High Speed Buffer
100MHz Video Line Driver

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CLM4103/CLM4303

FEATURES

- Improved Second Source to Elantec EL2002
- Slew Rate 1200V/µs
- Wide Bandwidth..... 100MHz
- Output current 230mA
- High Input Impedance..... 2MΩ
- No Oscillations with Capacitive Loads
- 5V to ±15V Operation Guaranteed
- Current and Thermal Limiting
- Fully Specified to Drive 50Ω Lines

APPLICATIONS

- Op Amp Booster
- Video DAC Buffer
- Coax Cable Driver
- Line Driving
- Radar
- Sonar

GENERAL DESCRIPTION

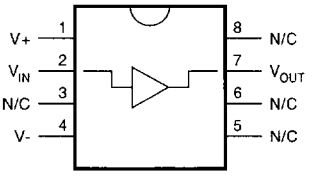
The CLM4103 family are high speed unity gain buffers that slew at 1200V/µs, having a small signal bandwidth of 100MHz, and capable of providing a continuous output current of ±150mA. They are monolithic ICs which are pin to pin compatible with the EL2003 and HA5002.

ORDERING INFORMATION

Part	Package	Temperature Range
CLM4103 N	Plastic P Dip 8 Lead	-40°C to +85°C
CLM4303 N	Plastic P Dip 8 Lead	-40°C to +85°C
CLM4103 M	SOIC 20 Lead	-25°C to +70°C
CLM4303 M	SOIC 20 Lead	-25°C to +70°C

CONNECTION DIAGRAMS

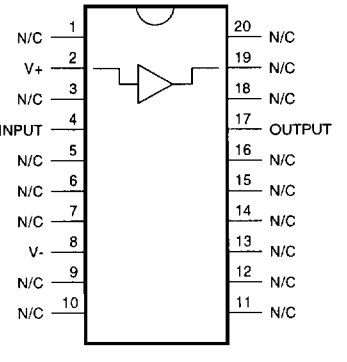
PLASTIC DIP



PACKAGE NO8A

1A-44

PLASTIC SO



PACKAGE M20A

1A-45

ABSOLUTE MAXIMUM RATINGS (Note 1)

Supply Voltage ..... ±18 or 36V
Input Voltage ..... ±Vsupply
Short Circuit to GND ..... Continuous
ESD Tolerance (Note 4) ..... ±2000V
Thermal Resistance (θ_{JA}) (Note 7)
N Package ..... 50°C/W
M Package ..... 60°C/W

Storage Temperature Range ..... -65°C to +150°C
Lead Temperature
(Soldering 10 seconds) ..... 260°C

DC ELECTRICAL CHARACTERISTICS
The following specifications apply for Supply Voltage = ±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 $T_A = T_J = 25°C$.

SYMBOL	CHARACTERISTICS	TYP	CLM4103 Limit (Note 5)	CLM4303 Limit (Note 5)	UNITS	CONDITIONS
A_{V1}	Voltage Gain 1	0.990	0.980 **0.970**	0.970 **0.970**	V/V Min	R_L = 1kΩ, V_{IN} = ±12V
A_{V2}	Voltage Gain 2	0.900	0.850 **0.800**	0.830 **0.800**		R_L = 50Ω, V_{IN} = ±6V
A_{V3}	Voltage Gain 3	0.850	0.830 **0.790**	0.820 **0.790**		R_L = 50Ω, V_{sup} = ±5V V_{IN} = ±3V
V_{OS}	Offset Voltage	15	25 **54**	35 **50**	mV Max	
I_B	Input Bias Current	1	10 **20**	20 **30**	µA Max	R_S = 10kΩ,
R_{IN}	Input Resistance	5	1	1	MΩ Min	R_L = 100Ω
C_{IN}	Input Capacitance	3.5			pF	
R_O	Output Resistance	7	10 **12**	10 **12**	Ω Max	V_{IN} = ±2V, R_L = 50Ω
I_S	Supply Current	15	15 **20**	15 **20**	mA Max	R_L = ∞
V_{O1}	Output Swing 1	13.5	13.0 **12.5**	13.0 **12.5**	±V Min	R_L = 1k, V_{IN} = ±14V
V_{O2}	Output Swing 2	11.3	10.5 **10.0**	10.5 **10.0**		R_L = 100Ω, V_{IN} = ±12V
V_{O3}	Output Swing 3	12	11 **9**	10 **9**		R_L = 50Ω, V_{IN} = ±14V
PSSR	Power Supply Rejection Ratio	80	60 **5**	60 **50**	dB Min	$V^{\pm}$ = ±5V to ±15V
I_{OUT}	Output Current	±230	150	150	mA Min	

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AC ELECTRICAL CHARACTERISTICS

The following specifications apply for Supply Voltage = ±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 $T_A = T_J = 25^oC$.

SYMBOL	CHARACTERISTICS	TYP	CLM4103	CLM4303	UNITS	CONDITIONS
			Limit (Note 5)	Limit (Note 5)		
SR_1	Slew Rate 1	1200	600	600	V/µs	V_{IN} = ±10V, R_L = 1kΩ (Note 2)
SR_2	Slew Rate 2	800	400	400	V/µs	V_{IN} = ±5V, R_L = 50Ω
t_r, t_f	Rise Time Fall Time	7.0			ns	R_L = 50Ω, $C_L \leq$ 10pF V_O = 100mV_{PP}
t_{pd}	Propagation Delay Time	4.0			ns	R_L = 50Ω, $C_L \leq$ 10pF V_O = 100mV_{PP}
THD	Distortion @ 1KHz	0.2	1	1	%	V_{IN} = ±4Vrms, R_L = 50Ω

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 a ±10V input pulse and 50Ω source impedance at 25°C. For accurate measurements, the input slew rate should be at least 1700V/µs.

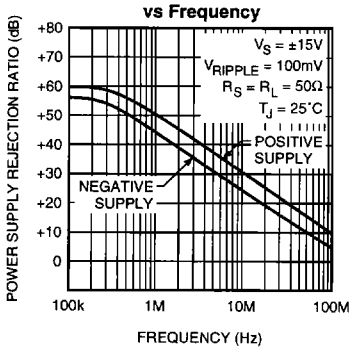
Note 3: The test circuit consists of the human body model of 120pF in series with 1500Ω.

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

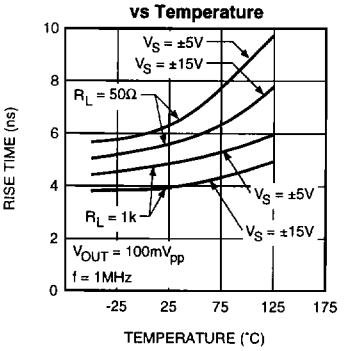
Note 5: Limits are guaranteed by testing, correlation or periodic characterization.

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.

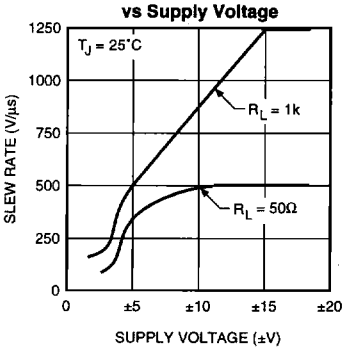
PSSR vs Frequency



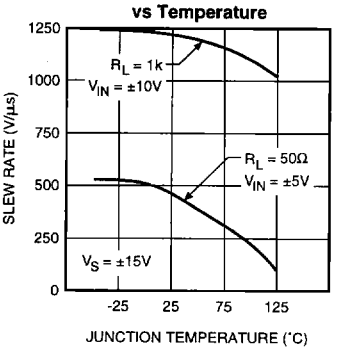
Rise Time vs Temperature



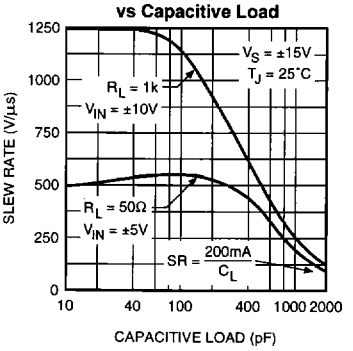
Slew Rate vs Supply Voltage



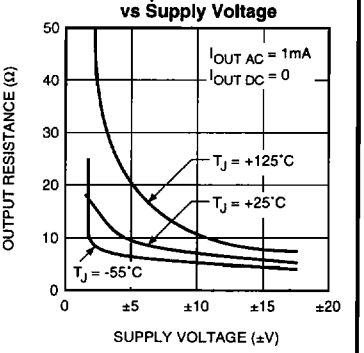
Slew Rate vs Temperature



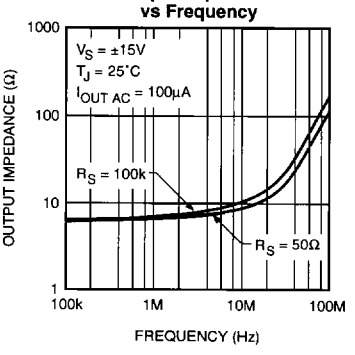
Slew Rate vs Capacitive Load



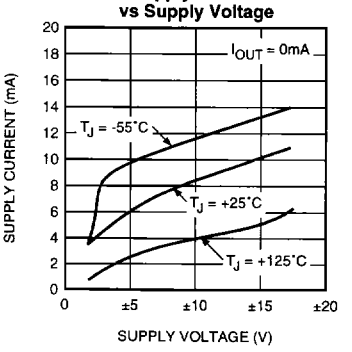
Output Resistance vs Supply Voltage



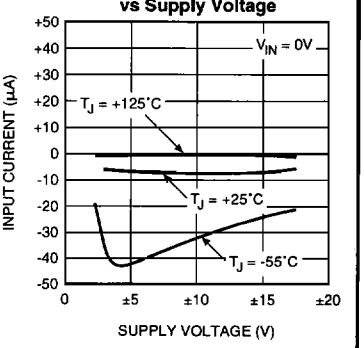
Output Impedance vs Frequency



Supply Current vs Supply Voltage



Input Current vs Supply Voltage



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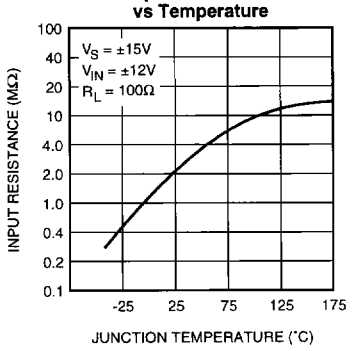
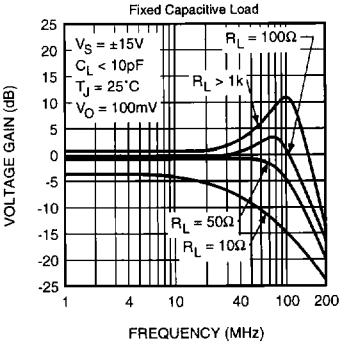
Input Resistance vs Temperature



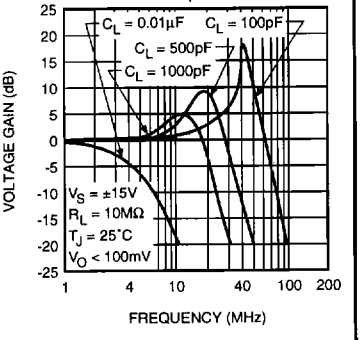
Voltage Gain vs Frequency

Different Resistive Loads - Fixed Capacitive Load



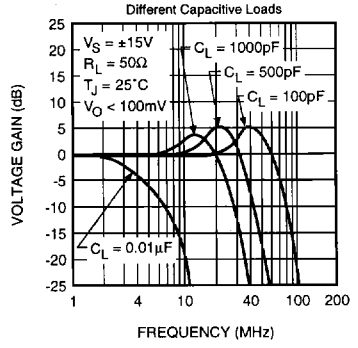
Voltage Gain vs Frequency

No Resistive Load - Different Capacitive Loads



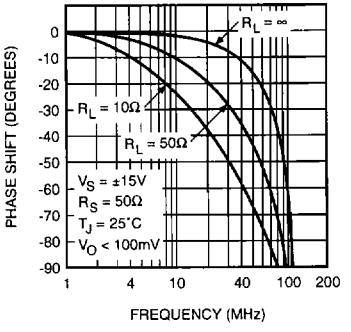
Voltage Gain vs Frequency

50Ω Resistive Load - Different Capacitive Loads



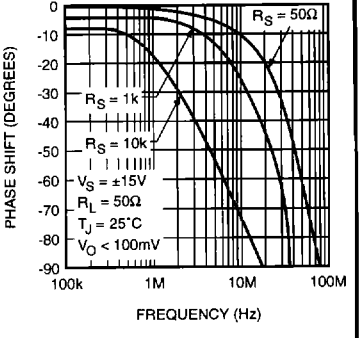
Phase Shift vs Frequency

Different Resistive Loads



Phase Shift vs Frequency

Different Source Resisters



Small Signal Bandwidth vs Supply Voltage