GSLV321

Single Low Voltage, Low Noise, 1.2MHz, Rail-to-Rail Input/Output, General Purpose CMOS Operational Amplifiers

Product Description

The GSLV321 are low voltage CMOS operational amplifiers, low power, low noise, internally frequency compensated CMOS operational amplifiers. It also features wider bandwidth, lower quiescent and lower offset than legacy LMV operational amplifier family.

They operate from a single power supply ranging from +1.8V to +5.5V. Operation from split power supplies is also possible and the low power supply current drain is independent of the magnitude of the power supply voltage.

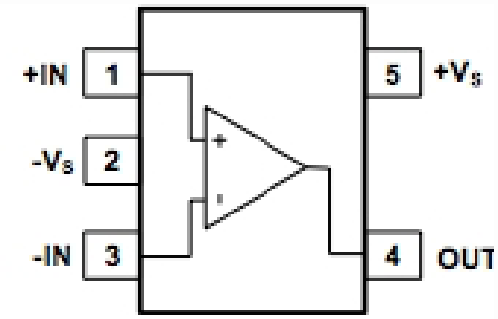
Features

- Wide power supply range : +1.8V to +5.5V
- Gain-bandwidth product, GBP(typ)=1.2MHz
- Low Noise Voltage Density : 17nV/$\sqrt{Hz}$
- Low quiescent current per amplifier : 60μA
- Low input bias current : 1pA
- Low Offset : V_{OS}(typ)=1mV, I_{OS}(typ)=1pA
- Unity Gain Stable
- Miniature Packages : SC70-5 & SOT-23-5
- RoHS Compliant, 100%Pb & Halogen Free

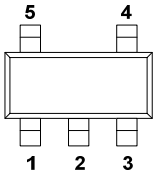
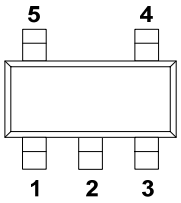
Applications

- Chargers
- Power supplies
- Industrial: controls, instruments
- Desktops
- Communications infrastructure

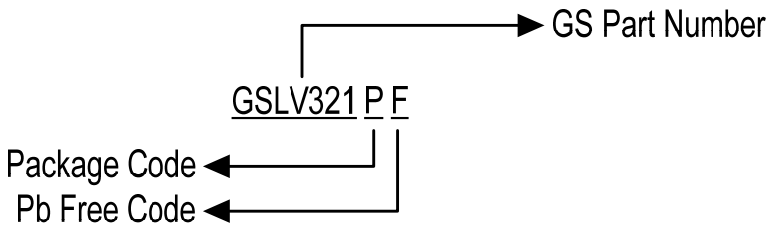
Block Diagram



Pin Assignments

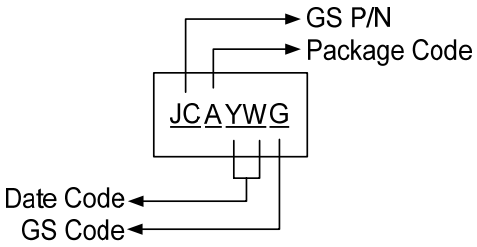
GSLV321X5F (SC70-5) Top View		GSLV321LF (SOT-23-5) Top View	
			
Pin No	**Pin Name**	**Pin No**	**Pin Name**
1	+IN	1	+IN
2	$-V_S$	2	$-V_S$
3	-IN	3	-IN
4	OUT	4	OUT
5	$+V_S$	5	$+V_S$

Ordering Information

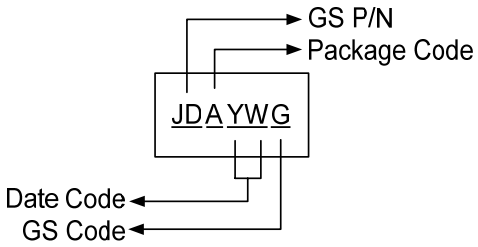


Device	Package
GSLV321X5F	SC70-5
GSLV321LF	SOT-23-5

Marking Information



GSLV321X5F



GSLV321LF

Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_{CC}	Supply voltage	7.5	V
V_{IN}	Input voltage	-0.5 to 7.5	V
	Output short-circuit duration	Infinite	
I_{IN}	Input current : V_{IN} driven negative Input current : V_{IN} driven positive above	5mA in DC or 50mA in AC (duty cycle=10%, T=1s)	mA
T_{OPA}	Operating free-air temperature range	-40 to +85	ºC
T_{STG}	Storage temperature range	-65 to +150	ºC
T_J	Maximum junction temperature	150	ºC
θ_{JA}	Thermal resistance junction to ambient	190	ºC/W
ESD	Human body mode (HBM)	8000	V
	Machine mode (MM)	400	

Note 1. Stresses beyond those listed under"absolute maximum ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

Note 2. This integrated circuit can be damaged by ESD if you don't pay attention to ESD protection. Recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage. ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

Electrical Characteristics

V_S=+5V, T_A=25°C, V_{CM}=V_S/2, R_L=600Ω, unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{OS}	Input offset voltage			1	3.7	mV
I_B	Input bias current			1		pA
I_{OS}	Input offset current			1		pA
V_{CM}	Common-mode voltage range	V_S=5.5V		-0.1 to +5.6		V
CMRR	Common-mode rejection ratio	V_S=5.5V, V_{CM}=-0.1V to 4V	75	91		dB
		V_S=5.5V, V_{CM}=-0.1V to 5.6V	64	86		dB
A_{OL}	Open-loop voltage gain	R_L=600Ω, V_O=0.15V to 4.85V	70	80		dB
		R_L=10KΩ, V_O=0.05V to 4.95V	75	85		dB
$\Delta V_{OS}/\Delta_T$	input offset voltage drift			2.1		μV/ºC
	Output voltage swing from rail	R_L=600Ω		0.1		V
		R_L=100KΩ		0.015		V
I_{OUT}	Output current		20	25		mA
	Operating voltage range		1.8		5.5	V
PSRR	Power supply rejection ratio	V_S=+2.5V to +5.5V V_{CM}=(-V_S)+0.5V	70	80		dB
I_Q	Quiescent current	I_{OUT}=0A	60	85		μA

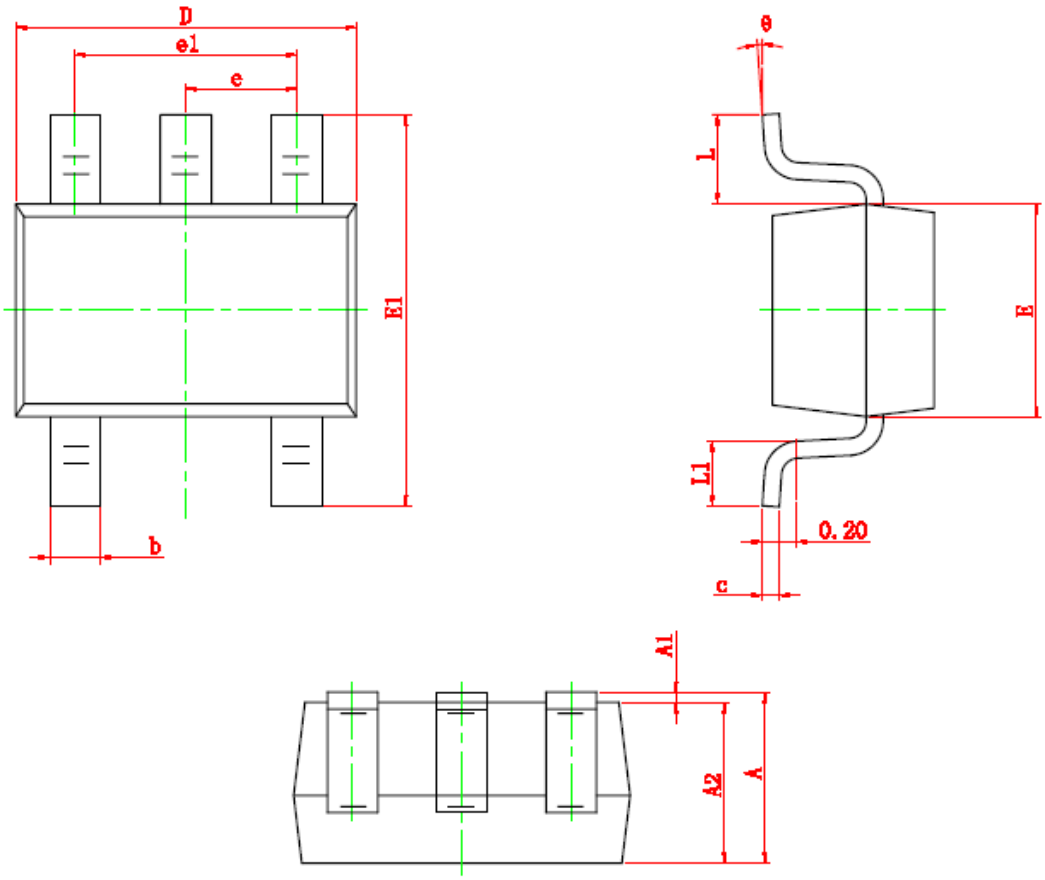
Electrical Characteristics (Continue)

V_S=+5V, T_A=25°C, V_{CM}=V_S/2, R_L=600Ω, unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
GBP	Gain-bandwidth product	R_L=600Ω		1.2		MHz
Φo	Phase margin			63.5		deg
BW_P	Full power bandwidth	<1% distortion		400		KHz
SR	Slew rate	G=+1,2V Output step		0.38		V/μs
ts	Settling time to 0.1%	G=+1,2V Output step		0.36		μs
	Overload recovery time	V_{IN} Gain=V_S		0.4		μs
	Voltage noise density	f=1KHz		17		nV/$\sqrt{Hz}$
		f=10KHz		11		nV/$\sqrt{Hz}$

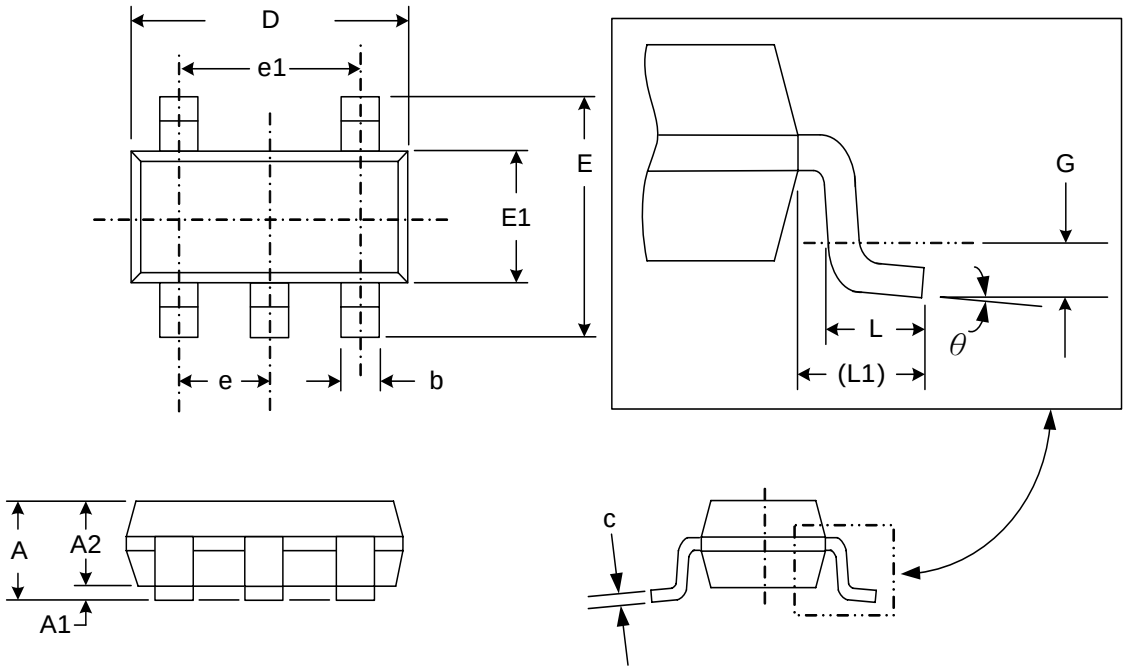
Package Dimension

SC70-5



Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

SOT-23-5



Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.95	1.45	.037	.057
A1	0.05	0.15	.002	.006
A2	0.90	1.30	.035	.051
b	0.30	0.50	.012	.020
c	0.08	0.20	.003	.008
D	2.80	3.00	.110	.118
E	2.60	3.00	.102	.118
E1	1.50	1.70	.059	.067
e	0.95 (TYP)		.037 (TYP)	
e1	1.90 (TYP)		.075 (TYP)	
L	0.35	0.55	.014	.022
L1	0.60 (TYP)		.024 (TYP)	
G	0.25 (TYP)		.010 (TYP)	
Y	0°	8°	0°	8°

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