Ordering number: ENN5234A

Monolithic Linear IC



LA6358N, 6358NS, 6358NM, 6358NT

High-Performance Dual Operational Amplifiers

Overview

The LA6358 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 30.0 V (single power supply) ± 1.5 to ± 15.0 V (dual power supply)
- Input voltage swingable down to nearly ground level and output voltage range V_{OUT} of 0 to $V_{CC} - 1.5 \text{ V}$
- Low current dissipation:

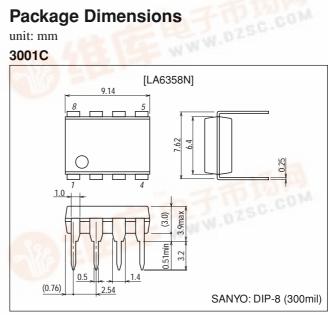
 $I_{CC} = 0.5 \text{ mA typ/V}_{CC} = +5 \text{ V}, R_{L} = \infty$

• Miniflat package permitting the LA6358NM-applied sets to be made small

Package Dimensions

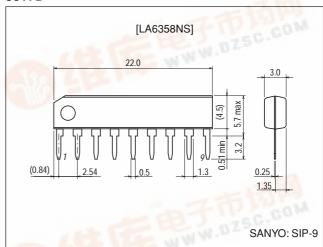
unit: mm

3001C



unit: mm

3017D



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LA6358N, 6358NS, 6358NM, 6358NT

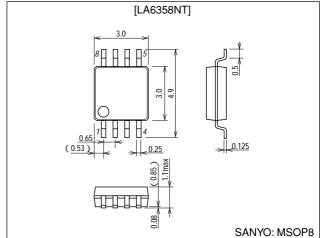
Package Dimensions

unit: mm

3032C

unit: mm **3245A**





Specifications

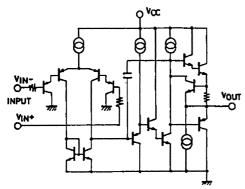
Maximum Ratings at Ta = 25°C

Parameter	Symbol		Conditions	Ratings	Unit
Maximum Supply Voltage	Vcc			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	Ta ≤ 25°C	LA6358N, 6358NS	570	mW
		Ta ≤ 25°C	LA6358NM	300	mW
		Ta ≤ 25°C	LA6358NT	170	mW
Operating Temperature	Topr			-30 to +85	°C
Storage Temperature	Tstg			-55 to +125	°C

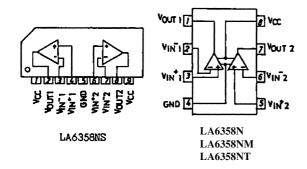
Operating Characteristics at Ta = 25°C, $V_{CC} = +5 \text{ V}$

Parameter	Symbol	Conditions	Test Circuit	Ratings			
				min	typ	max	Unit
Input Offset Voltage	Vio		1		±2	±7	mV
Input Offset Current	lio	I _{IN} (+)/I _{IN} (-)	6		±5	±50	nA
Input Bias Current	lΒ	I _{IN} (+)/I _{IN} (-)	4, 5		45	250	nA
Common-Mode Input Voltage Range	VICM		3	0		V _{CC} -1.5	V
Common-Mode Rejection Ratio	CMRR		3	65	80		dB
Large Signal Voltage Gain	VG	$V_{CC} = 15 \text{ V}, R_L \ge 2 \text{ k}\Omega$		25	100		V/mV
Output Voltage Range	Vo		2	0		V _{CC} -1.5	V
Power Supply Rejection Ratio	SVRR		1	65	100		dB
Channel Separation	CS	f = 1 k to 20 kHz	9		120		dB
Current Dissipation	Icc		7		0.5	1.2	mA
Output Current (Source)	I _{O source}	V _{IN+} = 1 V, V _{IN-} = 0 V	10	20	40		mA
Output Current (Sink)	I _{O sink}	V _{IN+} = 0 V, V _{IN-} = 1 V	11	10	20		mA

Equivalent Circuit

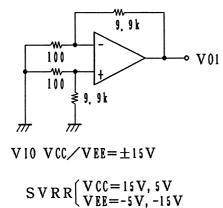


Pin Assignment



Test Circuits

1. VIO, SVRR



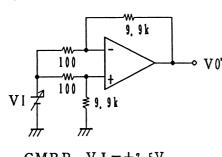
2. VO

$$V10 = V01/100$$

$$SVR(+)$$

$$SVR(-) = \left| \frac{\triangle V01}{100 \times 10 V} \right|$$

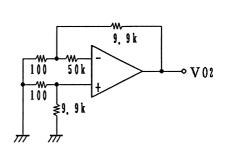
3. CMRR, VICM



CMRR
$$VI = \pm 1.5V$$

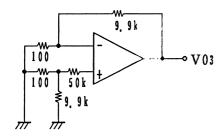
$$CMR = 2010g \frac{15 \times 100}{|\triangle V0'|}$$

4. IB(+)



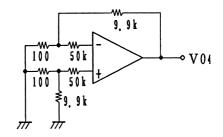
$$I B (+) = \frac{|V02 - V01|}{50k \times 100}$$

5. IB(-)



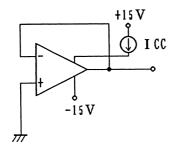
IB (-) =
$$\frac{|V03 - V01|}{50k \times 100}$$

6. I IO

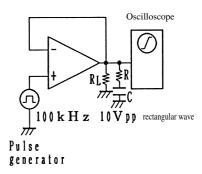


$$I \, I0 = \frac{|V04 - V01|}{50k \times 100}$$

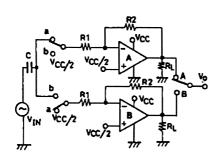
7. I CC



8. SR



9. Channel Separation CS

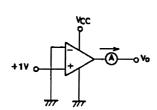


$$CS (A \rightarrow B) + 20log \frac{R_2 V_{OA}}{R_1 V_{OB}}$$

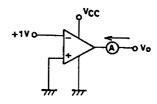
SW:b

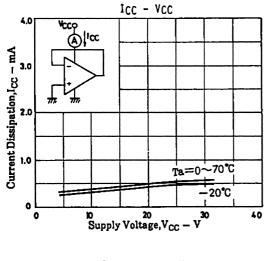
$$CS (B \rightarrow A) + 20log \frac{R_2 V_{OB}}{R_1 V_{OA}}$$

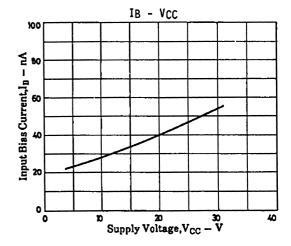
10. Output Current IO source

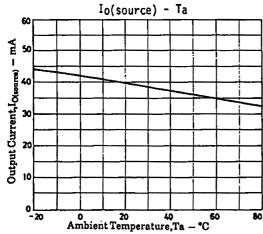


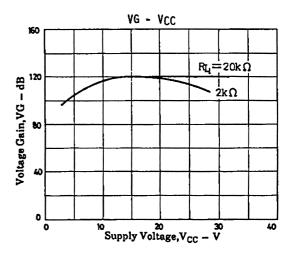
11. Output Current IO sink

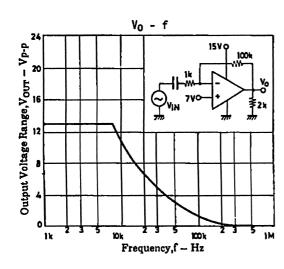


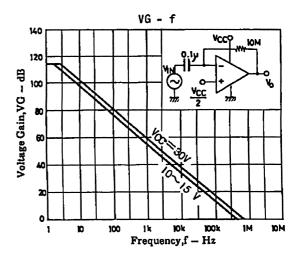










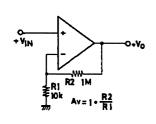


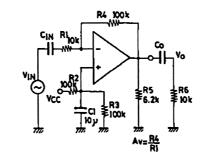
Sample Application Circuits

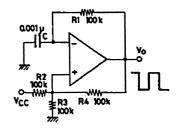
Noninverting DC amplifier

Inverting AC amplifier

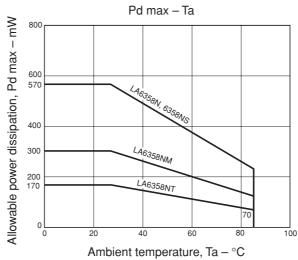
Rectangular wave oscillator







Unit (resistance: Ω , capacitance: F)



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