LNAM-B
Low-Noise Amplifier Module

MAGNICON
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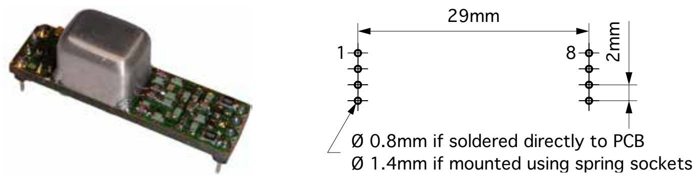
Data Sheet

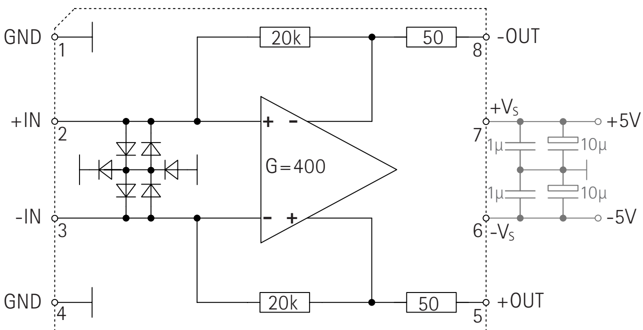
Fully differential ultra-low-noise voltage amplifier module (LNAM) with selected bipolar rf transistors at the input stage. The amplifier exhibits ultra-low voltage noise, very high speed, and good dc precision. 50 Ω input termination realized by negative feedback allows for the lowest possible noise temparature.

For optimum performance the module should be mounted in a solid metal box providing thermal stabilization and rf shielding. The use of a ground plane under the LNAM is recommended. Proper power supply bypassing is important. A parallel combination of surface-mount 1 µF ceramic capacitors and 10 µF tantalum capacitors is adequate. The ceramic capacitors should be placed within a few mm from the supply pins, whereas the tantalum capacitors may be located in a larger distance of up to several cm. Low-noise voltage regulators (e.g., MIC5205, LT1761, LT1964, TPS7A4901, TPS7A3001, or equivalent parts) are recommended to preserve the excellent amplifier noise performance.

To increase design flexibility the LNAM is delivered with spring sockets for plug-in mounting. Single channel evaluation boards are available. For versions with tighter dc specifications (input offset volage and bias current), please contact Magnicon GmbH.



Photograph of the LNAM-B and recommended PCB layout.



Functional block diagram.

Typical Specifications (T_A = 25 °C, $\pm V_S$ = ±5 V, R_L = 1 MΩ, unless otherwise noted)

Parameter	LNAM-B	Unit
Board size	31.4 x 8.6	mm^2
Height without pins	11.1	mm
Supply voltage range $\pm V_S$ PSRR @ 1Hz to 100kHz	±4...±6[a)] 90	V dB
Quiescent current @ input shorted	24	mA
Voltage gain Gain stability	400 0.05	 %/°C
Differential input impedance	50	Ω
CMRR @ 1 Hz to 1 MHz	93	dB
CM voltage range	100[b)]	mV
Input offset voltage Temperature dependence	500 4	µV µV/°C
Low frequency offset fluctuation (offset stability)	5[c)]	μV_{pp}
Input bias current ±IN Temperature dependence	1.5 0.2	µA %/°C
Max. current through input prot. diodes	±100	mA
THD @ 1 kHz, 2 V_{pp} into 50 Ω @ 1 kHz, 0.2 V_{pp} into 50 Ω	0.04[d)] <0.002[d)]	% %
Voltage noise @ 1 MHz 1/f corner	0.39 10	nV/√Hz Hz
Current noise @ 1 MHz ±IN 1/f corner	4 350	pA/√Hz Hz
Small-signal bandwidth @ R_s = 50 Ω	100	MHz
Rise time (10%-90%) @ R_s = 50 Ω	3.5	ns
Output slew rate	1000[e)]	V/µs
Output voltage swing @ R_L = 1 MΩ @ R_L = 50 Ω	±3.1[e)] ±1.4[e)]	V V

[a)] *Do not exceed 12.6 V between $+V_S$ and $-V_S$.*
[b)] *Higher values increase signal distortion.*
[c)] *8min, without enclosure in still air.*
[d)] *R_s = 50 Ω, zero output offset.*
[e)] *Instable behavior if exceeded.*