4mW, 180MHz, 2000V/μs High Speed Buffer

CLM4122 / CLM4322

FEATURES

- **High Slew Rate. 2000V/μs**
- **Wide Bandwidth. 180MHz**
- **Low Supply Current 800μA**
- **No Oscillations with Capacitive Loads**
- **Fully Specified to Drive 50Ω Lines**

APPLICATIONS

- **Coaxial Cable Driver**
- **Flash A/D Converter Driver**
- **Video DAC Buffer**
- **Video Amplifier**
- **Wide Bandwidth Signal Conditioning**

GENERAL DESCRIPTION

The CLM4122 family are low power, high speed unity gain buffers that slew at 2000V/μs, having a small signal bandwidth of 180MHz, delivers 60mA, yet draws only 800μA supply current.

The 4mW power consumption, fast slew rate, wide bandwidth, and high output drive make the CLM4122 family the ideal choice for battery operated equipment.

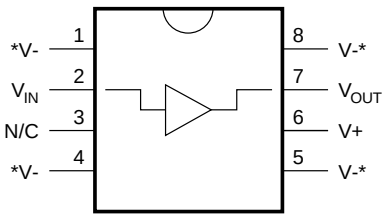
These same characteristics are the excellent choices for driving coaxial and switched pair cables.

ORDERING INFORMATION

Part	Package	Temperature Range
CLM4122 N	NO8A (Plastic P Dip 8 Lead)	-40°C to 85°C
CLM4122 M	MO8B (SOIC 8 Lead)	-40°C to 85°C
CLM4322 N	NO8A (Plastic P Dip 8 Lead)	-25°C to 70°C
CLM4322 M	MO8B (SOIC 8 Lead)	-25°C to 70°C

CONNECTION DIAGRAMS

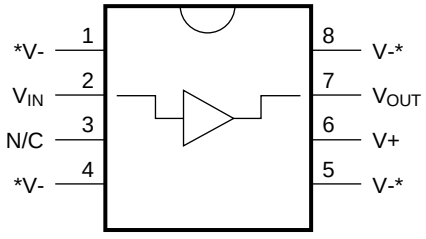
Plastic DIP



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

Package NO8A

Plastic SO



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

Package MO8B

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ABSOLUTE MAXIMUM RATINGS (Note 1)

Supply Voltage . . . . . +10
Input Voltage . . . . . ±Vsupply
Storage Temperature Range . . . . . -65°C to +150°C
Lead Temperature
(Soldering 10 seconds) . . . . . 260°C
Power Dissipation . . . . . (Note 4)

ESD Tolerance (Note 3) . . . . . ±2000V
Thermal Resistance (θ_{JA}) (Note 6)
N Package . . . . . 50°C/W
M Package . . . . . 60°C/W
Maximum Junction Temperature . . . . . 150°C

DC ELECTRICAL CHARACTERISTICS
The following specifications apply for Supply Voltage = +5V, 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 $T_A = T_J = 25^oC$.

SYMBOL	CHARACTERISTICS	TYP	CLM4122 Limit (Note 5)	CLM4322 Limit (Note 5)	UNITS	CONDITIONS
A_{V1}	Voltage Gain 1	0.970	0.950	0.950	V/V Min	R_L = 1KΩ, V_{IN} = +3V
A_{V2}	Voltage Gain 2	0.900	0.800	0.800		R_L = 50Ω, V_{IN} = +3V
V_{OS}	Offset Voltage	5	25	40	mV Max	V_{IN} = 2.5V
I_B	Input Bias Current	1	6	10	µA Max	R_L = 1KΩ, R_S = 10kΩ,
C_{IN}	Input Capacitance	3.5			pF	
R_O	Output Resistance	3	5 **10**	5 **6**	Ω Max	I_{OUT} = 0 to 1mA
I_S	Supply Current	825	1100	1200	µA Max	$R_L = \infty$
V_{O1}	Output Swing 1	4.5	4	4	V	R_L = 1K
V_{O2}	Output Swing 2	3.5	3.0	3.0		R_L = 100Ω
I_{OUT}	Output Current	60	44	44	mA	V_{IN} = +4V

AC ELECTRICAL CHARACTERISTICS
The following specifications apply for Supply Voltage = +5V, $R_L \geq 100K\Omega$ and $R_S = 50\Omega$ unless otherwise noted.
Boldface limits apply for $T_A = T_J = T_{MIN}$ to T_{MAX}; all other limits $T_A = T_J = 25^oC$.

SYMBOL	CHARACTERISTICS	TYP	CLM4122 Limit (Note 5)	CLM4322 Limit (Note 5)	UNITS	CONDITIONS
SR_1	Slew Rate 1	2000	1500	1200	V/µs	R_L = 1KΩ (Note 2), $V_{IN} = 3.5V_{PP}$
SR_2	Slew Rate 2	1000	700	600		R_L = 50Ω (Note 2)), $V_{IN} = 3.5V_{PP}$
SS_{BW}	Small Signal Bandwidth	180	140	100	MHz	$V_{IN} = 100mV_{PP}$, R_L = 50Ω, $C_L \leq$ 10pF
LS_{BW}	Large Signal Bandwidth	170	130	100		V_{IN} = +4V, R_L = 1K, $C_L \leq$ 10pF
P_{BW}	Power Bandwidth	100	70	60		V_{IN} = +4V, R_L = 50Ω, $C_L \leq$ 10pF
t_r, t_f	Rise Time Fall Time	2.0	2.5	3.5	ns	R_L = 50Ω, $C_L \leq$ 10pF, $V_O = 100mV_{PP}$
t_{pd}	Propagation Delay Time	3.0			ns	R_L = 50Ω, $C_L \leq$ 10pF, $V_O = 100mV_{PP}$
O_S	Overshoot	10			%	R_L = 50Ω, $C_L \leq$ 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°C with input DC offset to 2.5V. For accurate measurements, the input slew rate should be at least 5000V/µs.

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

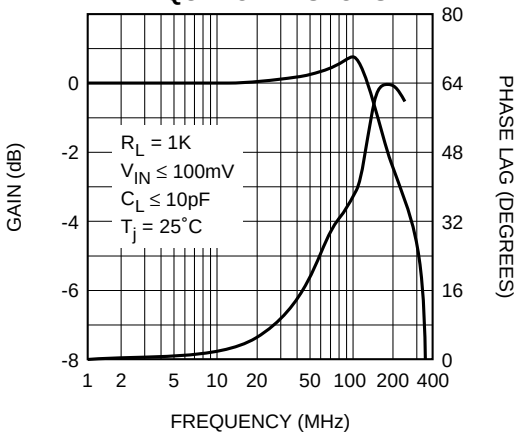
Note 4: The maximum power dissipation is a function of $T_{J(max)}$, θ_{JA} and T_A. The maximum allowable power dissipation at any ambient temperature is $P_D = (T_{J(max)} - T_A)/\theta_{JA}$.

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

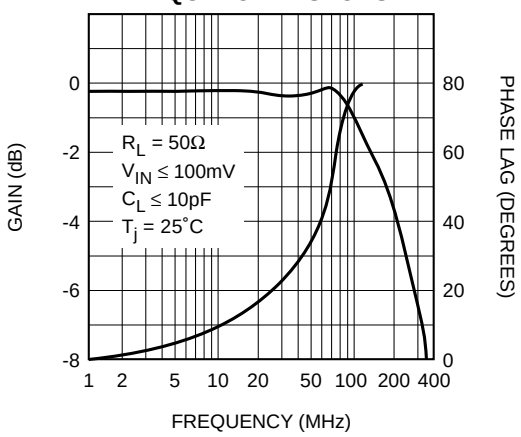
Note 6: For M & N package, θ_{JA} is measured by soldering the unit directly on a printed circuit board and V^- pins are connected to 2 square inches of 2 oz copper.

TYPICAL PERFORMANCE CHARACTERISTICS

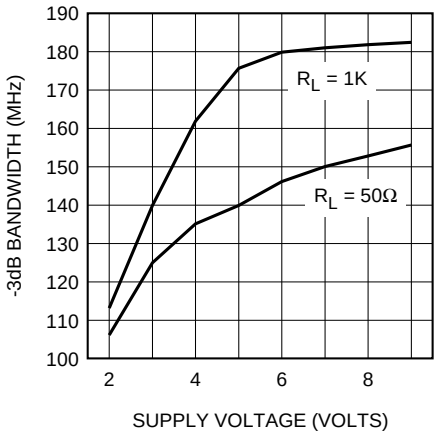
FREQUENCY RESPONSE



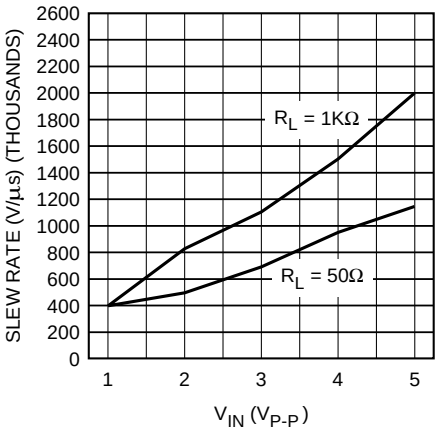
FREQUENCY RESPONSE



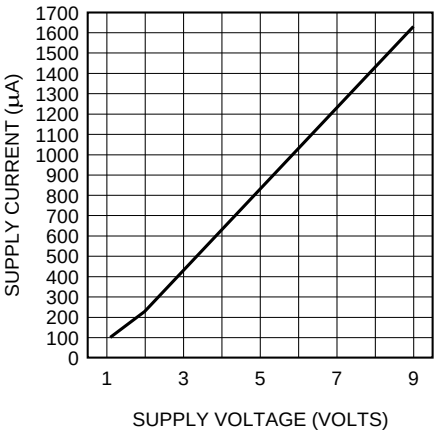
SUPPLY VOLTAGE vs BANDWIDTH



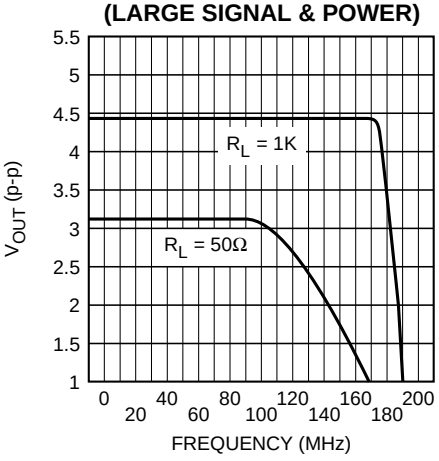
INPUT VOLTAGE vs SLEW RATE



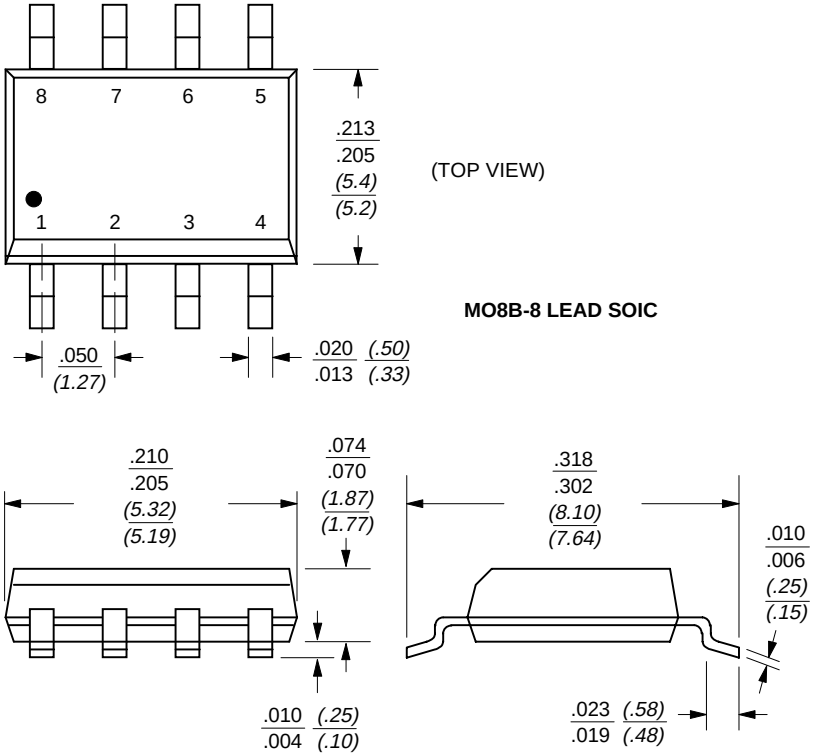
SUPPLY VOLTAGE vs SUPPLY CURRENT



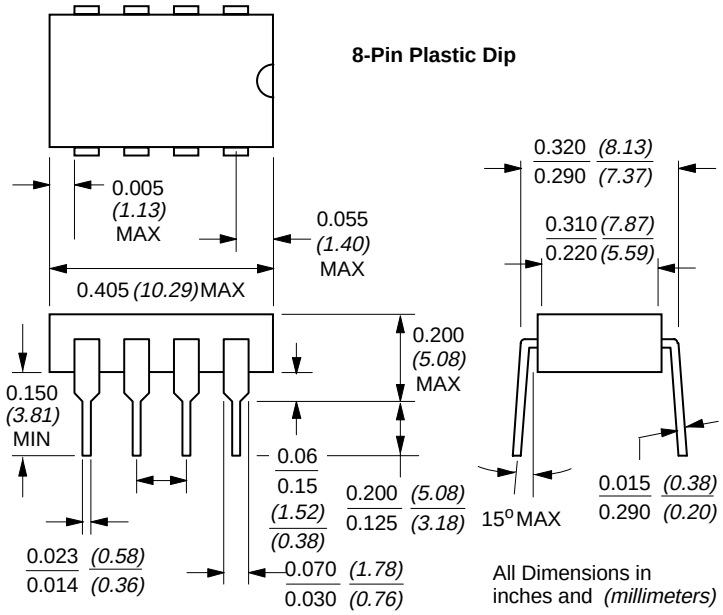
BANDWIDTH (LARGE SIGNAL & POWER)



MO8B DIMENSIONS



NO8A DIMENSIONS



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