

Comlinear® CLC1010, CLC2010

0.2mA, Low Cost, 2.5 to 5.5V, 35MHz Rail-to-Rail Amplifiers



FEATURES

- 70 μ A supply current
- 7.3MHz bandwidth
- Input voltage range with 5V supply: -0.3V to 3.8V
- Output voltage range with 5V supply: 0.04V to 4.96V
- 9V/ μ s slew rate
- 29nV/ $\sqrt{\text{Hz}}$ input voltage noise
- 4mA linear output current
- Fully specified at 2.7V and 5V supplies
- Competes with low power CMOS amps
- CLC1010: Pb-free SOT23-5, SOIC-8
- CLC2010: Pb-free MSOP-8, SOIC-8

APPLICATIONS

- Portable/battery-powered applications
- Mobile communications, cell phones, pagers
- ADC buffers and active filters
- Portable test instruments
- Signal conditioning
- Portable medical instrumentation

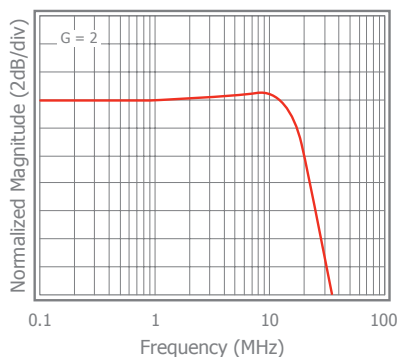
General Description

The COMLINEAR CLC1010 (single) and CLC2010 (dual) are ultra-low power, low cost, voltage feedback amplifiers. These amplifiers use only 70 μ A of supply current and are designed to operate from a supply range of 2.5V to 5.5V (± 1.25 to ± 2.75). The input voltage range extends 300mV below the negative rail and 1.2V below the positive rail.

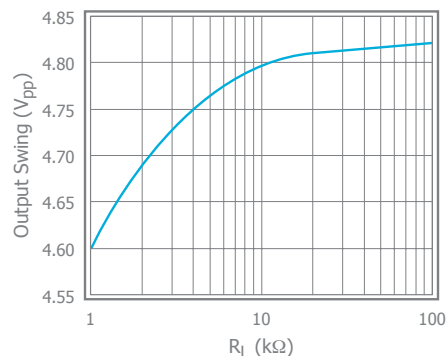
The CLC1010 and CLC2010 offer high bipolar performance at a low CMOS price. They offer superior dynamic performance with a 7.3MHz small signal bandwidth and 9V/ μ s slew rate. The combination of low power, high bandwidth, and rail-to-rail performance make the CLC1010 and CLC2010 well suited for battery-powered communication/computing systems.

Typical Performance Examples

Frequency Response



Output Swing vs. R_L



Ordering Information

Part Number	Package	Pb-Free	RoHS Compliant	Operating Temperature Range	Packaging Method
CLC1010IST5X*	SOT23-5	Yes	Yes	-40°C to +85°C	Reel
CLC1010ISO8X	SOIC-8	Yes	Yes	-40°C to +85°C	Reel
CLC2010IMP8X*	MSOP-8	Yes	Yes	-40°C to +85°C	Reel
CLC2010ISO8X	SOIC-8	Yes	Yes	-40°C to +85°C	Reel

Moisture sensitivity level for all parts is MSL-1. *Advance Information, contact CADEKA for availability.

Electrical Characteristics

$T_A = 25^\circ\text{C}$, $V_S = +5\text{V}$, $R_f = R_g = 10\text{k}\Omega$, $R_L = 10\text{k}\Omega$ to $V_S/2$, $G = 2$; unless otherwise noted.

Parameter	Conditions	Min	Typ	Max	Units
Frequency Domain Response					
-3dB Bandwidth	$G = +1$, $V_{OUT} = 0.05V_{pp}$, $R_f = 0$		7.3		MHz
-3dB Bandwidth	$G = +2$, $V_{OUT} < 0.2V_{pp}$		3.4		MHz
Large Signal Bandwidth	$G = +2$, $V_{OUT} = 2V_{pp}$		2.5		MHz
Gain Bandwidth Product	$G = +11$, $V_{OUT} = 0.2V_{pp}$		4		MHz
Time Domain Response					
Rise and Fall Time	$V_{OUT} = 0.2\text{V}$ step; (10% to 90%)		50		ns
Settling Time to 0.1%	$V_{OUT} = 1\text{V}$ step		600		ns
Overshoot	$V_{OUT} = 1\text{V}$ step		4		%
Slew Rate	2V step, $G = -1$		9		V/ μs
Distortion/Noise Response					
2nd Harmonic Distortion	$V_{OUT} = 2V_{pp}$, 100kHz		-67		dBc
3rd Harmonic Distortion	$V_{OUT} = 2V_{pp}$, 100kHz		-60		dBc
THD	$V_{OUT} = 2V_{pp}$, 100kHz		59		dB
Input Voltage Noise	> 10kHz		29		nV/ $\sqrt{\text{Hz}}$
DC Performance					
Input Offset Voltage ⁽¹⁾			1		mV
Average Drift			8		$\mu\text{V}/^\circ\text{C}$
Input Offset Current ⁽¹⁾			90		μA
Input Bias Current ⁽¹⁾			100		nA/ $^\circ\text{C}$
Average Drift			1.3		nA
Power Supply Rejection Ratio ⁽¹⁾	DC	58	63		dB
Open-Loop Gain ⁽¹⁾	$V_{OUT} = V_S / 2$		76		dB
Supply Current ⁽¹⁾	per channel		70		μA
Input Characteristics					
Input Resistance	Non-inverting		>10		M Ω
Input Capacitance			1.25		pF
Common Mode Input Range			-0.3 to 3.8		V
Common Mode Rejection Ratio ⁽¹⁾	DC, $V_{CM} = 0\text{V}$ to $V_S - 1.5$		97		dB
Output Characteristics					
Output Voltage Swing	$R_L = 2\text{k}\Omega$ to $V_S / 2$		0.09 to 4.9		V
	$R_L = 10\text{k}\Omega$ to $V_S / 2$		0.04 to 4.96		V
Output Current			± 4		mA
Short-Circuit Output Current			± 9		mA

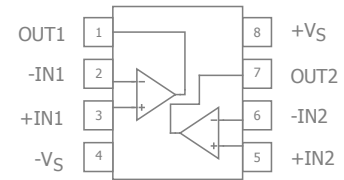
NOTES:

1) 100% tested at 25°C

Refer to the data sheet for complete product specifications

Available Package

CLC2010 SOIC-8



Comlinear CLC1010, CLC2010 0.2mA, Low Cost, 2.5 to 5.5V, 35MHz Rail-to-Rail Amps Rev 1C

For additional information regarding our products, please visit CADEKA at: cadeka.com

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