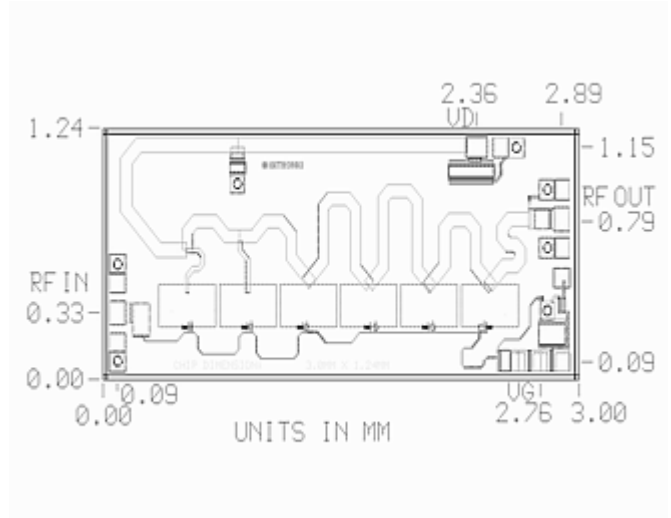


Features:

- Usable Frequency Range: 1 - 22 GHz
- P_{-2dB} : +29 dBm
- Gain: 6.5 dB
- Fully Matched Input/Output
- On-Chip DC Bias RF Choke
- On-Chip Input/Output DC Blocking
- Die Size: 3.00 x 1.24 x 0.1 mm
- Robust 0.25um PHEMT Technology
- MTTF 1.0E6 hours @ +85 °C



Description:

The MMA-022030B is a 2 - 20GHz broadband power amplifier with nearly 1W output power (P_{-2dB}). It is realized in advanced AlGaAs/InGaAs pHEMT technology. The usable frequency range extends to 1 – 22 GHz. With on-chip input/output blocking capacitors and DC supply RF choke circuitry, it only requires simple DC bias circuits and RF connections for broad range applications.

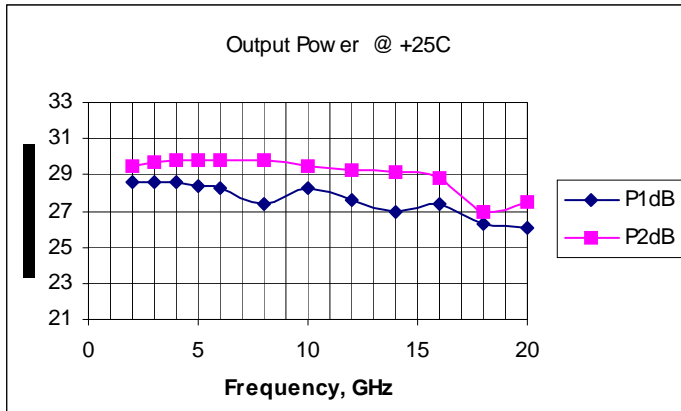
Electrical Specifications: (At VDD = +9.0V, IDD = 490 mA, VGG = - 0.42V, T_A=25 °C)

Parameter	Units	Min.	Typ.	Max.
Frequency Range, min.	GHz	2		20
Small Signal Gain	dB	5.0	6.5	
Gain Flatness	+/-dB		1.3	
Input Return Loss	dB		-9	
Output Return Loss	dB		-8.0	
Output P _{-1dB} 2-6 GHz	dBm	+28.0	+28.5	
8-16 GHz	dBm	+27.0	+28.0	
18-20 GHz	dBm	+25.5	+26.0	
Output P _{-2dB} 2-6 GHz	dBm	+29.2	+30.0	
8-16 GHz	dBm	+28.5	+29.5	
18-20 GHz	dBm	+26.5	+28.0	
Noise Figure	dB		6.5	
DC Drain Voltage, VDD	V		+9.0	+9.5
DC Gate Voltage, VGG (~ 1mA)	V	-2.0	-0.42	0.0
DC Current, IDD	mA		490	
Thermal Resistance	°C/W		16.2	

MEASURED DATA ⁽¹⁾

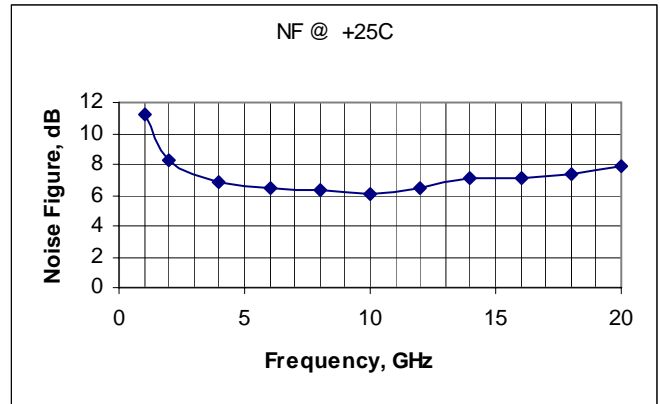
Output Power

VDD = +9.0V, IDD = 490mA, VG = -0.42V



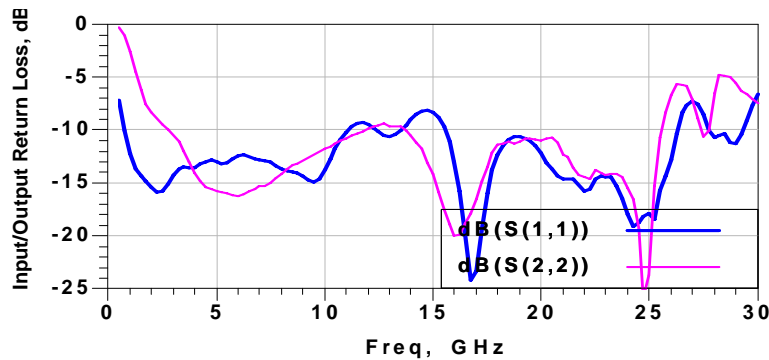
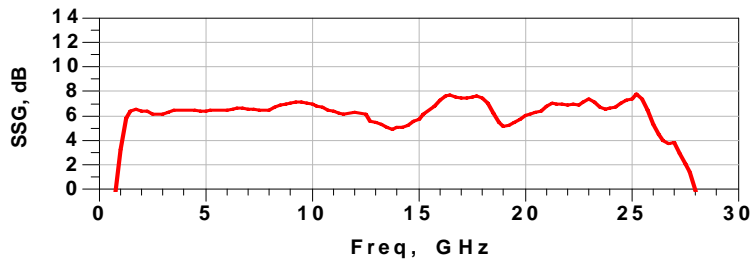
Noise Figure

VDD = +9.0V, IDD = 490mA, VG = -0.42V



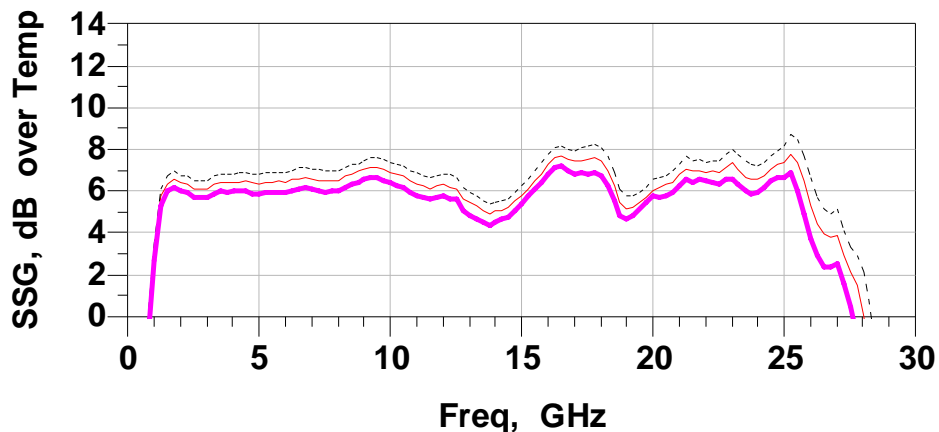
Small Signal Gain and VSWR at +25°C

MMA-22030B
VDD = +9.0V, IDD = 490mA, VG = -0.42V



Small Signal Gain over Temperature Range

MMA-22030B
VDD = +9.0V, IDD = 490mA, VG = ~ - 0.42V



_____ @ +25 °C, _____ @ -40 °C, _____ @ +85 °C

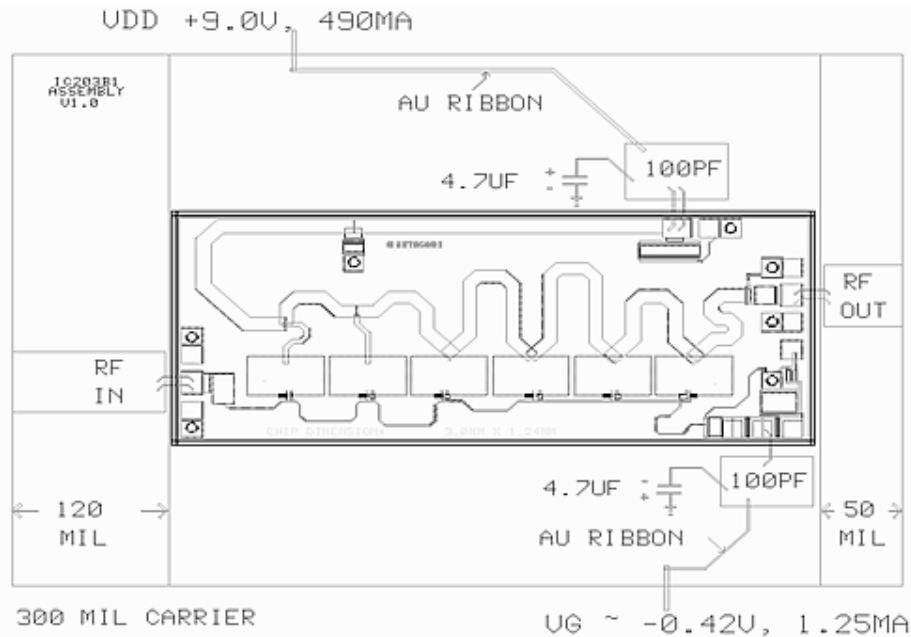
(1) Test module per the assembly diagram of this data sheet. Two SMA Connectors and microstrip line losses, approximately 0.5dB at 10GHz, and 0.9dB at 20GHz, are de-embedded. Data include RF bond-wires.

Absolute Maximum Ratings (*):

Parameter	Rating
Drain Voltage, VDD	+ 9.5 V
Gate Voltage, VGG	- 2 V
Current, IDD	600 mA
Channel Temperature	+175 °C
Operating Temperature	-55 °C to +85 °C
Storage Temperature	-65 °C to +175 °C
RF Input Power	+ 27 dBm

(*) Operation exceeding the limits can cause permanent damage.

MMA-022030B Bonding/Assembly Diagram



Bonding/Assembly Recommendations:

1. Use epoxy with good thermal and electrical conductivity to attach the device. Curing temperature should maintain at approximately +150 °C.
2. Use 1.0 mil diameter Au wire, 2 parallel each pad for RF input and output pads. Keep the wire length less than 10 mils to minimize its impact to high frequency performance.