

Ordering number: EN 3191A

Monolithic Linear IC

|              |          |   |
|--------------|----------|---|
| <b>SANYO</b> | No.3191A | <b>LA6358N,6358NS</b>                           |
|              |          | High-Performance<br>Dual Operational Amplifiers |

**Overview**

The LA6358N is an IC integrating two high-performance operational amplifiers in a single package. This operational amplifier contains an internal phase compensator and is designed to operate from a single power supply over a wide range of voltages. As with conventional general-purpose operational amplifiers, operation from dual power supplies is also possible and power dissipation is very low. This IC can be used widely in commercial and industrial applications including various transducer amplifiers and DC amplifiers.

**Features**

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

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

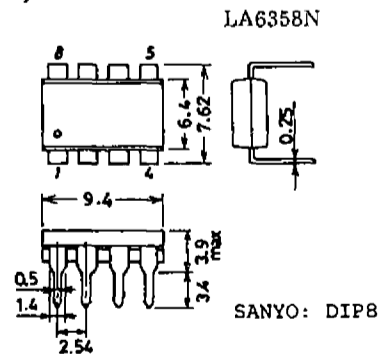
|                             |                                  |             | unit       |
|-----------------------------|----------------------------------|-------------|------------|
| Maximum Supply Voltage      | $V_{CC}$                         | 32          | V          |
| Differential Input Voltage  | $V_{ID}$                         | 32          | V          |
| Maximum Input Voltage       | $V_{IN\ max}$                    | -0.3 to +32 | V          |
| Allowable Power Dissipation | $P_d\ max$ $T_a \leq 25^\circ C$ | 570         | mW         |
| Operating Temperature       | $T_{opr}$                        | -30 to +85  | $^\circ C$ |
| Storage Temperature         | $T_{stg}$                        | -55 to +125 | $^\circ C$ |

**Operating Characteristics at  $T_a = 25^\circ C, V_{CC} = +5V$**

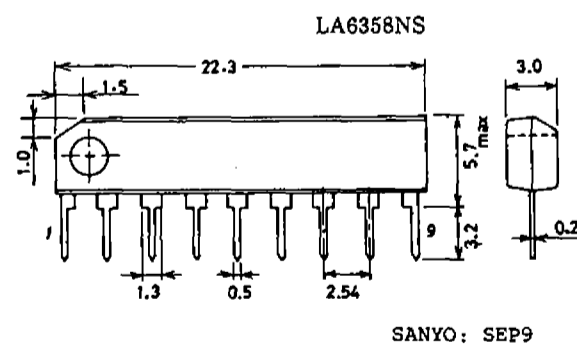
|                                 |           |                         | Test Circuit | min | typ            | max | unit |
|---------------------------------|-----------|-------------------------|--------------|-----|----------------|-----|------|
| Input Offset Voltage            | $V_{IO}$  |                         | 1            |     | ±2             | ±7  | mV   |
| Input Offset Current            | $I_{IO}$  | $I_{IN(+)} / I_{IN(-)}$ | 2            |     | ±5             | ±50 | nA   |
| Input Bias Current              | $I_B$     | $I_{IN(+)} / I_{IN(-)}$ | 3            |     | 45             | 250 | nA   |
| Common-Mode Input Voltage Range | $V_{ICM}$ |                         | 4            | 0   | $V_{CC} - 1.5$ |     | V    |

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Package Dimensions 3001B-D8IC (unit : mm)



Package Dimensions 3017B-S9IC (unit : mm)



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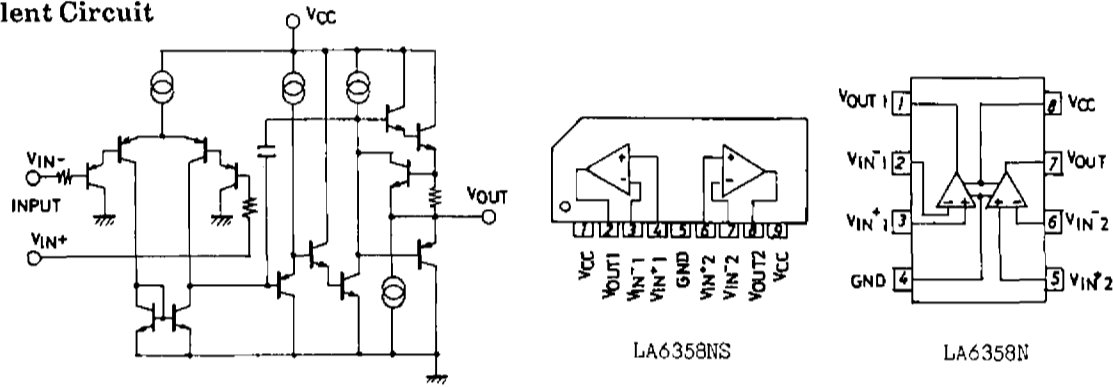
1100YT / 8029TA, TS №3191-1/4

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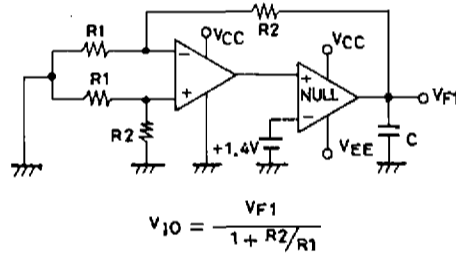
|                              |                       | Test    |     |                      |     |      |
|------------------------------|-----------------------|---------|-----|----------------------|-----|------|
|                              |                       | Circuit | min | typ                  | max | unit |
| Common-Mode Rejection Ratio  | CMR                   | 4       | 65  | 80                   |     | dB   |
| Large Signal Voltage Gain    | V <sub>G</sub>        | 5       | 25  | 100                  |     | V/mV |
| Output Voltage Range         | V <sub>OUT</sub>      |         | 0   | V <sub>CC</sub> -1.5 |     | V    |
| Power Supply Rejection Ratio | SVR                   | 6       | 65  | 100                  |     | dB   |
| Channel Separation           |                       | 7       |     | 120                  |     | dB   |
| Current Dissipation          | I <sub>CC</sub>       | 8       |     | 0.5                  | 1.2 | mA   |
| Output Current (Source)      | I <sub>O source</sub> | 9       | 20  | 40                   |     | mA   |
| Output Current (Sink)        | I <sub>O sink</sub>   | 10      | 10  | 20                   |     | mA   |

Equivalent Circuit

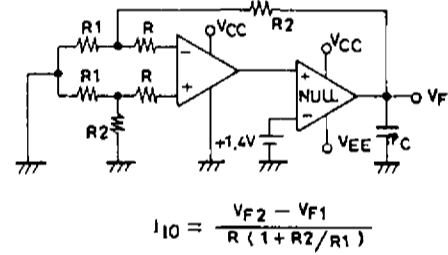


Test Circuits

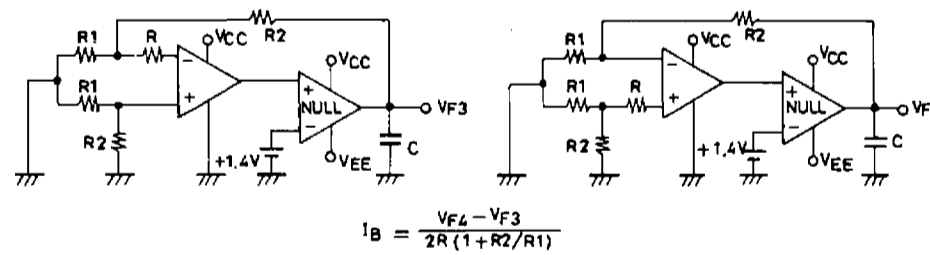
1. Input Offset Voltage V<sub>I0</sub>



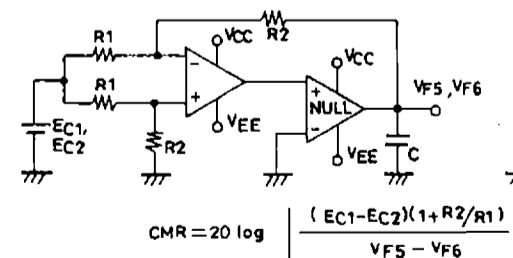
2. Input Offset Current I<sub>I0</sub>



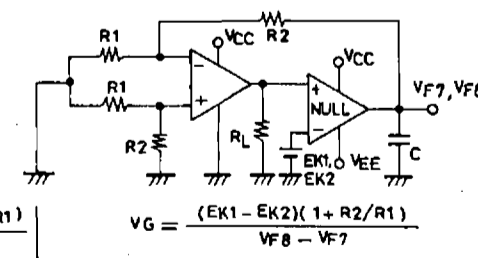
3. Input Bias Current I<sub>B</sub>



4. Common-mode Rejection Ratio CMR  
Common-mode Input Voltage Range V<sub>ICM</sub>

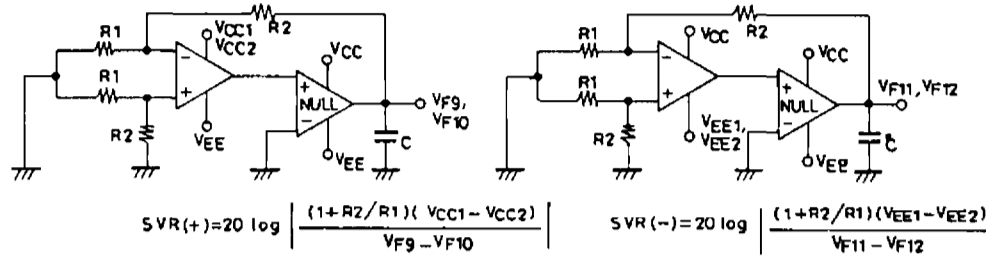


5. Voltage Gain V<sub>G</sub>

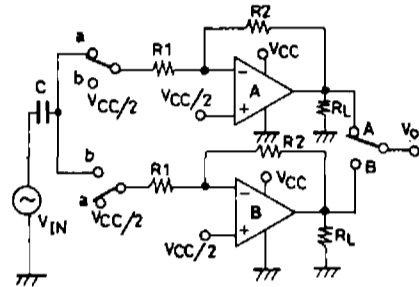


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6. Supply Voltage Rejection SVR



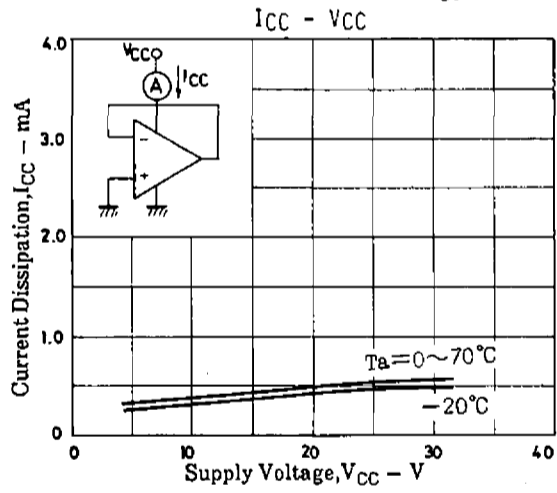
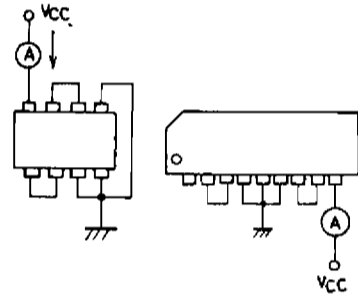
7. Channel Separation CS



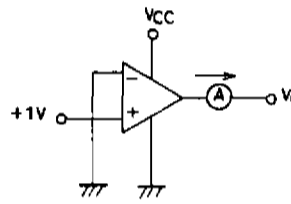
SW : a  
 $CS(A \rightarrow B) + 20 \log \frac{R2 VOA}{R1 VOB}$

SW : b  
 $CS(B \rightarrow A) + 20 \log \frac{R2 VOB}{R1 VOA}$

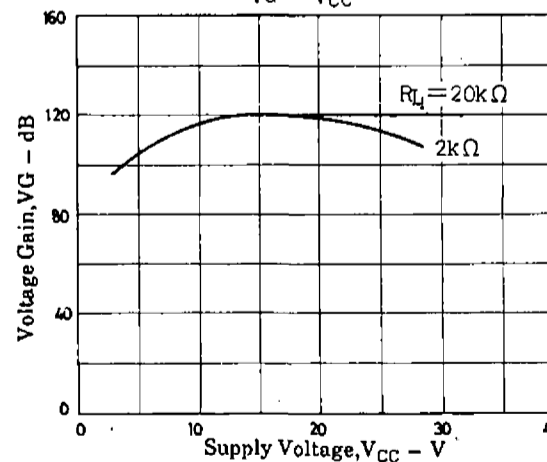
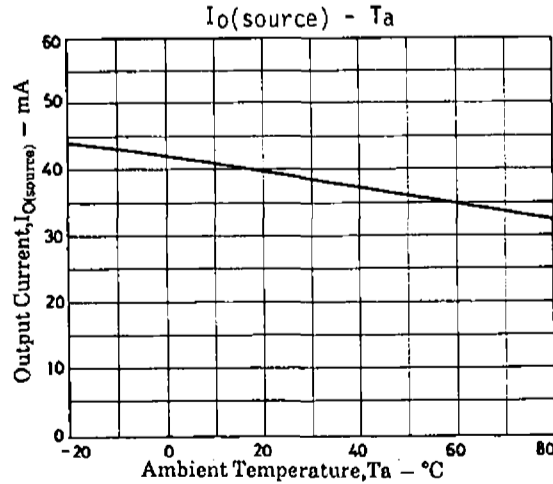
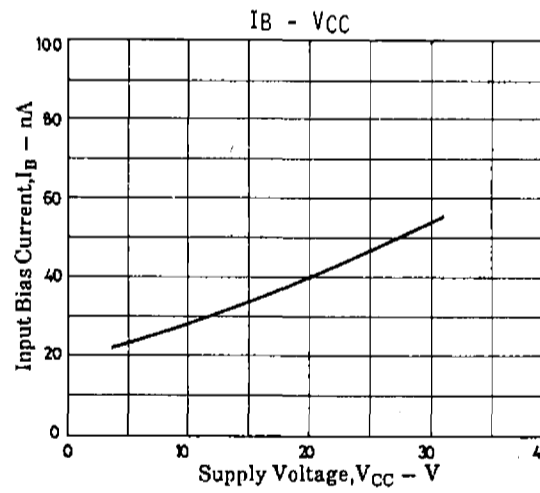
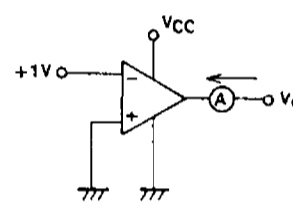
8. Current Dissipation ICC



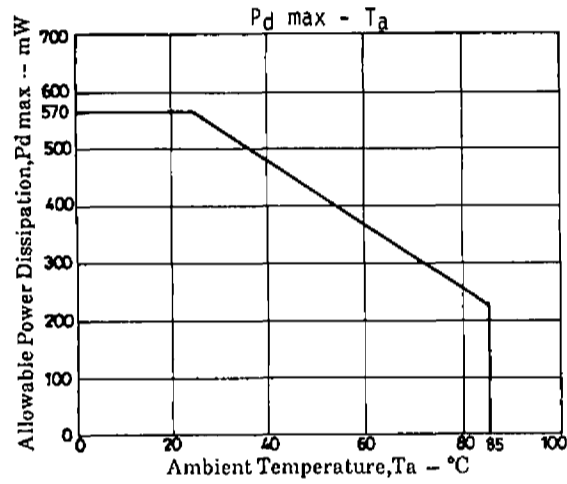
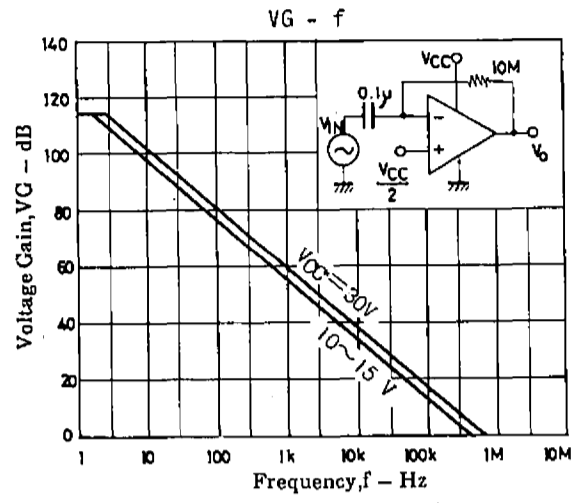
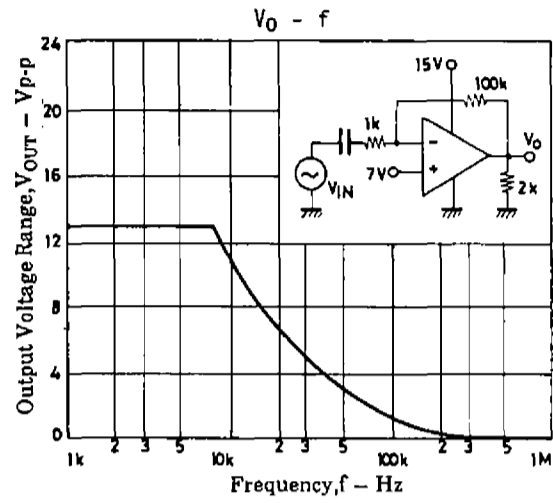
9. Output Current IO source



10. Output Current IO sink

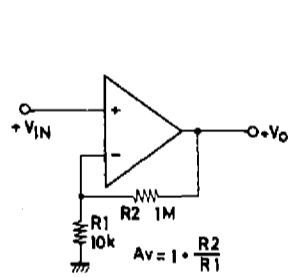


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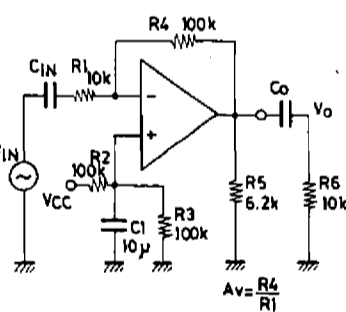


Sample Application Circuits

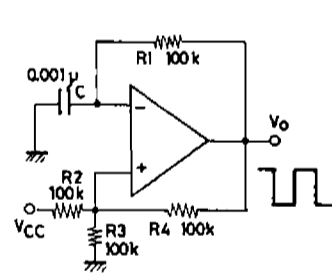
Noninverting DC amplifier



Inverting AC amplifier



Rectangular wave oscillator



Unit (resistance:Ω capacitance:F)

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