



ON Semiconductor®

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# LA6358N

# LA6358NS

Monolithic Linear IC

## High-Performance Dual Operational Amplifiers

### Overview

The LA6358 is a high-performance dual operational amplifier that can operate from a single voltage power supply. It features a built-in phase correction circuit. It can also operate from a dual power supply with both positive and negative levels and features low power consumption. The LA6358NT can be used in a wide range of industrial applications as a transducer amplifier for all types of transducers, as a DC amplifier circuit, and for other purposes as well.

### Functions

- Eliminates need for phase compensation
- Wide range of operating supply voltage: 3.0V to 30.0V (single power supply)  
:  $\pm 1.5$  to  $\pm 15.0$ V (dual power supply)
- Input voltage swingable down to nearly ground level and output voltage range  $V_{OUT}$  of 0 to  $V_{CC}-1.5$ V
- Low current dissipation :  $I_{CC} = 0.5$ mA typ/ $V_{CC} = +5$ V,  $R_L = \infty$

### Specifications

**Maximum Ratings** at  $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{CC}$ max		32	V
Differential input voltage	$V_{ID}$		32	V
Maximum input voltage	$V_{IN}$ max		-0.3 to +32	V
Allowable power dissipation	$P_d$ max	$T_a \leq 25^\circ\text{C}$ LA6358N, 6358NS	570	mW
Operating temperature	$T_{opr}$		-30 to +85	$^\circ\text{C}$
Storage temperature	$T_{stg}$		-55 to +125	$^\circ\text{C}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

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**Electrical Characteristics** at Ta = 25°C, VCC = 5.0V, Otherwise unless specified.

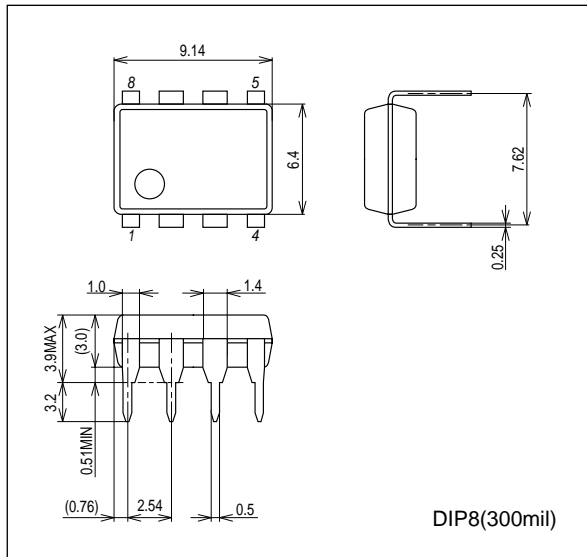
Parameter	Symbol	Conditions	Test Circuit	Ratings			Unit
				min	typ	max	
Input offset voltage	V <sub>IO</sub>		1		±2	±7	mV
Input offset current	I <sub>IO</sub>	I <sub>IN</sub> (+)/I <sub>IN</sub> (-)	2		±5	±50	nA
Input bias current	I <sub>B</sub>	I <sub>IN</sub> (+)/I <sub>IN</sub> (-)	3		45	250	nA
Common-mode input voltage range	V <sub>ICM</sub>		4	0		V <sub>CC</sub> -1.5	V
Common-mode rejection ratio	CMR		4	65	80		dB
Large-amplitude voltage gain	V <sub>G</sub>	V <sub>CC</sub> = 15V, R <sub>L</sub> ≥ 2kΩ	5	25	100		V/mV
Output voltage range	V <sub>OUT</sub>			0		V <sub>CC</sub> -1.5	V
Supply voltage rejection ratio	SVR		6	65	100		dB
Channel separation		f = 1kHz to 20kHz	7		120		dB
Current drain	I <sub>CC</sub>		8		0.5	1.2	mA
Output current (source)	I <sub>O</sub> source	V <sub>IN+</sub> = 1V, V <sub>IN-</sub> = 0V	9	20	40		mA
Output current (sink)	I <sub>O</sub> sink	V <sub>IN+</sub> = 0V, V <sub>IN-</sub> = 1V	10	10	20		mA

## Package Dimensions

unit : mm (typ)

3001D

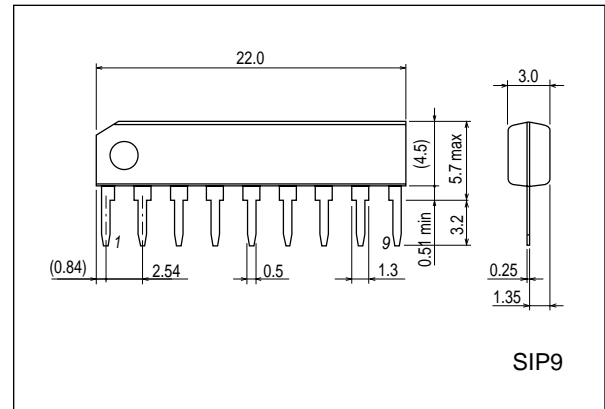
[LA6358N]



unit : mm (typ)

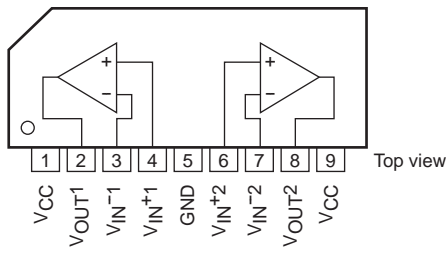
3017D

[LA6358NS]

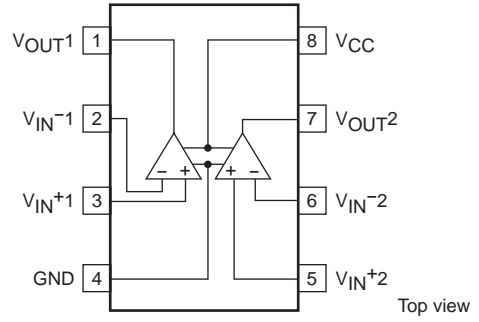


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## Pin Assignment

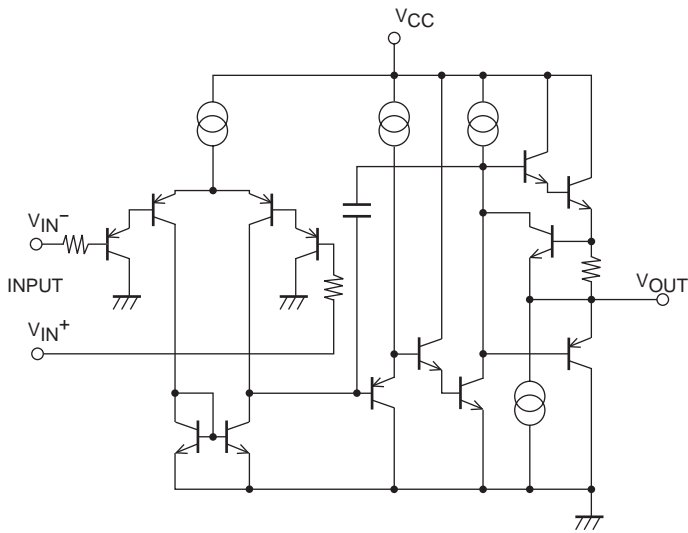


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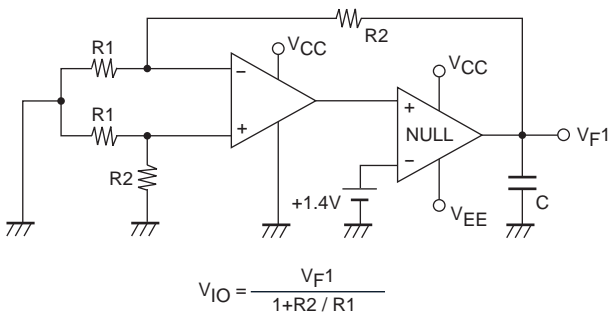
[LA6358N, 6358NM, 6358NT]

## Equivalent Circuit

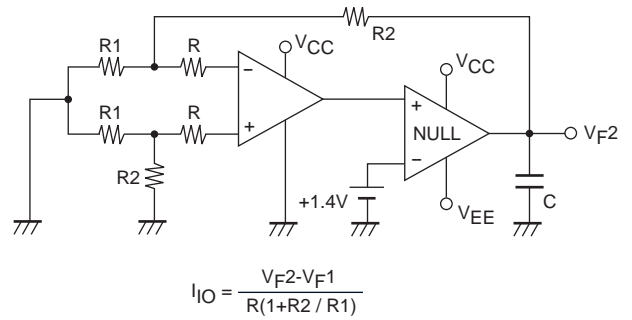


Test Circuits

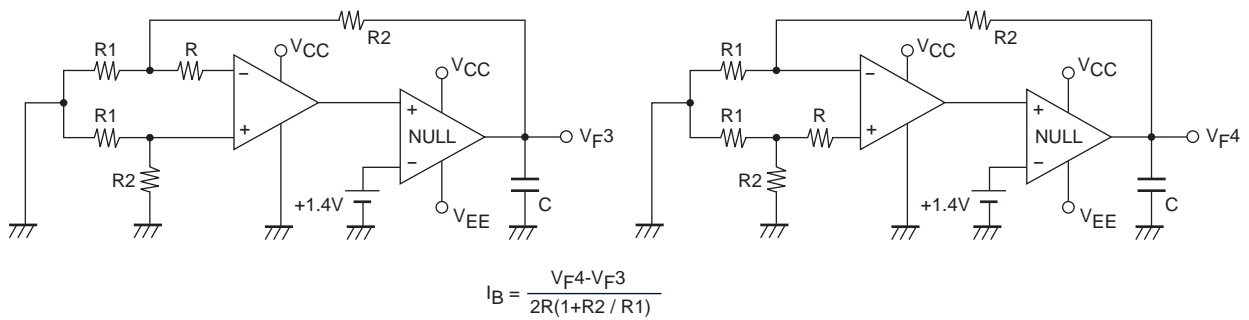
1.  $V_{IO}$



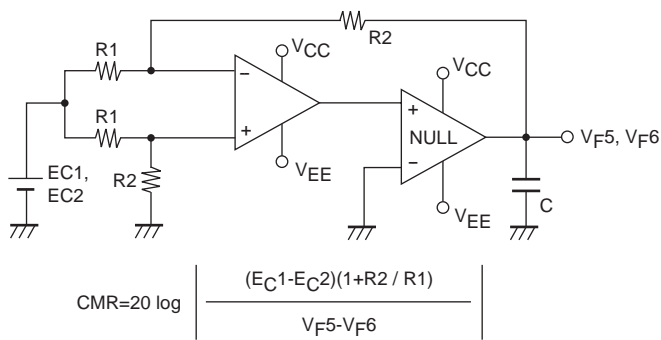
2.  $I_{IO}$



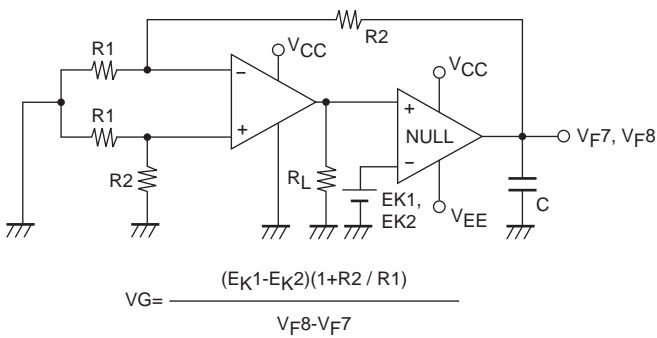
3.  $I_B$



4. CMR,  $V_{ICM}$

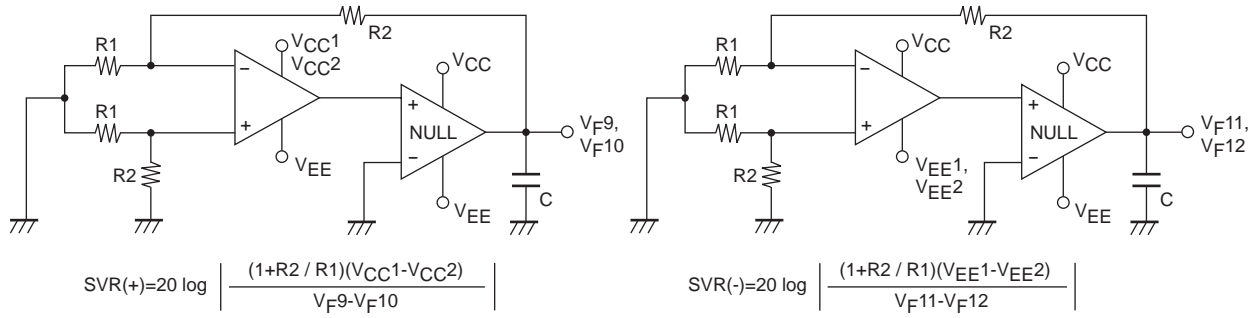


5.  $V_G$

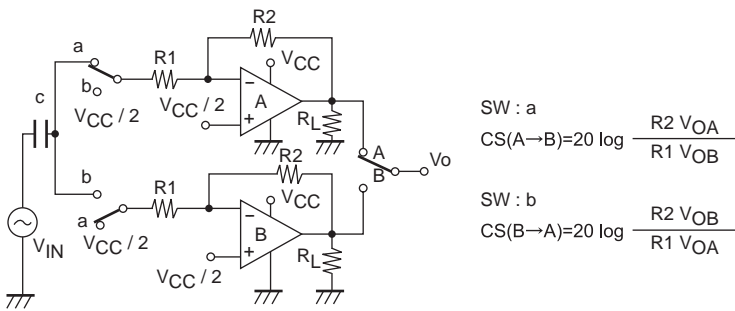


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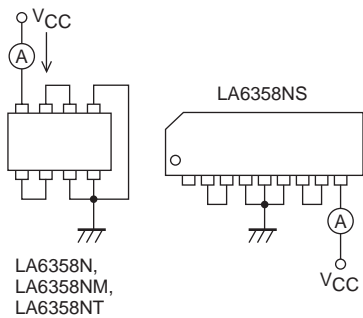
## 6. SVR



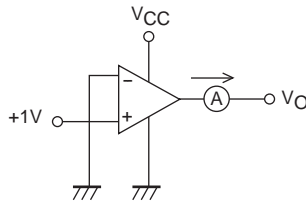
## 7. CS



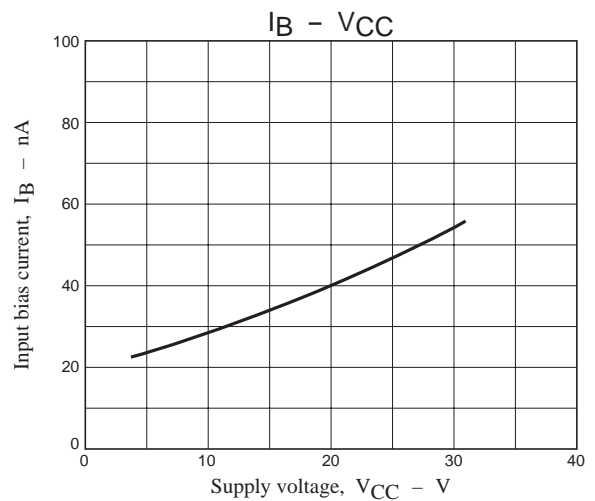
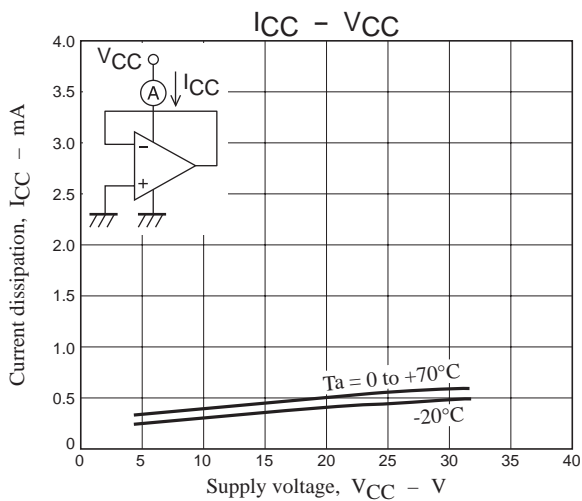
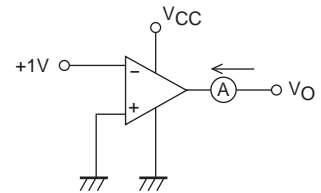
## 8. ICC



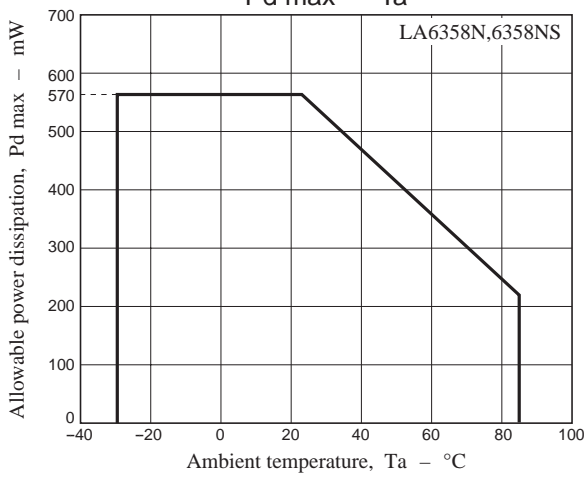
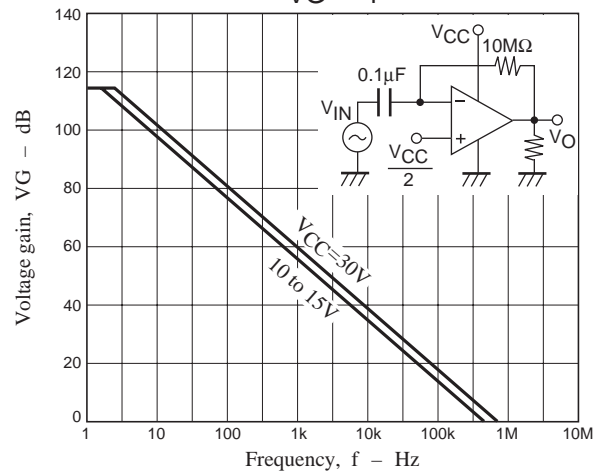
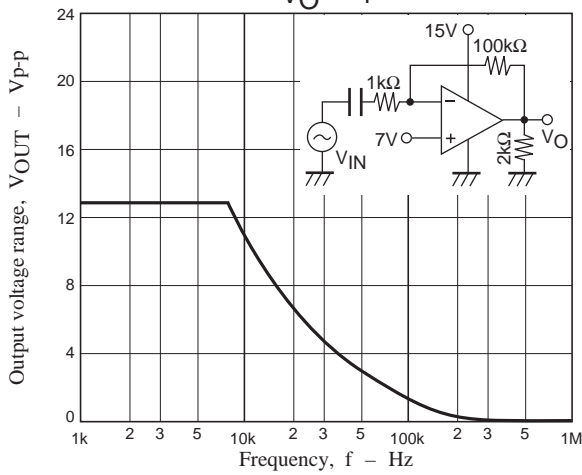
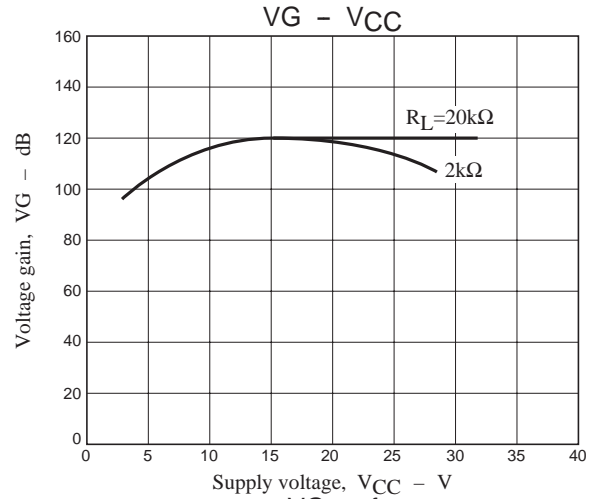
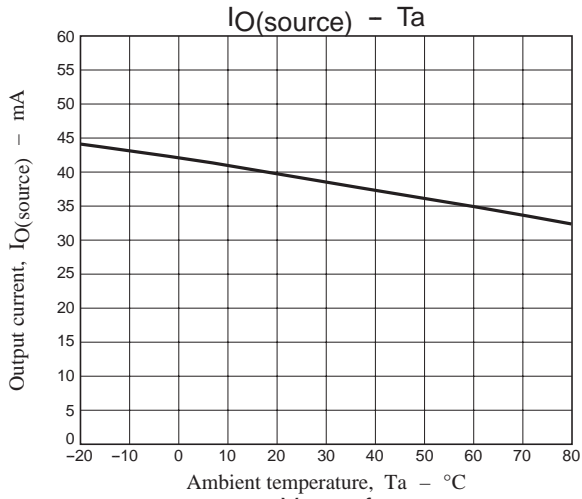
## 9. IO source



## 10. IO sink

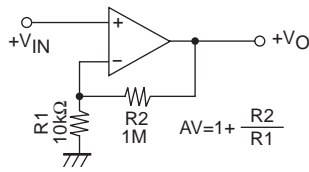


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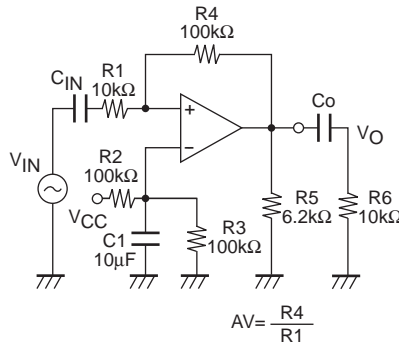


Sample Application Circuits

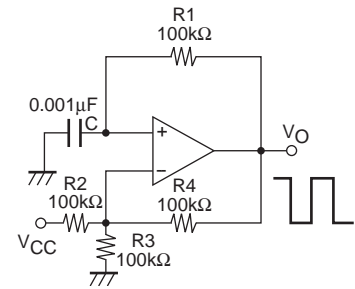
Noninverting DC amplifier



Inverting AC amplifier



Rectangular wave oscillator



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