

CLM4121 / CLM4321

FEATURES

- High Slew Rate..... 2000V/μs
- Wide Bandwidth..... 180MHz
- Peak Output Current..... 300mA
- Low Supply Current..... 7mA
- No Oscillations with Capacitive Loads
- 5V to ±15V Operation Guaranteed
- Fully Specified to Drive 50Ω Lines

APPLICATIONS

- Coaxial Cable Driver
- Flash A/D Converter Driver
- Video DAC Buffer
- OP Amp Booster
- Video Amplifier
- High Frequency Filter
- Wide Bandwidth Signal Conditioning
- Radar
- Sonar

GENERAL DESCRIPTION

The CLM4121 family are high speed unity gain buffers that slew at 2000V/μs, having a small signal bandwidth of 180MHz, delivers 150mA, yet draws only 7mA supply current.

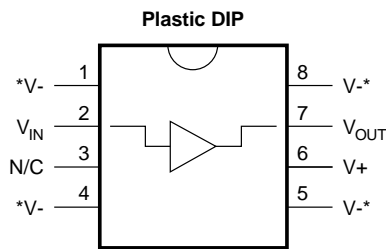
The fast slew rate, wide bandwidth, and high output drive make the CLM4121 family the ideal choice for closed loop buffer applications with wide band op amps.

These same characteristics are the excellent choices for open loop applications such as driving coaxial and switched pair cables.

ORDERING INFORMATION

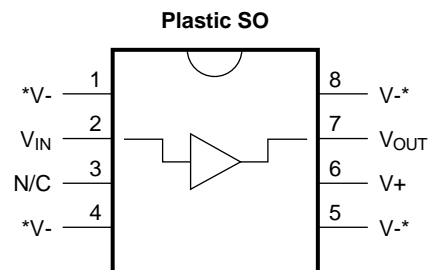
| Part | Package | Temperature Range |
|-----------|-----------------------------|-------------------|
| CLM4121 N | NO8A (Plastic P Dip 8 Lead) | -40°C to 85°C |
| CLM4121 M | MO8B (SOIC 8 Lead) | -40°C to 85°C |
| CLM4321 N | NO8A (Plastic P Dip 8 Lead) | -25°C to 70°C |
| CLM4321 M | MO8B (SOIC 8 Lead) | -25°C to 70°C |

CONNECTION DIAGRAMS



*Heat-sinking pins. Pin 1 and Pin 8 must be connected to the negative supply.

Package NO8A



*Heat-sinking pins. Pin 1 and Pin 8 must be connected to the negative supply.

Package MO8B

ABSOLUTE MAXIMUM RATINGS (Note 1)

| | | | |
|-------------------------------------|-----------------------------------|---|-----------------|
| Supply Voltage | ± 20 | ESD Tolerance (Note 3) | $\pm 2000V$ |
| Input Voltage | $\pm V_{supply}$ | Thermal Resistance (θ_{JA}) (Note 6) | |
| Storage Temperature Range | $-65^{\circ}C$ to $+150^{\circ}C$ | N Package | $50^{\circ}C/W$ |
| Lead Temperature | | M Package | $60^{\circ}C/W$ |
| (Soldering 10 seconds) | $260^{\circ}C$ | Maximum Junction Temperature | $150^{\circ}C$ |
| Power Dissipation | (Note 4) | | |

DC 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 | CLM4121 | CLM4321 | UNITS | CONDITIONS |
|-----------|------------------------------|-------|-----------------------|-----------------------|--------------|---|
| | | | Limit (Note 5) | Limit (Note 5) | | |
| A_{V1} | Voltage Gain 1 | 0.970 | 0.950 0.950 | 0.950 0.950 | V/V Min | $R_L = 1K\Omega$, $V_{IN} = \pm 10V$ |
| A_{V2} | Voltage Gain 2 | 0.900 | 0.800 0.800 | 0.800 0.800 | | $R_L = 50\Omega$, $V_{IN} = \pm 6V$ |
| A_{V3} | Voltage Gain 3 | 0.840 | 0.780 0.750 | 0.750 0.700 | | $R_L = 50\Omega$, $V^+ = 5V$ $V_{IN} = 2V_{PP}$ |
| V_{OS} | Offset Voltage | 15 | 20 30 | 30 30 | mV Max | $R_L = 1K\Omega$ |
| I_B | Input Bias Current | 1 | 5 7 | 10 10 | μA Max | $R_L = 1K\Omega$, $R_S = 10k\Omega$, |
| R_{IN} | Input Resistance | 0.5 | .2 | .2 | $M\Omega$ | $R_L = 50\Omega$ |
| C_{IN} | Input Capacitance | 3.5 | | | pF | |
| R_O | Output Resistance | 3 | 5 10 | 5 6 | Ω Max | $I_{OUT} = \pm 10mA$ |
| I_{S1} | Supply Current 1 | 7.5 | 10 10 | 10 10 | mA Max | $R_L = \infty$ |
| I_{S2} | Supply Current 2 | 2.5 | 5 5 | 5 5 | | $R_L = \infty$, $V^+ = 5V$ |
| V_{O1} | Output Swing 1 | 13.5 | 13.3 13 | 13.2 13 | $\pm V$ Min | $R_L = 1K$ |
| V_{O2} | Output Swing 2 | 12.7 | 10 9 | 10 9 | | $R_L = 100\Omega$ |
| V_{O3} | Output Swing 3 | 1.8 | 1.6 1.3 | 1.6 1.5 | V_{PP} Min | $R_L = 50\Omega$, $V^+ = 5V$ (Note 5) |
| I_{OUT} | Output Current | 200 | 140 | 140 | mA | $V_{IN} = \pm 13V$ |
| PSSR | Power Supply Rejection Ratio | 70 | 60 60 | 60 60 | dB Min | $V^{\pm} = \pm 5V$ to $\pm 15V$ |

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 | CLM4121 | CLM4321 | UNITS | CONDITIONS |
|---------------------------------|------------------------|------|----------------|----------------|------------|---|
| | | | Limit (Note 5) | Limit (Note 5) | | |
| SR ₁ | Slew Rate 1 | 4000 | 3500 | 2500 | V/ μ s | $V_{IN} = \pm 11V$, $R_L = 1K\Omega$ (Note 2) |
| SR ₂ | Slew Rate 2 | 2000 | 1500 | 1000 | | $V_{IN} = \pm 5V$, $R_L = 50\Omega$ (Note 2) |
| SS _{BW} | Small Signal Bandwidth | 180 | 140 | 100 | MHz | $V_{IN} = \pm 100mV_{PP}$, $R_L = 50\Omega$ $C_L \leq 10pF$ |
| LS _{BW} | Large Signal Bandwidth | 65 | 55 | 40 | | $V_{IN} = \pm 11V$, $R_L = 1K$ $C_L \leq 10pF$ |
| P _{BW} | Power Bandwidth | 40 | 30 | 20 | | $V_{IN} = \pm 8V$, $R_L = 50\Omega$ $C_L \leq 10pF$ |
| t _r , t _f | Rise Time Fall Time | 2.0 | 2.5 | 3.5 | ns | $R_L = 50\Omega$, $C_L \leq 10pF$ $V_O = 100mV_{PP}$ |
| t _{pd} | Propagation Delay Time | 3.0 | | | ns | $R_L = 50\Omega$, $C_L \leq 10pF$ $V_O = 100mV_{PP}$ |
| O _S | Overshoot | 10 | | | % | $R_L = 50\Omega$, $C_L \leq 10pF$ $V_O = 100mV_{PP}$ |

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 $25^\circ C$. For accurate measurements, the input slew rate should be at least $5000V/\mu s$.

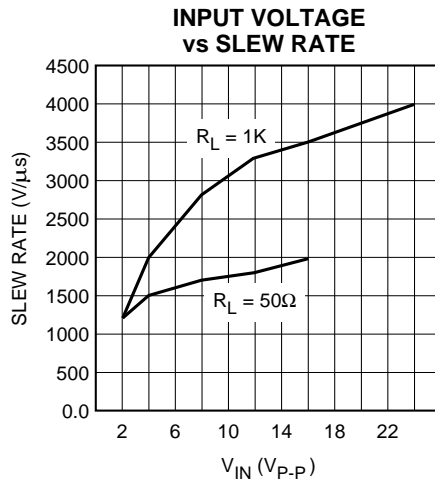
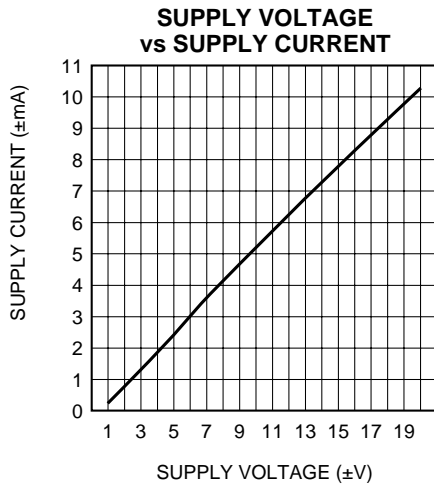
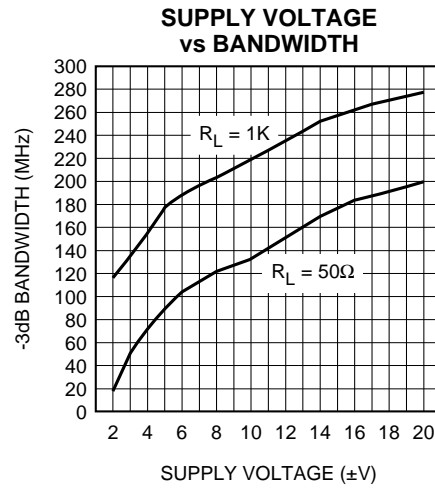
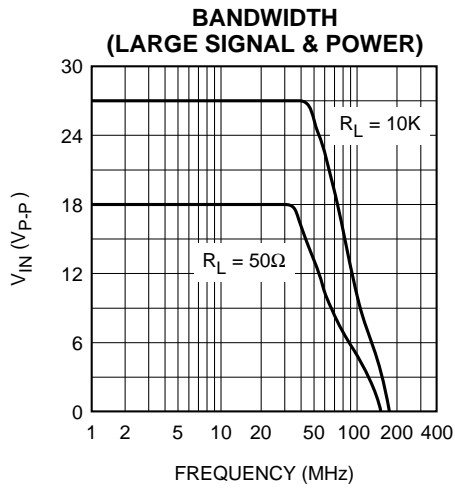
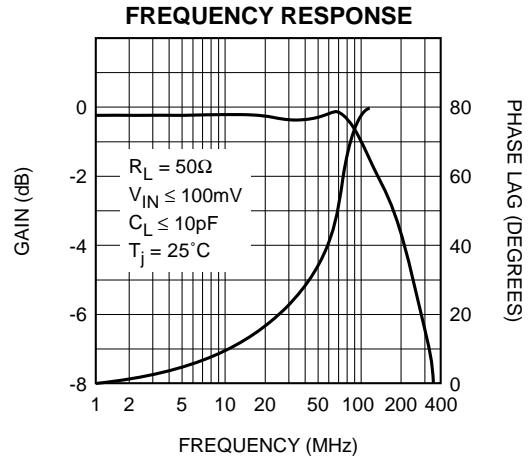
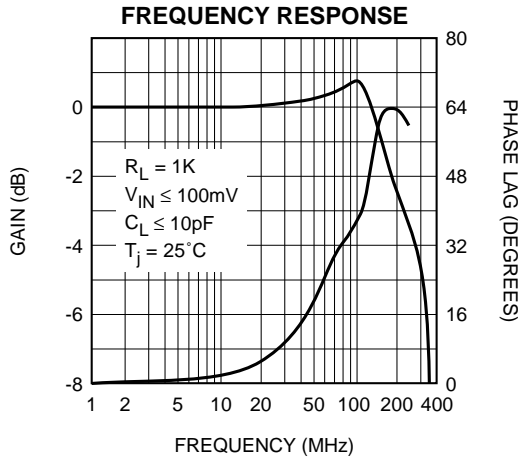
Note 3: The test circuit consists of the human body model of $120pF$ in series with 1500Ω .

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 $P_D = (T_{J(max)} - T_A)/\theta_{JA}$.

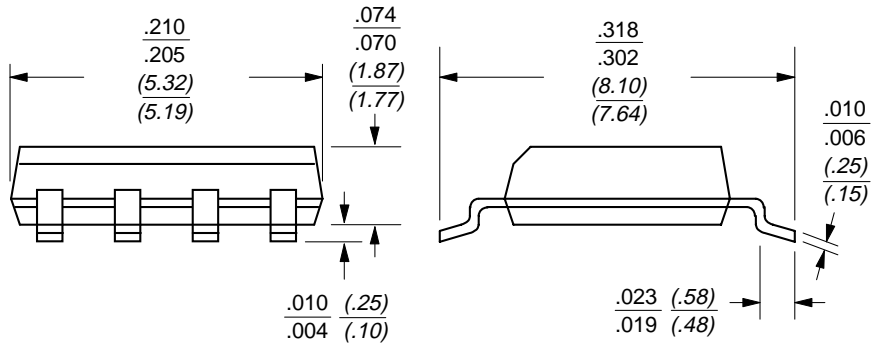
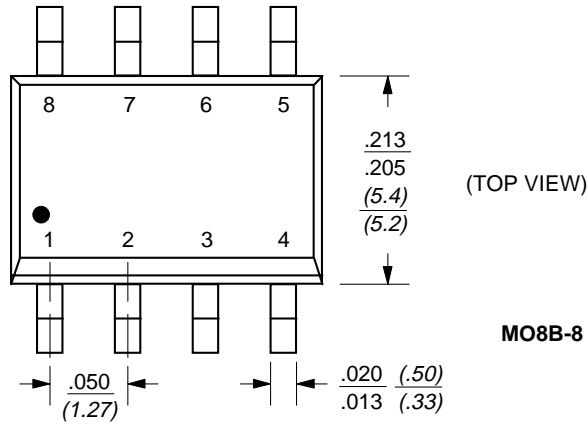
Note 5: Limits are guaranteed by testing, correlation or periodic characterization.

Note 6: For M & N package, θ_{JA} is measured by soldering the unit directly on a printed circuit board and V pins are connected to 2 square inches of 2 oz copper.

TYPICAL PERFORMANCE CHARACTERISTICS



MO8B DIMENSIONS



NO8A DIMENSIONS

