



# Microwave

## 24GHz K Band VCO + Amplifier

### High Power 0.5W Output Frequency: 22GHz-26.8 GHz & Divide-by-16



## Features

- Saturated Output Power:  
up to +27.5 dBm @ 15% PAE
- High Output IP 3: +33 dBm
- High Gain: 21.5 dB
- DC Supply: +5V @ 850mA (startup 1.5A 10ms)
- Gain control DC: -2V to 0V
- VCO frequency: 22 - 26.8GHz
- Power Output Divide/16 = -1dBm
- Phase Noise: -93 dBc/Hz @ 100 kHz
- Tune Voltage 0 - +13V (10uA)
- High-Frequency good quality SMA connectors
- Type: SRI 21-146-1000-00 (27GHz)
- Weight with fan: 60g

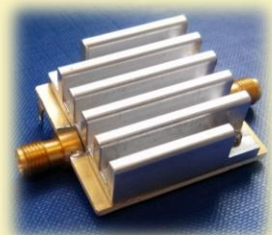
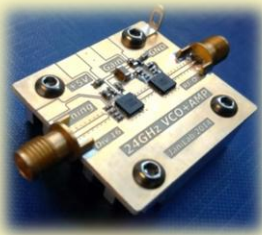
## Typical Applications

- Point-to-Point Radios
- Point-to-Multi-Point Radios
- VSAT
- Military & Space

\* we send the product with\*



- PCB material Rogers RO4350B
- PCB size: 33mm X 36 mm
- Full size: L=50mm with SMA-s  
W= 33mm H= 25mm with FAN



## Installation Guide

Please check the packaging, if everything was okay

Connect the output to antenna or instrument or dummy load.

Please connect the +5 V power supply to the PCB panel,

Optional Gain control DC: -2V to 0V

If remain open then maximum gain available.

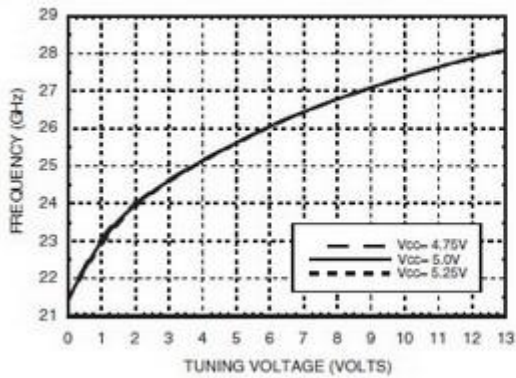
SMA connector on the left frequency /16 divider output = 1,375GHz to 1,675GHz

## Warning

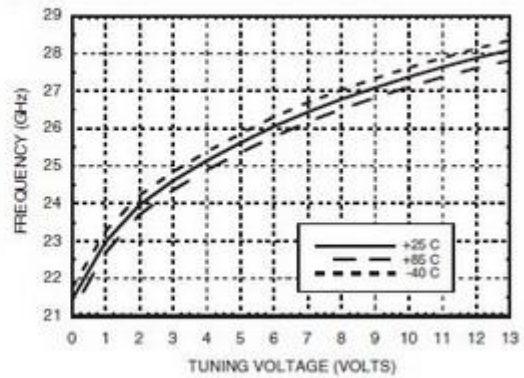
- Make sure power supply polarity (no protection)
- When Switching ON the peak current can reach 1.5 amps  
therefore, the current limit to be set to 2 amps
- The maximum voltage +5.5V (+5V)
- Do not leave open the RF output during operation
- The FAN is operating at required because the device overheat
- For the FAN to operate need another power supply because the phase noise increases,  
or be applied separately LC filter unit between power supply and FAN

# The Voltage Controlled Oscillator characteristics

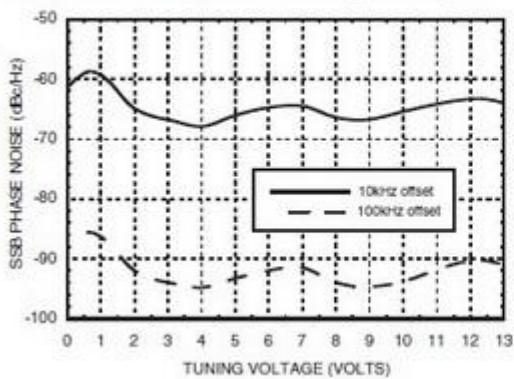
Frequency vs. Tuning Voltage,  $T = 25^{\circ}\text{C}$



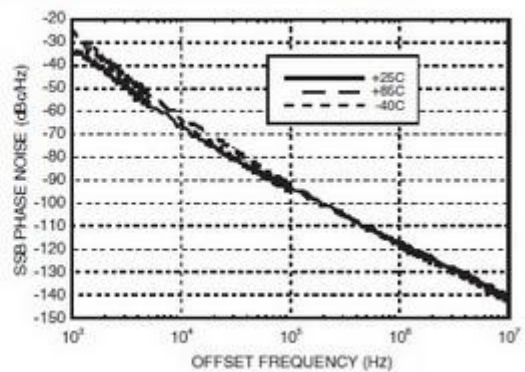
Frequency vs. Tuning Voltage,  $V_{cc} = +5\text{V}$



SSB Phase Noise vs. Tuning Voltage

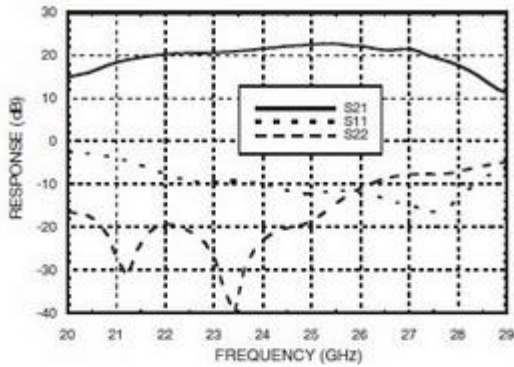


SSB Phase Noise @  $V_{tune} = 5\text{V}$

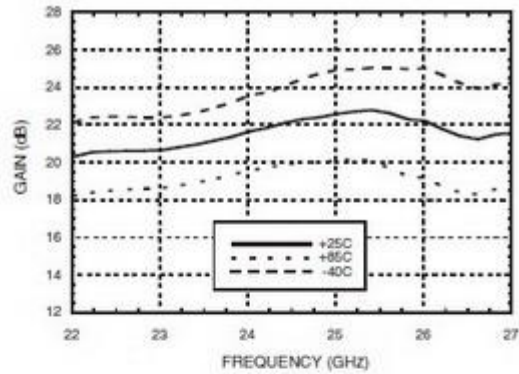


# The Amplifier characteristics

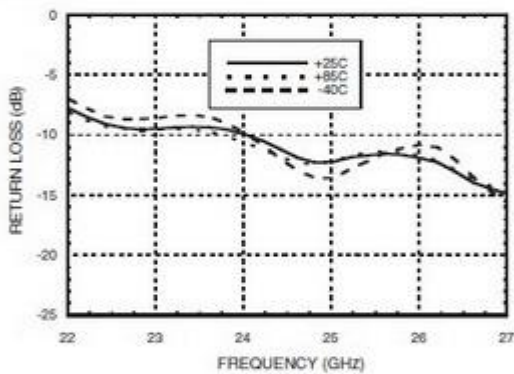
**Broadband Gain & Return Loss vs. Frequency**



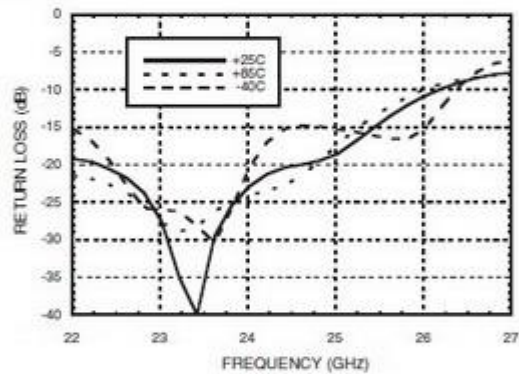
**Gain vs. Temperature**



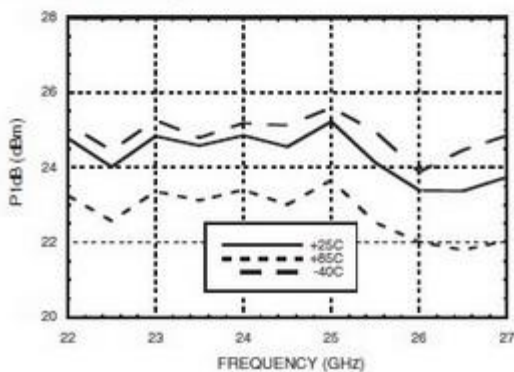
**Input Return Loss vs. Temperature**



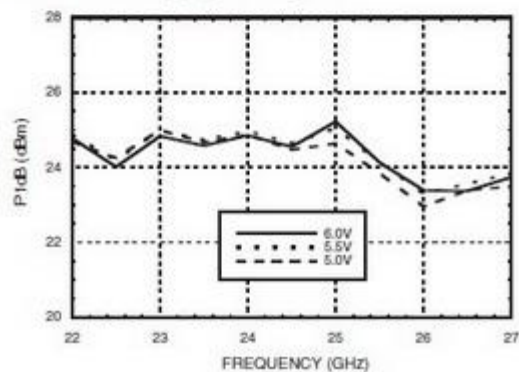
**Output Return Loss vs. Temperature**



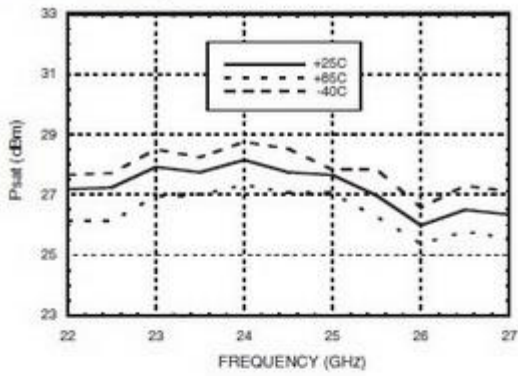
**P1dB vs. Temperature**



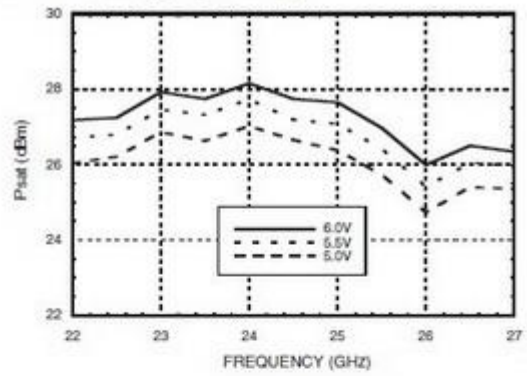
**P1dB vs. Supply Voltage**



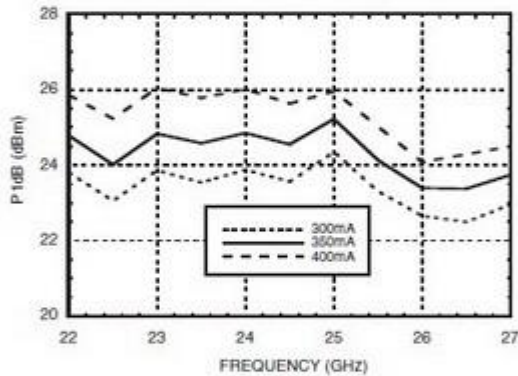
**Psat vs. Temperature**



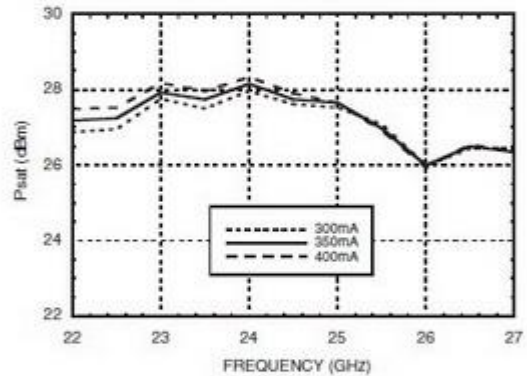
**Psat vs. Supply Voltage**



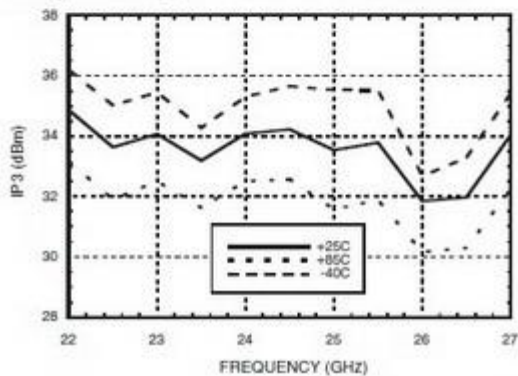
**P1dB vs. Supply Current (Idd)**



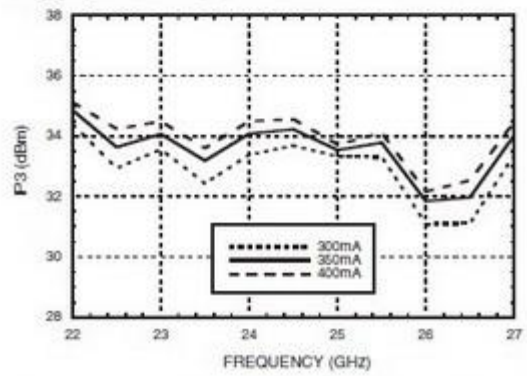
**Psat vs. Supply Current (Idd)**



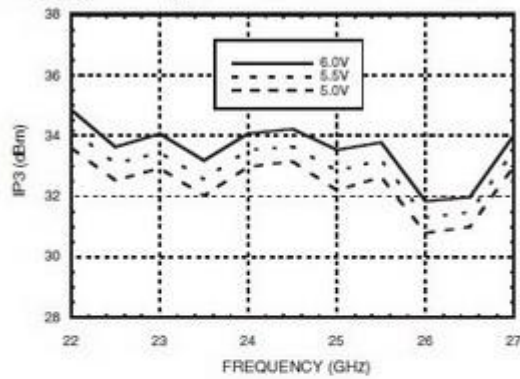
**Output IP3 vs. Temperature, Pout/Tone = +14 dBm**



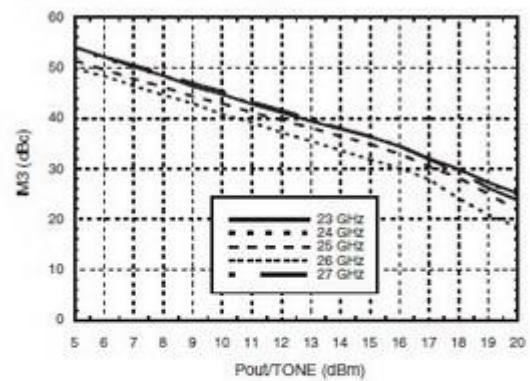
**Output IP3 vs. Supply Current, Pout/Tone = +14 dBm**



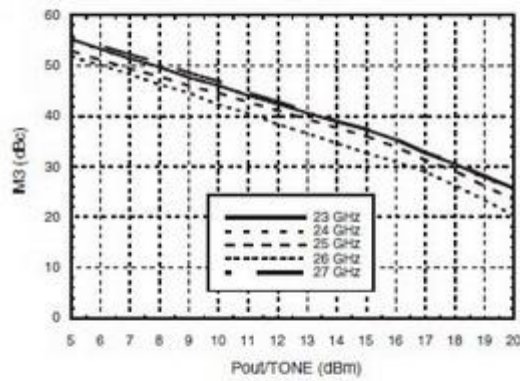
**Output IP3 vs. Supply Voltage, Pout/Tone = +14 dBm**



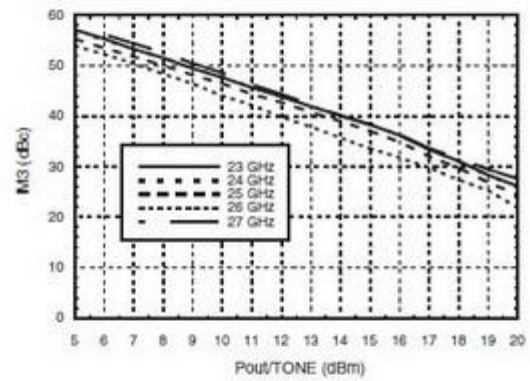
**Output IM3 @ Vdd = +5V**



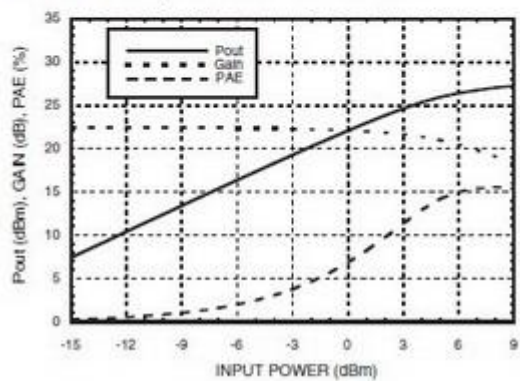
**Output IM3 @ Vdd = +5.5V**



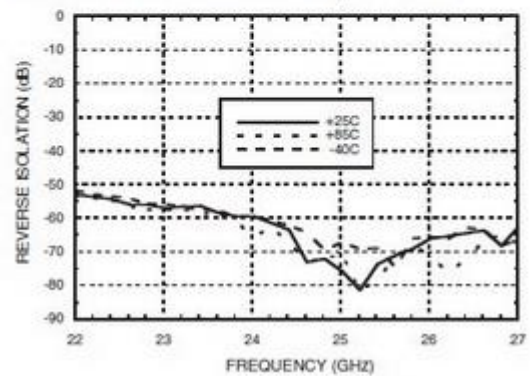
**Output IM3 @ Vdd = +6V**



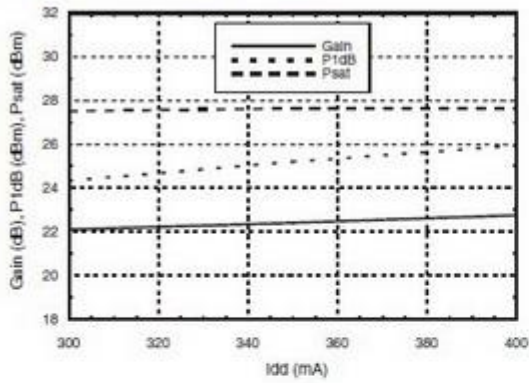
**Power Compression @ 25 GHz**



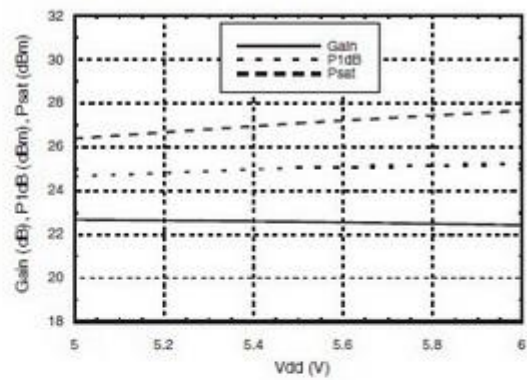
**Reverse Isolation vs. Temperature**



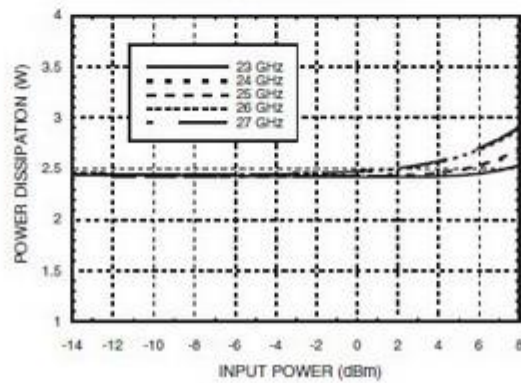
Gain & Power vs.  
Supply Current @ 25 GHz



Gain & Power vs.  
Supply Voltage @ 25 GHz



Power Dissipation



manufacturing company

**Janilab**   
Microwave devices

*Janos Papp*

If you need for more information

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