MM3089

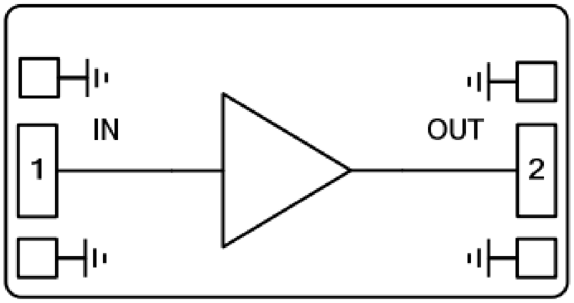
V1.0.0

GaAs pHEMT MMIC
Driver Amplifier
0.03-6GHz

Features

- Single Biasing Voltage (Self Biased)
- Frequency: 0.03-6GHz
- Gain: 14dB
- P1dB: +28dBm@VDD=+12V
- Psat: +28.5dBm@VDD=+12V
- Noise Figure: 2dB
- Power Supply: +12V@150mA
- Input/Output: 50Ω
- Die Size: 1.0 x 0.8 x 0.1 mm

Functional Block Diagram



Typical Applications

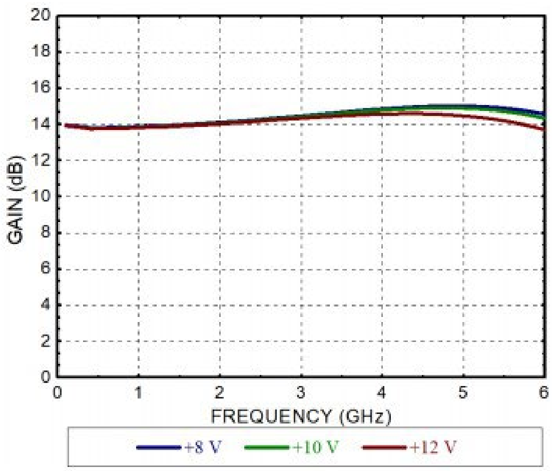
- Test Instrumentation
- Microwave Radio & VSAT
- Military & Space
- Telecom Infrastructure
- Fiber Optics

Electrical Specifications

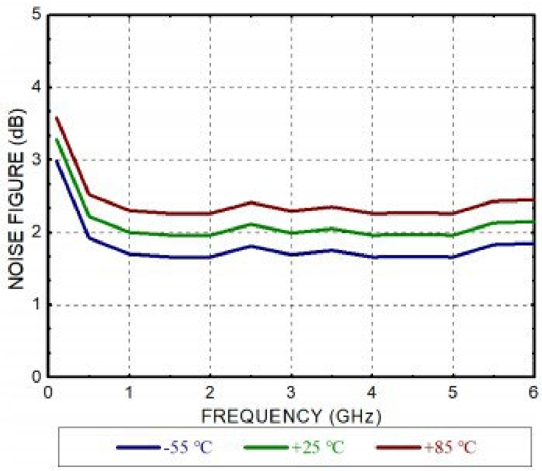
TA = +25°C

Parameters	VDD=+8V			VDD=+10V			VDD=+12V			
	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency	0.03-6			0.03-6			0.03-6			GHz
Gain		14.5			14.5			14		dB
Gain Flatness		±0.5			±0.5			±0.5		dB
Noise Figure		2			2			2		dB
P1dB		25			27			28		dBm
Input RL		15			15			15		dB
Output RL		18			18			18		dB
Psat		25.5			27.5			28.5		dBm
OIP3		38			38			38		dBm
Idd	110	135	160	115	140	165	120	150	180	mA

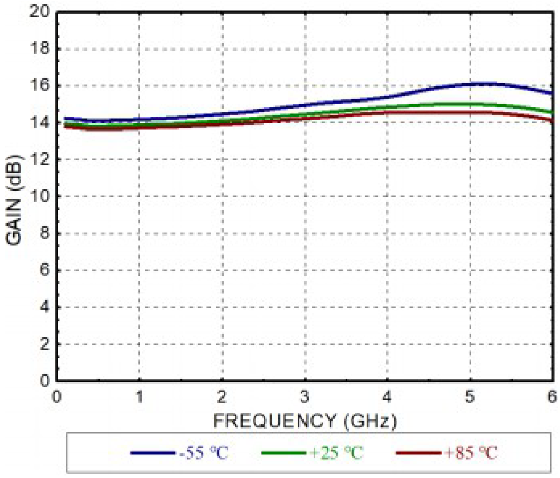
Gain vs. VDD



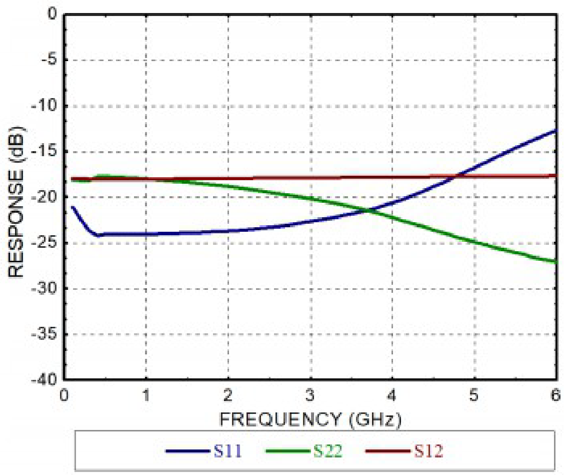
NF vs. Temperature @ VDD=+12V



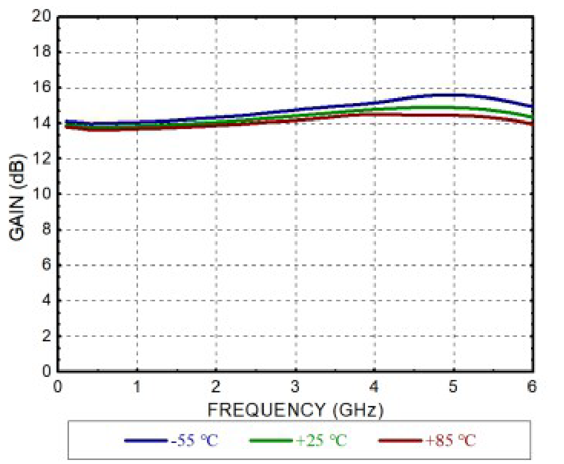
Gain vs. Temperature @ VDD=+8V



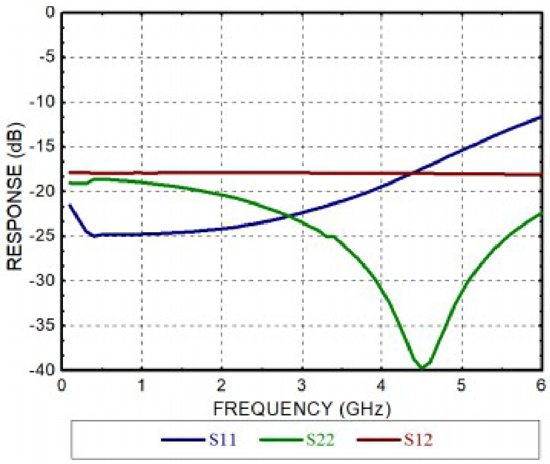
Return Loss & Reverse Isolation @ VDD=+8V



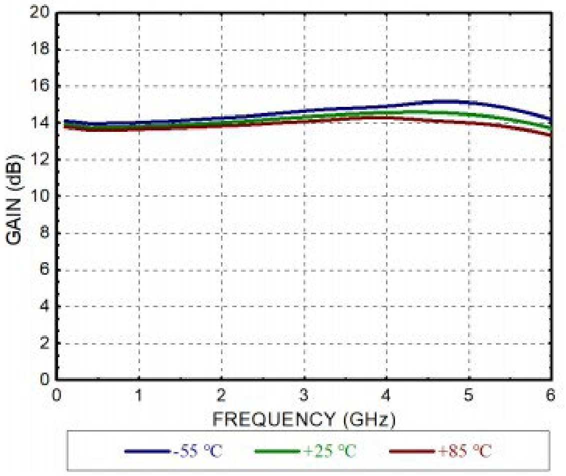
Gain vs. Temperature @ VDD=+10V



Return Loss & Reverse Isolation @ VDD=+10V



Gain vs. Temperature @ VDD=+12V



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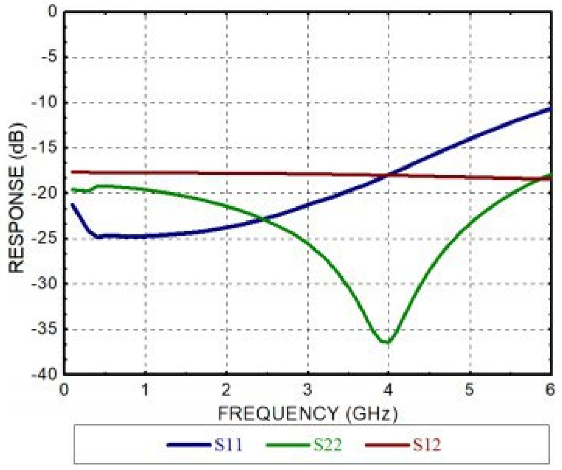
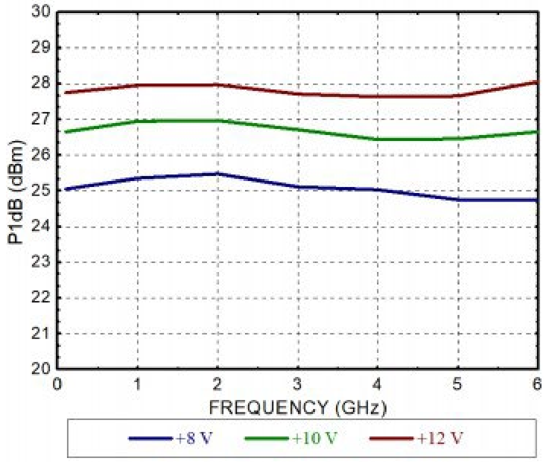
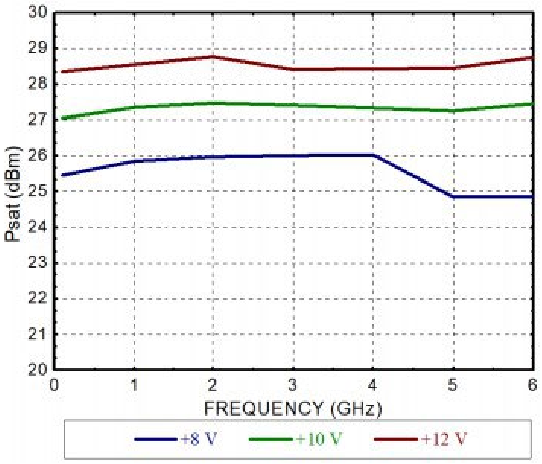


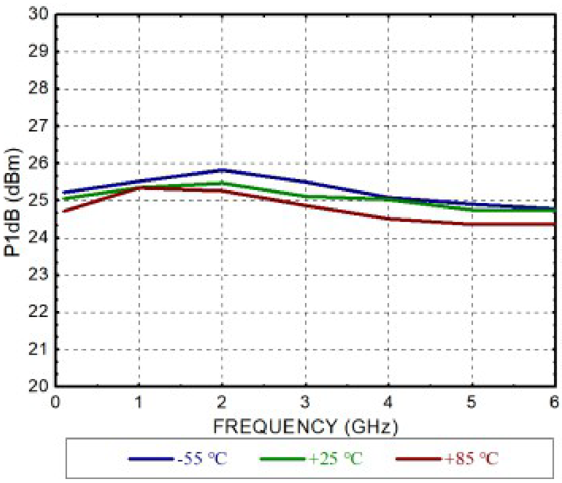
P1dB vs. VDD



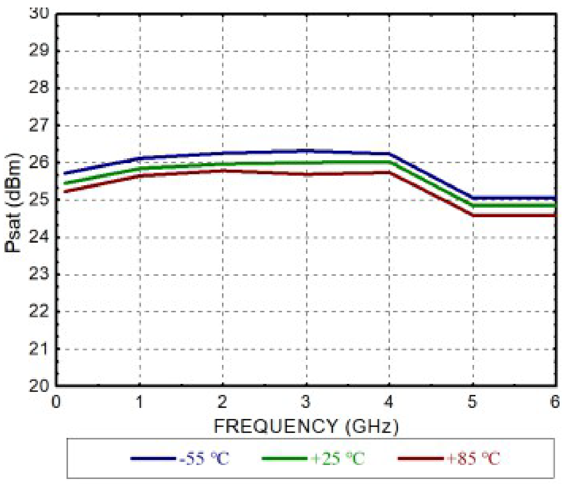
Psat vs. VDD



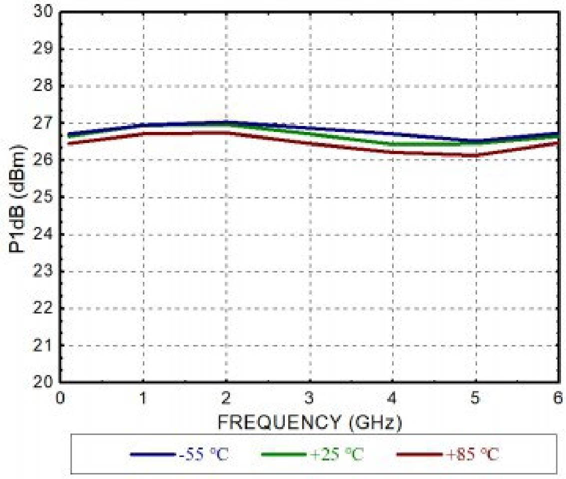
P1dB vs. Temperature @ VDD=+8V



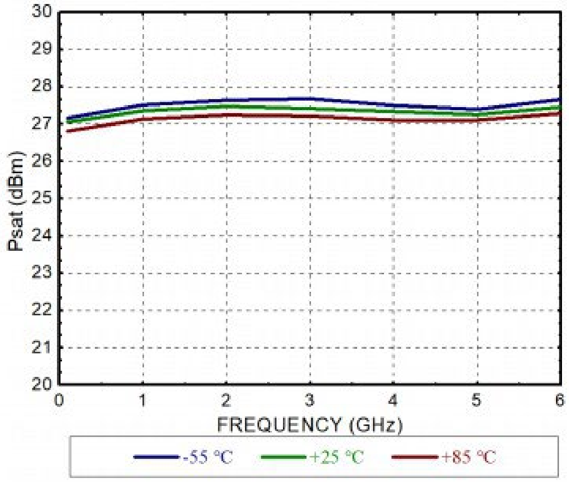
Psat vs. Temperature @ VDD=+8V



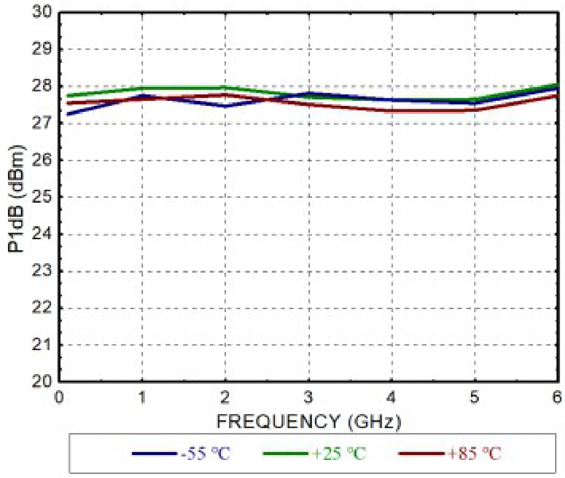
P1dB vs. Temperature @ VDD=+10V



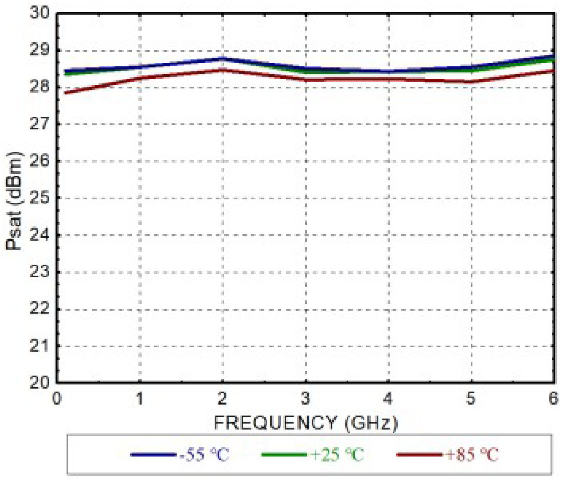
Psat vs. Temperature @ VDD=+10V



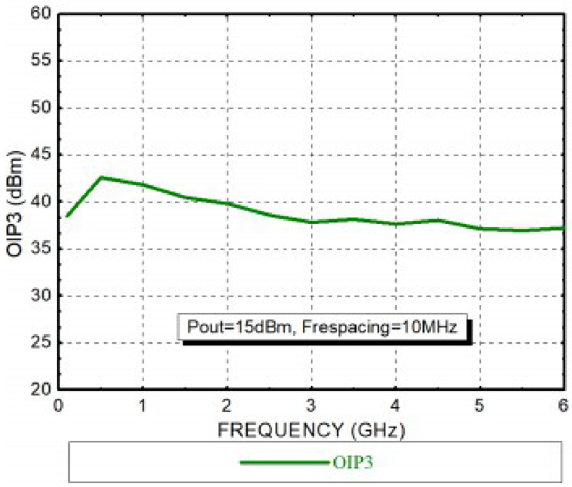
P1dB vs. Temperature @ VDD=+12V



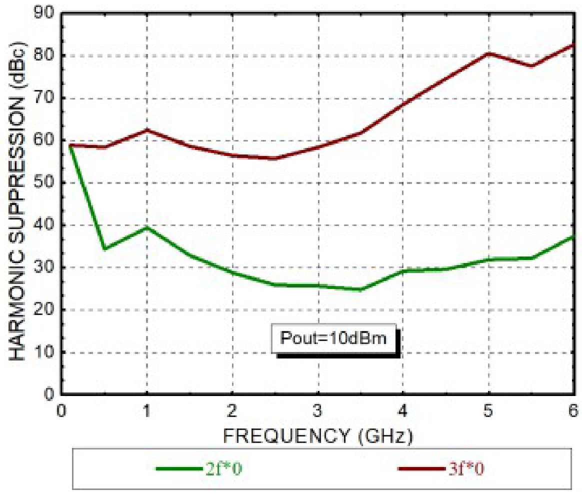
Psat vs. Temperature @ VDD=+12V



OIP3

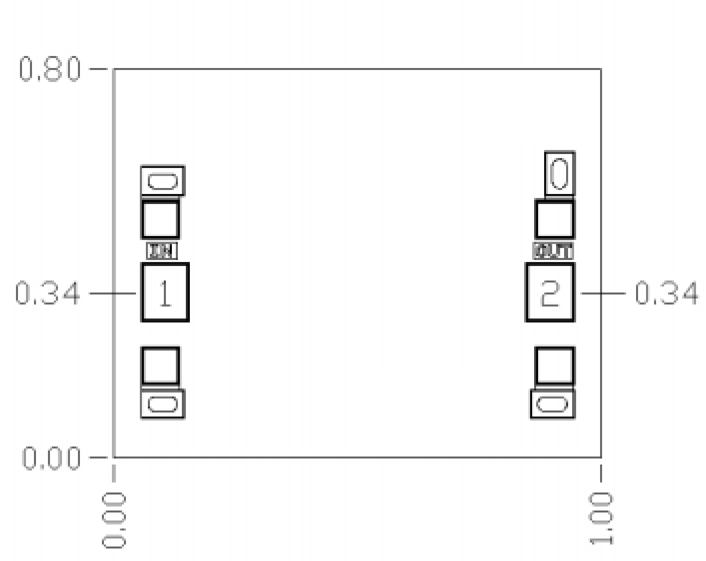


Harmonic Suppression



Outline Drawing:

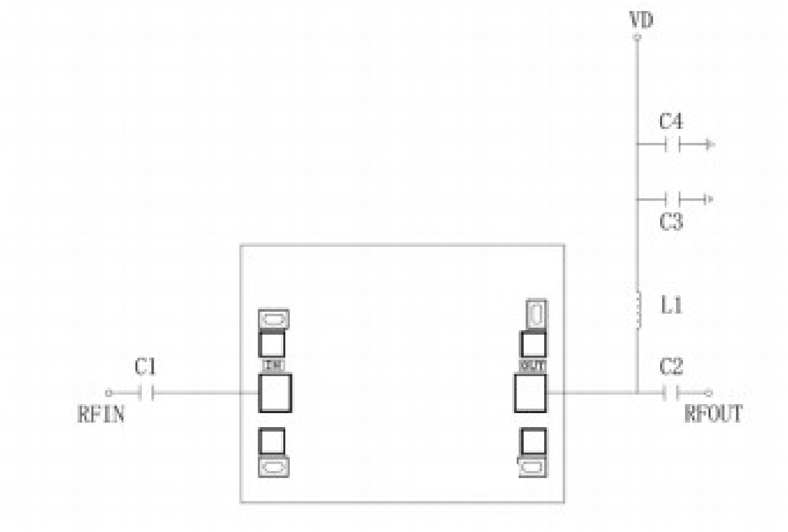
All Dimensions in mm



Pad Description

Pad	Function	Description
1	IN	RF signal input, DC coupling, 50 ohm matched, DC-blocking capacitor needed.
2	OUT	RF signal output, DC coupling, 50 ohm matched, DC-blocking capacitor and bias inductance needed.
Die bottom	GND	Die bottom must be connected to RF/DC ground.

Recommended bias circuit



Frequency	30MHz	100MHz	1GHz	2GHz
L1(nH)	820	270	47	22
C1/C2(pF)	1000	200	20	10
C3/C4(uF)	0.001/0.01			

Notes:

1. Die thickness: 100um
2. Typical bond pad is 120*100 μm^2
3. Bond pad metalization: Gold
4. Backside metalization: Gold
5. Backside of the die (GND)
6. Outline dimension tolerance: 50um

Maximum Ratings:

1. Power supply voltage: +12.5V
2. RF input power: +20dBm
3. Storage temperature: -65℃ to +150℃
4. Operating temperature: -55℃ to +85℃