

200MHz Slew Enhanced VFA



The EL5100, EL5101, and EL5300 represent high-speed voltage feedback amplifiers based on the current feedback amplifier architecture. This gives the typical high slew rate benefits of a CFA family along with the stability and ease of use associated with the VFA type architecture. This family is available in single, dual, and triple versions, with 200MHz, 400MHz, and 700MHz versions. This family operates on single 5V or $\pm 5V$ supplies from minimum supply current. The EL5100 and EL5300 also feature an output enable function, which can be used to put the output in to a high-impedance mode. This enables the outputs of multiple amplifiers to be tied together for use in multiplexing applications.

Ordering Information

PART NUMBER	PACKAGE	TAPE & REEL	PKG. DWG. #
EL5100IS	8-Pin SO	-	MDP0027
EL5100IS-T7	8-Pin SO	7"	MDP0027
EL5100IS-T13	8-Pin SO	13"	MDP0027
EL5100IW-T7	6-Pin SOT-23	7" (3K pcs)	MDP0038
EL5100IW-T7A	6-Pin SOT-23	7" (250 pcs)	MDP0038
EL5101IC-T7	SC-70	7" (3K pcs)	
EL5101IC-T7A	SC-70	7" (250 pcs)	
EL5101IW-T7	5-Pin SOT-23	7" (3K pcs)	MDP0038
EL5101IW-T7A	5-Pin SOT-23	7" (250 pcs)	MDP0038
EL5300IU	16-Pin QSOP	-	MDP0040
EL5300IU-T7	16-Pin QSOP	7"	MDP0040
EL5300IU-T13	16-Pin QSOP	13"	MDP0040

Features

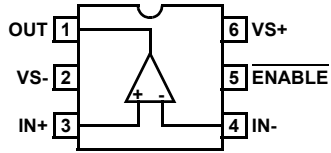
- Specified for 5V or $\pm 5V$ applications
- Power-down to 17 μ A/amplifier
- -3dB bandwidth = 200MHz
- ± 0.1 dB bandwidth = 20MHz
- Low supply current = 2.5mA
- Slew rate = 2200V/ μ s
- Low offset voltage = 4mV max
- Output current = 100mA
- $A_{VOL} = 1000$
- Diff gain/phase = 0.08%/0.1°

Applications

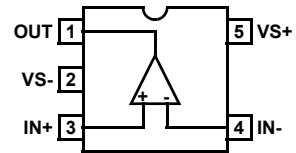
- Video amplifiers
- PCMCIA applications
- A/D drivers
- Line drivers
- Portable computers
- High speed communications
- RGB applications
- Broadcast equipment
- Active filtering

Pinouts

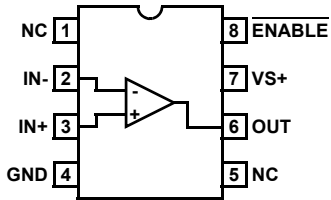
EL5100
(6-PIN SOT-23)
TOP VIEW



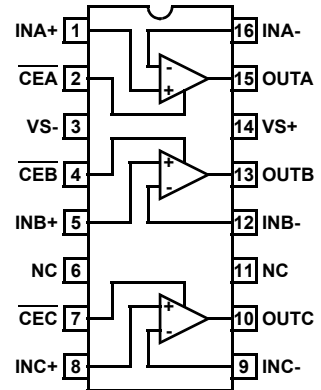
EL5101
(5-PIN SOT-23)
TOP VIEW



EL5100
(8-PIN SO)
TOP VIEW



EL5300
(16-PIN QSOP)
TOP VIEW



EL5100, EL5101, EL5300

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

Supply Voltage between V_{S+} and GND. 13.2V
 Input Voltage $\pm V_S$
 Differential Input Voltage $\pm 4\text{V}$
 Maximum Output Current. 80mA

Storage Temperature Range -65°C to $+150^\circ\text{C}$
 Ambient Operating Temperature Range -40°C to $+85^\circ\text{C}$
 Operating Junction Temperature 150°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: $T_J = T_C = T_A$

DC Electrical Specifications $V_S = \pm 5\text{V}$, $\text{GND} = 0\text{V}$, $T_A = 25^\circ\text{C}$, $V_{\text{CM}} = 0\text{V}$, $V_{\text{OUT}} = 0\text{V}$, $V_{\text{ENABLE}} = \text{GND}$ or OPEN , unless otherwise specified.

PARAMETER	DESCRIPTION	CONDITIONS	MIN	TYP	MAX	UNIT
V_{OS}	Offset Voltage		-4	1	4	mV
TCV_{OS}	Offset Voltage Temperature Coefficient	Measured from T_{MIN} to T_{MAX}		8		$\mu\text{V}/^\circ\text{C}$
I_{B}	Input Bias Current	$V_{\text{IN}} = 0\text{V}$	-6	2	6	μA
I_{OS}	Input Offset Current	$V_{\text{IN}} = 0\text{V}$	-2.5	0.5	2.5	μA
TCI_{OS}	Input Bias Current Temperature Coefficient	Measured from T_{MIN} to T_{MAX}		8		$\text{nA}/^\circ\text{C}$
PSRR	Power Supply Rejection Ratio		70	90		dB
CMRR	Common Mode Rejection Ratio	V_{CM} from -3V to $+3\text{V}$	60	75		dB
CMIR	Common Mode Input Range	Guaranteed by CMRR test	-3		+3	V
R_{IN}	Input Resistance	$V_{\text{IN}} = -3\text{V}$ to $+3\text{V}$	0.7	1.2		$\text{M}\Omega$
C_{IN}	Input Capacitance			1		pF
$I_{\text{S,ON}}$	Supply Current - Enabled	Per amplifier	2.1	2.5	2.9	mA
$I_{\text{S,OFF}}$	Supply Current - Shut Down	$V_{\text{S+}}$, per amplifier	-5	0	5	μA
		$V_{\text{S-}}$, per amplifier	5	17	25	μA
PSOR	Power Supply Operating Range		3.3		12	V
AVOL	Open Loop Gain	$R_{\text{L}} = 1\text{k}\Omega$ to GND, V_{OUT} from -2.5V to $+2.5\text{V}$	55	60		dB
V_{OP}	Positive Output Voltage Swing	$R_{\text{L}} = 150\Omega$ to GND	3.2	3.4		V
		$R_{\text{L}} = 1\text{k}\Omega$ to GND	3.6	3.8		V
V_{ON}	Negative Output Voltage Swing	$R_{\text{L}} = 150\Omega$ to GND		-3.4	-3.2	V
		$R_{\text{L}} = 1\text{k}\Omega$ to GND		-3.8	-3.6	V
I_{OUT}	Output Current	$R_{\text{L}} = 10\Omega$ to 0V	± 60	± 100		mA
$V_{\text{IH-EN}}$	ENABLE pin Voltage for Power Up		$V_{\text{S+}} - 4$			V
$V_{\text{IL-EN}}$	ENABLE pin Voltage for Shut Down				$V_{\text{S+}} - 1$	V
I_{EN}	Enable Pin Current	Enabled, $V_{\text{EN}} = 0\text{V}$	-1		1	μA
		Disabled, $V_{\text{EN}} = 5\text{V}$	5	17	25	μA

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Closed Loop AC Electrical Specifications $V_S = \pm 5V$, $T_A = 25^\circ C$, $V_{ENABLE} = 0V$, $A_V = +1$, $R_F = 0\Omega$, $R_L = 150\Omega$ to GND, unless otherwise specified.

PARAMETER	DESCRIPTION	CONDITIONS	MIN	TYP	MAX	UNIT
BW	-3dB Bandwidth ($V_{OUT} = 200mV_{p.p}$)	$V_S = \pm 5V$, $A_V = 1$, $R_F = 0\Omega$	150	200		MHz
SR	Slew Rate	$R_L = 100\Omega$, $V_{OUT} = -3V$ to $+3V$, $A_V = +2$	1500	2200	4000	V/ μs
t_R, t_F	Rise Time, Fall Time	$\pm 0.1V$ step		2.8		ns
OS	Overshoot	$\pm 0.1V$ step		10		%
t_{PD}	Propagation Delay	$\pm 0.1V$ step		3.2		ns
t_S	0.1% Settling Time	$V_S = \pm 5V$, $R_L = 500\Omega$, $A_V = 1$, $V_{OUT} = \pm 2.5V$		20		ns
dG	Differential Gain	$A_V = 2$, $R_L = 150\Omega$, $V_{INDC} = -1$ to $+1V$		0.08		%
dP	Differential Phase	$A_V = 2$, $R_L = 150\Omega$, $V_{INDC} = -1$ to $+1V$		0.1		$^\circ$
e_N	Input Noise Voltage	$f = 10kHz$		10		nV/ \sqrt{Hz}
i_N	Input Noise Current	$f = 10kHz$		7		pA/ \sqrt{Hz}
t_{DIS}	Disable Time			180		ns
t_{EN}	Enable Time			650		ns

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