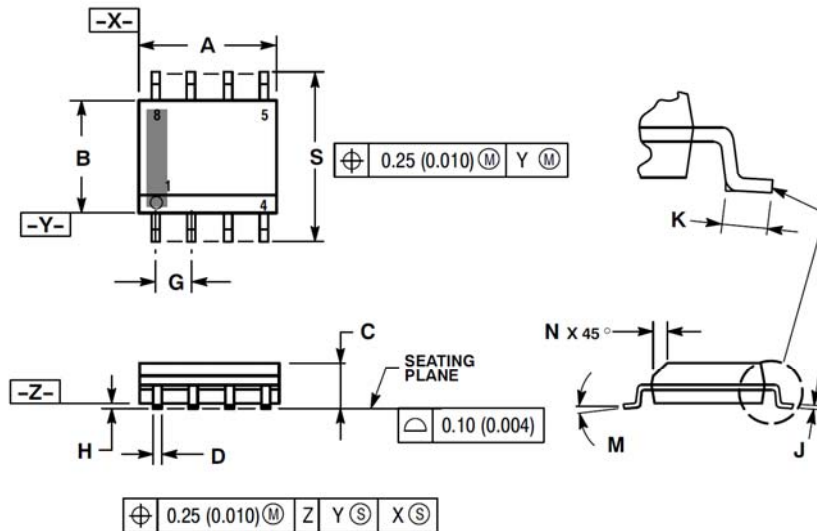

 Small Signal Voltage Follower Pulse Response
(Noninverting)


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.

DIM	MILLIMETERS		INCHES	
	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
E	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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