

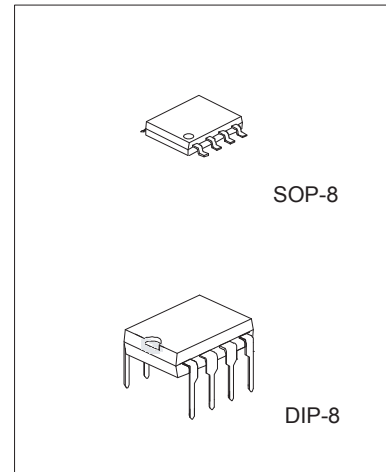
## Low Power Dual Operational Amplifier

### DESCRIPTION

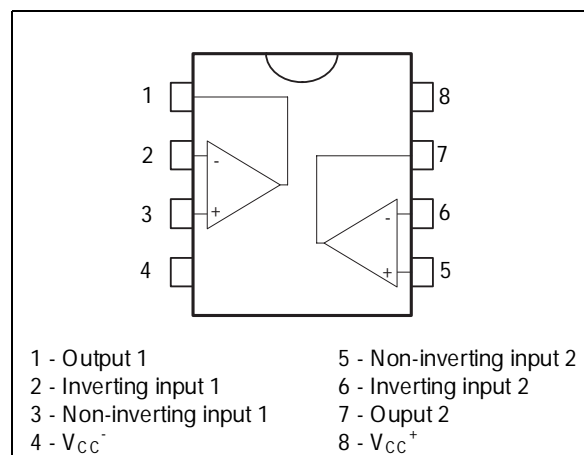
The CO358 is a high performance monolithic low power Operational amplifier.

### FEATURES

- Internally frequency compensated for unity gain
- Large dc voltage gain:100 dB
- Wide bandwidth (unity gain):1 MHz (temperature compensated)
- Wide power supply range:
  - Single supply: 3V to 32V
  - Or dual supplies:±1.5V to ±16V
- Very low supply current drain(500µA)-essentially independent of supply voltage
- Low input offset voltage:2mV
- Input common-mode voltage range includes ground
- Differential input voltage range equal to the power supply voltage
- Large output voltage swing: 0V to ±1.5V



### PIN CONFIGURATION

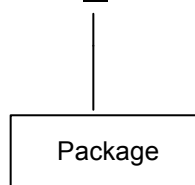


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## Low Power Dual Operational Amplifier

### ORDERING INFORMATION

CO358N



Blank SO-8  
 N=PDIP8  
 A=SO-8 & taping

### MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	V <sub>CC</sub>	± 16	V
Differential Input Voltage	V <sub>I(DIFF)</sub>	± 16	V
Input Voltage	V <sub>I</sub>	± 16	V
Operating Temperature	TOPR	0 ~ +70	°C
Power Dissipation	P <sub>D</sub>	550 400	mW
Storage Temperature Range	TSTG	-65 ~ +150	°C

### ELECTRICAL CHARACTERISTICS (V<sub>CC</sub>=15.0V, V<sub>EE</sub>= -15V, T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDUCTION	MIN	TYP	MAX	UNIT
Supply Current, all Amp, no load	I <sub>CC</sub>			1	2	mA
Input offset voltage	V <sub>IO</sub>	R <sub>S</sub> < 10kΩ			7	mV
Input offset current	I <sub>IO</sub>			3	30	nA
Input bias current	I <sub>BIAS</sub>			45	150	nA
Large signal voltage gain	G <sub>V</sub>	V <sub>O(p-p)</sub> = ±10V, R <sub>L</sub> ≤ 2kΩ	25			V/mV
Common Mode Input Voltage Range	V <sub>I(R)</sub>				V <sub>CC</sub> -2	V
Common Mode Rejection Ratio	CMRR	R <sub>S</sub> ≤ 10kΩ	70	85		dB
Supply Voltage Rejection Ratio	PSRR	R <sub>S</sub> ≤ 10kΩ	65	100		dB
Output Voltage swing	V <sub>O(p-p)</sub>	R <sub>L</sub> ≥ 10kΩ		±12	±14	V
Power Consumption	P <sub>C</sub>			70	170	mW
Rise Time	T <sub>RISE</sub>	V <sub>I</sub> = ± 20mV, R <sub>L</sub> ≥ 2kΩ, C <sub>L</sub> ≤ 100pF		0.3		μs
Overshoot	OS	V <sub>I</sub> = ± 20mV, R <sub>L</sub> ≥ 2kΩ, C <sub>L</sub> ≤ 100pF		15		%
Input Resistance	R <sub>I</sub>		0.3	2		MΩ
Output Resistance	R <sub>O</sub>			75		Ω
Total Harmonic Distortion	THD	f=1kHz, A <sub>v</sub> =20dB, R <sub>L</sub> =2kΩ, V <sub>O</sub> =2V <sub>pp</sub> , C <sub>L</sub> =100pF		0.008		%
Channel Separation	V <sub>O1</sub> /V <sub>O2</sub>			120		dB

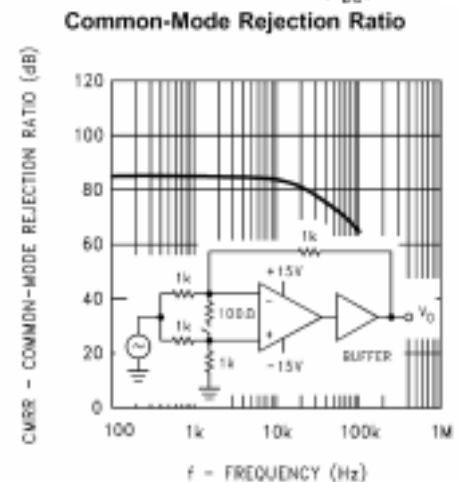
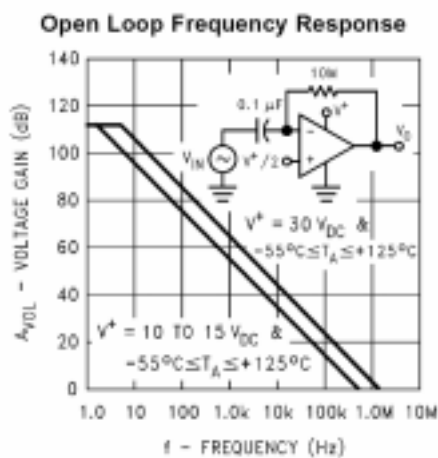
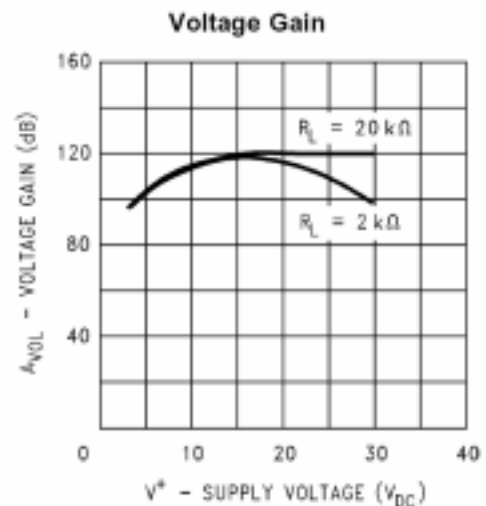
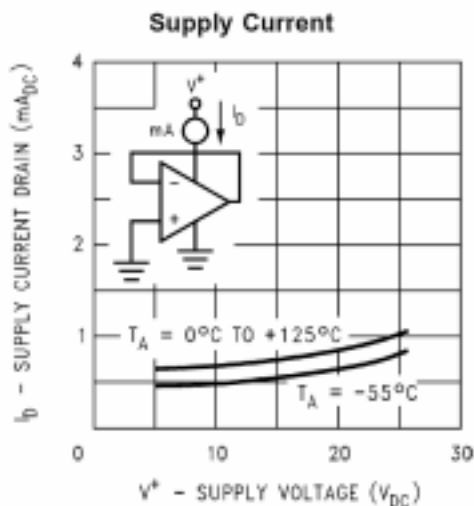
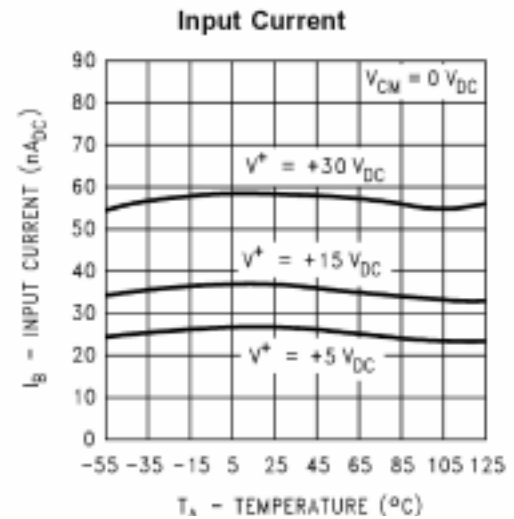
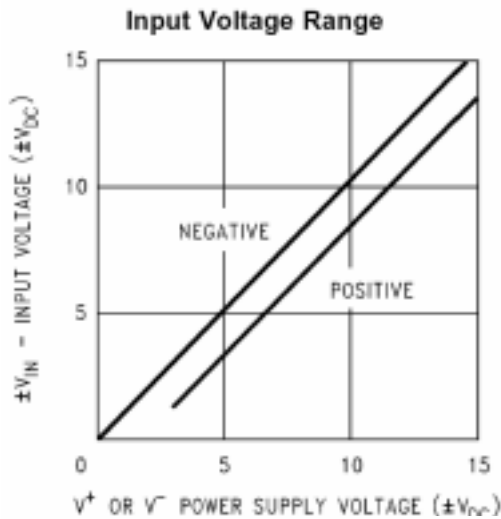
### FREQUENCY CHARACTERISTICS (T<sub>a</sub>=25°C, V<sub>CC</sub>=15V, V<sub>EE</sub>=-15V)

PARAMETER	SYMBOL	TEST CONDUCTION	MIN	TYP	MAX	UNIT
Unity Gain Bandwidth	BW		2.0	2.8		MHz

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### TYPICAL PERFORMANCE CHARACTERISTICS

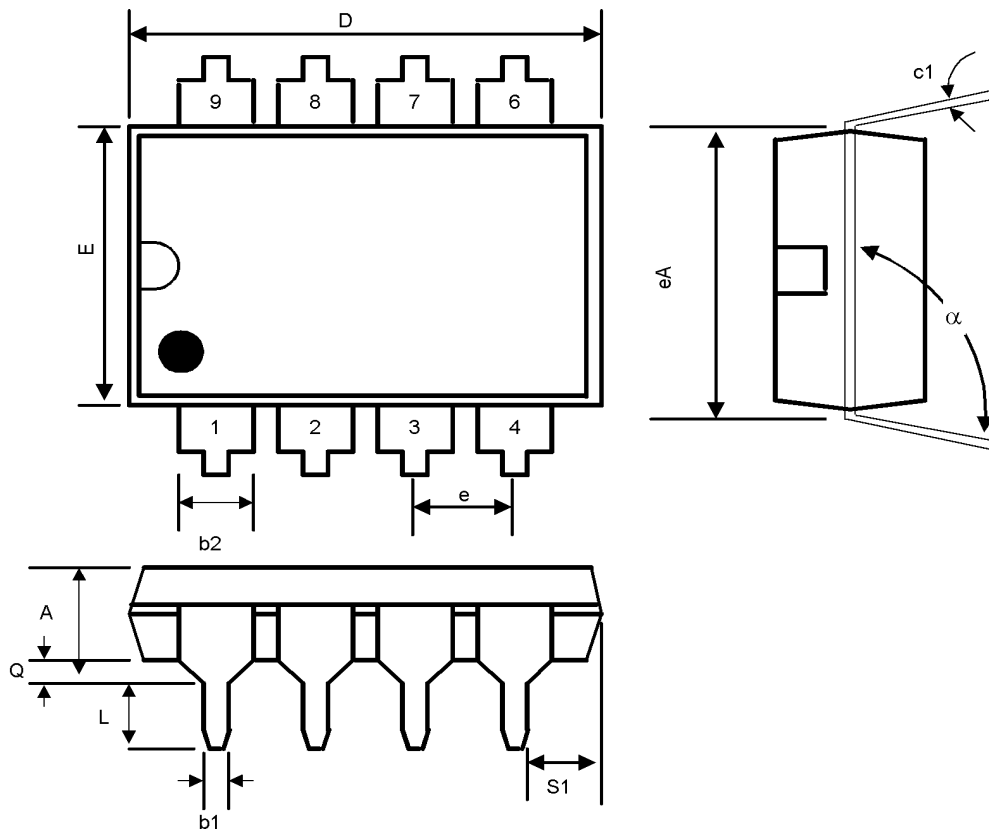


**NOTE: The lead free label will be pasted on the Reed, Box and Carton for the Lead Free Process.**

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## Low Power Dual Operational Amplifier

### Package Outlines : DIP-8

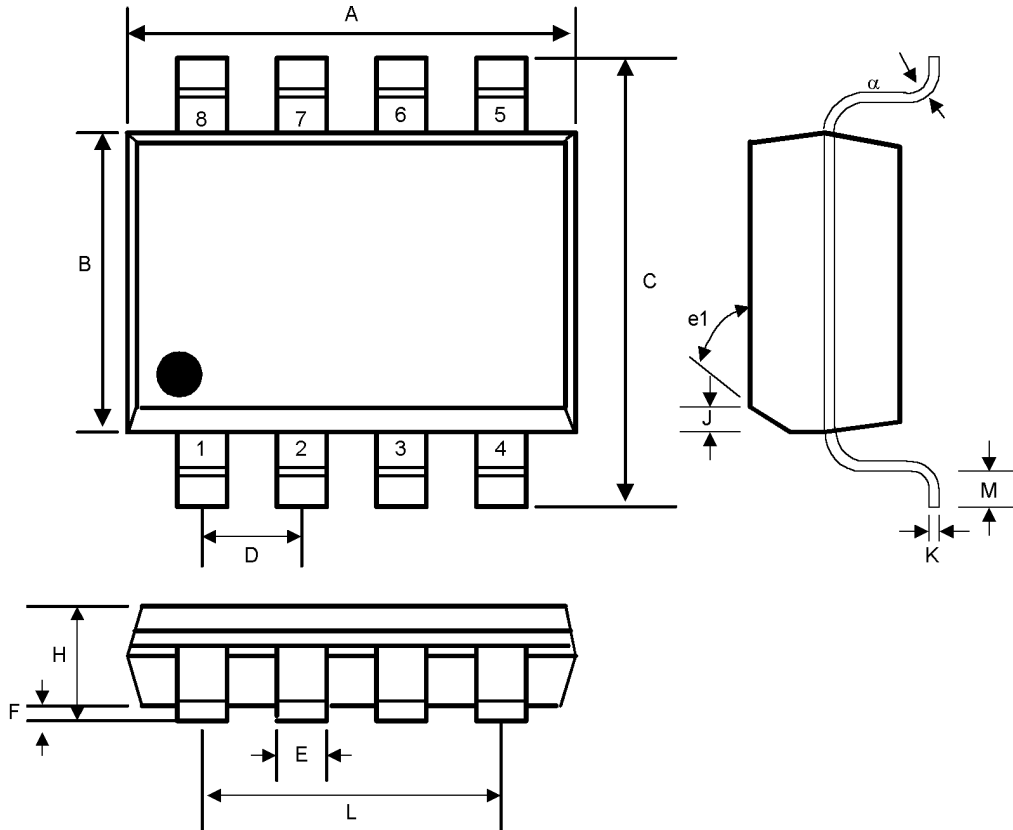


SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN	MAX	MIN	MAX	
A	-	0.200	-	5.08	-
b1	0.014	0.023	0.36	0.58	-
b2	0.045	0.065	1.14	1.65	-
c1	0.008	0.015	0.20	0.38	-
D	0.355	0.400	9.02	10.16	-
E	0.220	0.310	5.59	7.87	-
e	0.100 BSC		2.54 BSC		-
eA	0.300 BSC		7.62 BSC		-
L	0.125	0.200	3.18	5.08	-
Q	0.015	0.060	0.38	1.52	-
s1	0.005	-	0.13	-	-
	90 <sup>0</sup>	105 <sup>0</sup>	90 <sup>0</sup>	105 <sup>0</sup>	-

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## Low Power Dual Operational Amplifier

### Small Outline SOP-8



SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN	MAX	MIN	MAX	
A	0.188	0.197	4.80	5.00	-
B	0.149	0.158	3.80	4.00	-
C	0.228	0.244	5.80	6.20	-
D	0.050 BSC		1.27 BSC		-
E	0.013	0.020	0.33	0.51	-
F	0.004	0.010	0.10	0.25	-
H	0.053	0.069	1.35	1.75	-
J	0.011	0.019	0.28	0.48	-
K	0.007	0.010	0.19	0.25	-
M	0.016	0.050	0.40	1.27	-
L	0.150 REF		3.81 REF		-
e1	45°		45°		-
	0°	8°	0°	8°	-

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