RichardsonRFPD
An Arrow Company

RLAC0510B

Preliminary

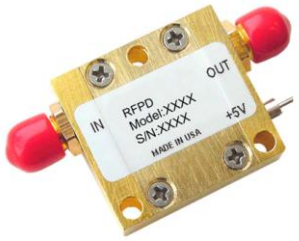
500 ~ 1000 MHz Super Low Noise Amplifier

RLAC0510B is an ultra low noise figure, wideband, and unconditionally stable packaged amplifier.

RLAC0510B is designed to meet the rugged standards of MIL-STD-202 and MILSTD-883.

A surface mount package version is also available, RLAS0510B.

RLAS0510B is RoHS compliant.



Key Features:

Wide frequency range:	500 ~ 1000 MHz
Ultra low noise:	0.40 dB
High OIP3:	30.0 dBm
Very good return loss:	20 dB @ input
Impedance:	50 Ohm
Unconditional stable:	*k >1*
Single DC Supply:	100 mA @ +5.0V
MTFB[1]	>600,000 hrs (68 Years)
Small Size:	1.00"x1.08"x0.41" (27.4x25.4x10.4mm)
Built-In Functions:	DC blocks at input and output ports, temperature compensation circuitry

Absolute Maximum Ratings[2]:

Parameters	Symbol	Value	Units
DC Power Supply Voltage	V_{dd}	7	V
Drain Current	I_{dd}	150	mA
Total Power Dissipation	P_{diss}	1000	mW
RF Input Power	$P_{In,Max}$	10	dBm
Channel Temperature	T_{ch}	150	°C
Storage Temperature	T_{STG}	-65 ~ 150	°C
Maximum Operating Temperature	$T_{O,MAX}$	-55 ~ 100	°C

Electrical Specifications[3]: (at +25°C)

Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
Gain	S_{21}	500 ~ 1000 MHz	36	38	40	dB
Gain Variation	ΔG	500 ~ 1000 MHz		+/- 0.1	+/- 0.25	dB
Input Return Loss	S_{11}	500 ~ 1000 MHz	16	20		dB
Output Return Loss	S_{22}	500 ~ 1000 MHz	16	18		dB
Reverse Isolation	S_{12}	500 ~ 1000 MHz	50	60		dB
Noise Figure	NF	500 ~ 1000 MHz	0.35	0.40	0.50	dB
Output Power @ 1dB Gain Comp. Point	P_{1dB}	500 ~ 1000 MHz	15	16		dBm
Output IP3	OIP_3	2-Tone, Pout 0 dBm each, 1 MHz separation	30	32		dBm
Current Consumption	I_{dd}	V_{dd}= +5.0 V		100		mA
Power Supply Voltage	V_{dd}		+4.54[4]	+5.0	+5.5	V
Operating Temperature	T_o		-40		+85	°C
Maximum Average RF Input Power	$P_{IN,\ MAX}$	500 ~ 1000 MHz			10	dBm

[1] MTBF: Mean Time Between Failure, Per TR-NWT-000332, ISSUE 3, SEPTEMBER, 1990, T=40 °C
[2] Operation of this device above any one of these parameters may cause permanent damage.
[3] Specifications are subject to change without notice.
[4] The lower DC supply voltage reduces the LNA performance.

Frequency Response

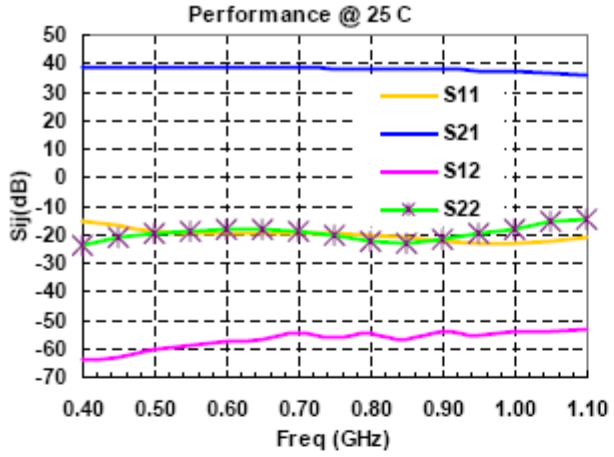


FIG. 1 Small signal performance.

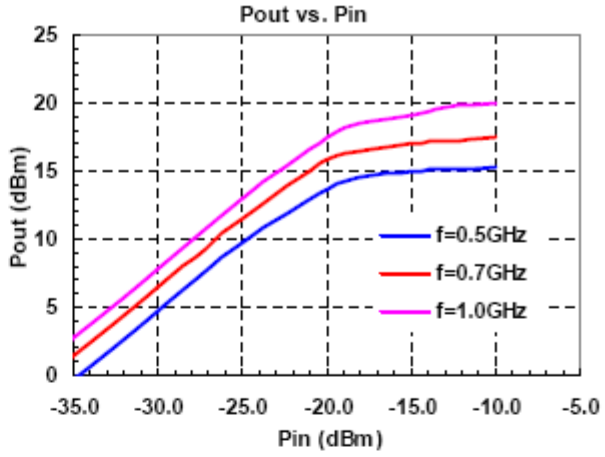


FIG. 2 P_{1dB} and OIP3 at room temperature.

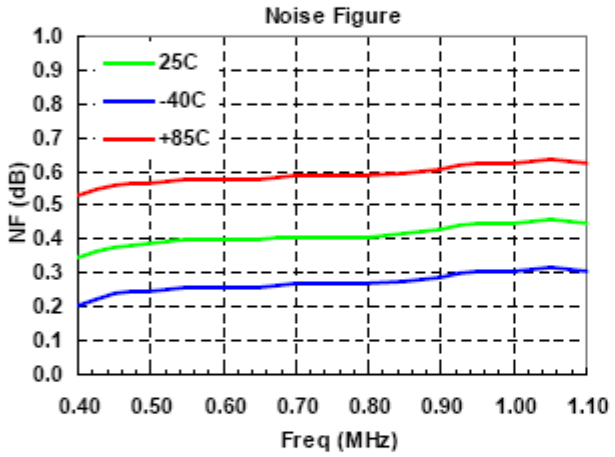


FIG. 3 Noise figure performance at full temperature

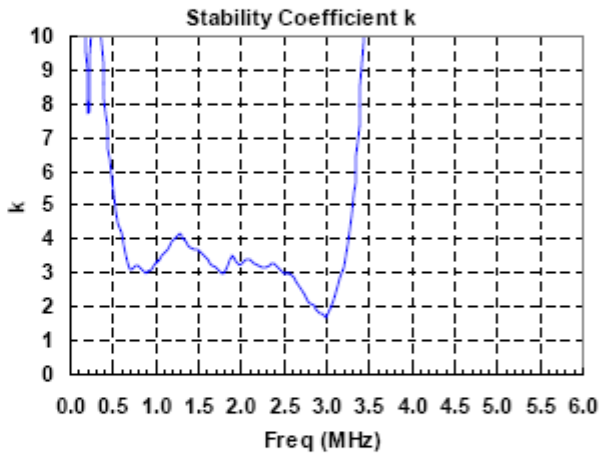


FIG. 4 Stability factor *k*

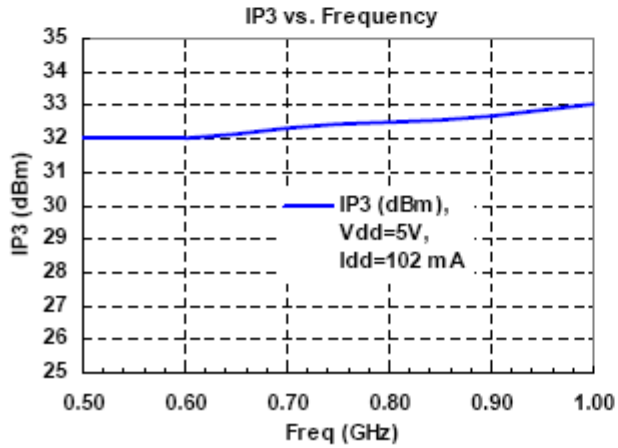


FIG. 5 Frequency response in extended frequency

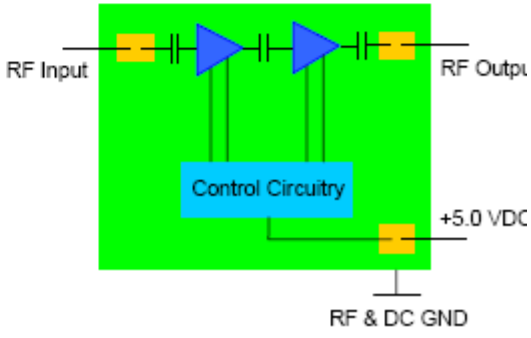


FIG. 6 Block diagram

Mechanical Outline: (2:1 ratio)

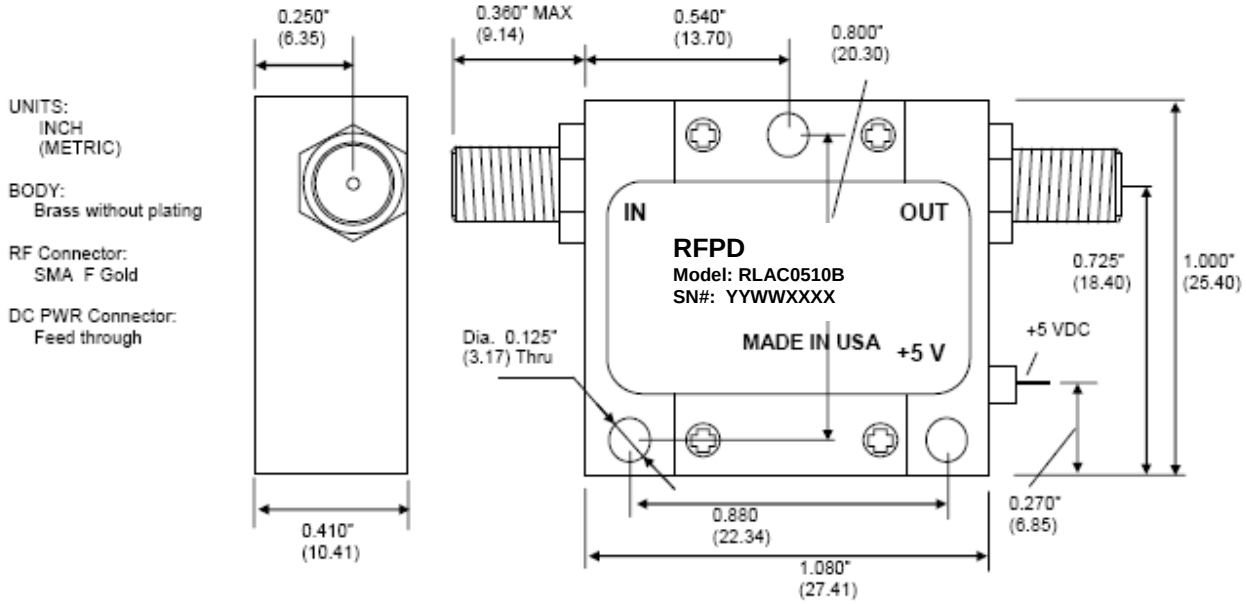


FIG. 7 Outline of standard package.

Ordering Information

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