



SANYO Semiconductors

# DATA SHEET

## LA6358N,6358NS, LA6358NM,6358NT

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	Pd max	$T_a \leq 25^\circ\text{C}$ LA6358N, 6358NS	570	mW
		$T_a \leq 25^\circ\text{C}$ LA6358NM	300	mW
		$T_a \leq 25^\circ\text{C}$ LA6358NT	170	mW
Operating temperature	Topr		-30 to +85	$^\circ\text{C}$
Storage temperature	Tstg		-55 to +125	$^\circ\text{C}$

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# LA6358N, 6358NS, 6358NM, 6358NT

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

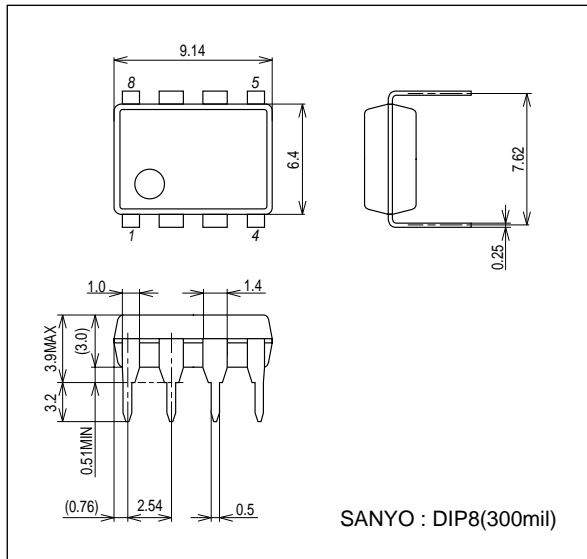
Parameter	Symbol	Conditions	Test Circuit	Ratings			Unit
				min	typ	max	
Input offset voltage	V <sub>IO</sub>		1		±2	±7	mV
Input offset current	I <sub>IO</sub>	I <sub>IN</sub> (+)/I <sub>IN</sub> (-)	2		±5	±50	nA
Input bias current	I <sub>B</sub>	I <sub>IN</sub> (+)/I <sub>IN</sub> (-)	3		45	250	nA
Common-mode 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

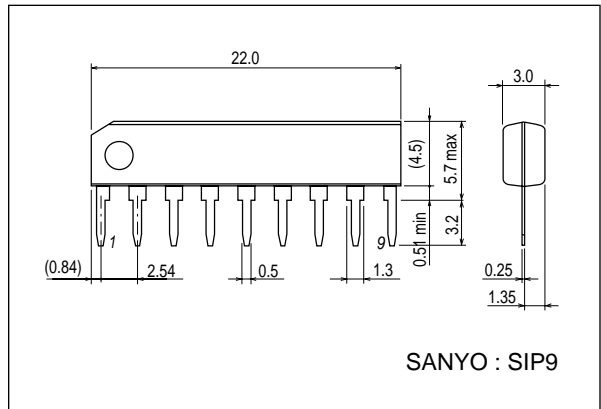
[LA6358N]



unit : mm (typ)

3017D

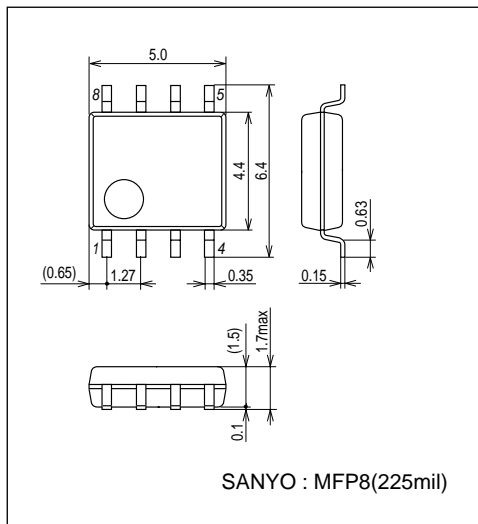
[LA6358NS]



unit:mm (typ)

3032D

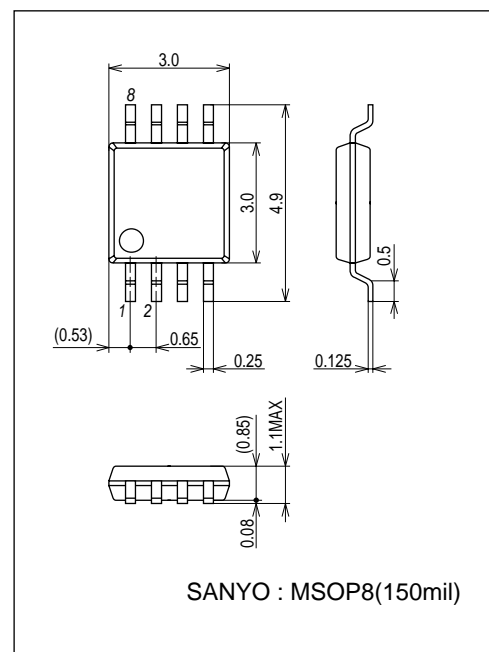
[LA6358NM]



unit:mm (typ)

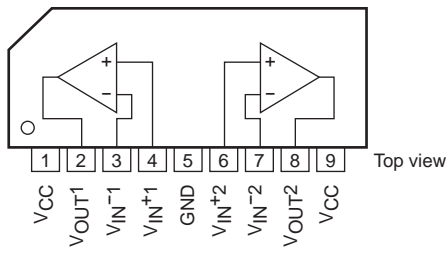
3245B

[LA6358NT]

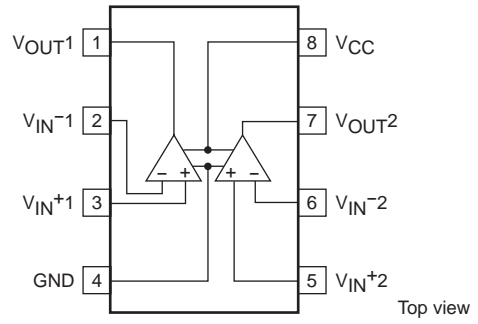


# LA6358N, 6358NS, 6358NM, 6358NT

## Pin Assignment

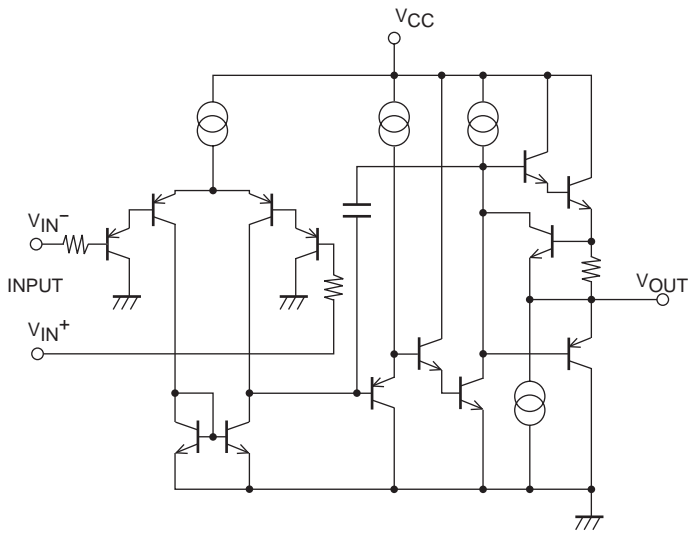


[LA6358NS]



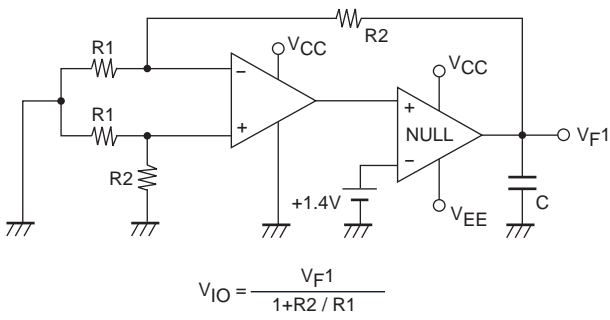
[LA6358N, 6358NM, 6358NT]

## Equivalent Circuit

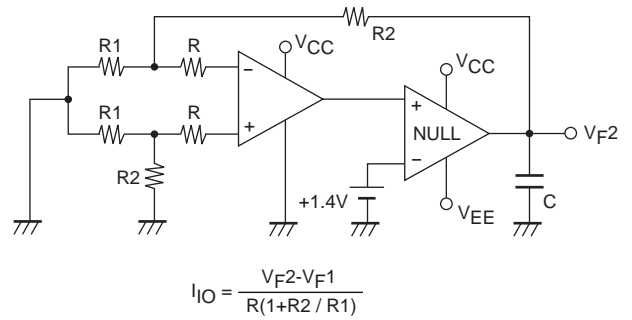


Test Circuits

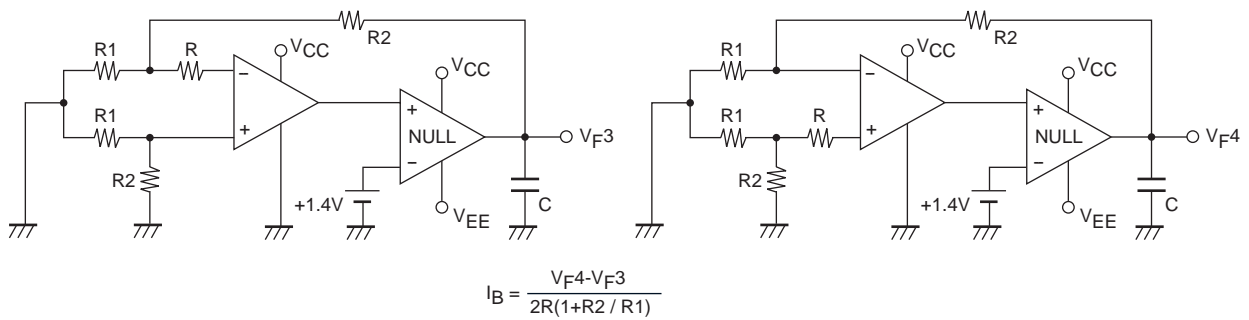
1.  $V_{IO}$



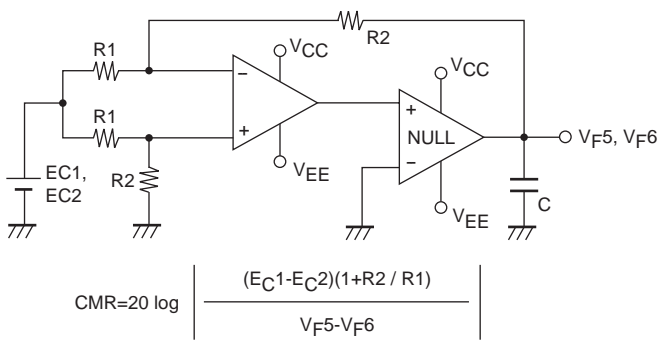
2.  $I_{IO}$



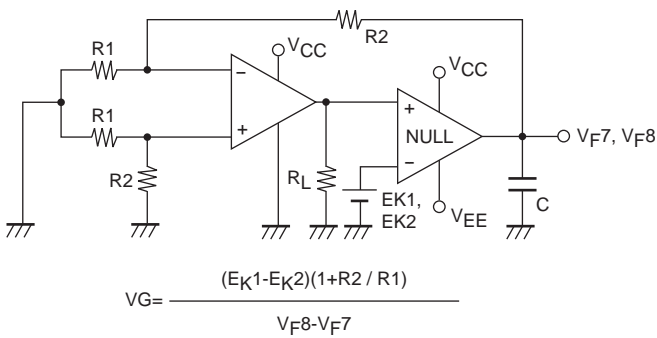
3.  $I_B$



4. CMR,  $V_{ICM}$

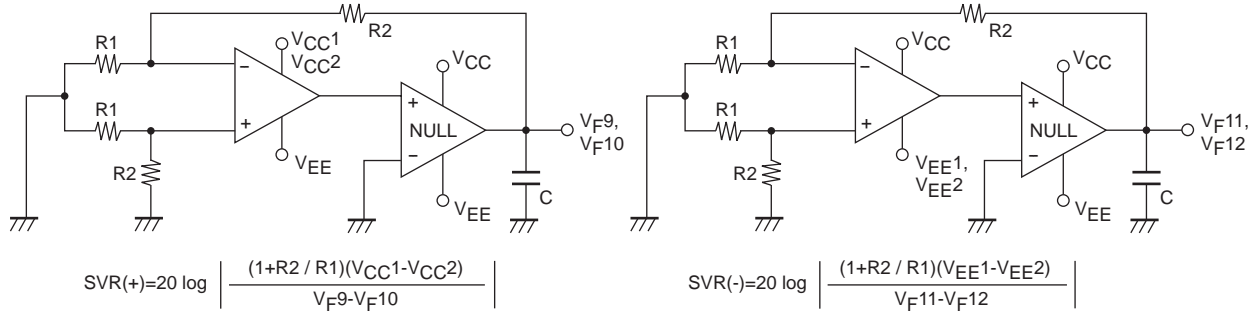


5.  $V_G$

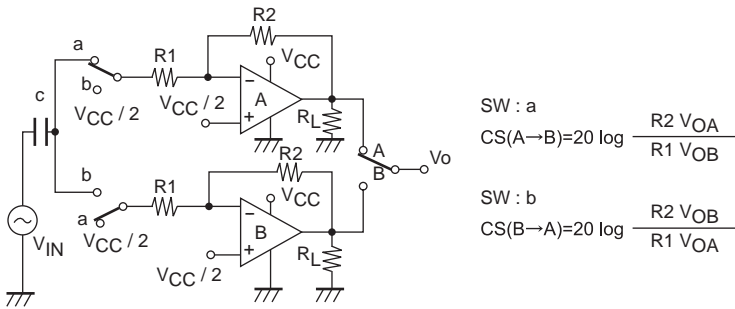


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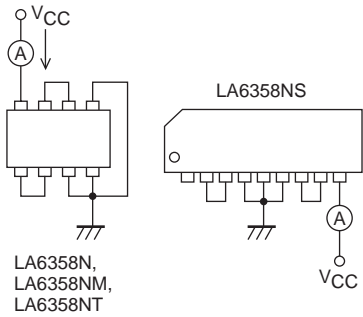
## 6. SVR



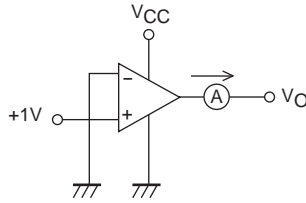
## 7. CS



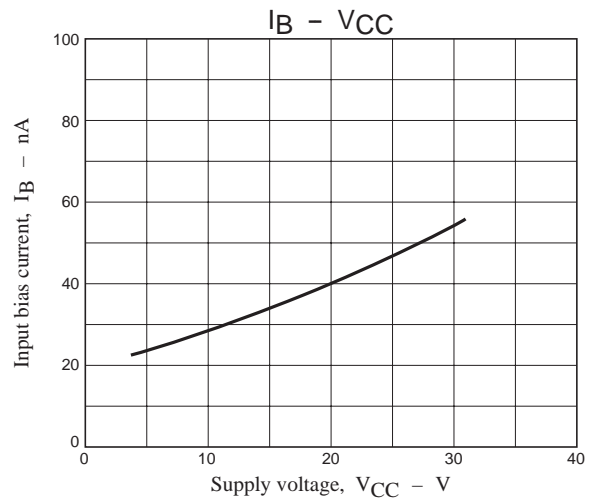
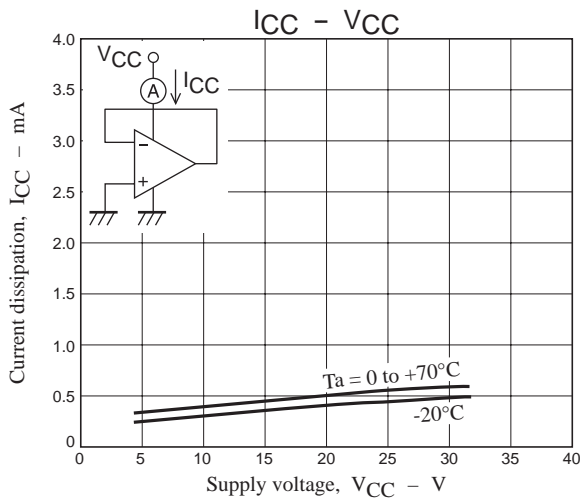
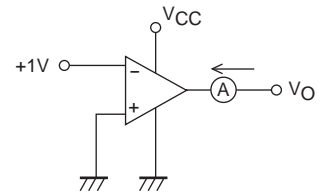
## 8. I<sub>CC</sub>



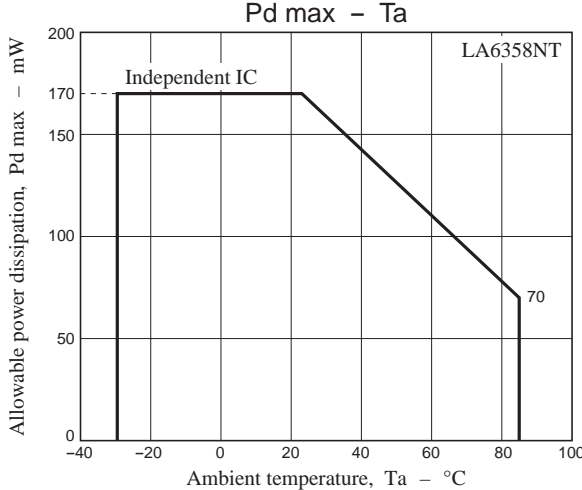
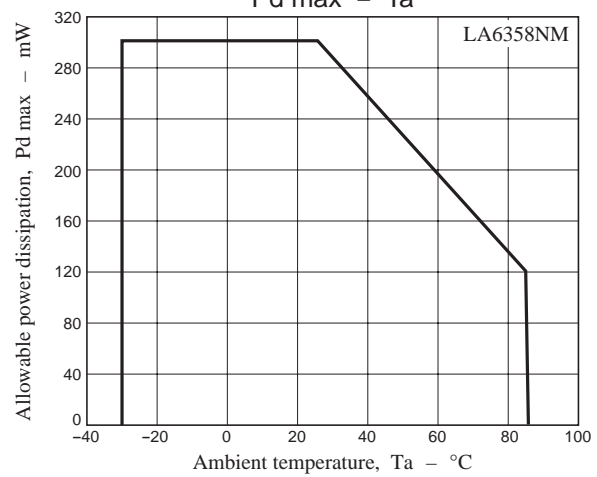
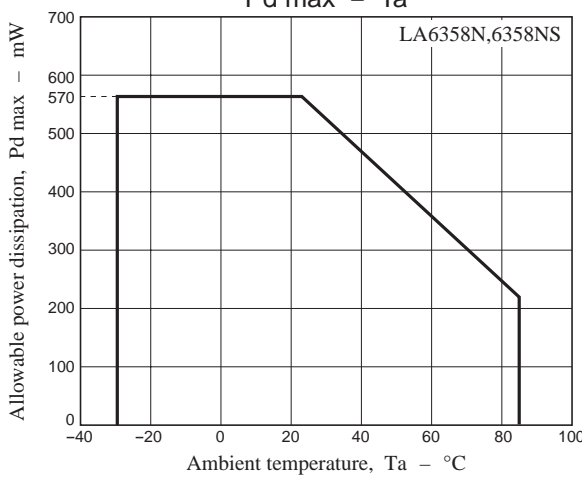
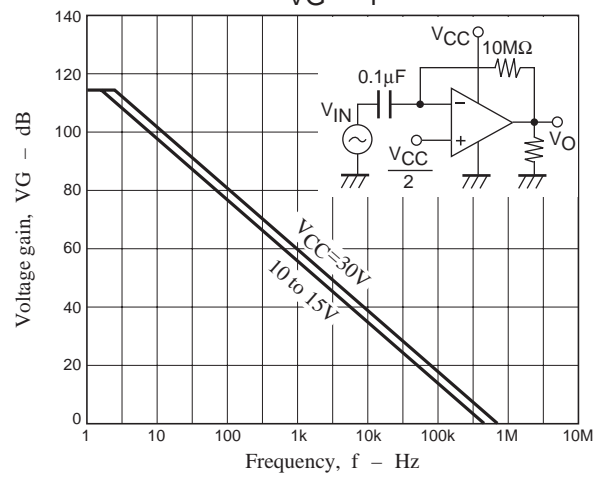
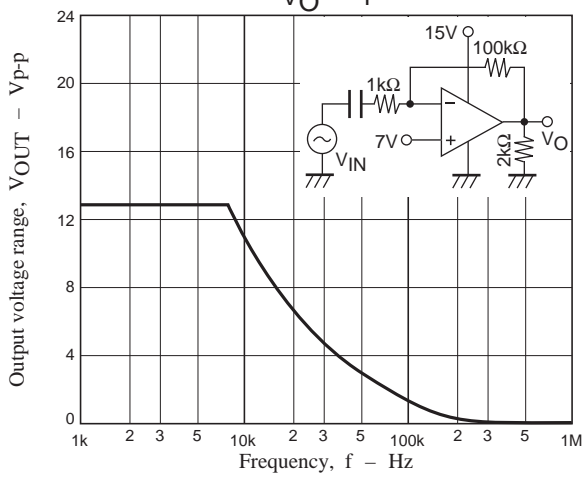
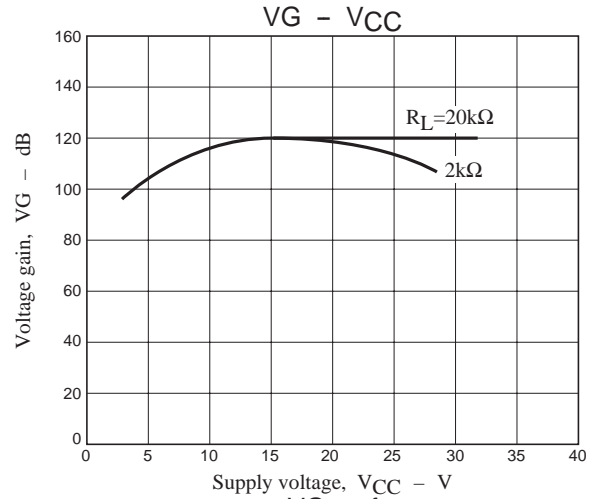
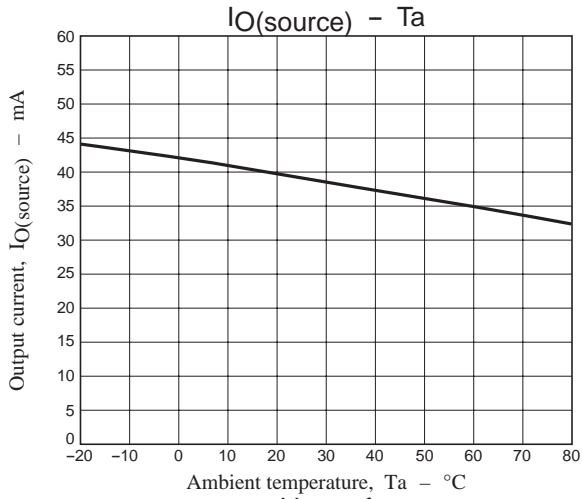
## 9. I<sub>O</sub> source



## 10. I<sub>O</sub> sink

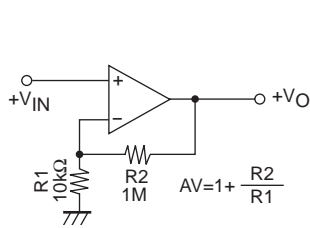


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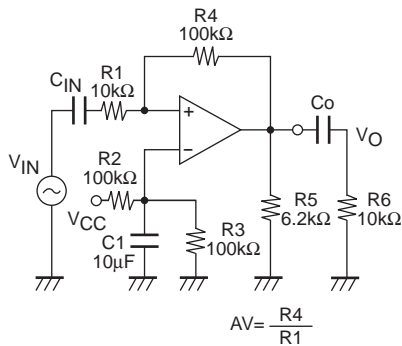


Sample Application Circuits

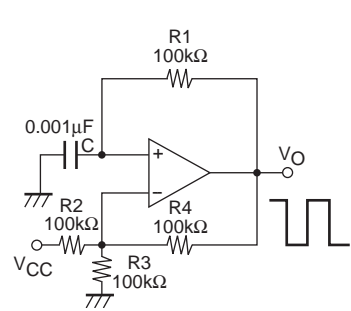
Noninverting DC amplifier



Inverting AC amplifier



Rectangular wave oscillator



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