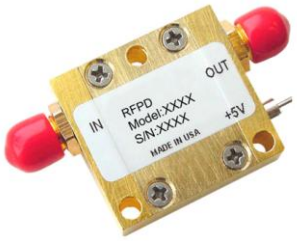
RichardsonRFPD
An Arrow Company

RLAC0205A

200 ~ 550 MHz Super Low Noise Amplifier[1]

RLAC0205A is an ultra low noise figure, wideband, and unconditionally stable SMT packaged amplifier with exceptionally low input and output VSWR. The amplifier offers a typical 0.50 dB noise figure, 22 dB input and output return losses, 43.0 dB gain, 18 dBm output P_{1dB} and 35 dBm OIP3 over the UHF frequency band from 200 MHz to 550 MHz. It is most suitable for receivers, wireless data communications, and other measurement applications.
RLAC0205A is designed to meet the rugged standards of MIL-STD-202 and MIL-STD-883.
Lead-Tin and **RoHS** compliant versions are both available.
A surface mount package version is also available, RLAS0205A.



Key Features:

Wide frequency range	200 ~ 550 MHz
Ultra Low noise figure	0.50 dB
High OIP3	35.0 dBm
Very Low VSWR:	1.18:1
Impedance	50 Ohm
Unconditionally stable	*k* >1
Single DC Supply	90 mA @ +5V
MTBF[i2]	>600,000 hrs (68 years)
Small Size:	1.00"x1.08"x0.41" (27.4x25.4x10.4 mm)
Built-In Functions	DC blocks at input and output ports, temperature compensation circuitry

Absolute Maximum Ratings[3]:

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: (at room temperature)

Testing Item	Symbol	Test Constraints	Min	Nom	Max	Unit
Gain	S_{21}	200 ~ 550 MHz		43		dB
Gain Variation	ΔG	200 ~ 550 MHz		+/- 0.75	+/- 1.0	dB
Input VSWR	$VSWR_1$	200 ~ 550 MHz		1.18	1.22	
Output VSWR	$VSWR_2$	200 ~ 550 MHz		1.18	1.22	
Reverse Isolation	S_{12}	200 ~ 550 MHz	42	45		dB
Noise Figure	NF	200 ~ 550 MHz		0.50	0.65	dB
Output Power @ 1dB Gain Comp. Point	P_{1dB}	200 ~ 550 MHz		18		dBm
Output IP3	OIP_3	2-Tone, Pout 0 dBm each, 1 MHz separation		35		dBm
Current Consumption	I_{dd}	V_{dd}= +5.0 V		90		mA
Power Supply Voltage	V_{dd}		+4.8[4]	+5.0	+5.2	V
Operating Temperature	T_o		-40		+85	°C
Maximum Average RF Input Power	$P_{IN,\ MAX}$	200 ~ 550 MHz			10	dBm

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

Frequency Response

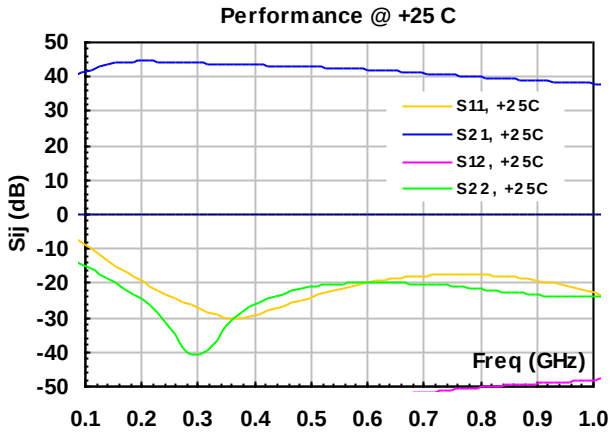


FIG. 1 Small signal performance.

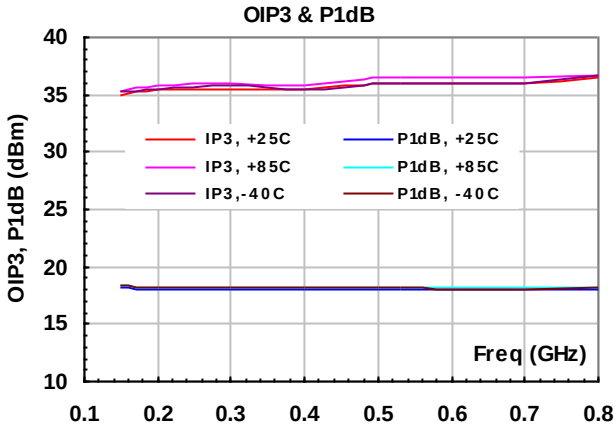


FIG. 2 P_{1dB} and OIP3 at room temperature.

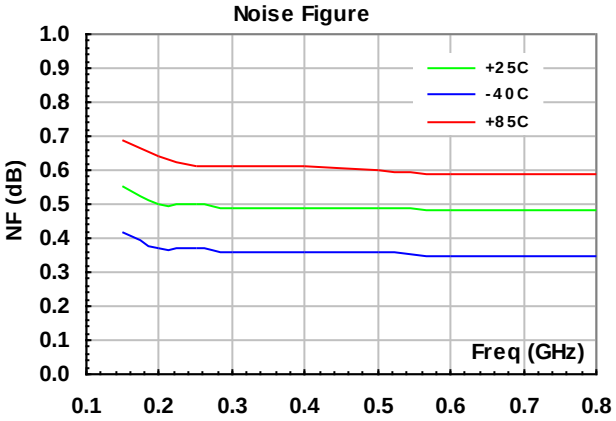


FIG. 3 Noise figure performance at full temperature

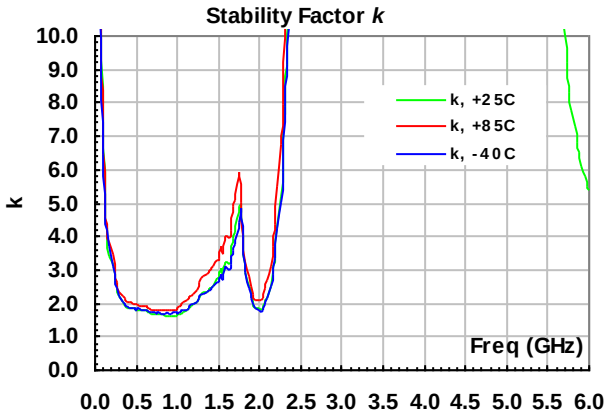


FIG. 4 Stability factor ***k***

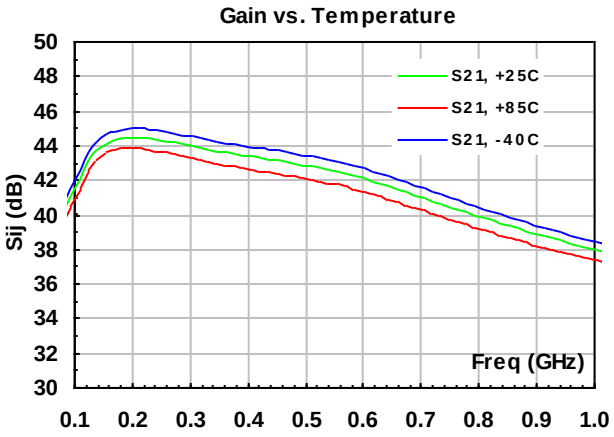


FIG. 5 Gain vs. temperature

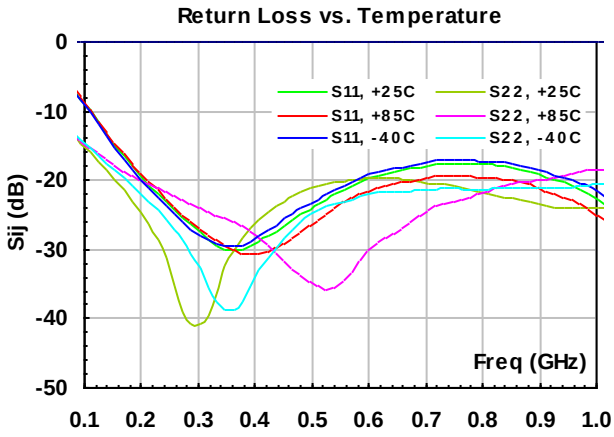


FIG. 6 Return Loss vs. Temperature

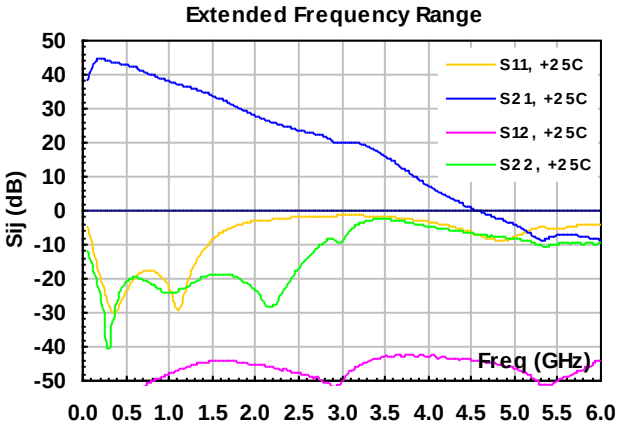


FIG. 7 Frequency response in extended frequency

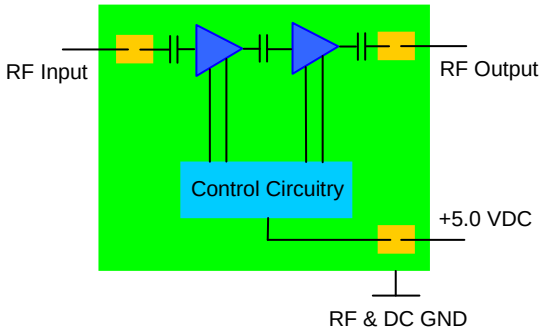


FIG. 8 Block diagram

Mechanical Outline: (2:1 ratio)

UNITS:
INCH
(METRIC)

BODY:
Brass without plating

RF Connector:
SMA F Gold

DC PWR Connector:
Feed through

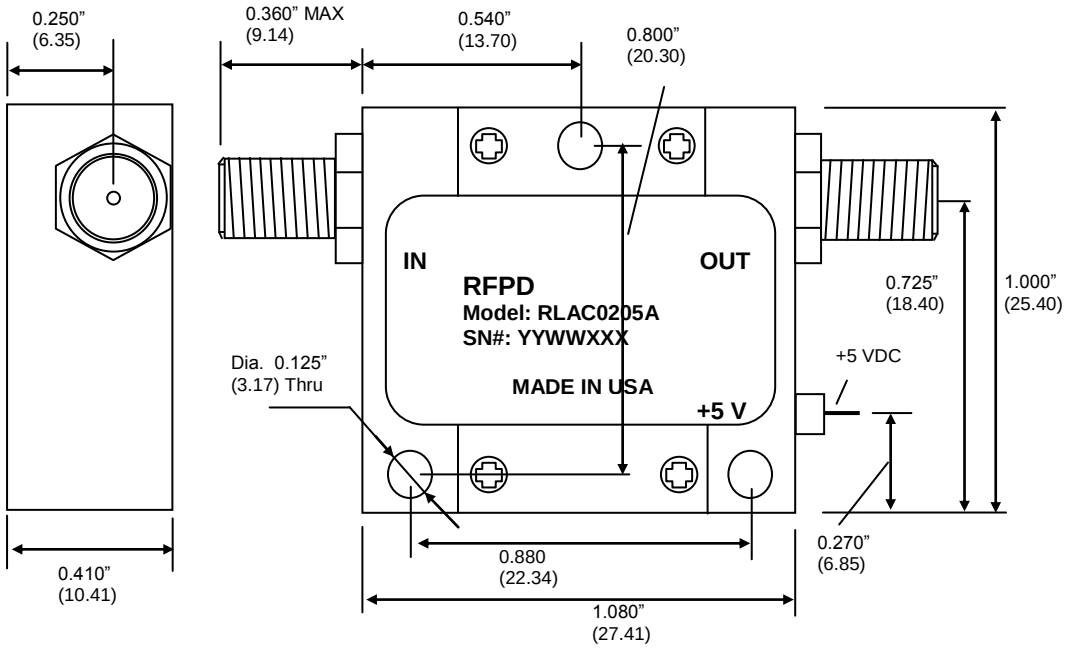


FIG. 9 Outline of standard package.

Ordering Information

Part Number	Description
RLAC0205A	Lead-Tin
RLAC0205A-G	RoHS

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