FAIRCHILD
SEMICONDUCTOR TM

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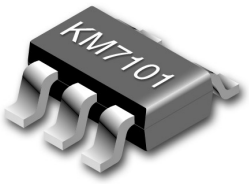
KM7101

Ultra-Low Cost, 136μA, +2.7V, 4.9MHz Rail-to-Rail I/O Amplifier

Product Brief



SOT23-5 shown (not actual size)

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

Features at 2.7V

- 136μA supply current
- 4.9MHz bandwidth
- Output swings to within 20mV of either rail
- Input voltage range exceeds the rail by >250mV
- 5.3V/μs slew rate
- 35mA short circuit output current
- 24nV/√Hz input voltage noise
- Directly replaces LMC7101 in single supply applications
- Available in SOT23-5 package

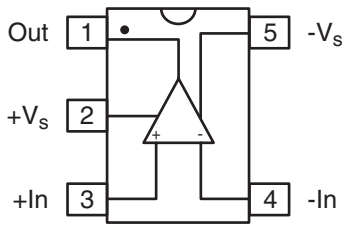
Advertised Specifications	KM7101	Competitor A	Units
G = 1 BW	4.9	1	MHz
Noise	24	37	nV/√Hz
Slew rate	5.3	0.7	V/μs
Supply current	136	500	μA

Applications

- Portable/battery-powered applications
- PCMCIA, USB
- Mobile communications, cellular phones, pagers
- Notebooks and PDA's
- Sensor Interface
- A/D buffer
- Active filters
- Signal conditioning
- Portable test instruments

Available Package

SOT23-5



General Description

The KM7101 is an ultra-low cost, low power, voltage feedback amplifier that is pin compatible to the LMC7101. If a standard pinout is required, use the KM4170. The KM7101 uses only 136μA of supply current and offers no crossover distortion. The input voltage range exceeds the negative and positive rails.

The KM7101 offers high bipolar performance at a low CMOS price. The KM7101 offers superior dynamic performance with a 4.9MHz small signal bandwidth and 5.3V/μs slew rate. The combination of low power, high bandwidth, and rail-to-rail performance make the KM7101 well suited for battery-powered communication/computing systems.

Ordering Information

Part No.	Package	Container	Pack Qty	Eval Bd*
KM7101IT5	SOT23-5	Partial Reel	<3000	KEB008
KM7101IT5TR3	SOT23-5	Reel	3000	KEB008

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.

KM7101
Typical Specifications

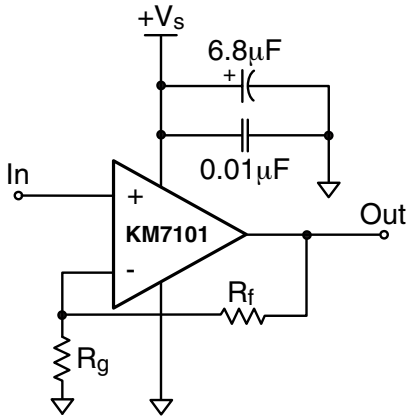
Electrical Characteristics

($G = +2$, $R_f = 5k\Omega$, $R_L = 10k\Omega$ 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[2]				
-3dB bandwidth	G = +1, $V_o = 0.02V_{pp}$	4.9	4.3	MHz
	G = +2, $V_o = 0.2V_{pp}$	3.7	3.0	MHz
full power bandwidth	G = +2, $V_o = 2V_{pp}$	1.4	2.3	MHz
gain bandwidth product		2.2	2.0	MHz
Time Domain Response				
rise and fall time	1V step	163	110	ns
overshoot	1V step	<1	<1	%
slew rate	1V step	5.3	9	V/µs
Distortion and Noise Response				
2nd harmonic distortion[1]	$1V_{pp}$, 10KHz	-75	-73	dBc
3rd harmonic distortion[1]	$1V_{pp}$, 10KHz	-76	-75	dBc
THD[1]	$1V_{pp}$, 10KHz	0.03	0.03	%
input voltage noise	>100KHz	24	27	nV/Hz
DC Performance				
input offset voltage		0.5	1.5	mV
average drift		5	15	µV/°C
input bias current		90	90	nA
average drift		32	40	pA/°C
power supply rejection ratio	DC	83	60	dB
open loop gain		90	80	dB
quiescent current		136	160	µA
Input Characteristics				
input resistance		12	12	MΩ
input capacitance		2	2	pF
input common mode voltage range		-0.25 to 2.95	-0.25 to 5.25	V
common mode rejection ratio	DC	81	85	dBc
Output Characteristics				
output voltage swing	$R_L = 10k\Omega$ to $V_s/2$	0.020 to 2.68	0.04 to 4.96	V
	$R_L = 1k\Omega$ to $V_s/2$	0.05 to 2.63	0.07 to 4.9	V
	$R_L = 200\Omega$ to $V_s/2$	0.11 to 2.52	0.14 to 4.67	V
output current		16	30	mA
short circuit output current		35	60	mA
recommended power supply operating range		2.5 to 5.5		V

Notes: 1) For +5V supply, a $2V_{pp}$ condition was used.
2) For G = +1, $R_f = 0$.

Typical Circuit Configuration



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	$+V_s + 0.5V$, $-V_s - 0.5V$
θ_{ja} for 5 lead SOT23	256°C/W