



Product Brief

KM4111/KM4121

200 μ A, Low Cost, +2.7V & +5V, 37MHz Rail-to-Rail Amplifiers

Preliminary

March 2000

Features

- 200 μ A supply current
- 37MHz bandwidth
- Power down to $I_S = 30\mu\text{A}$ (KM4121)
- Fully specified at +2.7V and +5V supplies
- Output voltage range: 0.1V to 4.9V; $V_S = +5$
- Input voltage range: -0.3V to +3.8V; $V_S = +5$
- 26V/ μ s slew rate
- $\pm 7\text{mA}$ linear output current
- $\pm 12\text{mA}$ short circuit output current
- 16nV/ $\sqrt{\text{Hz}}$ input voltage noise
- Competes with low power CMOS amplifiers
- Small package options (SOIC and SOT23)

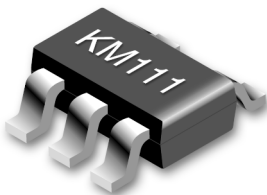
Applications

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

General Description

The KM4111 (single) and KM4121 (single with disable) are ultra-low power, low cost, voltage feedback amplifiers. These amplifiers use only 200 μ A of supply current and are designed to operate on +2.7V, +5V, or $\pm 2.5\text{V}$ supplies. The input voltage range extends 300mV below the negative rail and 1.2V below the positive rail.

The KM4111 offers high bipolar performance at a low CMOS price. The KM4111 offers superior dynamic performance with a 37MHz small signal bandwidth and 26V/ μ s slew rate. The combination of low power, high bandwidth, and rail-to-rail performance make the KM4111 well suited for battery-powered communication/computing systems.



SOT23-5 shown (not actual size)
other packages available

Outperforms the competition in
single-supply applications at a

lower cost!

Advertised Specifications	KM4111/ KM4121	Typical CMOS Amplifier	Units
G = 1 BW	37	1	MHz
Noise	16	30	nV/ $\sqrt{\text{Hz}}$
Slew rate	26	1	V/ μ s
Supply current	200	50	μ A

Typical Performance Plot

TBD

Ordering Information

Part No.	Temperature	Package	Eval. Board*
KM4111IT5	-40°C to +85°C	5-pin SOT23	KEB002
KM4111IC8	-40°C to +85°C	8-pin SOIC	KEB003
KM4121IT6	-40°C to +85°C	6-pin SOT23	KEB002
KM4121IC8	-40°C to +85°C	8-pin SOIC	KEB003

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

For additional information or a complete data sheet, visit us at www.kotamicrocircuits.com or call us at 970.667.7373 or call toll free at 1.877.667.7373.

ISO-9001 Certified

KM4111/KM4121

Typical Specifications

Preliminary

Electrical Characteristics

(G = +2, R_f = 5kΩ, R_L = 2kΩ to V_s/2, T_a = +25°C, unless noted)

PARAMETERS	CONDITIONS	TYP	TYP	UNITS
		V _s = +2.7V	V _s = +5V	
Frequency Domain Response				
-3dB bandwidth	G = +1, V _o = 0.2V _{pp}	x	37	MHz
	G = +2, V _o = 0.2V _{pp}	x	14.5	MHz
full power bandwidth	G = +2, V _o = 2V _{pp}	x	x	MHz
gain bandwidth product		x	x	MHz
Time Domain Response				
rise and fall time	2V step	y	y	ns
settling time to 0.1%	2V step	x	x	ns
overshoot	2V step	y	y	%
slew rate	2V step	x	26	V/μs
Distortion and Noise Response				
2nd harmonic distortion	2V _{pp} , 5MHz	y	y	dBc
3rd harmonic distortion	2V _{pp} , 5MHz	y	y	dBc
THD	2V _{pp} , 5MHz	x	x	%
input voltage noise	>1MHz	x	16	nV/Hz
input current noise	>1MHz	x	x	pA/Hz
DC Performance				
input offset voltage		x	0.5	mV
average drift		x	2	μV/°C
input bias current		x	0.5	μA
average drift		y	0.1	nA/°C
input offset current		x	0.02	μA
power supply rejection ratio	DC	x	62	dB
open loop gain		x	65	dB
quiescent current		x	200	μA
Disable Characteristics				
turn on time		x	x	ns
turn off time		x	x	ns
off isolation	5MHz, R _L = 100Ω	x	x	dB
quiescent current		x	30	μA
Input Characteristics				
input resistance		x	x	Ω
input capacitance		x	x	pF
input common mode voltage range		x	-0.3 to 3.8	V
common mode rejection ratio	DC	x	69	dB
Output Characteristics				
output voltage swing	R _L = 10kΩ to V _s /2	x	x	V
	R _L = 2kΩ to V _s /2	x	0.1 to 4.9	V
linear output current		x	±7	mA
short circuit output current		x	±12	mA
power supply operating range			2.5 to 5.5	V

*x and y = TBD

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)	+300°C
operating temperature range	-40° to +85°C
input voltage range	±V _s
internal power dissipation	see power derating curves in the full data sheet
θ _{ja} for 5 lead SOT23	256°C/W
θ _{ja} for 8 lead SOIC	152°C/W

Life Support Policy

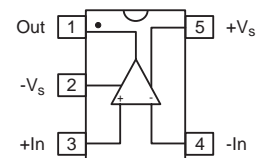
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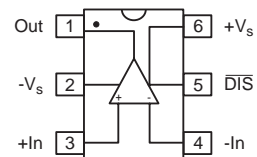
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Available Packages

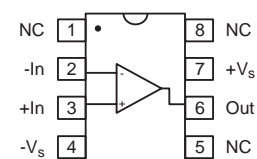
SOT23-5 (KM4111)



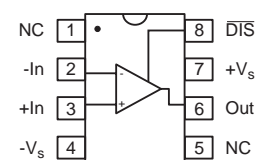
SOT23-6 (KM4121)



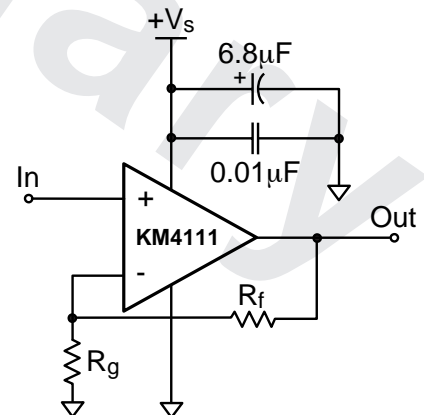
SOIC (KM4111)



SOIC (KM4121)



Typical Circuit Configuration



For additional information or a complete data sheet, visit us at www.kotamicrocircuits.com or call us at 970.667.7373 or call toll free at 1.877.667.7373.