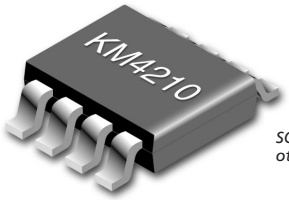
FAIRCHILD
SEMICONDUCTOR®

August 2001

KM4210

Dual, 0.5mA, Low Cost, +2.7V and +5V, 75MHz Rail-to-Rail Amplifier

Product Brief



SOIC-8 shown (not actual size)
other packages available

Outperforms the competition in single-supply applications at a *lower cost!*

Advertised Specifications	KM4210	Competitor A	Units
G = 1 BW	75	80	MHz
Noise	12	15	nV/√Hz
Slew rate	50	30	V/µs
Supply current/amp	0.5	0.8	µA

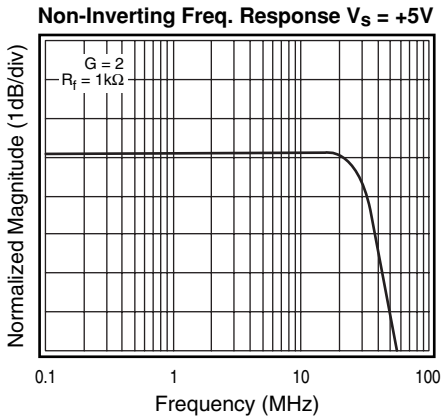
Features

- 505µA supply current per amplifier
- 75MHz bandwidth
- Fully specified at +2.7V and +5V supplies
- Output voltage range: 0.07V to 4.86V; V_S = +5
- Input voltage range: -0.3V to +3.8V; V_S = +5
- 50V/µs slew rate
- ±15mA linear output current
- ±30mA output short circuit current
- 12nV/√Hz input voltage noise
- Directly replaces AD8032
- Package options (SOIC-8 and MSOP-8)

Applications

- Portable/battery-powered applications
- A/D buffer
- Active filters
- Signal conditioning
- Portable test instruments

Typical Performance Plot



General Description

The KM4210 is a dual, low power, low cost, voltage feedback amplifier. The KM4210 uses only 505µA of supply current per amplifier, and is designed to operate on +2.7V, +5V, or ±2.5V supplies. The input voltage range extends 300mV below the negative rail and 1.2V below the positive rail.

The KM4210 offers high bipolar performance at a low CMOS price. The KM4210 offers superior dynamic performance with a 75MHz small signal bandwidth and 50V/µs slew rate. The combination of low power, high bandwidth, and rail-to-rail performance make the KM4210 well suited for battery-powered communication/computing systems.

The KM4110 (single) and KM4120 (single with disable) are also available.

Ordering Information

KM4210IC8	SOIC-8	Rail	95	KEB006
KM4210IC8TR3	SOIC-8	Reel	2500	KEB006
KM4210IM8	MSOP-8	Rail	50	KEB010
KM4210IM8TR3	MSOP-8	Reel	4000	KEB010

Temperature range for all parts: -40°C to +85°C.

* Evaluation boards are available to aid in the evaluation of these products. See the full data sheet or website for complete information.

KM4210
Typical Specifications

Electrical Characteristics

($G = +2$, $R_f = 1k\Omega$, $R_L = 1k\Omega$ to $V_s/2$, $T_a = +25°C$, unless noted)

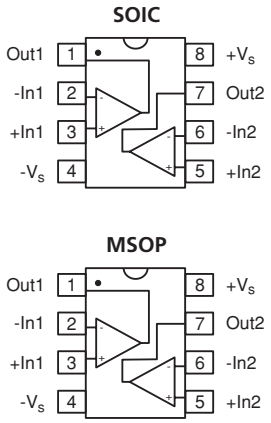
PARAMETERS	CONDITIONS	TYP $V_s = +2.7V$	TYP $V_s = +5V$	UNITS
Frequency Domain Response				
-3dB bandwidth	G = +1, $V_o = 0.05V_{pp}$	65	75	MHz
	G = +2, $V_o < 0.2V_{pp}$	30	35	MHz
full power bandwidth	G = +2, $V_o = 2V_{pp}$	12	15	MHz
gain bandwidth product		28	33	MHz
Time Domain Response				
rise and fall time	0.2V step	7.5	6	ns
settling time to 0.1%[1]	2V step	60	60	ns
overshoot[1]	2V step	4	3	%
slew rate	2V step	40	50	V/µs
Distortion and Noise Response				
2nd harmonic distortion[1]	$2V_{pp}$, 1MHz	67	64	dBc
3rd harmonic distortion[1]	$2V_{pp}$, 1MHz	72	62	dBc
THD[1]	$2V_{pp}$, 1MHz	65	60	dB
input voltage noise	>10kHz	12	12	nV/Hz
crosstalk	100kHz	90	90	dB
DC Performance				
input offset voltage		0	-1	mV
average drift		10	10	µV/°C
input bias current		1.2	1.2	µA
average drift		3.5	3.5	nA/°C
input offset current		30	30	nA
power supply rejection ratio	DC	66	65	dB
open loop gain		98	80	dB
quiescent current per amplifier		470	505	µA
Input Characteristics				
input resistance		9	9	MΩ
input capacitance		1.7	1.5	pF
input common mode voltage range		-0.3 to 1.5	-0.3 to 3.8	V
common mode rejection ratio	DC	98	92	dB
Output Characteristics				
output voltage swing	$R_L = 10k\Omega$ to $V_s/2$	0.05 to 2.6	0.08 to 4.84	V
	$R_L = 1k\Omega$ to $V_s/2$	0.09 to 2.53	0.13 to 4.73	V
linear output current		±15	±15	mA
short circuit output current		±25	±30	mA
power supply operating range		2.5 to 5.5		V

Notes: 1) For +2.7V supply, $1V_{pp}$ signal was used.

Absolute Maximum Ratings

supply voltage	0 to +6V
maximum junction temperature	+175°C
storage temperature range	-65°C to +150°C
lead temperature (10 sec)	+260°C
operating temperature range	-40° to +85°C
input voltage range	$+V_s + 0.5V$, $-V_s - 0.5V$
internal power dissipation	see power derating curves in the full data sheet
θ_{ja} for 8 lead SOIC	152°C/W
θ_{ja} for 8 lead MSOP	206°C/W

Available Packages



Typical Circuit Configuration