

**500MHz Low Noise Amplifiers**



The EL5130 and EL5131 are ultra-low voltage noise, high speed voltage feedback amplifiers that are ideal for

applications requiring low voltage noise, including communications and imaging. These devices offer extremely low power consumption for exceptional noise performance. Stable at gains as low as 5, these devices offer 100mA of drive performance. Not only do these devices find perfect application in high gain applications, they maintain their performance down to lower gain settings.

These amplifiers are available in small package options (SOT-23) as well as the industry-standard SO packages. All parts are specified for operation over the -40°C to +85°C temperature range.

**Ordering Information**

PART NUMBER	PACKAGE	TAPE & REEL	PKG. DWG. #
EL5130IS	8-Pin SO	-	MDP0027
EL5130IS-T7	8-Pin SO	7"	MDP0027
EL5130IS-T13	8-Pin SO	13"	MDP0027
EL5131IW-T7	5-Pin SOT-23	7" (3K pcs)	MDP0038
EL5131IW-T7A	5-Pin SOT-23	7" (250 pcs)	MDP0038

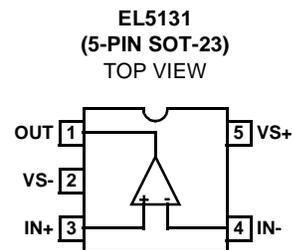
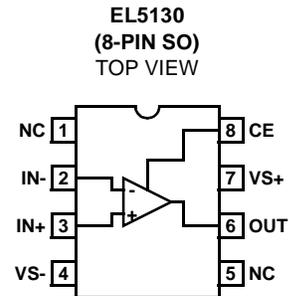
**Features**

- 500MHz -3dB bandwidth
- Ultra low noise 1.8nV/√Hz
- 350V/μs slew rate
- Low supply current = 4mA
- Single supplies from 5V to 12V
- Dual supplies from ±2.5V to ±5V
- Fast disable on the EL5130
- Low cost

**Applications**

- Imaging
- Instrumentation
- Communications devices

**Pinouts**



## EL5130, EL5131

### Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ )

Supply Voltage from  $V_{S+}$  to  $V_{S-}$  ..... 13.2V  
 $I_{IN-}$ ,  $I_{IN+}$ , CE .....  $\pm 5\text{mA}$   
 Continuous Output Current ..... 100mA  
 Power Dissipation ..... See Curves

Storage Temperature .....  $-65^\circ\text{C}$  to  $+125^\circ\text{C}$   
 Ambient Operating Temperature .....  $-40^\circ\text{C}$  to  $+85^\circ\text{C}$   
 Operating Junction Temperature .....  $+125^\circ\text{C}$

*CAUTION: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.*

*IMPORTANT NOTE: All parameters having Min/Max specifications are guaranteed. Typical values are for information purposes only. Unless otherwise noted, all tests are at the specified temperature and are pulsed tests, therefore:  $T_J = T_C = T_A$*

### Electrical Specifications $V_{S+} = +5\text{V}$ , $V_{S-} = -5\text{V}$ , $R_L = 150\Omega$ , $R_F = 900\Omega$ , $R_G = 100\Omega$ , $T_A = 25^\circ\text{C}$ , unless otherwise specified.

PARAMETER	DESCRIPTION	CONDITIONS	MIN	TYP	MAX	UNIT
$V_{OS}$	Offset Voltage		-0.9	0.2	0.9	mV
$T_C V_{OS}$	Offset Voltage Temperature Coefficient	Measured from $T_{MIN}$ to $T_{MAX}$		0.8		$\mu\text{V}/^\circ\text{C}$
IB	Input Bias Current	$V_{IN} = 0\text{V}$	1.5	2.27	3.3	$\mu\text{A}$
$I_{OS}$	Input Offset Current	$V_{IN} = 0\text{V}$	-500	100	500	nA
$T_C I_{OS}$	Input Bias Current Temperature Coefficient	Measured from $T_{MIN}$ to $T_{MAX}$		-3		$\text{nA}/^\circ\text{C}$
PSRR	Power Supply Rejection Ratio	$V_S = \pm 4.75\text{V}$ to $\pm 5.25\text{V}$	75	90		dB
CMRR	Common Mode Rejection Ratio	$V_{IN} = \pm 3.0\text{V}$	95	110		dB
CMIR	Common Mode Input Range	Guaranteed by CMRR test	$\pm 3$	$\pm 3.3$		V
$R_{IN}$	Input Resistance	Common mode	5	20		$\text{M}\Omega$
$C_{IN}$	Input Capacitance			1		pF
$I_S$	Supply Current		3.0	3.54	4.1	mA
AVOL	Open Loop Gain	$V_{OUT} = \pm 2.5\text{V}$ , $R_L = 1\text{k}\Omega$ to GND	10	16		kV/V
$V_O$	Output Voltage Swing	$R_L = 1\text{k}\Omega$ , $R_F = 900\Omega$ , $R_G = 100\Omega$	$\pm 3.5$	$\pm 3.8$		V
		$R_L = 150\Omega$	$\pm 3.5$	$\pm 3.3$		mV
$I_{SC}$	Short Circuit Current	$R_L = 10\Omega$	50	100		mA
BW	-3dB Bandwidth	$A_V = +5$ , $R_L = 1\text{k}\Omega$		500		MHz
BW	$\pm 0.1\text{dB}$ Bandwidth	$A_V = +5$ , $R_L = 1\text{k}\Omega$		60		MHz
GBWP	Gain Bandwidth Product			1500		MHz
PM	Phase Margin	$R_L = 1\text{k}\Omega$ , $C_L = 6\text{pF}$		55		$^\circ$
SR	Slew Rate	$V_S = \pm 5\text{V}$ , $R_L = 150\Omega$ , $V_{OUT} = \pm 2.5\text{V}$	225	350		$\text{V}/\mu\text{s}$
$t_R$ , $t_F$	Rise Time, Fall Time	$\pm 0.1V_{STEP}$		TBD		ns
OS	Overshoot	$\pm 0.1V_{STEP}$		TBD		%
$t_{PD}$	Propagation Delay	$\pm 0.1V_{STEP}$		TBD		ns
$t_S$	0.01% Settling Time			14		ns
dG	Differential Gain	$A_V = +2$ , $R_F = 1\text{k}\Omega$		0.01		%
dP	Differential Phase	$A_V = +2$ , $R_F = 1\text{k}\Omega$		0.01		$^\circ$
$e_N$	Input Noise Voltage	$f = 10\text{kHz}$		1.8		$\text{nV}/\sqrt{\text{Hz}}$
$i_N$	Input Noise Current	$f = 10\text{kHz}$		1.1		$\text{pA}/\sqrt{\text{Hz}}$

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