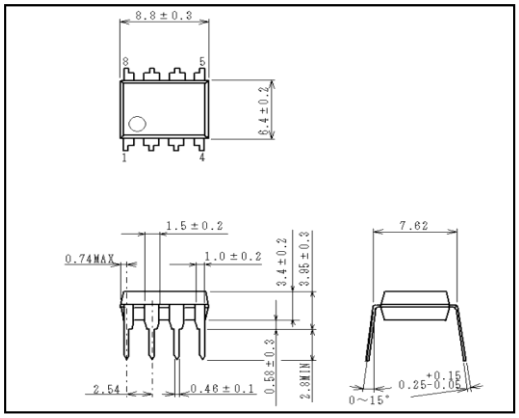
Dual operational amplifier

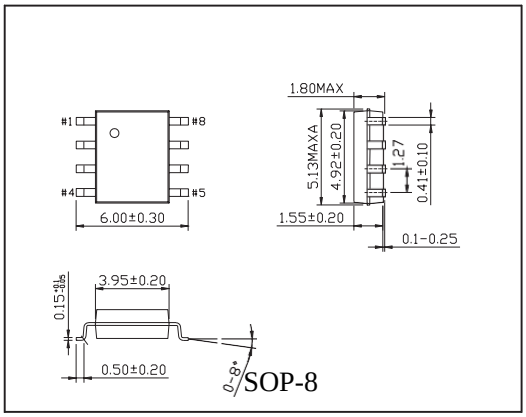
The LM158 consists of two independent high gain operational amplifiers. It can work with a single power supply or with a dual power supply, and the current consumption of the power supply has nothing to do with the power supply voltage. Applications include variable frequency amplifiers, DC gain sections and all conventional op amp circuits.

Available in DIP8 or SOP8 packages.

Package Outline Drawing



DIP-8

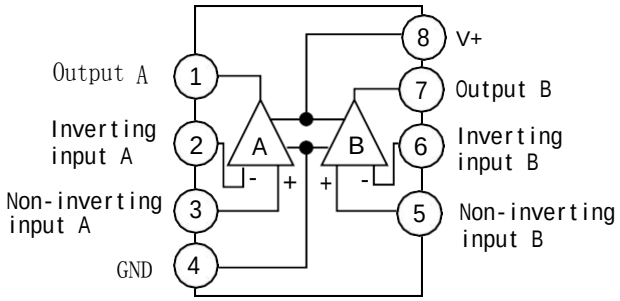


SOP-8

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



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

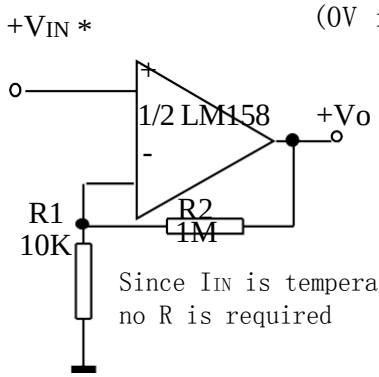
parameter name		value	unit
voltage		32 or ±18	V
Differential input voltage		32	V
Input voltage		-0.3~32	V
Power consumption (Note 1)	DIP package	550	mW
	SOP package	530	
Output short-circuit current to ground (1 amplifier) (Note 2) (V^+≤15V, Ta=25℃)		continued	
Input current (V_{IN}<-0.3V) (Note 3)		50	mA
Working temperature		-55~125	℃
Storage temperature		-65~150	℃

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

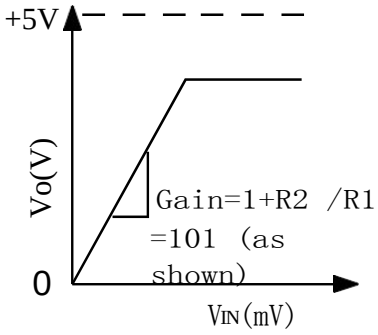
Features		Test Condition s		Specification value MIN	TYP	MAX	Unit
Input offset voltage		Ta = 25			2	5	mV
input bias current		Ta = 25 ℃, I_{IN} (+) or I_{IN} (-), V_{CM} = 0V			45	150	nA
Input offset current		Ta=25℃, $I_{IN(+)}$ - $I_{IN(-)}$, V_{CM}=0V			3	30	nA
Input Common Mode Voltage Range		Ta=25℃,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

typical application

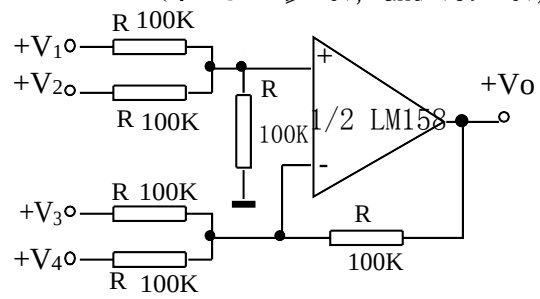
Non-inverting DC gain
(0V input = 0V output)



Since IIN is temperature independent, no R is required

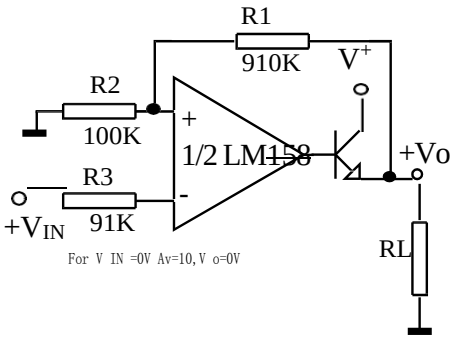


DC Summing Amplifier
(V IN'S ≥ 0V, and Vo≥ 0V)



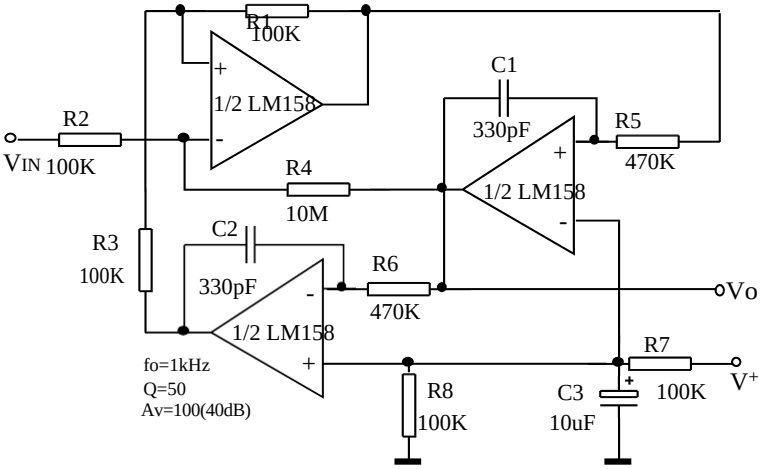
Among them: To keep Vo> 0V, Vo =V 1+ V2 +V 3+ V4
(V1+V2)≥(V3+V4)

power amplifier

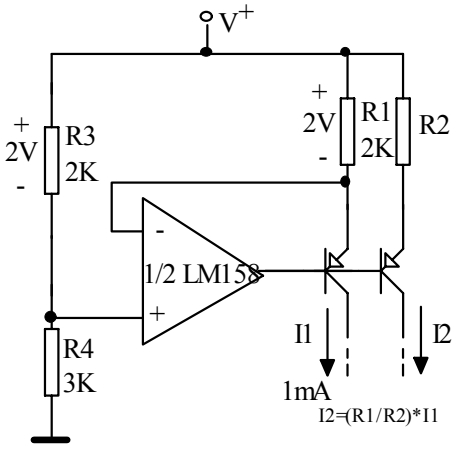


For V IN =0V Av=10, V o=0V

RC Active Band
Pass Filter



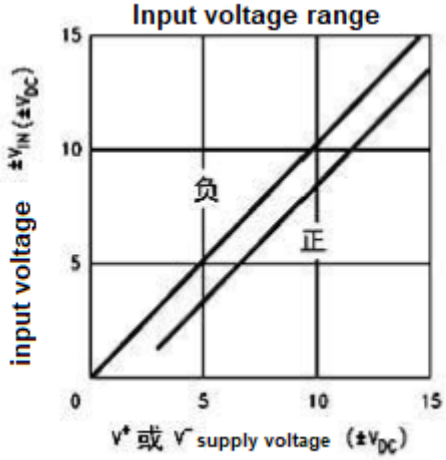
Fixed current source



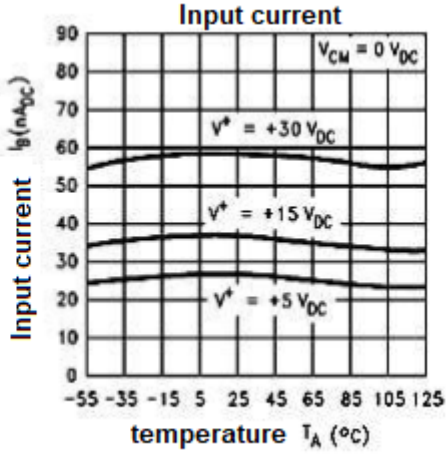
I2=(R1/R2)*I1

Typical characteristic curve

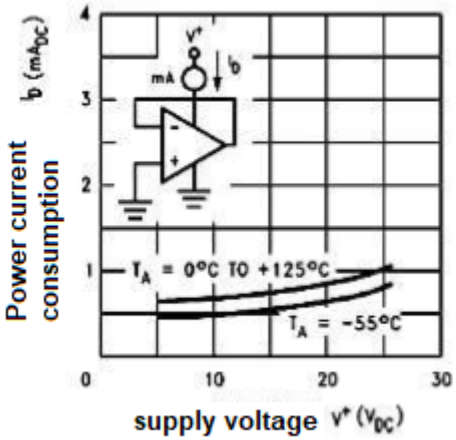
Input voltage range



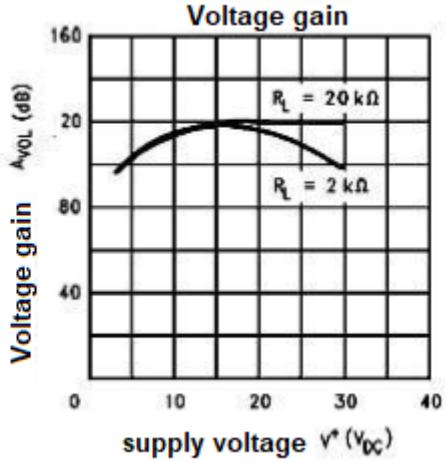
Input current



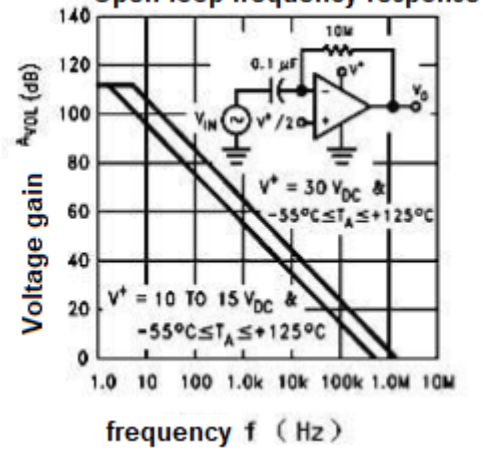
Supply current



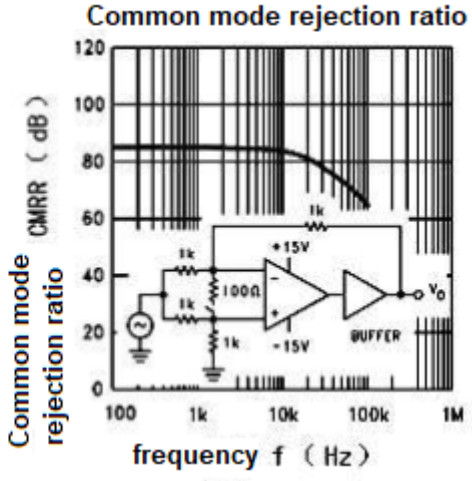
Voltage gain

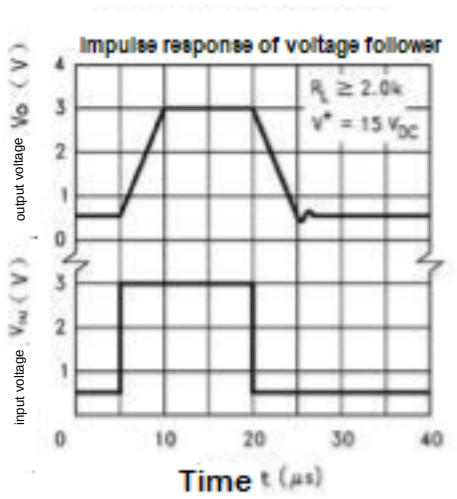


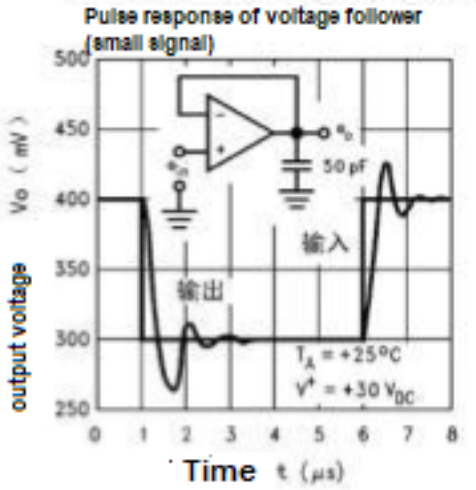
Open loop frequency response

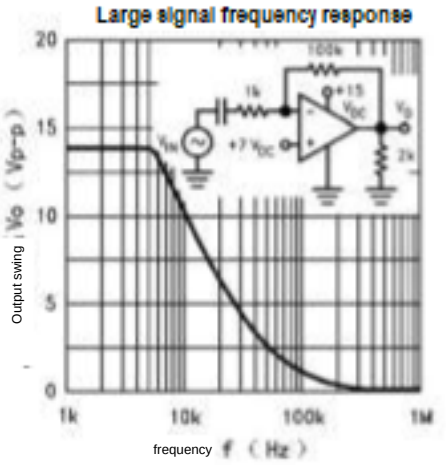


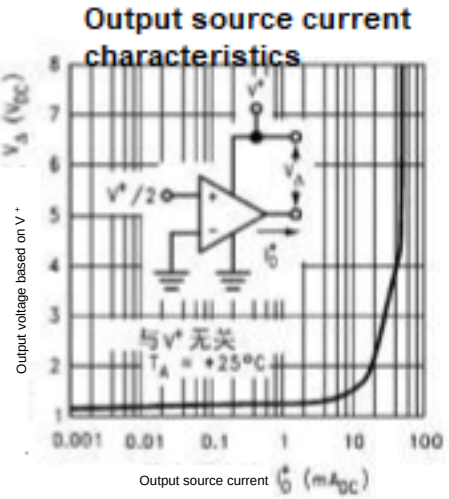
Common mode rejection ratio



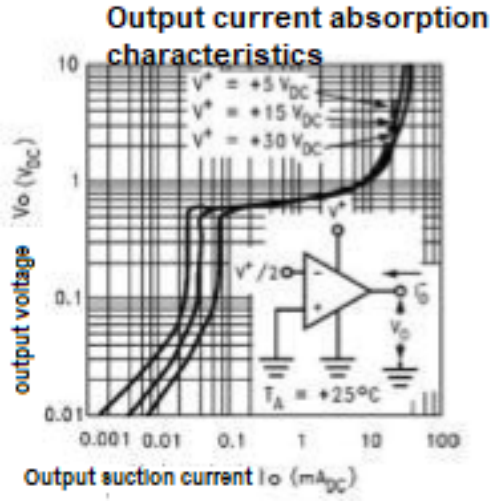


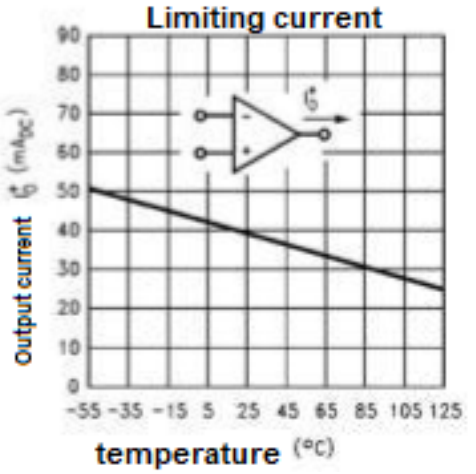




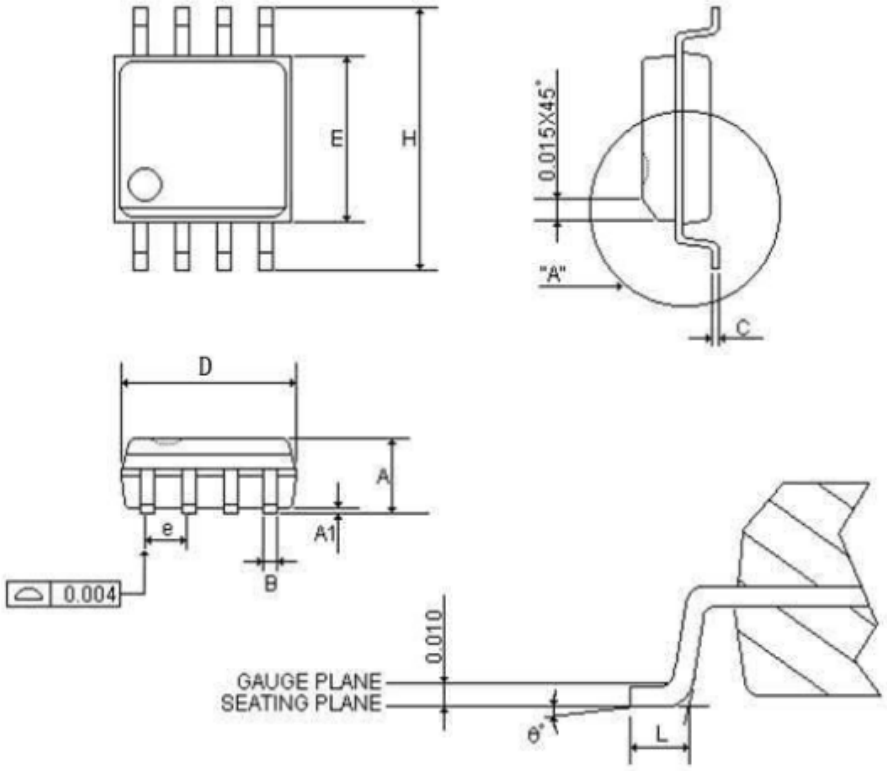


Output source current





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^O	0^O	-	8^O	0^O	-	8^O