

Comlinear® CLC1603, CLC3603, CLC3613

Single and Triple, 1.1mA, 200MHz Amplifiers



FEATURES

- 0.1dB gain flatness to 30MHz
- 0.01%/0.03° differential gain/phase
- 200MHz -3dB bandwidth at G = 2
- 140MHz large signal bandwidth
- 450V/μs slew rate
- 1.1mA supply current (enabled)
- 0.35mA supply current (disabled)
- 100mA output current
- Fully specified at 5V and ±5V supplies
- CLC1603: Pb-free SOT23-6
- CLC3603: Pb-free SOIC-16
- CLC3613: Pb-free SOIC-14

APPLICATIONS

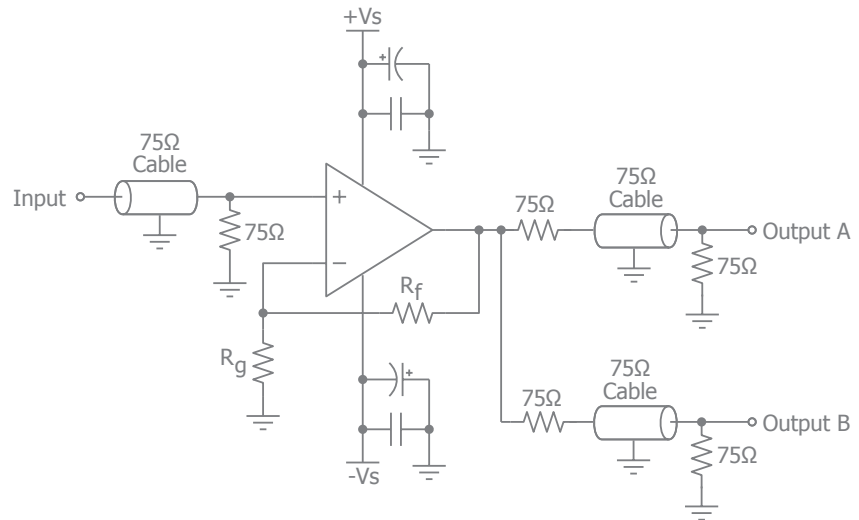
- RGB video line drivers
- Portable Video
- Line drivers
- Set top box
- Active filters
- Cable drivers
- Imaging applicaitons
- Radar/communication receivers

General Description

The COMLINEAR CLC1603 (single with disable), CLC3603 (triple with disable), and CLC3613 (triple) are high-performance, current feedback amplifiers that provide 240MHz unity gain bandwidth, ±0.1dB gain flatness to 30MHz, and 450V/μs slew rate while consuming only 1.1mA of supply current. This high performance exceeds the requirements of NTSC/PAL/HDTV video applications. These COMLINEAR high-performance amplifiers also provide ample output current to drive multiple video loads.

The COMLINEAR CLC1603, CLC3603, and CLC3613 are designed to operate from ±5V or +5V supplies. The CLC1603 and CLC3603 offer a enable/disable feature to save power. While disabled, the outputs are in a high-impedance state to allow for multiplexing applications. The combination of high-speed, low-power, and excellent video performance make these amplifiers well suited for use in many general purpose, high-speed applications including set top boxes, high-definition video, active filters, and cable driving applications.

Typical Application - Driving Dual Video Loads



Ordering Information

Part Number	Package	Disable Option	Pb-Free	RoHS Compliant	Operating Temperature Range	Packaging Method
CLC1603IST6X	SOT23-6	Yes	Yes	Yes	-40°C to +85°C	Reel
CLC3613ISO14X	SOIC-14	No	Yes	Yes	-40°C to +85°C	Reel
CLC3613ISO14	SOIC-14	No	Yes	Yes	-40°C to +85°C	Rail
CLC3603ISO16X	SOIC-16	Yes	Yes	Yes	-40°C to +85°C	Reel
CLC3603ISO16	SOIC-16	Yes	Yes	Yes	-40°C to +85°C	Rail

Moisture sensitivity level for all parts is MSL-1.

Electrical Characteristics

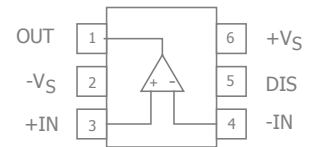
$T_A = 25^\circ\text{C}$, $V_S = \pm 5\text{V}$, $R_f = R_g = 1.2\text{k}\Omega$, $R_L = 100\Omega$ to GND, $G = 2$; unless otherwise noted.

Parameter	Conditions	Min	Typ	Max	Units
Frequency Domain Response					
-3dB Bandwidth	$G = +1$, $R_f = 2.5\text{k}\Omega$, $V_{OUT} = 0.5V_{pp}$		240		MHz
-3dB Bandwidth	$G = +2$, $V_{OUT} = 0.5V_{pp}$		200		MHz
Large Signal Bandwidth	$G = +2$, $V_{OUT} = 2V_{pp}$		120		MHz
0.1dB Gain Flatness	$G = +2$, $V_{OUT} = 0.5V_{pp}$		30		MHz
Time Domain Response					
Rise and Fall Time	$V_{OUT} = 2\text{V}$ step; (10% to 90%)		4		ns
Overshoot	$V_{OUT} = 0.2\text{V}$ step		1		%
Slew Rate	$V_{OUT} = 2\text{V}$ step		450		V/ μs
Distortion/Noise Response					
2nd Harmonic Distortion	$V_{OUT} = 2V_{pp}$, 5MHz		-67		dBc
3rd Harmonic Distortion	$V_{OUT} = 2V_{pp}$, 5MHz		-57		dBc
Total Harmonic Distortion	$V_{OUT} = 2V_{pp}$, 5MHz, $R_L = 150\Omega$		55		dBc
Differential Gain	NTSC (3.58MHz), DC-coupled, $R_L = 150\Omega$		0.01		%
Differential Phase	NTSC (3.58MHz), DC-coupled, $R_L = 150\Omega$		0.03		$^\circ$
Third Order Intercept	$V_{OUT} = 0.5V_{pp}$, 10MHz		35		dBm
Spurious Free Dynamic Range	$V_{OUT} = 1V_{pp}$, 5MHz		58		dBc
Input Voltage Noise	> 1MHz		4		nV/ $\sqrt{\text{Hz}}$
Input Current Noise	> 1MHz, Inverting		15		pA/ $\sqrt{\text{Hz}}$
	> 1MHz, Non-Inverting		15		pA/ $\sqrt{\text{Hz}}$
Crosstalk	Channel-to-Channel 5MHz		56		dB
DC Performance					
Input Offset Voltage		-4	0.7	4	mV
Input Bias Current	Non-Inverting	-5	2	5	μA
	Inverting	-5	2	5	μA
Power Supply Rejection Ratio	DC	50	75		dB
Supply Current	CLC1603		1.1	2.5	mA
	CLC3603, CLC3613		3.3	6.5	mA
Disable Supply Current	$\overline{\text{DIS}}$ pin is grounded, CLC1603		0.11	0.5	mA
	$\overline{\text{DIS}}$ pin is grounded, CLC3603		0.3	0.5	mA
Input Characteristics					
Common Mode Input Range			± 4.0		V
Common Mode Rejection Ratio	DC	50	60		dB
Output Characteristics					
Output Voltage Swing	$R_L = 100\Omega$	-3.0	± 3.5	3.0	V
Output Current			± 270		mA

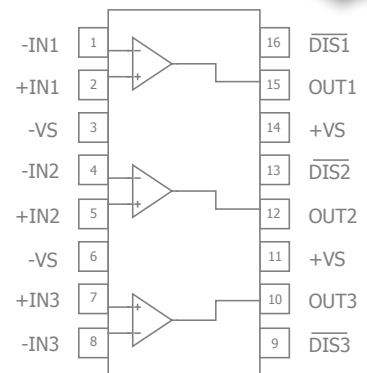
Note:
Refer to the data sheet for complete product specifications.

Available Packages

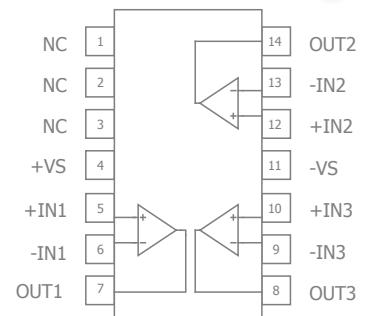
CLC1603 SOT23-6
(not actual size)



CLC3603 SOIC-16
(not actual size)



CLC3613 SOIC-14
(not actual size)



Comlinear CLC1603, CLC3603, CLC3613 Single and Triple, 1.1mA, 200MHz Amplifiers Rev 1C

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

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