

# ±5V FET Input 220MHz Video Buffer



## CLM4135 / CLM4335

### FEATURES

- Slew Rate ..... 2700V/μs
- Wide Range Single or Dual Supply Operation
- Wide Power Bandwidth..... DC to 220MHz
- Low Phase Non-Linearity ..... 2°
- Fast Rise Times ..... 1.5ns
- High Input Resistance..... 10<sup>10</sup>Ω

### APPLICATIONS

- Video Line Driver
- High Speed ATE
- Coaxial Cable Driver
- Isolation Buffer
- High Frequency Filter
- Flash A/D Buffer
- Video DAC Buffer
- Op Amp Booster

### GENERAL DESCRIPTION

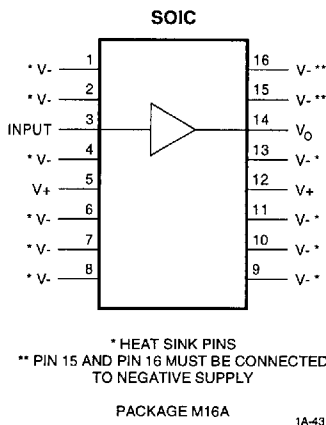
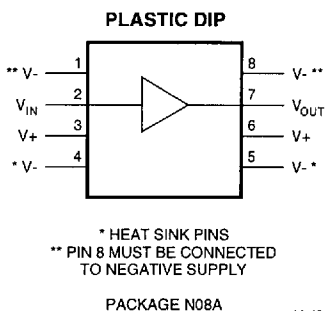
The CLM4135 family is a high speed, FET input, ±5V supply buffer designed to provide high current drive at frequencies from DC to over 220MHz. The CLM4135 family has a slew rate of 2700V/μs and is capable of providing 80mA output current.

The family is intended to fulfill a wide range of buffer applications such as video distribution high speed line drivers, video impedance transformation, op amp isolation buffers for driving reactive loads and high impedance input buffers for high speed ADCs and comparators.

### ORDERING INFORMATION

Part	Package	Temperature Range
CLM4135N	NO8A (Plastic PDip 8 Lead)	-40°C to +85°C
CLM4335N	NO8A (Plastic PDip 8 Lead)	-40°C to +85°C
CLM4135M	M16A (SOIC 16 Lead)	-40°C to +85°C
CLM4335M	M16A (SOIC 16 Lead)	-40°C to +85°C

### CONNECTION DIAGRAMS



■ 1844322 0000799 666 ■

**ABSOLUTE MAXIMUM RATINGS** (Note 1)

Supply Voltage	±10	ESD Tolerance (Note 3)	±2000V
Input Voltage	±V <sub>supply</sub>	Thermal Resistance (θ <sub>JA</sub> ) (Note 6)	
Storage Temperature Range	-65°C to +150°C	N Package	50°C/W
Lead Temperature		M Package	60°C/W
(Soldering 10 seconds)	260°C	Maximum Junction Temperature	150°C
Power Dissipation	(Note 4)		

**DC ELECTRICAL CHARACTERISTICS**

The following specifications apply for Supply Voltage = ±5V, V<sub>CM</sub> = 0, R<sub>L</sub> ≥ 100KΩ and R<sub>S</sub> = 50Ω unless otherwise noted.

**Boldface** limits apply for T<sub>A</sub> = T<sub>J</sub> = T<sub>MIN</sub> to T<sub>MAX</sub>; all other limits T<sub>A</sub> = T<sub>J</sub> = 25°C.

SYMBOL	CHARACTERISTICS	TYP	CLM4135	CLM4335	UNITS	CONDITIONS
			Limit (Note 5)	Limit (Note 5)		
A <sub>V1</sub>	Voltage Gain 1	0.95	0.92	0.90	V/V Min	R <sub>L</sub> = 1KΩ, V <sub>IN</sub> = ±4V
A <sub>V2</sub>	Voltage Gain 2	0.90	0.80	0.80		R <sub>L</sub> = 50Ω, V <sub>IN</sub> = ±3V
V <sub>OS</sub>	Offset Voltage	15	25	50	mV Max	R <sub>L</sub> = 1KΩ
I <sub>B</sub>	Input Bias Current	1	350	700	pA Max	R <sub>L</sub> = 1KΩ, R <sub>S</sub> = 10kΩ
R <sub>IN</sub>	Input Resistance	10 <sup>10</sup>	10 <sup>10</sup>	10 <sup>10</sup>	Ω	R <sub>L</sub> = 50Ω
C <sub>IN</sub>	Input Capacitance	3.0			pF	
R <sub>O</sub>	Output Resistance	3	10	10	Ω Max	I <sub>OUT</sub> = ±10mA
I <sub>S</sub>	Supply Current	10	14	14	mA Max	R <sub>L</sub> = ∞
V <sub>O1</sub>	Output Swing 1	4.5	4	4	±V Min	R <sub>L</sub> = 1K
V <sub>O2</sub>	Output Swing 2	4	3.5	3.5		R <sub>L</sub> = 100Ω
I <sub>OUT</sub>	Output Current	80	50	50	mA	R <sub>L</sub> = 50Ω

**AC ELECTRICAL CHARACTERISTICS**

The following specifications apply for Supply Voltage = ±5V, V<sub>CM</sub> = 0, R<sub>L</sub> ≥ 100KΩ and R<sub>S</sub> = 50Ω unless otherwise noted.

**Boldface** limits apply for T<sub>A</sub> = T<sub>J</sub> = T<sub>MIN</sub> to T<sub>MAX</sub>; all other limits T<sub>A</sub> = T<sub>J</sub> = 25°C.

SYMBOL	CHARACTERISTICS	TYP	CLM4135	CLM4335	UNITS	CONDITIONS
			Limit (Note 5)	Limit (Note 5)		
SR <sub>1</sub>	Slew Rate 1	2700	2000	1500	V/μs	V <sub>IN</sub> = ±4V, R <sub>L</sub> = 1KΩ (Note 2)
SR <sub>2</sub>	Slew Rate 2	1500	1000	800		V <sub>IN</sub> = ±4V, R <sub>L</sub> = 50Ω (Note 2)
SS <sub>BW</sub>	Small Signal Bandwidth	220	175	125	MHz	V <sub>IN</sub> = ±100mV <sub>PP</sub> , R <sub>L</sub> = 1KΩ C <sub>L</sub> ≤ 10pF
LS <sub>BW</sub>	Large Signal Bandwidth	80	60	40		V <sub>IN</sub> = ±11V, R <sub>L</sub> = 1K C <sub>L</sub> ≤ 10pF
P <sub>BW</sub>	Power Bandwidth	60	30	20		V <sub>IN</sub> = ±8V, R <sub>L</sub> = 50Ω C <sub>L</sub> ≤ 10pF
t <sub>r</sub> , t <sub>f</sub>	Rise Time Fall Time	1.6	2.5	3.5	ns	R <sub>L</sub> = 50Ω, C <sub>L</sub> ≤ 10pF V <sub>O</sub> = 100mV <sub>PP</sub>
t <sub>pd</sub>	Propagation Delay Time	2.1			ns	R <sub>L</sub> = 50Ω, C <sub>L</sub> ≤ 10pF V <sub>O</sub> = 100mV <sub>PP</sub>
O <sub>s</sub>	Overshoot	10			%	R <sub>L</sub> = 50Ω, C <sub>L</sub> ≤ 10pF V <sub>O</sub> = 100mV <sub>PP</sub>

**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. 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<sub>J(max)</sub>, θ<sub>JA</sub> and T<sub>A</sub>. The maximum allowable power dissipation at any ambient temperature is P<sub>D</sub> = (T<sub>J(max)</sub> - T<sub>A</sub>)/θ<sub>JA</sub>.

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

**Note 6:** For M & N package, θ<sub>JA</sub> 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

