1.5MHz, RRIO, CMOS, Op Amps

DESCRIPTION

The LMV321(Single), LMV358 (Dual) is low cost, voltage feedback amplifiers. These devices can operate from 2.1V to 5.5V single supply, and consume only 40μA quiescent current per amplifier. They provide rail-to-rail input with a wide input common mode voltage range and rail-to-rail output voltage swing. This feature makes LMV321/358 appropriate for buffering ASIC.

The LMV321/358 offer a gain-bandwidth product of 1.5MHz and an ultra-low input bias current of 10pA. They are well suited for piezoelectric sensors, integrators and photo diode amplifiers.

The LMV321/358 are designed into a wide range of applications, such as portable systems, safety monitoring, battery-powered instrumentation, and portable systems.

FEATURES

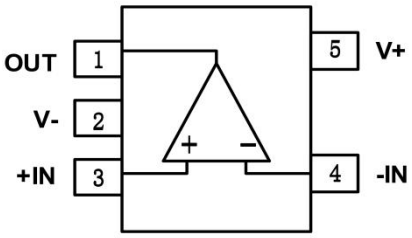
- Low Cost
- Supply Voltage Range: 2.1V to 5.5V
- Low Supply Current : 40μA/Amp(TYP)
- Low Offset Voltage: 0.8mV(TYP)
- Unity-Gain Stable
- Gain-Bandwidth Product : 1.5MHz(TYP)
- Slew Rate: 0.6V/μs(TYP)
- Rail-to-Rail Input and Output
- Input Voltage Range: -0.1V to 5.6V with V_S = 5.5V
- Operating Temperature: -20℃~+85℃

APPLICATIONS

- Active filter
- Electronic instrumentation
- General Purpose Portable Devices
- General Purpose Low Voltage

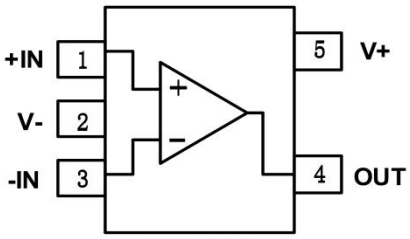
Pin Configuration

LMV321



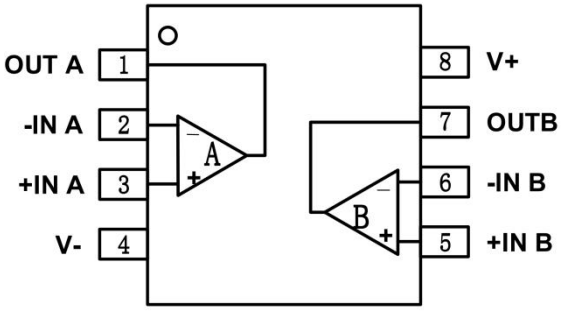
SOT23-5

LMV321B



SOT23-5

LMV358



SOP-8

Absolute Maximum Ratings

Over operating free-air temperature range (unless otherwise noted)

PARAMETER	MIN	MAX	UNIT
Power Supply Voltage(V+ to V-)	2.1	6	V
Differential Input Voltage		±5.5	V
Common mode Input Voltage	-0.3	VCC+0.3V	V
Maximum Junction Temperature		+150	℃
Storage Temperature Range	-65	+150	℃
Lead Temperature(Soldering, 10 sec)		260	℃

Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. Exposure to any Absolute Maximum Rating condition for extended periods may affect device reliability and lifetime.

Recommended Operating Conditions

Over operating free-air temperature range (unless otherwise noted)

	MIN	NOM	MAX	UNIT
Supply Voltage, Vs=(V+) - (V-)	2.1		5.5	V
Operating Temperature Range	-20		+85	℃

ELECTRICAL CHARACTERISTICS

(V+=5V, T_A = 25°C, unless otherwise noted)

PARAMETER	SYMBOL	CONDITIONS	Spec			
			MIN	TYP	MAX	UNIT
Input offset voltage	V_{IO}		-	±0.8	±5	mV
Input offset current	I_{IO}		-	±10	-	pA
Input bias current	I_{BIAS}		-	±10	-	pA
Input Common Mode Voltage	V_{ICM}	V+=5.5V	-0.1	-	5.6	V
Quiescent Current/Amplifier	I_Q			40		μA
Output short-circuit current	I_{SC}		-	60	-	mA
Large Signal Voltage Gain	Gv	R_L=5KΩ, Vo=0.1 to 4.9V	70	90	-	dB
		R_L=100KΩ, Vo=0.035 to 4.965V	80	94	-	dB
Common Mode Rejection Ratio	CMRR	V+=5.5V, V_{ICM}=-0.1 to 4V	62	90	-	dB
		V+=5.5V, V_{ICM}=-0.1 to 5.6V	56	88	-	dB
Power supply Rejection Ratio	PSRR	V+=2.5V to 5.5V, V_{ICM}=0.5V	60	80	-	dB
Output Swing	V_{OH}	R_L=10KΩ	V+-100	V+-10	-	V
	V_{OL}		-	10	-	mV
Gain-Bandwidth Product	GBWP		-	1.5	-	MHz
Slew Rate	SR		-	0.6	-	V/us

TYPICAL APPLICATIONS

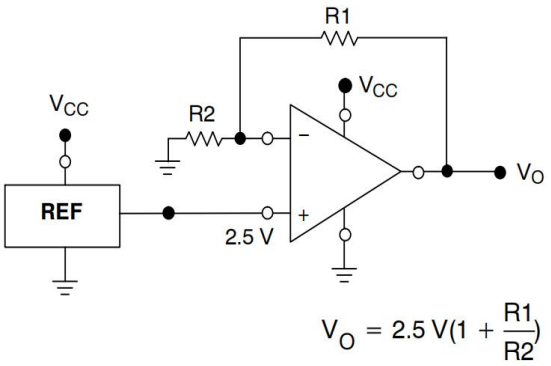


Figure 1. Reference Voltage

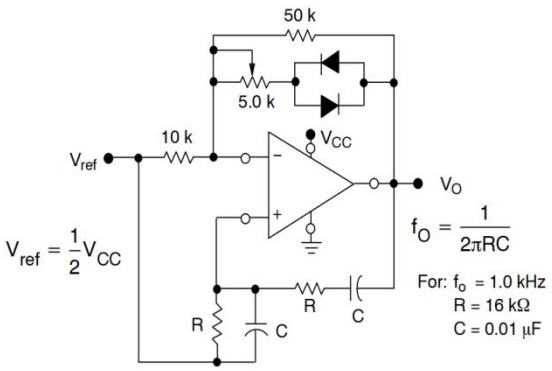


Figure 2. Wien Bridge Oscillator

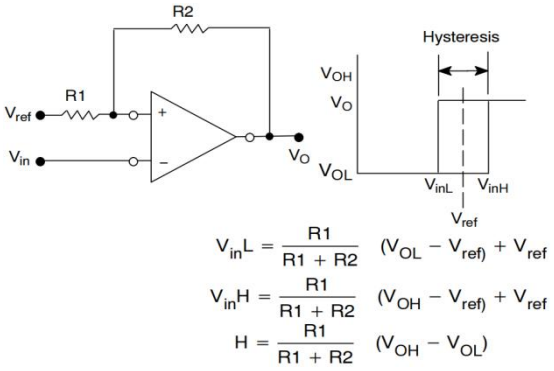


Figure 3. Lag Comparator

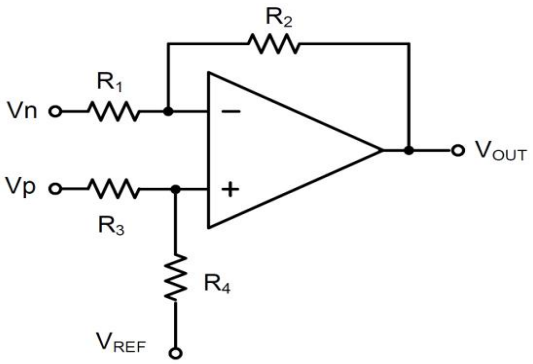


Figure 4. Differential Amplifier

TYPICAL CHARACTERISTICS

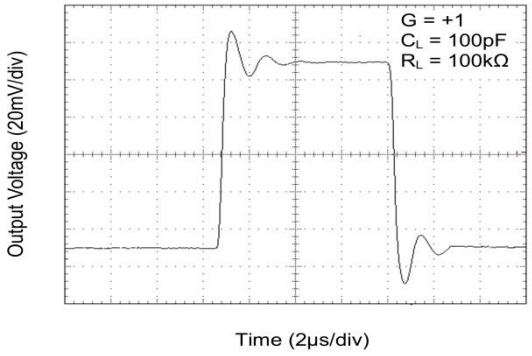


Figure 5. Small-Signal Step Response

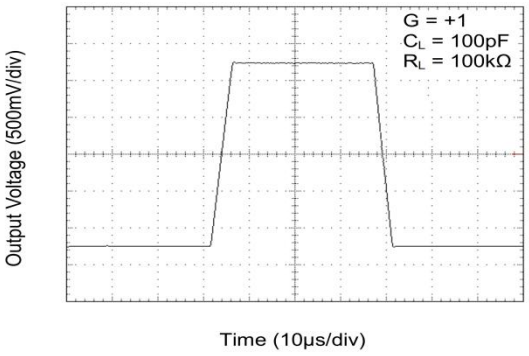


Figure 6. Large-Signal Step Response

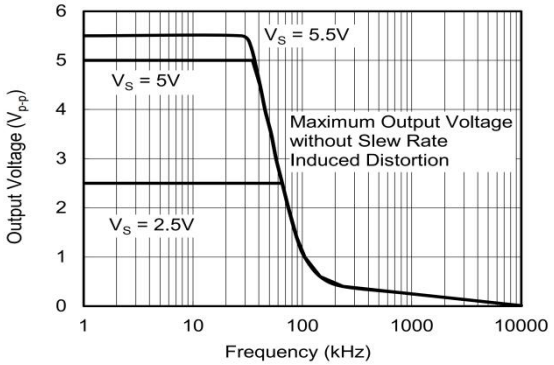


Figure 7. Maximum Output Voltage vs. Frequency

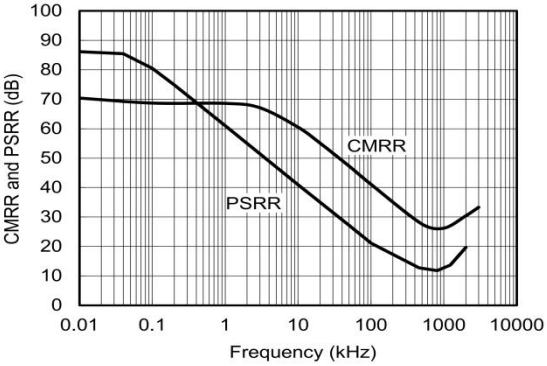
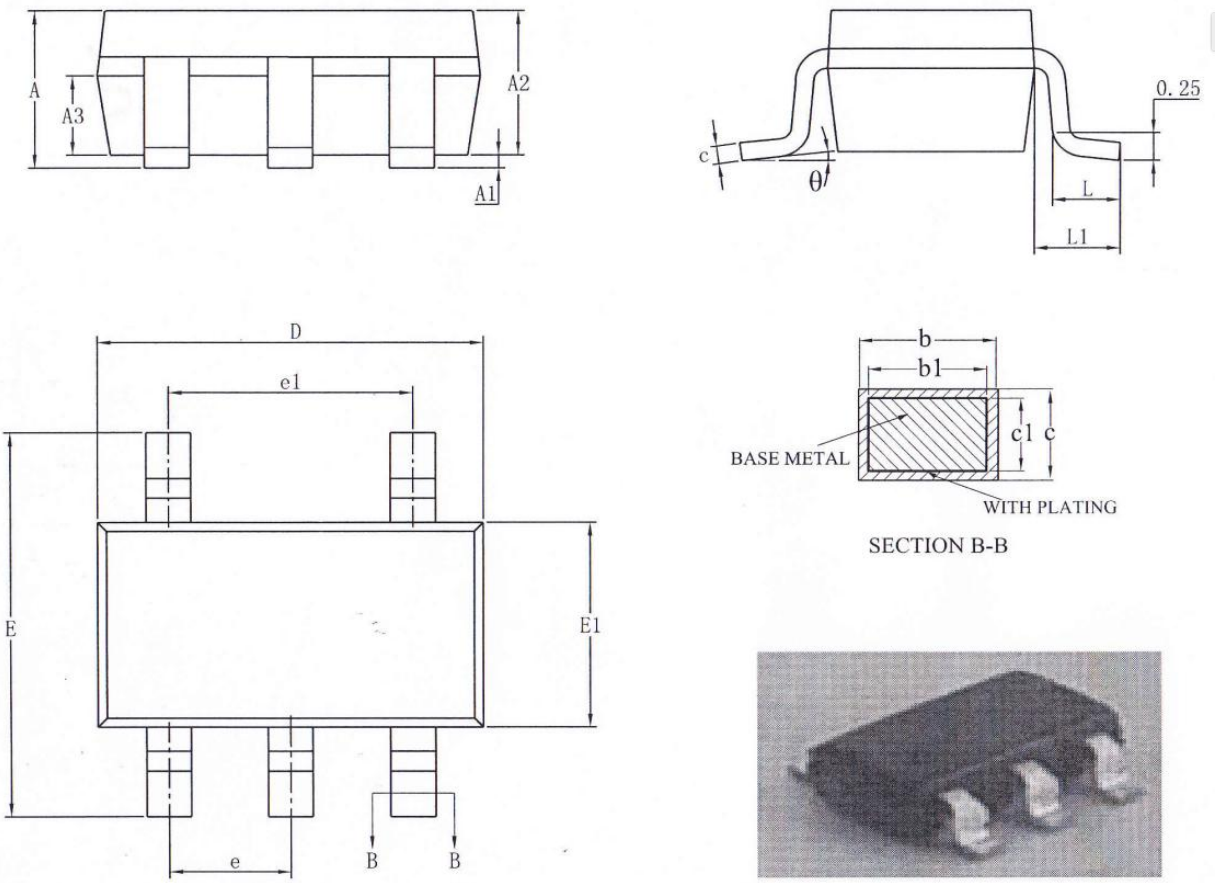


Figure 8. CMRR & PSRR vs. Frequency

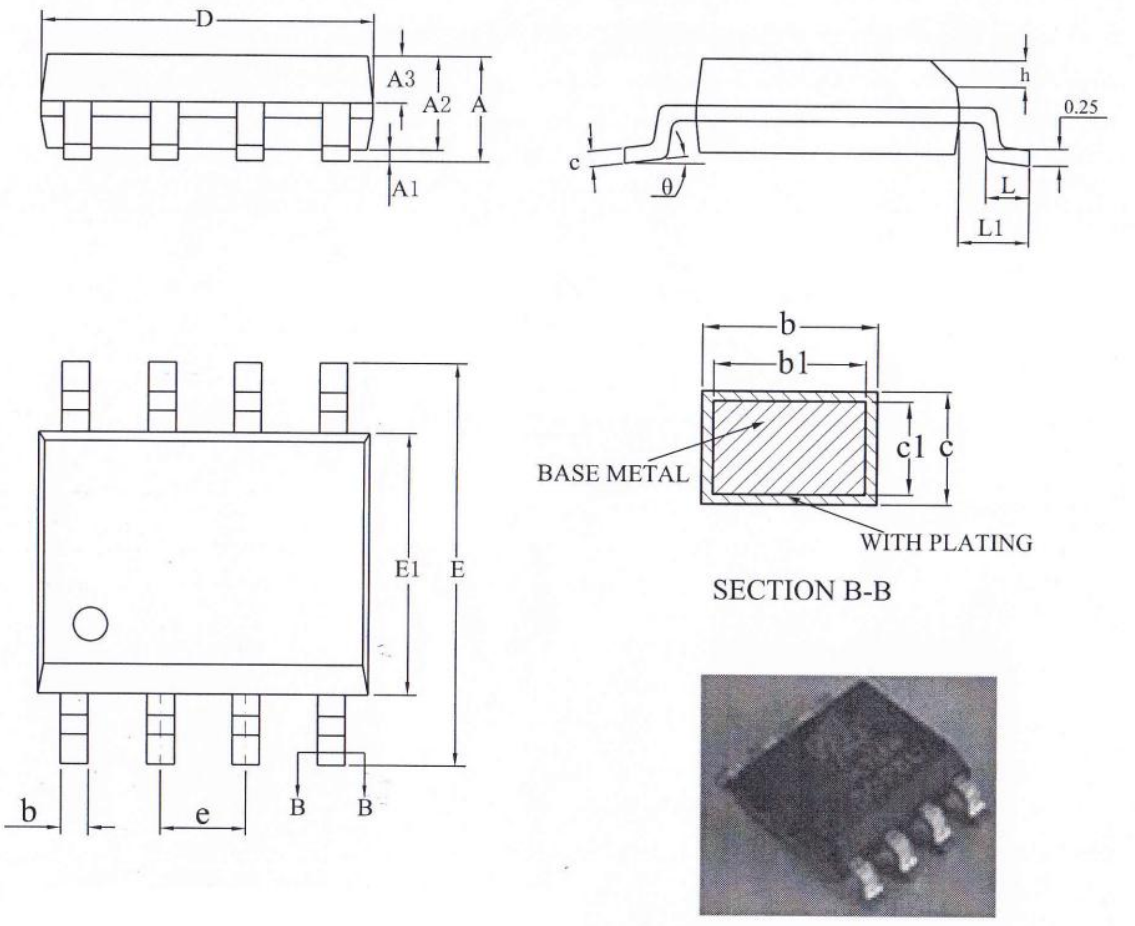
PACKAGE OUTLINE DIMENSIONS

SOT23-5



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	—	—	1.25
A1	0.04	—	0.10
A2	1.00	1.10	1.20
A3	0.60	0.65	0.70
b	0.33	—	0.41
b1	0.32	0.35	0.38
C	0.15	—	0.19
c1	0.14	0.15	0.16
D	2.82	2.92	3.02
E	2.60	2.80	3.00
E1	1.50	1.60	1.70
e	0.95BSC		
e1	1.90BSC		
L	0.30	—	0.60
L1		0.60REF	
θ	0	—	8°

SOP8



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	—	—	1.75
A1	0.10	—	0.225
A2	1.30	1.40	1.50
A3	0.60	0.65	0.70
b	0.39	—	0.47
b1	0.38	0.41	0.44
c	0.20	—	0.24
c1	0.19	0.20	0.21
D	4.80	4.90	5.00
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e	1.27BSC		
h	0.25	—	0.5
L	0.50	—	0.8
L1	1.05REF		
θ	0	—	8°