



### General Description

The ELN8551, ELN8552 and ELN8554 are single, dual and quad amplifiers featuring rail-to-rail input and Output swings, which has ultralow offset, drift and bias current. All are guaranteed to operate from +2.7 V to +5 V Single supply. With an offset voltage of only 3  $\mu\text{V}$  and drift of 20 nV/ $^{\circ}\text{C}$ , the ELN8551 is perfectly suited for Applications where error sources cannot be tolerated. Temperature, position and pres-sure sensors, medical equipment and strain gage amplifiers benefit greatly from nearly zero drift over their operating temperature range. The rail-to-rail input and output swings provided by the ELN8551/358/324 family make both high-side and low-side sensing easy. The ELN8551/358/324 series is specified for the extended industrial/automotive ( $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ ) temperature range. The ELN8551 single is available in 5-lead SOT and 8-lead SOP/MSOP packages. The ELN8552 dual amplifier is available in 8-lead SOP/MSOP packages. The ELN8554 quad is available in narrow 14-lead SOP and 14-lead TSSOP packages.

### Features

- ◆ Low Offset Voltage: 3 $\mu\text{V}$  (TYP)
- ◆ Rail-to-Rail Input and Output Swing
- ◆ 2.7V to 5.0V Single Supply Operation
- ◆ Voltage Gain: 145dB (TYP)
- ◆ PSRR: 115dB (TYP)
- ◆ CMRR: 110dB (TYP)
- ◆ Low Input Bias Currents: 130pA
- ◆ Low Supply Current: 450 $\mu\text{A}$ /Channel
- ◆ Overload Recovery Time: 0.1ms
- ◆ No External Capacitors Required
- ◆  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$  Operating Temperature Range
- ◆ Small Packaging:

ELN8551 Available in Green SOT23-5, SOP8 and MSOP8

ELN8552 Available in Green SOP8 and MSOP8

ELN8554 Available in Green SOP14 and TSSOP14

### Applications

- ◆ Temperature Measurements
- ◆ Pressure Sensors
- ◆ Precision Current Sensing
- ◆ Electronic Scales
- ◆ Strain Gage Amplifiers
- ◆ Medical Instrumentation
- ◆ Thermocouple Amplifiers
- ◆ Handheld Test Equipment



# Zero-Drift, Single-Supply, Rail-to-Rail Input/Output Operational Amplifiers

ELN8551/8552/8554

## Ordering/Marking Information

ELN8551NN

ELN8552NN

ELN8554NN

XX X X

R : Tape & Reel

Package Type :

B2 : SOT23-5

M1 : SOP8

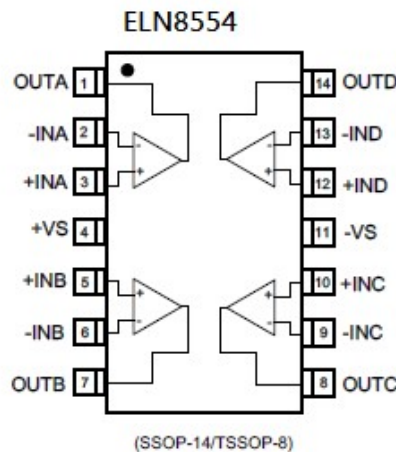
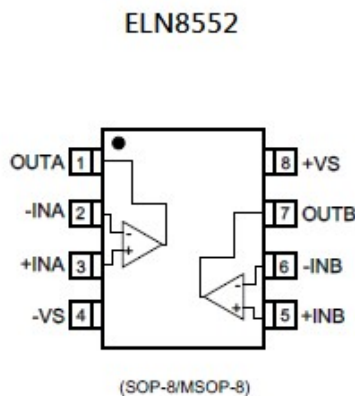
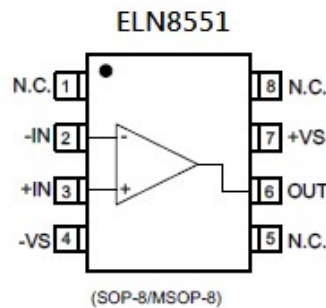
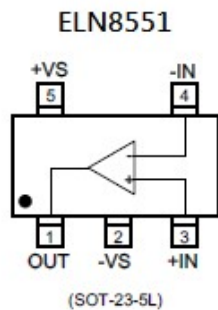
R1 : MSOP8

M2 : SOP14

E1 : TSSOP14

Part Number	Package	Marking	Marking Information
ELN8551NNB2GR	SOT23-5	51AX	A · X: Tracking code
ELN8551NNM1GR	SOP8	LN8551	LLLL : Process Code YYYYYY : Lot Code
ELN8551NNR1GR	MSOP8	LLLL YYYYYY	
ELN8552NNM1GR	SOP8	LN8552	
ELN8552NNR1GR	MSOP8	LLLL YYYYYY	
ELN8554NNM2GR	SOP14	LN8554	
ELN8554NNE1GR	TSSOP14	LLLL YYYYYY	

## Package





# Zero-Drift, Single-Supply, Rail-to-Rail Input/Output Operational Amplifiers

ELN8551/8552/8554

## Absolute Maximum Ratings

◆ Supply Voltage .....	6V
◆ Input Voltage .....	-VS+0.3V—+VS+0.3V
◆ Differential Input Voltage .....	-5.0V to +5.0V
◆ Package Thermal Resistance @ TA = 25°C	
SOT23-5 .....	190°C/W
MSOP8 .....	216°C/W
SOP8 .....	125°C/W
SOP14 .....	120°C/W
TSSOP14 .....	180°C/W
◆ Storage temperature range .....	-65°C to 150°C
◆ Operating junction temperature .....	-40°C to 125°C
◆ ESD Human Model .....	4000V
◆ Lead Temperature Range (Soldering 10 sec) .....	260°C

## Electrical Characteristics

VS = +5V, VCM = +2.5V, VO = +2.5V, TA = +25°C, unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
<b>INPUT CHARACTERISTICS</b>						
Vos	Input Offset Voltage		—	3	10	μV
Ib	Input Bias Current			100		pA
Ios	Input Offset Current			10		pA
CMRR	Common-Mode Rejection Ratio	VCM = 0V to 5V		110		dB
Avo	Large Signal Voltage Gain	RL = 10kΩ Vo=0.3V~4.7V		145		dB
ΔVos/ΔT	Input Offset Voltage Drift			20		nV/°C
<b>OUTPUT CHARACTERISTICS</b>						
VOH	Output Voltage High	RL = 100kΩ to -VS		4.99		V
		RL = 10kΩ to -VS		4.99		V
VOL	Output Voltage Low	RL = 100kΩ to +VS		2		mV
		RL = 10kΩ to +VS		5		mV
Isc	Short Circuit Limit	RL = 10Ω to -VS		43		mA
Io	Output Current			30		mA
<b>POWER SUPPLY</b>						
PSRR	Power Supply Rejection Ratio	VS = 2.7V to 5.5V		115		dB
Iq	Quiescent Current	VO = 0V, RL = 0Ω		450		μA
<b>DYNAMIC PERFORMANCE</b>						
GBP	Gain-Bandwidth Product	G = +100		1.44		MHz
SR	Slew Rate	RL = 10kΩ		0.84		V/μs
TOR	Overload Recovery Time			0.10		ms
<b>NOISE PERFORMANCE</b>						
en p-p	Voltage Noise	0Hz to 10Hz		0.81		μVp-p
en	Voltage Noise Density	f = 1kHz		49		nV/√Hz



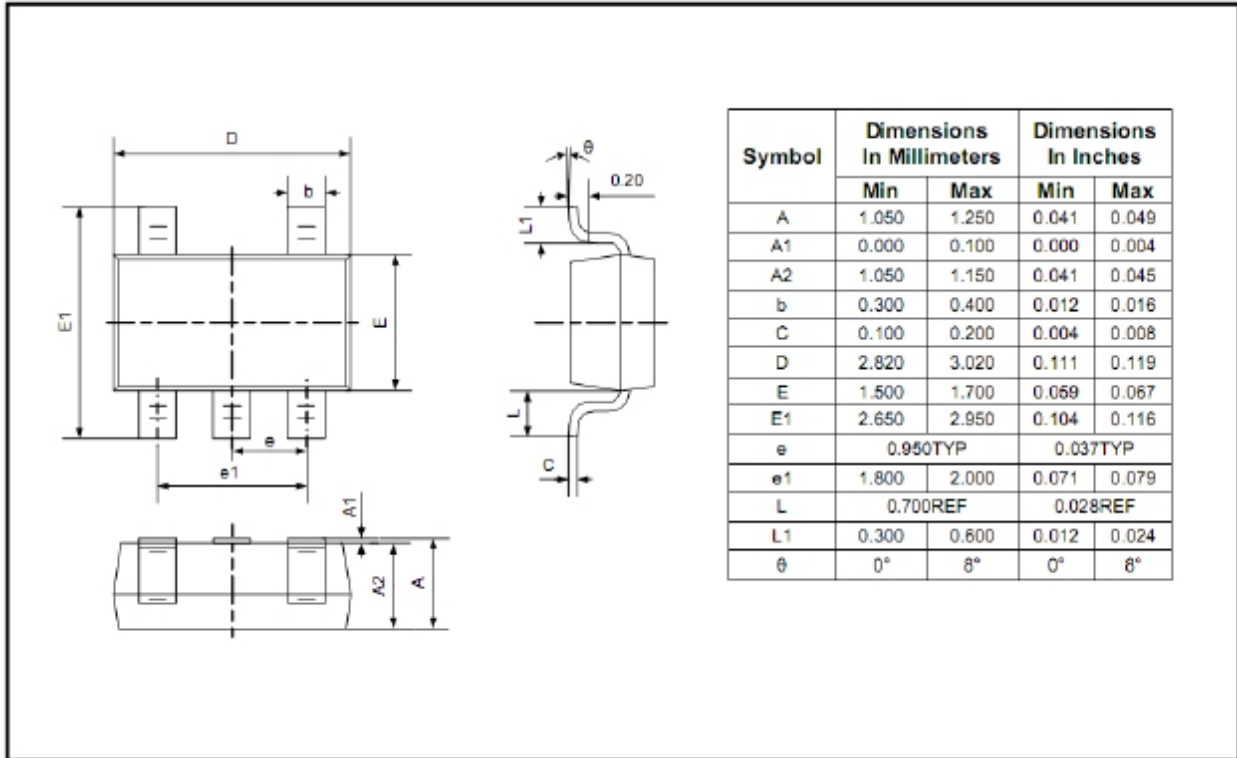
# Zero-Drift, Single-Supply, Rail-to-Rail Input/Output Operational Amplifiers

**ELN8551/8552/8554**

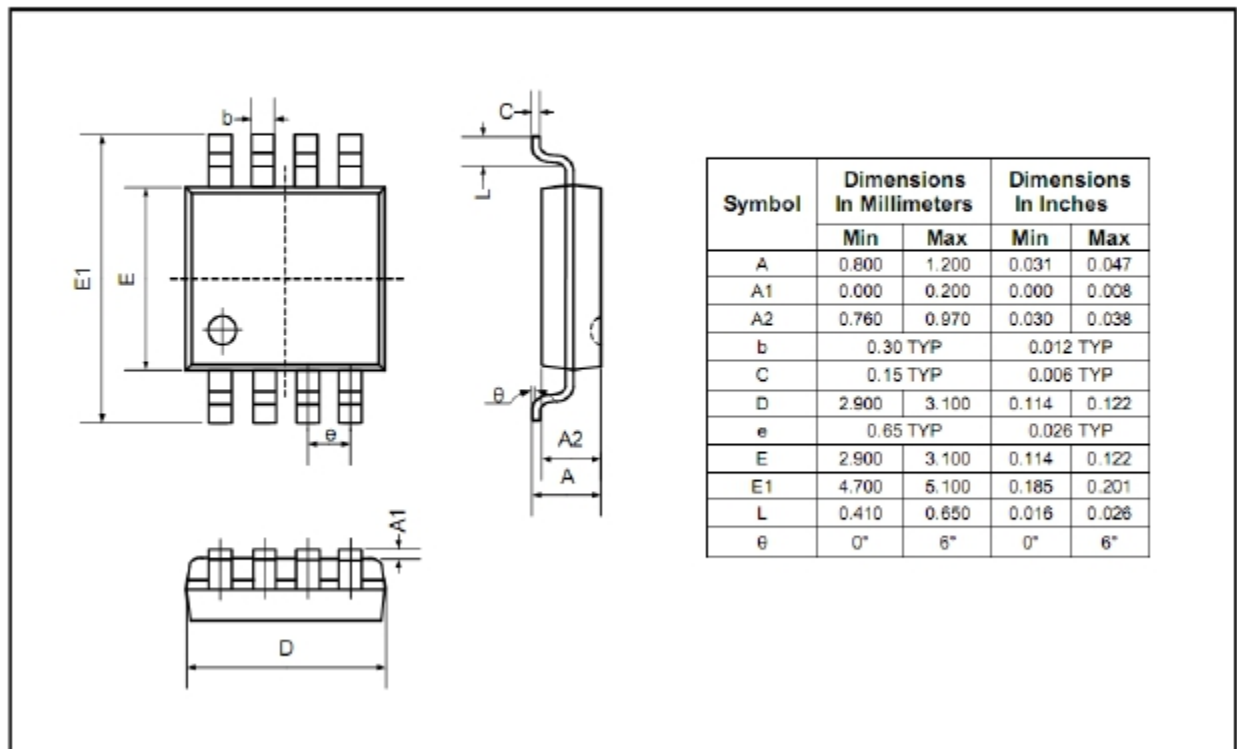
VS = +2.7V, VCM = +1.35V, VO = +1.35V, TA = +25°C, unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
<b>INPUT CHARACTERISTICS</b>						
V <sub>os</sub>	Input Offset Voltage		—	3	10	μV
I <sub>b</sub>	Input Bias Current			75		pA
I <sub>os</sub>	Input Offset Current			5		pA
CMRR	Common-Mode Rejection Ratio	V <sub>CM</sub> = 0V to 2.7V		110		dB
A <sub>vo</sub>	Large Signal Voltage Gain	R <sub>L</sub> = 10kΩ V <sub>o</sub> = 0.3V~2.4V		140		dB
ΔV <sub>os</sub> /ΔT	Input Offset Voltage Drift			20		nV/°C
<b>OUTPUT CHARACTERISTICS</b>						
V <sub>OH</sub>	Output Voltage High	RL = 100kΩ to -VS		2.69		V
		RL = 10kΩ to -VS		2.69		V
V <sub>OL</sub>	Output Voltage Low	RL = 100kΩ to +VS		1		mV
		RL = 10kΩ to +VS		2		mV
I <sub>sc</sub>	Short Circuit Limit	RL = 10Ω to -VS		26		mA
I <sub>o</sub>	Output Current			10		mA
<b>POWER SUPPLY</b>						
PSRR	Power Supply Rejection Ratio	VS = 2.7V to 5.5V		115		dB
I <sub>q</sub>	Quiescent Current	VO = 0V, RL = 0Ω		450		μA
<b>DYNAMIC PERFORMANCE</b>						
GBP	Gain-Bandwidth Product	G = +100		1.43		MHz
SR	Slew Rate	RL = 10kΩ		0.84		V/μs
T <sub>OR</sub>	Overload Recovery Time			0.04		ms
<b>NOISE PERFORMANCE</b>						
e <sub>n p-p</sub>	Voltage Noise	0Hz to 10Hz		0.90		μVp-p
e <sub>n</sub>	Voltage Noise Density	f = 1kHz		53		nV/ Hz

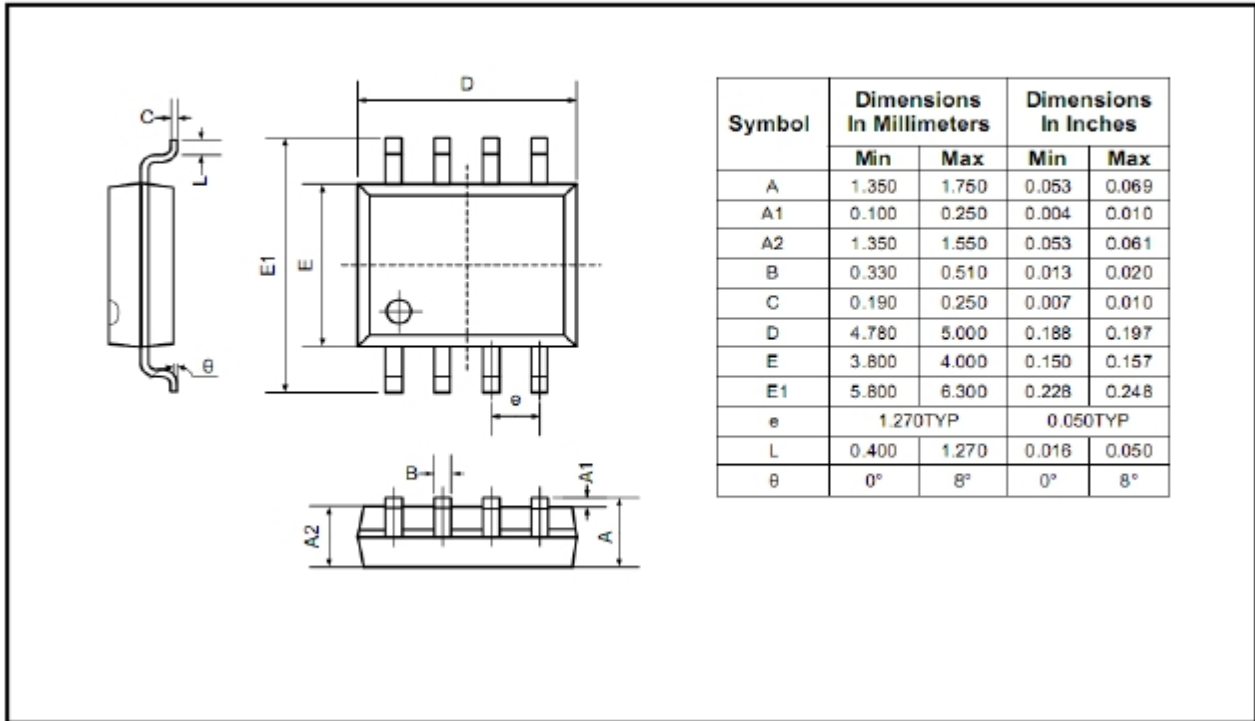
Package Information  
SOT-23-5L



MSOP8



SOP8



SOP14

