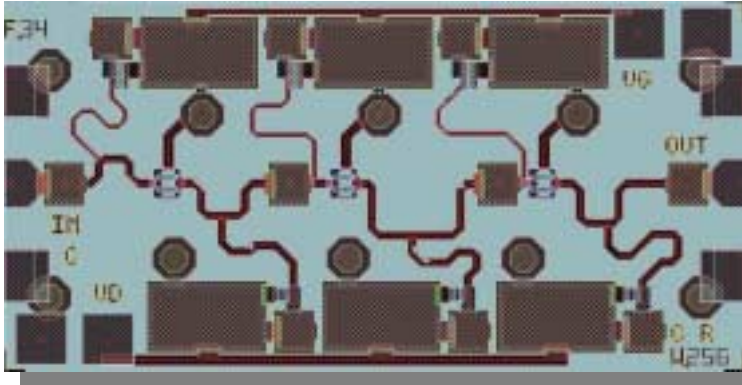


### KaLNA3S.04R\*\*\*



#### MMIC Features

- Low Noise 2.5 dB N.F.
- High Gain 22 dB Gain (min)
- Frequency Range : 33-36 GHz
- 50  $\Omega$  Zin / Zout
- >10 dB Input / Output Return Loss
- > 8 dBm Output power at 1dB gain compression
- Chip size : 1.5 mm X 0.7 mm
- Substrate Thickness : 75  $\mu$ m
- Bond Pad dimensions 100  $\mu$ m x 100  $\mu$ m

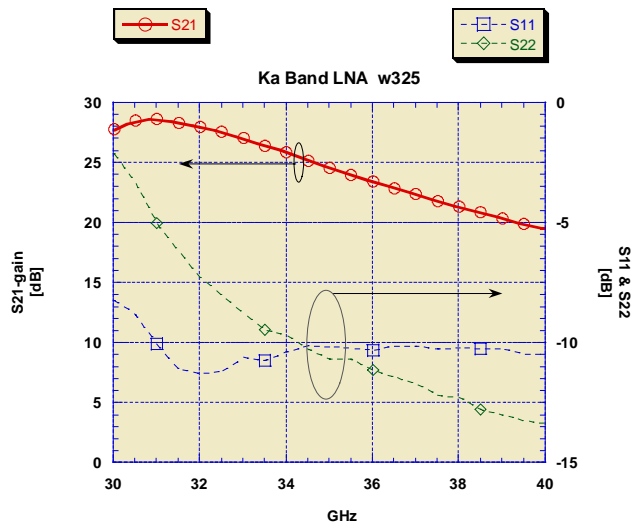
#### Description

The Rockwell KaLNA3S.04R is a PHEMT low noise amplifier that operates from 33 to 36 GHz. This 3 stage amplifier has 24 dB nominal gain with 2.5 dB nominal noise figure and 1 dB gain compression of 8 dBm output power minimum. This MMIC is unconditionally stable.

#### Absolute Maximum Ratings

Symbol	Parameters/Conditions	Min	Max	Units
V <sub>d</sub> 1 2 3	Drain Supply Voltage		5	Volts
V <sub>g</sub> 1 2 3	Gate Supply Voltage	-0.6	0.0	Volts
I <sub>d</sub> total	Total drain current		80	mA
I <sub>g</sub> total	Total gate current		0.1	mA
P <sub>in</sub>	RF input power		30	dBm
T <sub>ch</sub>	Operating channel temperature		150	° C
T <sub>max</sub>	Max assembly temperature		300*	° C
T <sub>stg</sub>	Max storage temperature	- 65	165	° C
T <sub>base</sub>	Maximum base plate temperature		140	° C

\* 30 minute maximum



**RF and Electrical Specifications**  
**Conditions T base = 25 ° C, Z source = Z load 50 +/- 5 Ω**

Symbol	Parameters/Conditions	Min	Typ	Max	Units
V <sub>d</sub> 1 2 3	Drain Supply Voltage	2.5	3	5	Volts
V <sub>g</sub> 1 2 3	Gate Supply Voltage	-0.6	-0.2	0.0	Volts
ID total	Total drain current (@ typ V <sub>gs</sub> )	20	50	80	mA
Frequency	Specified Bandwidth edges	33		36	GHz
Gain**	Small signal	22	24		dB
Δ Gain	Small signal gain flatness		<1	1.2	dB/GHz
P1dB(note 1)	Power output at 1dB gain compression	8	10		dBm
RL in	Input port return loss	8	10		dB
RL out	Output port return loss	8	10		dB
Isolation	Reverse isolation	30	40		dB
NF(note 1)	Noise figure		2.5	3.0	dB

(Note 1) These measurements will be carried out on a sampled basis. A random representative sample of dies is mounted and tested for noise figure and 1 dB gain compression.

- ❑ **Each die is fully DC tested and RF S-parameters are measured. Full 2-port S-parameter data on individual die will be supplied.**
- ❑ **All dies will pass visual inspection as dictated by the rules contained in Section A of the General Notes on Rockwell PHEMT Products (applicable sections of MIL-I-45208)**
- ❑ **Every die has a unique identifier number on-chip for complete traceability.**
- ❑ **A conductive epoxy or a flux-less solder die attach is recommended. The die should be attached to an electrically conductive surface to complete DC and RF ground paths. The ground path inductance should be minimized (<10 pH) to assure stability.**
- ❑ **The front side metal is compatible with thermo-sonic 1 mil wire bonding. The backside metal is compatible with die attach methods not exceeding T<sub>max</sub> .**
- ❑ **GaAs MMICs are ESD sensitive. Proper precautions should be used when handling these devices. Front and backside metal is Gold.**

**(\*\*\*) Rockwell Science Center reserves the right to make improvements in this device, including die size reduction, while maintaining all RF & DC specifications. The General Notes on Rockwell PHEMT Products will be supplied upon user's request . In addition to inspection criteria it will contain descriptions, biasing instructions, reliability data.**