盛微先進科技
SAVITECH.COM

SV7321LV, SV7358LV, SV7324LV

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

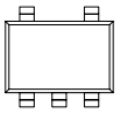
V1.0

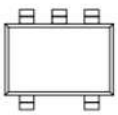
SAVITECH Corporation

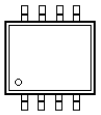
Low Voltage, Low Noise, 1.2MHz, Rail-to-Rail Input/Output, General Purpose CMOS Operational Amplifiers

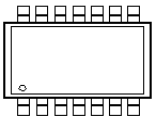
Features

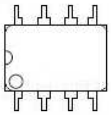
Wide power supply range: +1.8V to +5.5V
Gain-bandwidth product, GBP (typ.) = 1.2MHz
Low Noise Voltage Density: 17nV/√Hz
Very low quiescent current per amplifier: 60μA
Low input bias current: 1pA
Low Offset: V_{OS} (typ.) = 1mV, I_{OS} (typ.) = 1pA
Unity Gain Stable

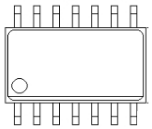

SC70-5


SOT23-5


MSOP-8


TSSOP-14

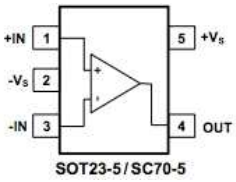

DIP-8


SOP-14

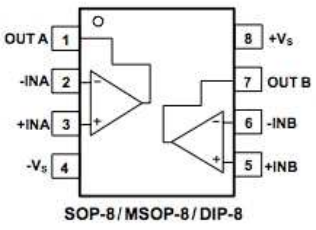
Description

The SV7321LV, SV7358LV and SV7324LV are low voltage CMOS operational amplifiers; consist of 1/2/4 independent, 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.

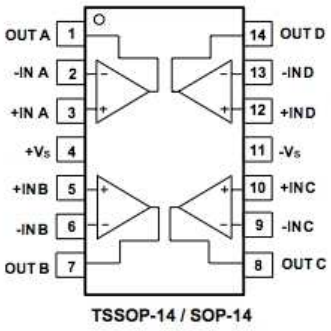
Pin connection



SOT23-5 / SC70-5



SOP-8 / MSOP-8 / DIP-8



TSSOP-14 / SOP-14

Order codes

Part number	Operation range	Package	Packing
SV7321-05OT-TR3	-40°C, +85°C	SOT23-5	Tape & Reel, 3000pcs
SV7321-05SC-TR3		SC70-5	Tape & Reel, 3000pcs
SV7324-14SP-TR2		SOP-14	Tape & Reel, 2500pcs
SV7324-14TP-TR2		TSSOP-14	Tape & Reel, 2500pcs
SV7358-08SP-TR2		SOP-8	Tape & Reel, 2500pcs
SV7358-08DP-TR2		DIP-8	Tube, 50pcs
SV7358-08MP-TR3		MSOP-8	Tape & Reel, 3000pcs

Absolute maximum ratings

Symbol	Parameter	SV7321LV	SV7324LV	SV7358LV	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	5 mA in DC or 50 mA in AC (duty cycle = 10%, T=1s)			mA
T_{oper}	Operating free-air temperature range	-40 to +85			°C
T_{stg}	Storage temperature range	-65 to +150			°C
T_j	Maximum junction temperature	150			°C
R_{thja}	Thermal resistance junction to ambient SOP-14 MSOP-8 SOT23-5	 103 216 190			°C/W
ESD	HBM: human body mode	8K			V
	MM: machine mode	400			

NOTE: Stresses above those listed under Absolute Maximum Ratings may cause permanent damage to the device. This is a stress rating only; functional operation of the device at these or any other conditions above those indicated in the operational section of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

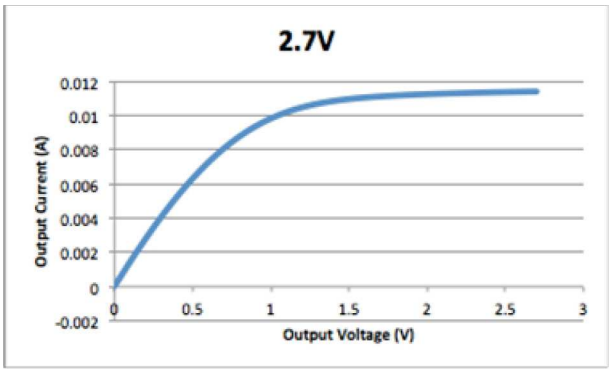
CAUTION

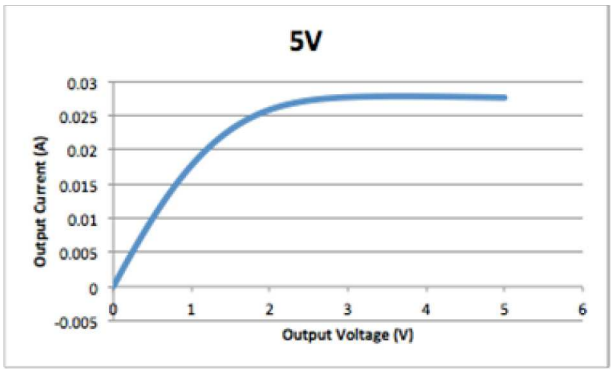
This integrated circuit can be damaged by ESD if you don't pay attention to ESD protection. SAVITECH recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage. ESD damage can range from subtle performance 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

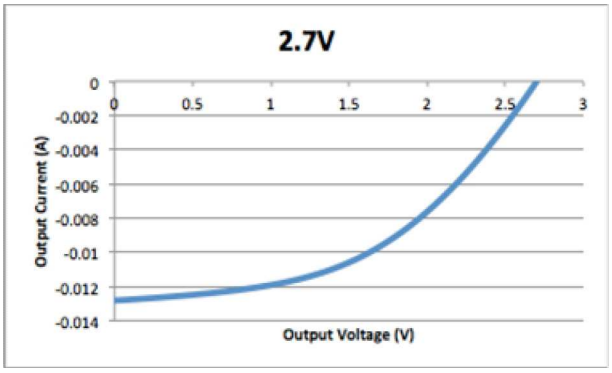
Vs = +5V, T_A = +25°C, V_{CM} = V_S/2, R_L = 600 , unless otherwise noted						
PARAMETER	**CONDITION**	**TYP**	**MIN/MAX OVER TEMOERATURE**			
		+25°C	**+25°C**	**-40°C to 85°C**	**UNITS**	**MIN/MAX**
INPUT CHARACTERISTICS						
Input Offset Voltage (V_{OS})		1	3	3.7	mV	MAX
Input Bias Current (I_B)		1			pA	TYP
Input Offset Current (I_{OS})		1			pA	TYP
Common-Mode Voltage Range (V_{CM})	V_S = 5.5V	-0.1 to +5.6			V	TYP
Common-Mode Rejection Ration (CMRR)	V_S = 5.5V, V_{CM} = -0.1V to 4V	91	75	73	dB	MIN
	V_S = 5.5V, V_{CM} = -0.1V to 5.6V	86	64	63	dB	MIN
Open-Loop Voltage Gain (A_{OL})	R_L = 600 , V_O = 0.15V to 4.85V	80	70		dB	MIN
	R_L = 10k , V_O = 0.05V to 4.95V	85	75		dB	MIN
Input Offset Voltage Drift (V_{OS}/ T)		2.1			V/°C	TYP
OUTPUT CHARACTERISITICS						
Output Voltage Swing from Rail	R_L = 600	0.1			V	TYP
	R_L = 100k	0.015			V	TYP
Output Current (I_{OUT})		25	20	18	mA	MIN
POWER SUPPLY						
Operating Voltage Range			1.8	1.8	V	MIN
			5.5	5.5	V	MAX
Power Supply Rejection Ratio (PSRR)	V_S = +2.5V to +5.5V V_{CM} = ($-V_S$) + 0.5V	80	70	78	dB	MIN
Quiescent Current/ Amplifier (I_Q)	I_{OUT} = 0	60	85		uA	MAX
DYNAMIC PERFORMANCE						
Gain-Bandwidth Product (GBP)	R_L = 600	1.2			MHz	TYP
Phase Margin (o)		63.5			degree	TYP
Full Power Bandwidth (BWp)	< 1% distortion	400			kHz	TYP
Slew Rate (SR)	G = +1, 2V Output Step	0.38			V/ s	TYP
Settling Time to 0.1% (ts)	G = +1, 2V Output Step	0.36			s	TYP
Overload Recovery Time	Vin Gain = Vs	0.4			s	TYP
NOISE PERFORMANCE						
Voltage Noise Density	f = 1kHz	17			nV/√Hz	TYP
	f = 10kHz	11			nV/√Hz	TYP

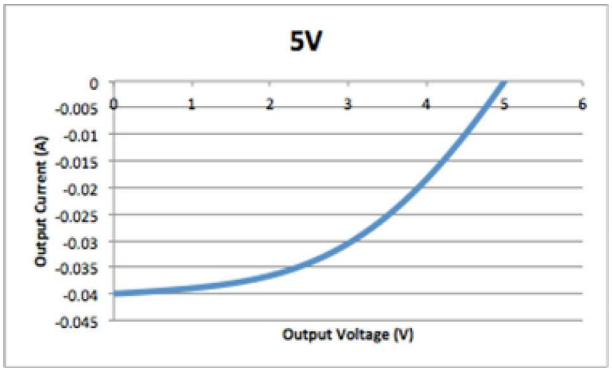
Output Voltage vs. Output Current Source Sweep



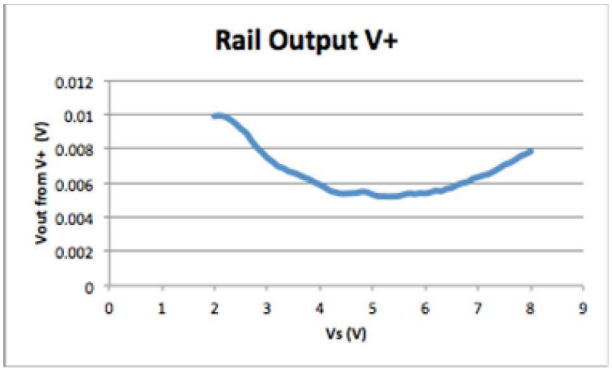


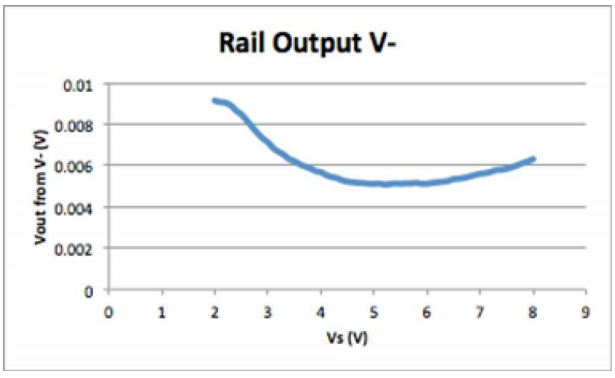
Output Voltage vs. Output Current Sink Sweep



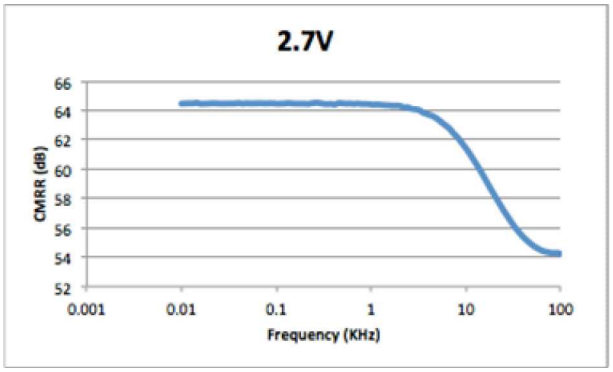


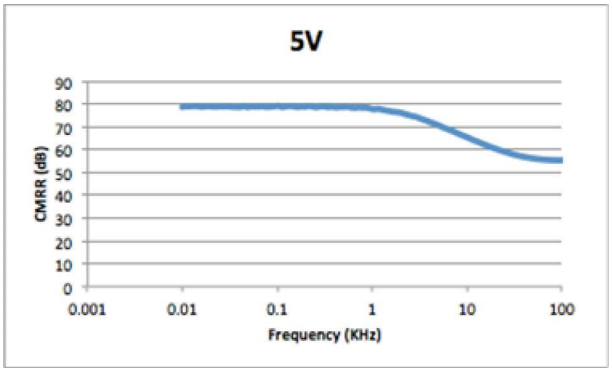
Rail Output



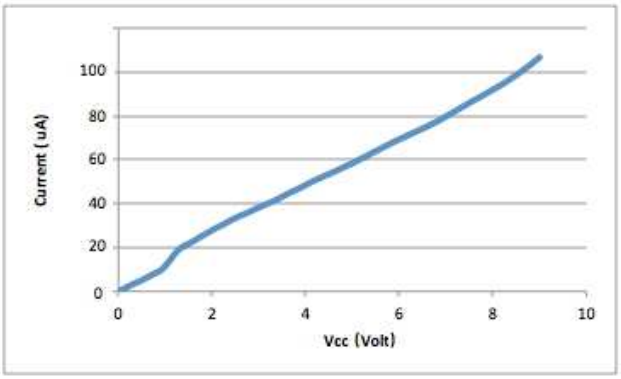


CMRR vs. Frequency

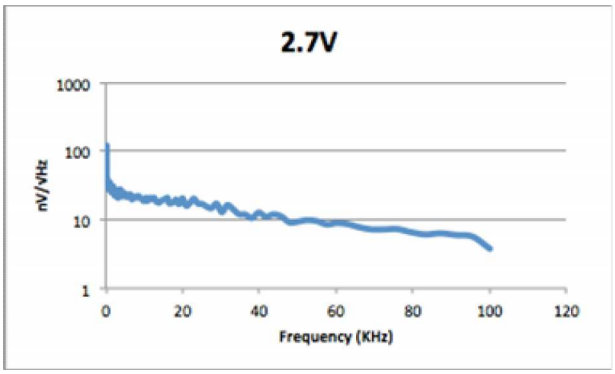


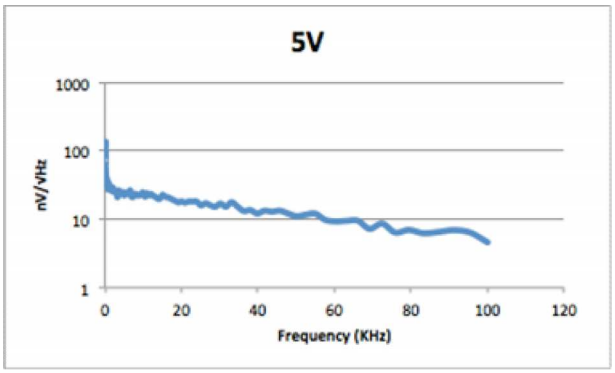


I_Q Current vs. Vcc

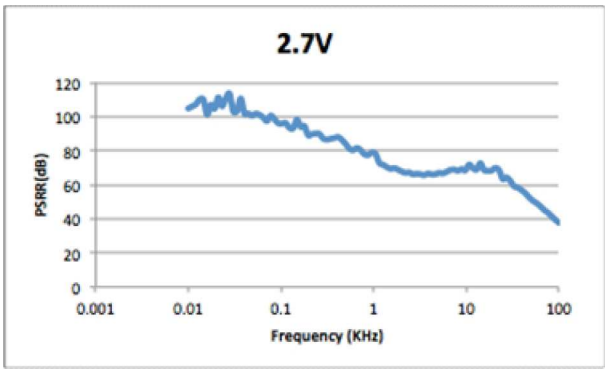


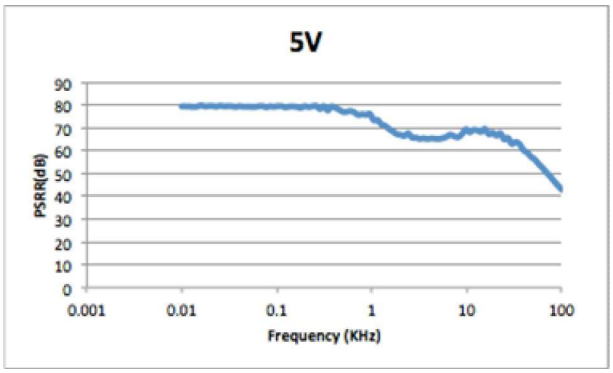
Input Noise vs. Frequency



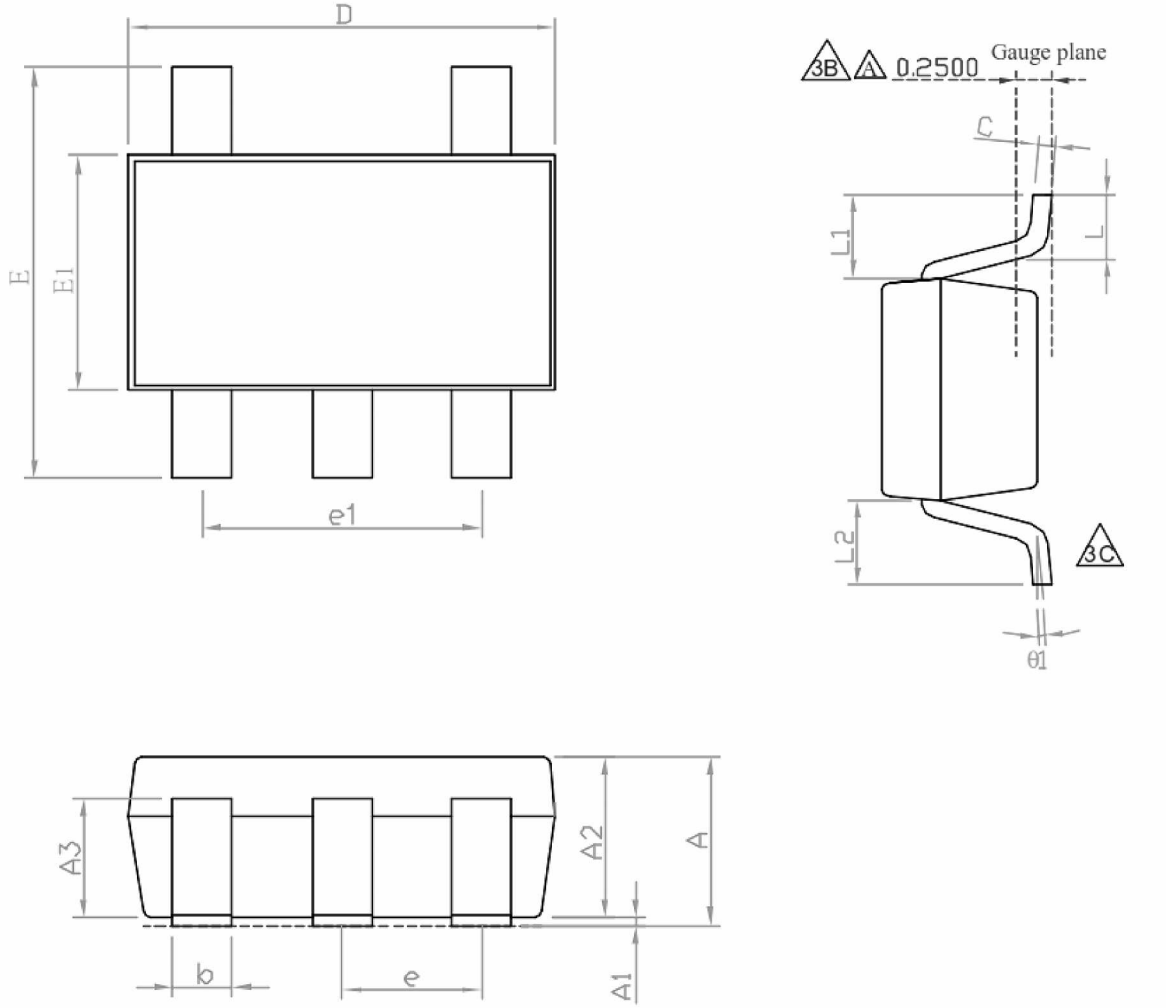


PSRR vs. Frequency





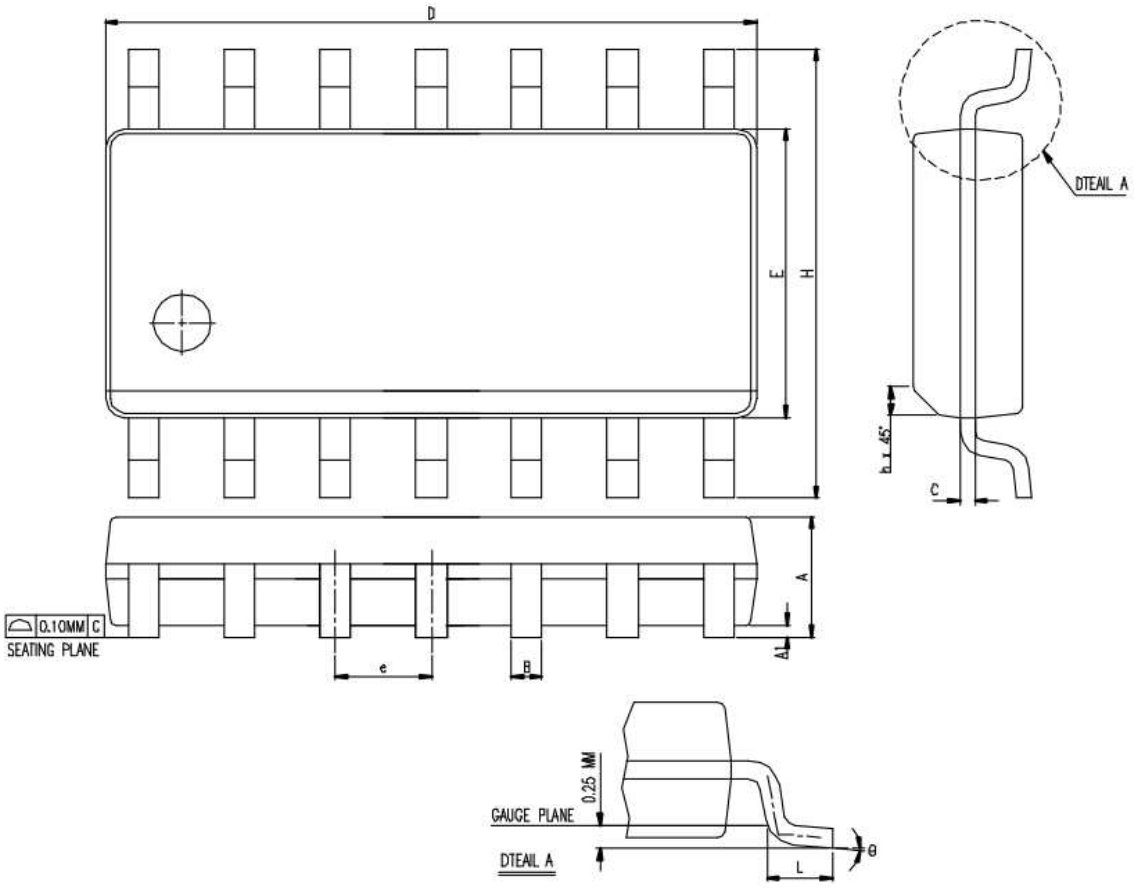
SOT23-5 MECHANICAL DATA



	SYMBOLS	DIMENSIONS IN MILLIMETERS		
		MIN	NOM	MAX
	A	1.00	1.10	1.40
3A	A1	0.00	0.05	0.10
	A2	1.00	1.10	1.30
	A3	0.70	0.80	0.90
	b	0.35	0.40	0.50
3A	C	0.12	0.125	0.225
	D	2.70	2.90	3.10
	E	2.60	2.80	3.00
	E1	1.40	1.60	1.80
	e	---	0.95(TYP)	---
	e1	---	1.90(TYP)	---
	θ1	1°	5°	9°
	L	0.37	---	---
3A	L1	---	0.6REF	---
3A	L1-L2	---	---	0.12

NOTE
1. PACKAGE BODY SIZES EXCLUDE MOLD FLASH PROTRUSIONS OR GATE BURRS
2. TOLERANCE ±0.1000 mm (4 mil) UNLESS OTHERWISE SPECIFIED
3. COPLANARITY : 0.1000 mm
4. DIMENSION L IS MEASURED IN GAUGE PLANE

SOP-14 MECHANICAL DATA

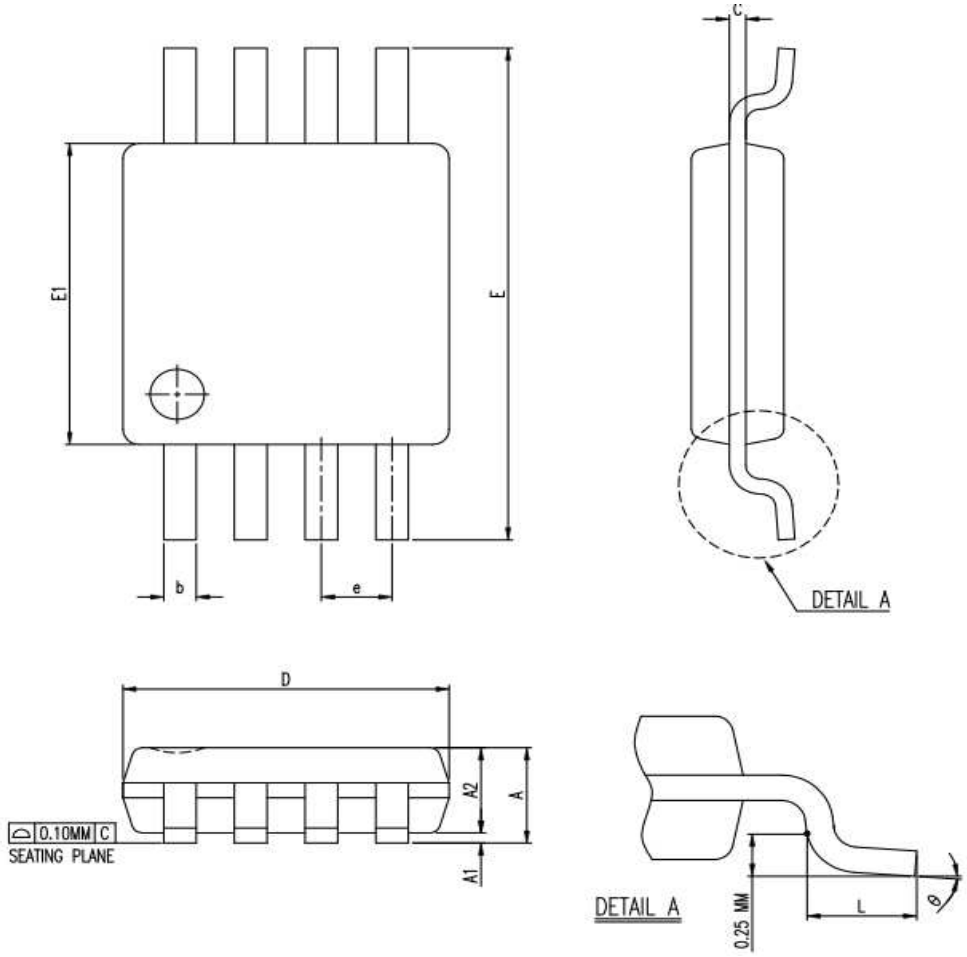


Symbol	Dimension in MM		Dimension in Inch	
	Min.	Max.	Min.	Max.
A	1.35	1.75	0.0532	0.0688
A1	0.10	0.25	0.004	0.0098
B	0.33	0.51	0.013	0.02
C	0.19	0.25	0.0075	0.0098
e	1.27BSC		0.050 BSC	
D	8.55	8.75	0.3367	
H	5.80	6.20	0.2284	0.344
E	3.80	4.00	0.1497	0.244
L	0.40	1.27	0.016	0.1574
h	0.25	0.50	0.0099	0.0196
Θ	0*	8*	0*	8*
JEDEC	MS-012 (AB)			

***Notes:**

Dimension “D” does not include mold flash, Protrusions or gate burrs.
Mold flash, protrusions and gate burrs shall not exceed 0.15 MM (0.006 Inch) per side.

MSOP-8 MECHANICAL DATA

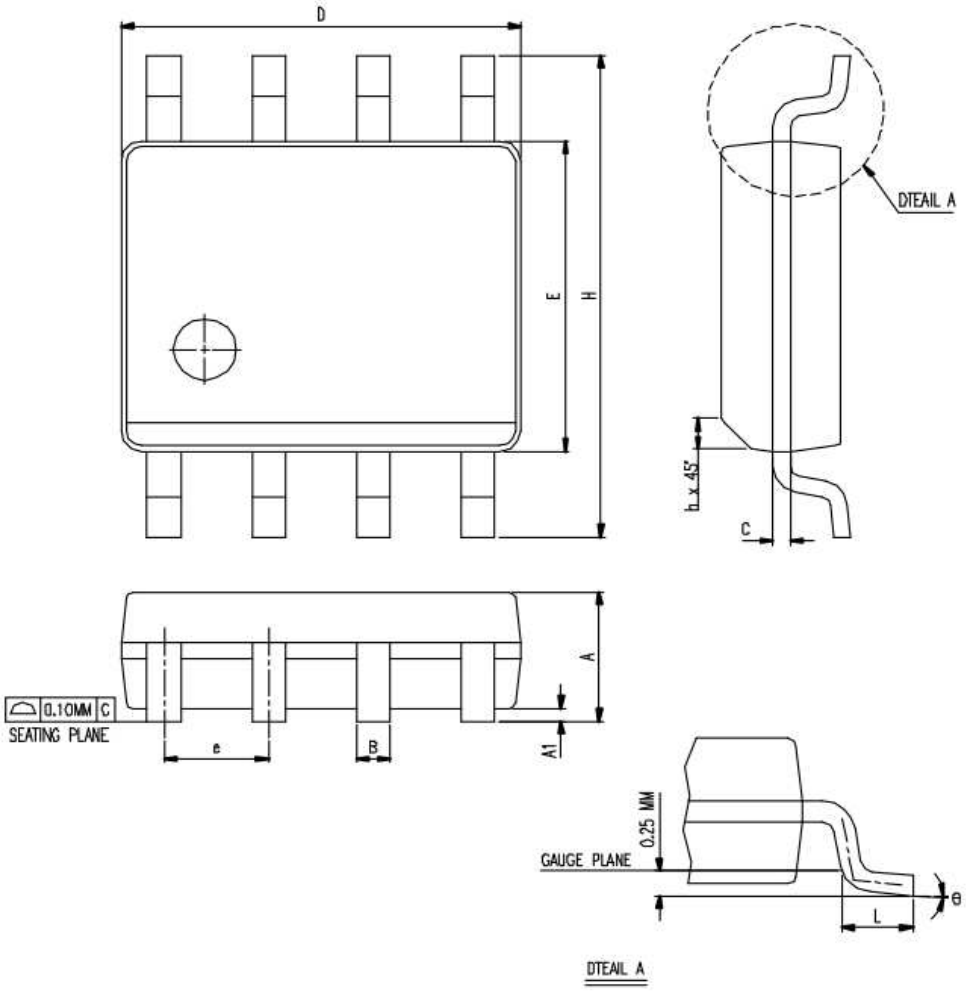


Symbol	Dimension in MM			Dimension in Inch		
	Min.	Mon.	Max.	Min.	Mon.	Max.
A	0.81	1.02	1.10	0.032	0.040	0.043
A1	0.05		0.15	0.002		0.006
B	0.76	0.86	0.95	0.030	0.034	0.037
C	0.28	0.30	0.38	0.011	0.012	0.015
E	0.13	0.15	0.23	0.005	0.006	0.009
E	0.29	3.00	3.10	0.114	0.118	0.122
E1	4.75	4.90	5.05	0.187	0.193	0.199
E	2.90	3.00	3.10	0.114	0.118	0.122
E	0.65 BASIC			0.026 BASIC		
L	0.40	0.55	0.70	0.016	0.022	0.028
Θ	0*	3*	6*	0*	3*	6*
JEDEC	MS-012 (AB)					

***Notes:**

Dimension “D” does not include mold protrusions or gate burrs.
Mold protrusions and gate burrs shall not exceed 0.15 MM (0.006 Inch) per side.
Dimension “E1” does not include mold protrusions.
Mold protrusions shall not exceed 0.25 MM (0.010 Inch) per side.

SOP-8 MECHANICAL DATA



Symbol	Dimension in MM		Dimension in Inch	
	Min.	Max.	Min.	Max.
A	1.35	1.75	0.0532	0.0688
A1	0.10	0.25	0.004	0.0098
B	0.33	0.51	0.013	0.02
C	0.19	0.25	0.0075	0.0098
e	1.27BSC		0.050 BSC	
D	4.80	5.00	0.1890	0.1968
H	5.80	6.20	0.2284	0.2440
E	3.80	4.00	0.1497	0.1574
L	0.40	1.27	0.016	0.050
h	0.25	0.50	0.0099	0.0196
Θ	0*	8*	0*	8*
JEDEC	MS-012 (AA)			

***Notes:**

Dimension “D” does not include mold flash, Protrusions or gate burrs.
Mold flash, protrusions and gate burrs shall not exceed 0.15 MM (0.006 Inch) per side.