

Preliminary

CLC412

APPLICATIONS:

- HDTV, NTSC & PAL video systems
- video switching and distribution
- multi-channel tele-communications amplifier
- wideband active filters
- cable drivers
- dc coupled single-to-differential conversions

DESCRIPTION

The CLC412 combines a high-speed complementary bi-polar process with Comlinear's proprietary current-feedback topology to produce a very high-speed dual op amp. The CLC412 provides a 250MHz -3dB bandwidth (SOIC) at a gain of +2 and a 1300V/ μ s slew rate while consuming only 50mW per amplifier from \pm 5V supplies.

The CLC412 offers exceptional video performance with its 0.01% and 0.025° differential gain and phase errors for NTSC and PAL video signals while driving one back terminated 75 Ω load. The CLC412 also offers flat gain response to 30MHz of 0.1dB and high channel-channel isolation at 10MHz of -82dB (SOIC), -68dB (PDIP). Additionally, each amplifier delivers a 70mA continuous output current. This level of performance makes the CLC412 an ideal dual op amp for many professional video applications.

The CLC412 is also well suited for wideband signal conditioning active filters such as anti-aliasing filters for high-speed A/D converters. Its small 8-pin SOIC package, low power requirement and low noise and distortion allow the CLC412 to serve portable RF applications such as tele-video/communications.

The CLC412 is available in the following versions.

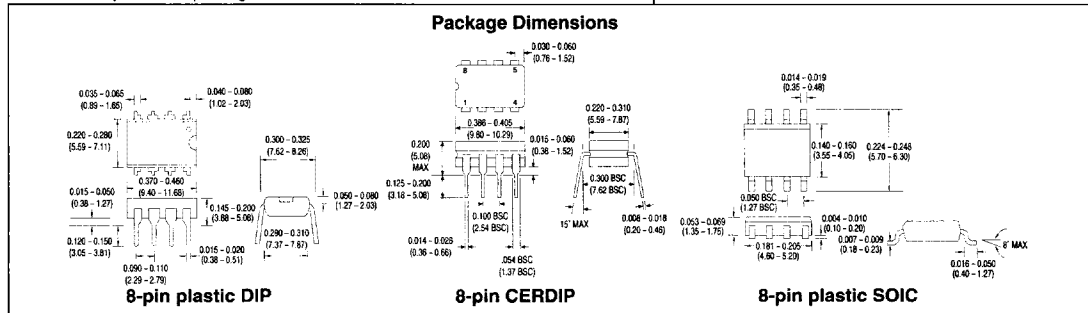
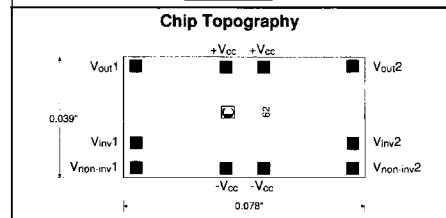
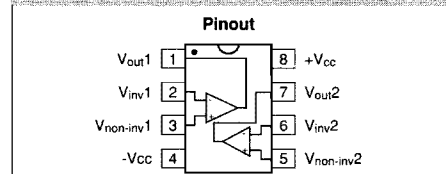
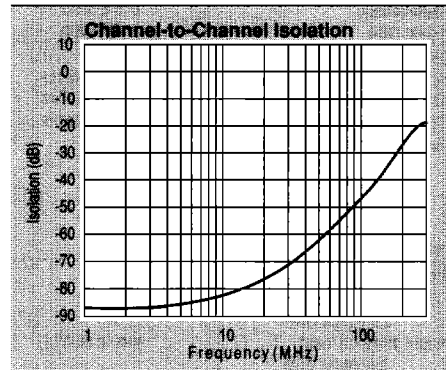
CLC412AJP	-40°C to +85°C	8-pin Plastic DIP
CLC412AJE	-40°C to +85°C	8-pin Plastic SOIC
CLC412AIB	-40°C to +85°C	8-pin Cerdip
CLC412A8B	-55°C to +125°C	8-pin Cerdip, MIL-STD-883, Level B
CLC412A8L-2	-55°C to +125°C	20-pin LCC, MIL-STD-883, Level B
CLC412ALC	-55°C to +125°C	dice
CLC412AMC	-55°C to +125°C	dice, MIL-STD-883, Level B

Contact factory for other packages and DESC SMD number.

FEATURES (typical):

- 250MHz -3dB bandwidth (SOIC)
- 0.1dB gain flatness to 30MHz
- 5mA per channel quiescent current
- 0.01%, 0.025° differential gain, phase
- -82dBc channel isolation @ 10MHz (SOIC)
- 1300V/ μ s slew rate
- 70mA continuous output current
- gain range \pm 1 to \pm 10V/V

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CLC412 Electrical Characteristics (A_v = +2, R_i = 750Ω, V_{out} = 3V, R_o = 100Ω)

PARAMETERS	CONDITIONS	TYP	MIN AND MAX RATINGS				UNITS	SYMBOL
			+25°C	-40°C	+25°C	+85°C		
Ambient Temperature	CLC412 AJP	+25°C	-40°C	+25°C	+85°C			
FREQUENCY DOMAIN RESPONSE								
+3dB bandwidth	(AJP) ¹⁾ V _{out} < 0.5V _{pp}	320	205	205	145	MHz	SSBW	
	(AJP) ¹⁾ V _{out} < 4.0V _{pp}	105	80 ²⁾	80	65	MHz	LSBW	
gain flatness	V _{out} < 0.5V _{pp}							
† peaking	DC to 30MHz	0.0	0.3	0.2	0.3	dB	GFP	
† rolloff	DC to 30MHz	0.1	TBD	TBD	TBD	dB	GFR	
† rolloff	f _c = 200MHz	1.5	2.7	2.7	8	dB	GFR	
linear phase deviation	DC to 75MHz	0.1	TBD	TBD	TBD	°	LPD	
differential gain	3.58 & 4.43MHz, R _i = 150Ω	0.01	TBD	TBD	TBD	%	DG	
differential phase	3.58 & 4.43MHz, R _i = 150Ω	0.025	0.05	0.05	0.10	°	DP	
TIME DOMAIN RESPONSE								
rise and fall time	0.5V step	1.1	1.7	1.7	2.4	ns	TRS	
	4V step	3.2	4.4 ²⁾	4.4	4.8	ns	TRL	
settling time to 0.05%	2V step	12	18	18	20	ns	TSS	
overshoot	0.5V step	TBD	TBD	TBD	TBD	%	OS	
slew rate	2V step	1300	1000	1000	800	V/μs	SR	
DISTORTION AND NOISE RESPONSE								
†2 nd harmonic distortion	2V _{pp} , 20MHz	-46	-42	-42	-38	dBc	HD2	
†3 rd harmonic distortion	2V _{pp} , 20MHz	-50	-46	-46	-42	dBc	HD3	
3 rd order intermodulation intercept	10MHz	TBD				dBm	IMD	
equivalent noise input								
non-inverting voltage	>1MHz	2.7	3.4	3.4	3.8	nV/√Hz	VN	
inverting current	>1MHz	11.0	13.9	13.9	15.5	pA/√Hz	NICN	
non-inverting current	>1MHz	2.1	2.6	2.6	3.0	pA/√Hz	ICN	
noise floor	>1MHz	-157	-156	-156	-155	dBm _{1Hz}	SNF	
crosstalk	(AJP) ¹⁾ 10MHz	68	62	62	62	dB	XTLK	
STATIC DC PERFORMANCE								
*input offset voltage		± 2	± 10	± 6	± 12	mV	VIO	
average drift		± 30	60	—	60	μV/°C	DVIO	
*input bias current	non-inverting	5	28	12	12	μA	IBN	
average drift		30	187	—	90	A/°C	DI _{BN}	
input bias current	inverting	± 3	25	15	20	μA	IBI	
average drift		± 20	125	—	80	nA/°C	DIBI	
†power supply rejection ratio	DC	50	46	46	44	dB	PSRR	
▲common mode rejection ratio	DC	50	45	45	42	dB	CMRR	
*supply current	R _i = ∞	10.2	13.6	12.8	12.8	mA	ICC	
MISCELLANEOUS PERFORMANCE								
input resistance	non-inverting	1000	300	500	500	kΩ	RIN	
input capacitance	non-inverting	1.0	2.0	2.0	2.0	pF	CIN	
output resistance	closed loop	0.2	0.6	0.3	0.2	Ω	ROUT	
output voltage range	R _i = ∞	+3.8,-3.3	+3.6,-2.9	+3.7,-3.0	+3.7,-3.0	V	VO	
	R _i = 100Ω	+3.1,-2.9	+1.6,-2.5	± 2.7	± 2.7	V	VOL	
	R _i = 100Ω (0° to 70°C)			+2.5,-2.6		V	VOL	
input voltage range	common mode	± 2.2	± 1.4	± 2.0	± 2.0	V	CMIR	
output current		70	25	45	45	mA	IO	

Absolute Maximum Ratings

V _{cc}	±7V
I _{out} short circuit protected to ground, however maximum reliability is obtained if I _{out} does not exceed...	150mA
common-mode input voltage	±V _{cc}
maximum junction temperature	+175°C
operating temperature range	
AJ/AI	-40°C to +85°C
A8/AM/AL:	-55°C to +125°C
storage temperature range	-65°C to +150°C
lead temperature (soldering 10 sec)	+300°C

Miscellaneous Ratings

Recommended gain range ±1 to ±10V/V

Notes:

- * AJ, AI : 100% tested at +25°C, sample tested at +85°C.
- † AJ : Sample tested at +25°C.
- † AI : 100% tested at +25°C.
- * A8 : 100% tested at +25°C, -55°C, +125°C.
- † A8 : 100% tested at +25°C, sample at -55°C, +125°C
- * AL, AM : 100% wafer probed +25°C to +25°C min/max specs.
- ▲ SMD : Sample tested at +25°C, -55°C, +125°C.
- note 1) : Due to differing package parasitics, performance is package dependant, and therefore will be specified separately.
- note 2) : Specification is guaranteed at V_{out} = 3Vpp.

Comlinear reserves the right to change specifications without notice.