

CLM4125 / CLM4225 / CLM4325

FEATURES

- High Slew Rate 3500V/ μ s
- Wide Bandwidth 350MHz
- Peak Output Current 100mA
- No Oscillations with Capacitive Loads
- Fully Specified to Drive 50 Ω Lines

APPLICATIONS

- Coaxial Cable Driver
- Flash A/D Converter Driver
- Video DAC Buffer
- OP Amp Booster
- Pulse and Video Amplifier
- High Frequency Filter
- Video Switching and Routing
- Radar
- Sonar

GENERAL DESCRIPTION

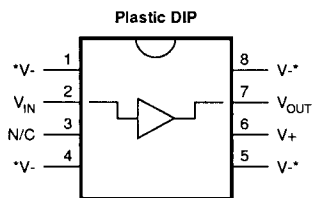
The CLM4125 family are high speed unity gain buffers that slew at 3500V/ μ s, and a small signal bandwidth of 350MHz.

The fast slew rate, wide bandwidth, and high output drive make the CLM4125 family the ideal choice for closed loop buffer applications with wide band op amps.

ORDERING INFORMATION

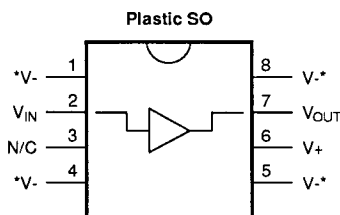
Part	Package	Temperature Range
CLM4125 N	NO8A (Plastic P Dip 8 Lead)	-40°C to 85°C
CLM4125 M	MO8B (SOIC 8 Lead)	-40°C to 85°C
CLM4225 N	NO8A (Plastic P Dip 8 Lead)	-40°C to 85°C
CLM4225 M	MO8B (SOIC 8 Lead)	-40°C to 85°C
CLM4325 N	NO8A (Plastic P Dip 8 Lead)	-25°C to 70°C
CLM4325 M	MO8B (SOIC 8 Lead)	-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 ± 10
 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}) (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 = $\pm 5\text{V}$, $V_{CM} = 0$, $R_L \geq 100\text{k}\Omega$ 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	CLM4125	CLM4225	CLM4325	UNITS	CONDITIONS
			Limit (Note 5)	Limit (Note 5)	Limit (Note 5)		
A_{V1}	Voltage Gain 1	0.99	0.96	0.95	0.95	V/V Min	$R_L = 1\text{K}$, $V_{IN} = \pm 3\text{V}$
A_{V2}	Voltage Gain 2	0.92	0.89	0.88	0.87		$R_L = 50\Omega$, $V_{IN} = \pm 3\text{V}$
A_{V3}	Voltage Gain 3	0.92	0.89	0.87	0.87		$R_L = 50\Omega$, $V_{IN} = \pm 2\text{V}$
V_{OS}	Offset Voltage	10	15 25	25 30	30 30	mV Max	$R_L = 1\text{K}$
I_B	Input Bias Current	1	5 7	8 8	10 10	μA Max	$R_L = 1\text{K}\Omega$, $R_S = 10\text{k}\Omega$
R_{IN}	Input Resistance	0.3				M Ω	$R_L = 50\Omega$
C_{IN}	Input Capacitance	3.5				pF	
R_O	Output Resistance	3	5 10	5 10	5 6	Ω Max	$I_{OUT} = \pm 10\text{mA}$
I_{S1}	Supply Current 1	20	30 30	30 30	30 30	mA Max	$R_L = \infty$
V_{O1}	Output Swing 1	4.5	4	4	4	$\pm\text{V}$ Min	$R_L = 1\text{K}$
V_{O2}	Output Swing 2	4	3.5	3.5	3.5		$R_L = 100\Omega$
V_{O3}	Output Swing 3	3.6	3.0	3.0	3.0	V_{PP} Min	$R_L = 50\Omega$
I_{OUT}	Output Current	80	60	60	60	mA	$V_{IN} = 4\text{V}$

AC ELECTRICAL CHARACTERISTICS

The following specifications apply for Supply Voltage = $\pm 5V$, $V_{CM} = 0$, $R_L \geq 100K\Omega$ and $R_S = 50\Omega$ unless otherwise noted.

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

SYMBOL	CHARACTERISTICS	TYP	CLM4125	CLM4225	CLM4325	UNITS	CONDITIONS
			Limit (Note 5)	Limit (Note 5)	Limit (Note 5)		
SR ₁	Slew Rate 1	3500	3000	2700	2500	V/ μ s	$V_{IN} = \pm 4.5V$, $R_L = 100\Omega$ (Note 2)
SR ₂	Slew Rate 2	2250	2000	1600	1500		$V_{IN} = \pm 4V$, $R_L = 50\Omega$ (Note 2)
SS _{BW}	Small Signal Bandwidth	350	300	250	225	MHz	$V_{IN} = \pm 100mV_{PP}$, $R_L = 50\Omega$ $C_L \leq 10pF$
LS _{BW}	Large Signal Bandwidth	140	120	110	100		$V_{OUT} = \pm 4.5V$, $R_L = 100\Omega$ $C_L \leq 10pF$
P _{BW}	Power Bandwidth	130	110	90	85		$V_{IN} = \pm 4V$, $R_L = 50\Omega$ $C_L \leq 10pF$
t _r , t _f	Rise Time Fall Time	1.2	1.4	1.6	1.7	ns	$R_L = 50\Omega$, $C_L \leq 10pF$ $V_O = 100mV_{PP}$
t _{pd}	Propagation Delay Time	2.0				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 .

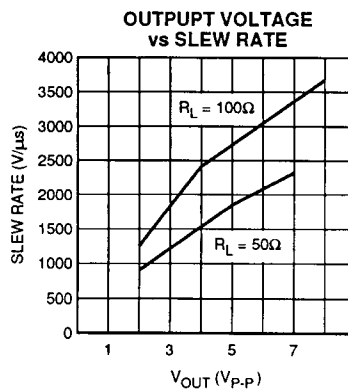
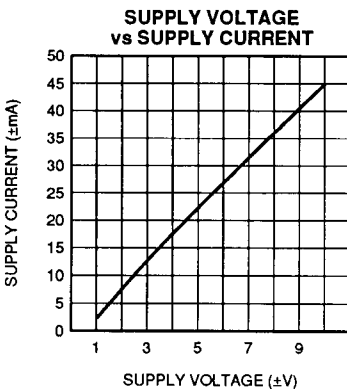
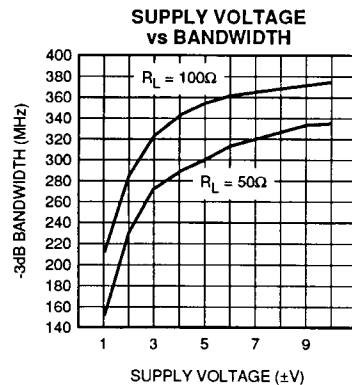
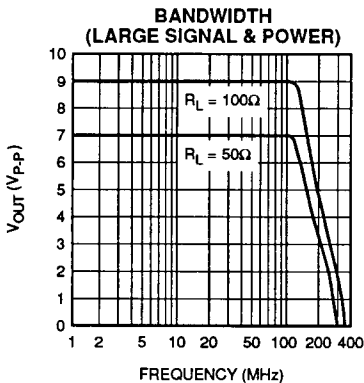
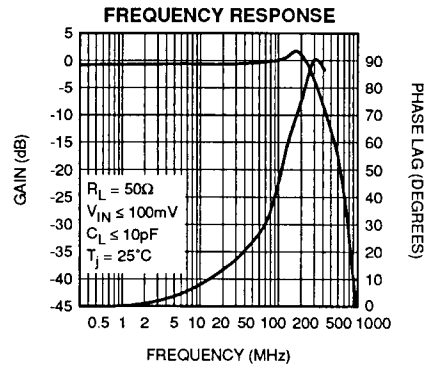
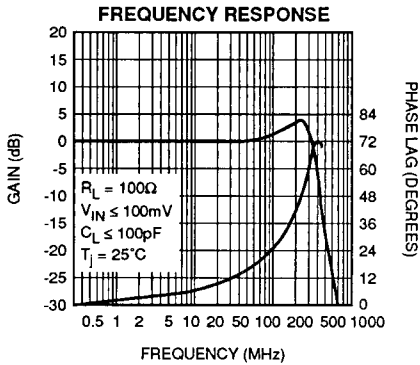
Note 4: The maximum power dissipation is a function of $T_{J(max)}$, θ_{JA} and T_A . The maximum allowable power dissipation at any ambient temperature is $P_D = (T_{J(max)} - T_A)/\theta_{JA}$.

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

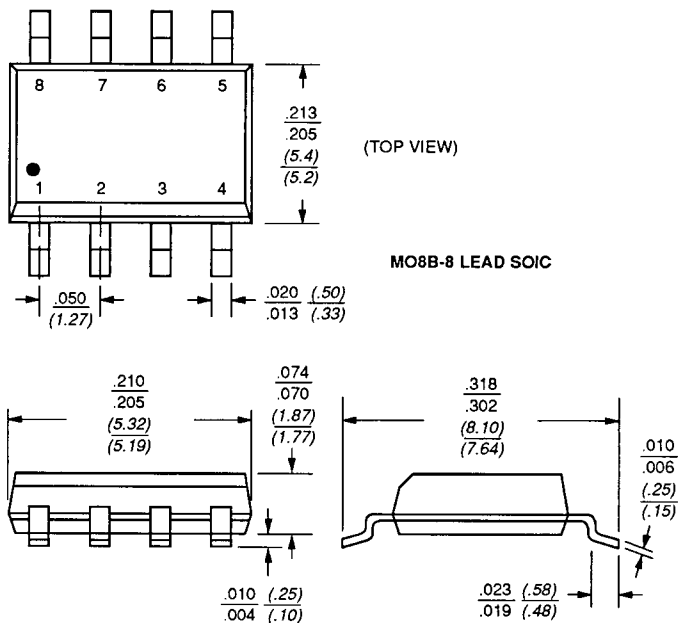
Note 6: For M & N package, θ_{JA} is measured by soldering the unit directly on a printed circuit board and V pins are connected to 2 square inches of 2 oz copper.



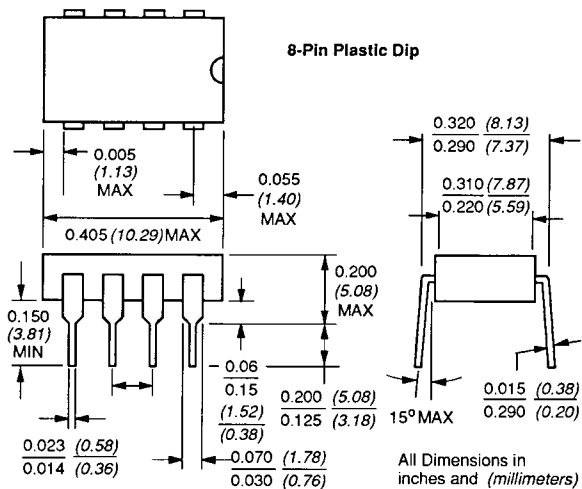
TYPICAL PERFORMANCE CHARACTERISTICS



MO8B DIMENSIONS



NO8A DIMENSIONS



Buffers ±15V Supply

Product	Description	Bandwidth -3db(MHz)	Slew Rate μV/s	Gain	Output V/mA	Vcc, Icc ±V/mA	Package *
CLM4121	Twice the speed and direct replacement to National's LM6121	180	4000	0.97	13.3/140	15/7.5	8N, 8M
CLM4102	Improved direct replacement to Elantec's EL2002	400	11,000	0.97	10/200	17/6	8N, 20M
CLM6121	Improved direct replacement to National's LM6121	100	1200	0.99	13.3/200	15/15	8N, 8M, 8H
CLM4133	350MHz, 3500V/μs FET input	350	3500	0.98	12/200	15/14	8N, 16M
LH0033	Direct replacement to National's LH0033	100	1500	0.98	12/100	15/18	12G
LH0002	Direct replacement to National's LH0002	50	200	0.97	10/100	15/6	8H, 10N
CA2003	Direct replacement to Elantec's EL2003	50	1200	0.99	13/105	15/10	8N, 8H
CLM4103	Improved direct replacement to Elantec's EL2003	75	1200	0.99	13/150	15/10	20M, 8N, 8H
LH4001	Direct replacement to National's LH4001	50	200	0.97	10/100	15/6	10N
CA2033	Direct replacement to Elantec's EL2033	50	1200	0.99	13/105	15/10	8N, 8J
CLM4109	FET input, 5000V/μs, 200MHz	200	5000	0.97	12/200	15/55	5T
CLM4163	FET input, Iout=1A, 3000V/μs 150MHz. Improved functional replacement to Elantec's EL2009 and EL2008	150	3000	0.97	12/1000	15/55	5T

Buffers ±5V Supply

CLM4125	350MHz, 3500V/μs, ±5V buffer	350	3500	0.99	4.5/80	5/28	8N, 8M
LH4002	Improved direct replacement to National's LH4002	300	3000	0.97	4/80	5/32	10N, 8HM
CLM4135	220MHz, 3000V/μs, ±5V, FET input buffer	220	3000	0.98	4/40	5/12	8N, 16M

Buffers +5V Supply

CLM4122	Low power 5mW, 150MHz, 2000V/μs, single supply buffer	150	2000	0.97	3/60	5/0.8	8N, 8M
CLM4130	Low power 10mW, 200MHz, 2000V/μs, FET input single supply buffer	200	2000	0.97	3/60	5/2	8N, 16M

Amplifiers ±15V Supply

Product	Description	Bandwidth -3db(MHz)	Slew Rate V/μs	I _B pA	V _{os} mV	I _{cc} mA	Package **
CLM4124	550V/μs, 70MHz, 100mA output current	70	550	30μA	5	12	16N, 16M
CLM4132	600V/μs, 70MHz, FET input	70	600	100	5	20	16N, 16M
LH0032	Direct replacement to National's LH0032	70	500	50	2	20	12G

Amplifiers ±5V Supply

CLM4152	FET input, 500V/μs, 75MHz	75	500	25	5	15	16N, 16M
CLM4154	500V/μs, 75MHz	75	500	25μA	5	10	16N, 16M

Amplifiers +5V Supply

CLM4150	FET input, 400V/μs, 80MHz	80	400	25	5	5/10	16N, 16M
CLM4140	400V/μs, 80MHz	80	400	25μA	5	5/10	16N, 16M

Current Feedback Amplifiers

CLM6181	Improved direct replacement to National's LM6181	100	1400	10μA	3	15/15	8N, 8M, 16M
CA2020	Direct replacement to Elantec's EL2020	50	500	10μA	3	15/9	8N, 20M

* #N=NO# OF LEADS FOR PDIP PACKAGED

** N=PDIP M=SOIC G=TO8 H=TO5 T=TO247

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