

### Dual operational amplifier

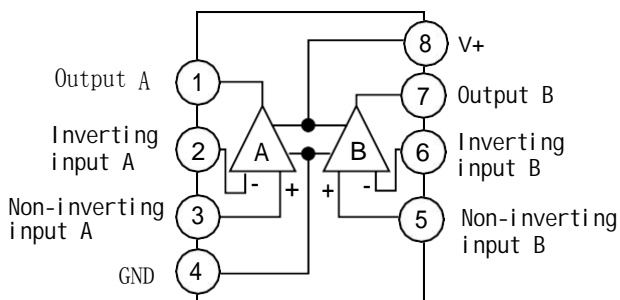
The LM258 consists of two independent high gain operational amplifiers. It can work with a single power supply or with a dual power supply, and the current consumption of the power supply has nothing to do with the power supply voltage. Applications include variable frequency amplifiers, DC gain sections and all conventional op amp circuits.

Available in DIP8 or SOP8 packages.

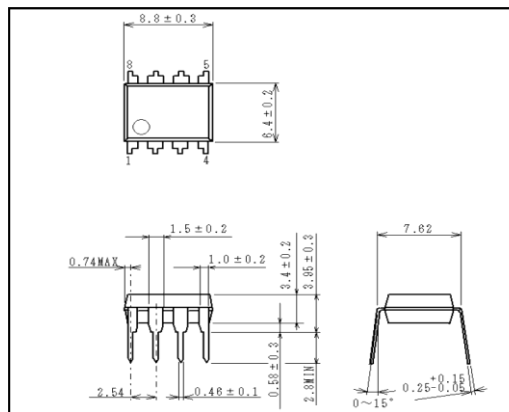
**main features :**

- Can work with single or dual power supply
- Two internally compensated op amps in one package.
- logic circuit matching.
- Low power consumption.
- Wide frequency range

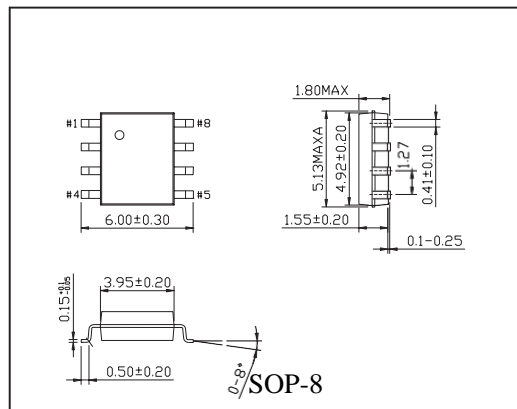
**Functional Block Diagram and Pinout Diagram**



Package Outline Drawing



DIP-8



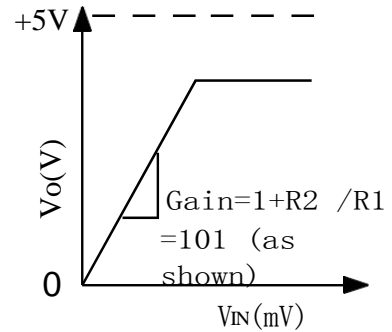
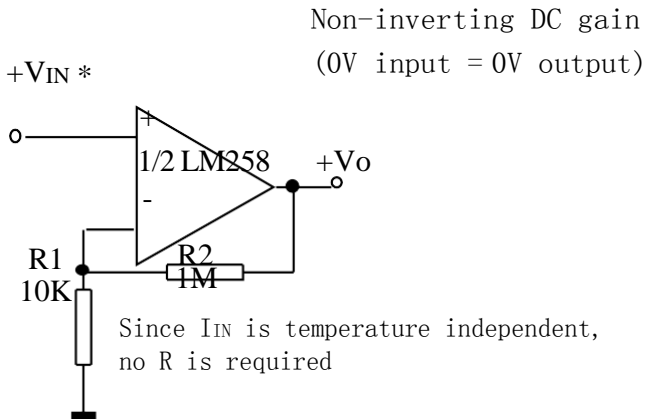
Limit value (absolute maximum rating, if not otherwise specified, Tamb=25°C)

parameter name		value	unit
voltage		32 or ± 16	V
Differential input voltage		32	V
Input voltage		-0.3~32	V
Power consumption (Note 1)	DIP package	550	mW
	SOP package	530	
Output short-circuit current to ground (1 amplifier) (Note 2) (V <sup>+</sup> ≤ 15V, Ta = 25°C)		continued	
Input current (VIN < -0.3V) (Note 3)		50	mA
Working temperature		-25~85	°C
Storage temperature		-65~150	°C

**Electrical characteristics (if not otherwise specified,  $V^+=5.0V$ )**

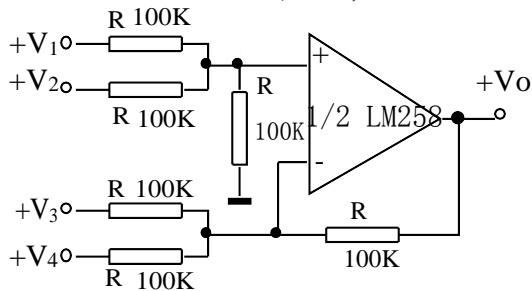
Features		Test Conditions		Specification value			Unit	
				MIN	TYP	MAX		
Input offset voltage		Ta = 25			2	5	mV	
input bias current		Ta = 25 °C, I <sub>IN (+)</sub> or I <sub>IN (-)</sub> , V <sub>CM</sub> = 0V			45	150	nA	
Input offset current		Ta=25°C, I <sub>IN(+)</sub> - I <sub>IN (-)</sub> , V <sub>CM</sub> =0V			3	30	nA	
Input Common Mode Voltage Range		Ta=25°C, V <sup>+</sup> =30V		0		V <sup>+</sup> -1.5	V	
supply current		Over the entire temperature range, R <sub>L</sub> = ∞ on all operational amplifiers		V <sup>+</sup> =30V	1	2	mA	
				V <sup>+</sup> =5V	0.5	1.2		
Large signal voltage gain		V <sup>+</sup> =15V, Ta=25°C, R <sub>L</sub> ≥2kΩ (for V <sub>o</sub> =1~11V)		50	100		V/mV	
Common Mode Rejection Ratio		DC, Ta=25°C, V <sub>CM</sub> =0~V <sup>+</sup> -1.5V		70	85		dB	
power supply rejection ratio		DC, Ta=25°C, V <sup>+</sup> =5~30V		65	100		dB	
Coupling system between amplifiers number		Ta=25°C, f=1~20kHz (all inputs)			-120		dB	
Output source current		V <sub>IN(+)</sub> =1V, V <sub>IN(-)</sub> =0V, V <sup>+</sup> =15V, V <sub>o</sub> =2V, Ta=25°C		20	40		mA	
output current sink		V <sub>IN(-)</sub> =1V, V <sub>IN(+)</sub> =0V, V <sup>+</sup> =15V, V <sub>o</sub> =2V, Ta=25°C		10	20		mA	
		V <sub>IN(-)</sub> =1V, V <sub>IN(+)</sub> =0V, V <sup>+</sup> =15V, V <sub>o</sub> =200mV, Ta=25°C		12	50		μA	
short-circuit current to ground		V <sup>+</sup> =15V, Ta=25°C			40	60	mA	
Input offset voltage						7	mV	
Input offset voltage drift		R <sub>s</sub> =0Ω			7		μV/°C	
Input offset current		I <sub>IN(+)</sub> - I <sub>IN (-)</sub>				100	on	
Input offset current drift		R <sub>s</sub> =0Ω			10		pA/°C	
Input bias current		I <sub>IN(+)</sub> or I <sub>IN(-)</sub>			40	300	nA	
Input Common Mode Voltage Range		V <sup>+</sup> =30V		0		V <sup>+</sup> -2	V	
Large signal voltage gain		V <sup>+</sup> = 15V, (V <sub>o</sub> = 1 ~ 11V),		25			V/mV	
Output voltage swing		V <sup>+</sup> =30V		R <sub>L</sub> =2kΩ	26		V	
				R <sub>L</sub> =10kΩ	27	28	V	
		V <sup>+</sup> =5V, R <sub>L</sub> =10kΩ			5	20	mV	
Output current		source current		V <sub>IN (+)</sub> = 1V, V <sub>IN (-)</sub> = 0V, V <sup>+</sup> = 15V, V <sub>o</sub> = 2V		10	20	mA
		current sink		V <sub>IN (-)</sub> = 1V, V <sub>IN (+)</sub> = 0V, V <sup>+</sup> = 15V, V <sub>o</sub> = 2V		5	8	mA

typical application



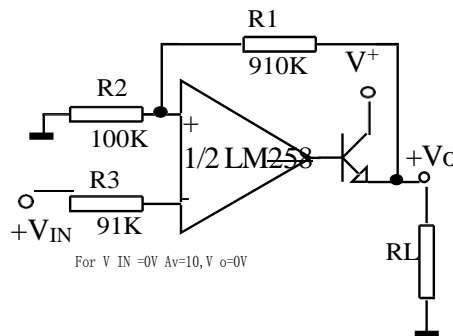
DC Summing Amplifier

( $V_{IN'S} \geq 0V$ , and  $V_o \geq 0V$ )

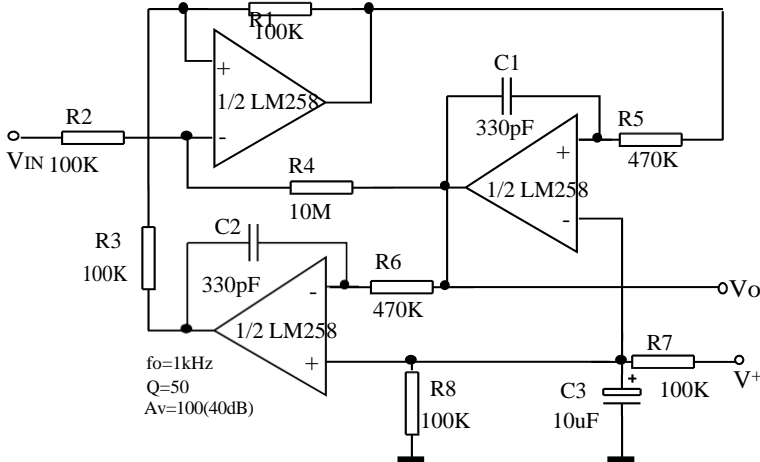


Among them: To keep  $V_o > 0V$ ,  $V_o = V_1 + V_2 + V_3 + V_4$   
( $V_1 + V_2 \geq V_3 + V_4$ )

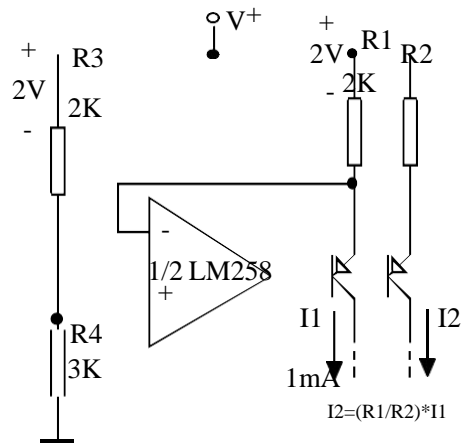
power amplifier



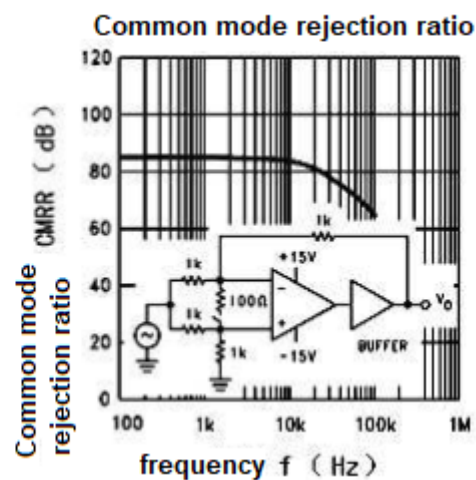
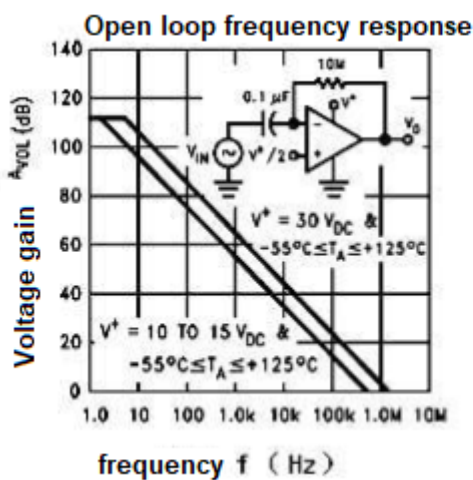
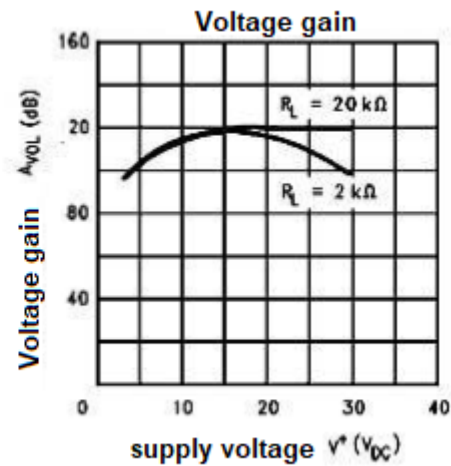
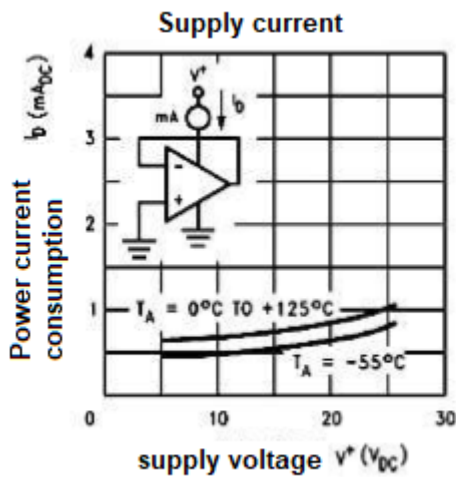
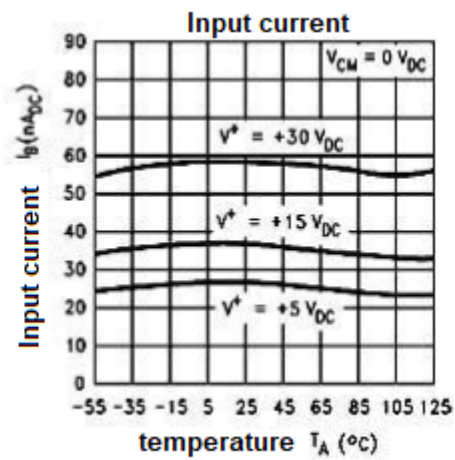
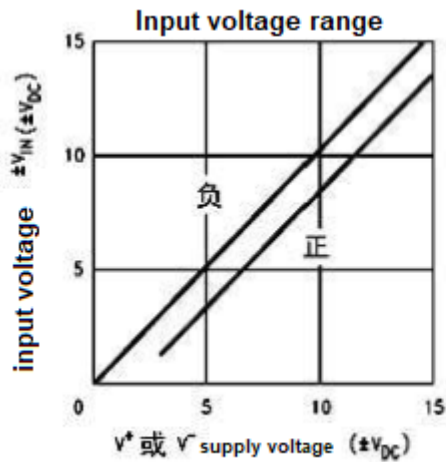
RC Active Band Pass Filter

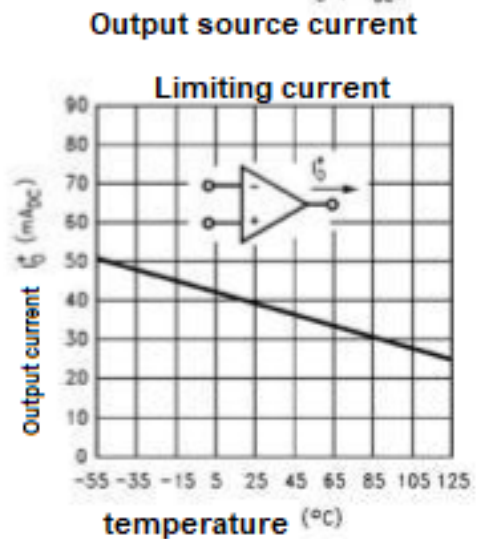
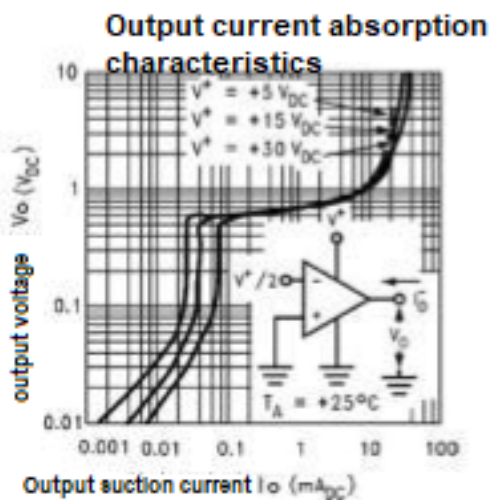
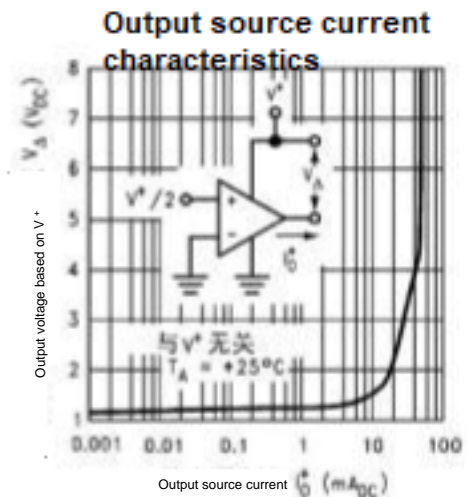
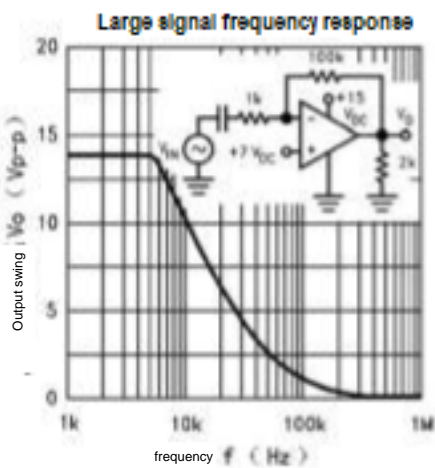
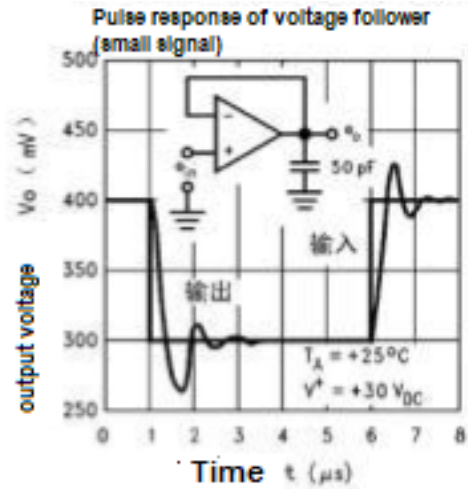
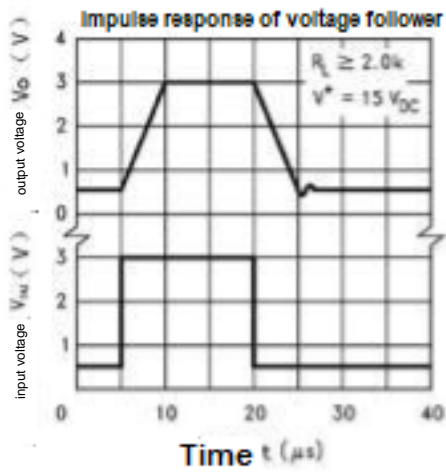


Fixed current source

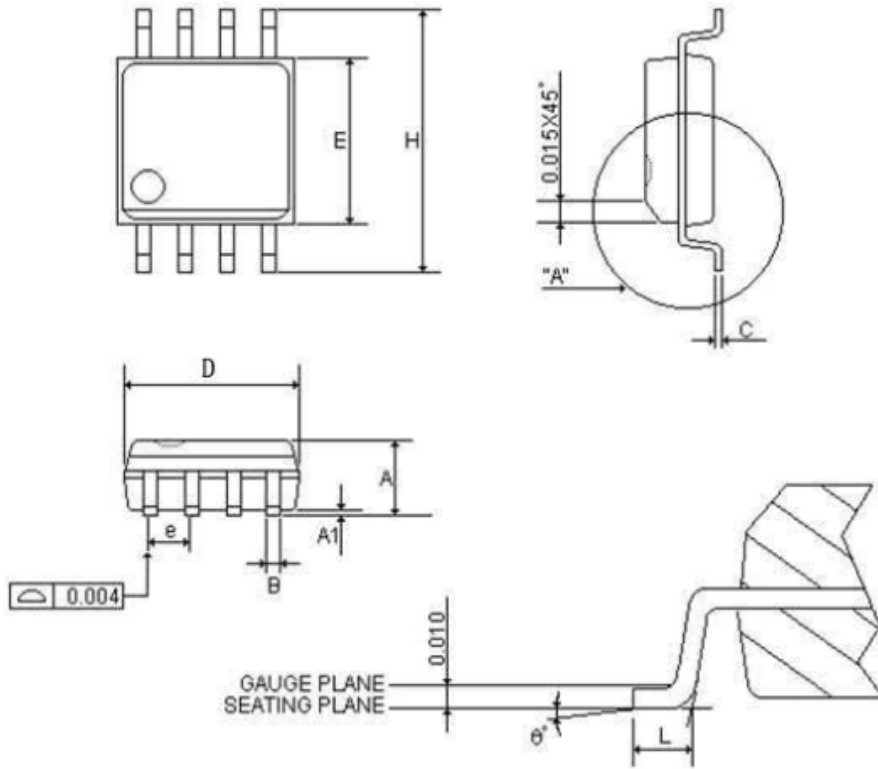


Typical characteristic curve





SOP 8



SYMBOLS	MIN	NOR	MAX	MIN	NOR	MAX
	(inch)			(mm)		
A	0.058	0.064	0.068	1.4732	1.6256	1.7272
A1	0.004	-	0.010	0.1016	-	0.254
B	0.013	0.016	0.020	0.3302	0.4064	0.508
C	0.0075	0.008	0.0098	0.1905	0.2032	0.2490
D	0.186	0.191	0.196	5.9944	6.1214	6.1976
E	0.150	0.154	0.157	3.81	3.9116	3.9878
e	-	0.050	-	-	1.27	-
H	0.228	0.236	0.244	5.7912	5.9944	6.1976
L	0.015	0.025	0.050	0.381	0.635	1.27
0°	0°	-	8°	0°	-	8°