



Low Power, 400MHz High Speed Buffer

CLM4102 / CLM4302

FEATURES

- Improved Replacement for EL2002
- Slew Rate 11000V/ μ s
- Wide Bandwidth..... 400MHz
- Output Current..... 150mA
- Wide Supply Voltage $\pm 3V$ to $\pm 18V$
- Supply Current..... 5mA
- Short Circuit Product
- Low Bias Current

APPLICATIONS

- Op Amp Booster
- Coaxial Cable Driver
- A/D Input Buffer
- Isolation Buffer

GENERAL DESCRIPTION

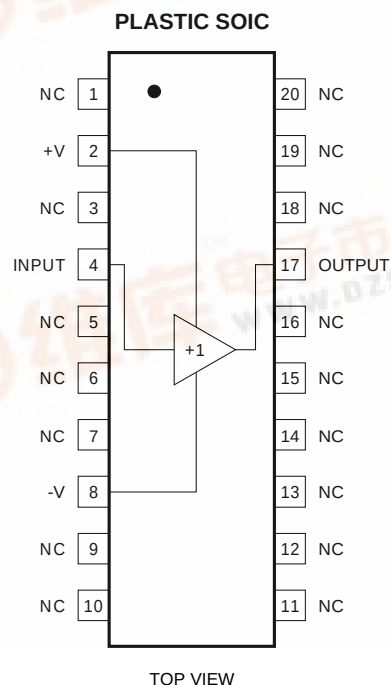
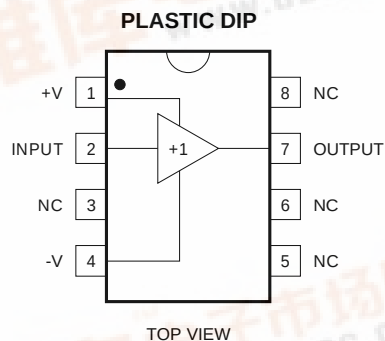
The CLM4102 product family is a low power, wide bandwidth buffer amplifier. The 4102 family delivers a -3dB bandwidth of 400MHz, 200mA, and 11000V/ μ s while only drawing 5mA of supply current. The CLM4102 family operates over a wide supply voltage range of $\pm 3V$ to $\pm 18V$.

This product is an excellent choice for coaxial cable drivers, A/D converter input buffers and fast op-amp current boosters, in applications for video, test and medical systems and military designs.

ORDERING INFORMATION

Part	Package	Temperature Range
CLM4102M	SOIC 20-Lead	-40°C to +85°C
CLM4102N	Plastic Dip 8-Lead	-40°C to +85°C
CLM4302M	SOIC 20-Lead	-25°C to +85°C
CLM4302N	Plastic Dip 8-Lead	-25°C to +85°C

CONNECTION DIAGRAMS



ABSOLUTE MAXIMUM RATINGS (Note 1)

Supply Voltage $\pm 20\text{V}$
 Input Voltage $\pm V_{\text{supply}}$
 Storage Temperature Range -65°C to $+150^{\circ}\text{C}$
 Lead Temperature
 (Soldering 10 seconds) 260°C
 Power Dissipation (Note 4)
 ESD Tolerance (Note 3) $\pm 2000\text{V}$

Thermal Resistance (θ_{JA})
 N Package 95°C/W
 M Package 95°C/W
 Thermal Resistance (θ_{JC})
 N Package 50°C/W
 M Package 50°C/W
 Maximum Junction Temperature 150°C

DC ELECTRICAL CHARACTERISTICS

The following specifications apply for Supply Voltage = $\pm 15\text{V}$, $V_{CM} = 0$, $R_L \geq 100\text{k}\Omega$ and $R_S = 50\Omega$ unless otherwise noted.

Boldface limits apply for $T_A = T_J = T_{MIN}$ to T_{MAX} ; all other limits $T_A = T_J = 25^{\circ}\text{C}$.

SYMBOL	CHARACTERISTICS	TYP	CLM4102	CLM4302	UNITS	CONDITIONS
			Limit (Note 5)	Limit (Note 5)		
A_{V1}	Voltage Gain 1	0.99	0.96 0.96	0.95 0.95	V/V Min	$R_L = \infty$, $V_{IN} = \pm 12\text{V}$
A_{V2}	Voltage Gain 2	0.95	0.90 0.90	0.90 0.90		$R_L = 100\Omega$, $V_{IN} = \pm 10\text{V}$
A_{V3}	Voltage Gain 3	0.92	0.85 0.85	0.85 0.85		$R_L = 100\Omega$, $V_{IN} = \pm 3\text{V}$, $V_S = \pm 5\text{V}$
V_{OS}	Offset Voltage	10	15 20	30 40	mV Max	$R_L = \infty$
I_B	Input Bias Current	1	8 10	12	μA Max	$R_L = \infty$
R_{IN}	Input Resistance	0.5	.2	.2	$\text{M}\Omega$	$R_L = 100\Omega$
C_{IN}	Input Capacitance	3.5			pF	
R_O	Output Resistance	3	7	10	Ω Max	$R_L = 100\Omega$, $V_{IN} = \pm 2\text{V}$
I_S	Supply Current	5	7.5	7.5	mA Max	$R_L = \infty$
V_O	Output Swing	10	10	10	$\pm\text{V}$ Min	$R_L = 100\Omega$, $V_{IN} = \pm 12\text{V}$
I_{OUT}	Output Current	200	100	100	mA	$V_{IN} = 12\text{V}$

AC ELECTRICAL CHARACTERISTICS

The following specifications apply for Supply Voltage = $\pm 15V$, $V_{CM} = 0$, $R_L \geq 100K\Omega$ and $R_S = 50\Omega$ unless otherwise noted.

Boldface limits apply for $T_A = T_J = T_{MIN}$ to T_{MAX} ; all other limits $T_A = T_J = 25^\circ C$.

SYMBOL	CHARACTERISTICS	TYP	CLM4102	CLM4302	UNITS	CONDITIONS
			Limit (Note 5)	Limit (Note 5)		
SR ₁	Slew Rate 1	11000	8000	6000	V/ μ s	$V_{IN} = \pm 10V$, $R_L = 100\Omega$ (Note 2)
SS _{BW}	Small Signal Bandwidth	400	200	200	MHz	$V_{IN} = \pm 100mV_{PP}$, $R_L = 100\Omega$ $C_L \leq 10pF$
P _{BW}	Power Bandwidth	100				$V_{IN} = \pm 4V$, $R_L = 100\Omega$ $C_L \leq 10pF$
t _r , t _f	Rise Time Fall Time	1.2	1.7	1.7	ns	$R_L = 100\Omega$, $C_L \leq 10pF$ $V_{IN} = 0.5V$
t _{pd}	Propagation Delay Time	2.0			ns	$R_L = 100\Omega$, $C_L \leq 10pF$ $V_{IN} = 0.5V$

Note 1: Absolute Maximum Ratings indicate limits beyond which damage to the device may occur. DC and AC electrical specifications do not apply when operating the device beyond its rated operating conditions.

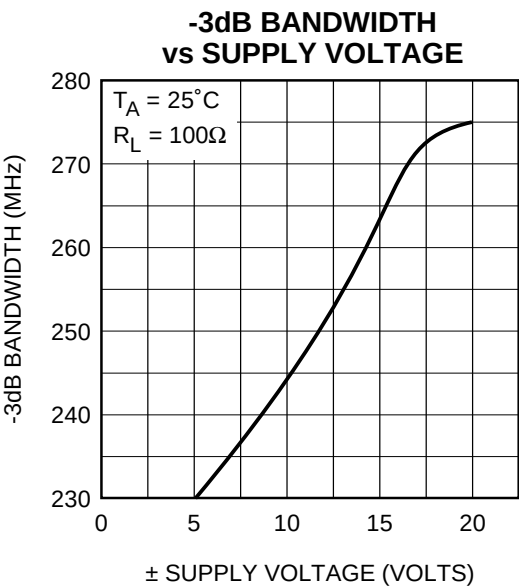
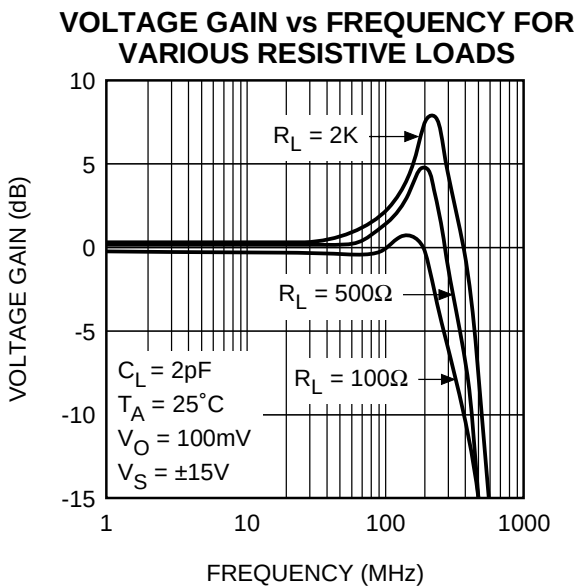
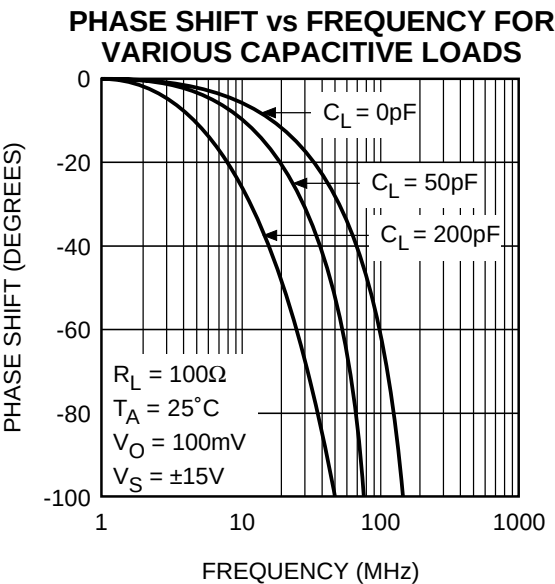
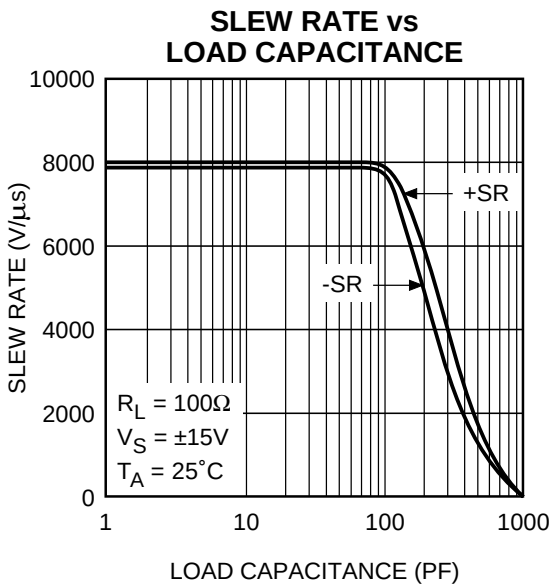
Note 2: Slew rate is measured with 50Ω source impedance at $25^\circ C$. Slew rate is measured between $V_O = +5V$ and $-5V$.

Note 3: The test circuit consists of the human body model of $120pF$ in series with 1500Ω .

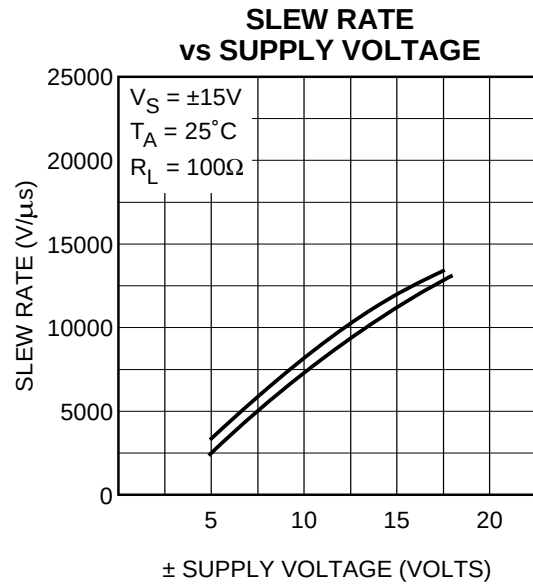
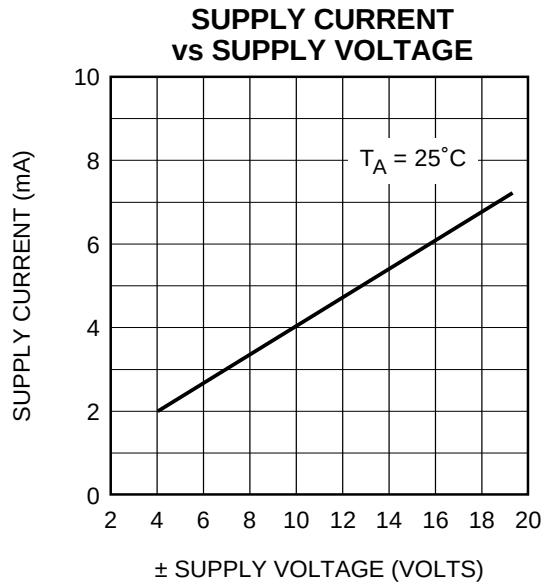
Note 4: The maximum power dissipation is a function of $T_{J(max)}$, θ_{JA} and T_A . The maximum allowable power dissipation at any ambient temperature is $P_D = (T_{J(max)} - T_A)/\theta_{JA}$.

Note 5: Limits are guaranteed by testing, correlation or periodic characterization.

TYPICAL PERFORMANCE CHARACTERISTICS



TYPICAL PERFORMANCE CHARACTERISTICS (continued)



**VOLTAGE GAIN vs FREQUENCY FOR
VARIOUS CAPACITIVE LOADS, $R_L = 100\Omega$**

