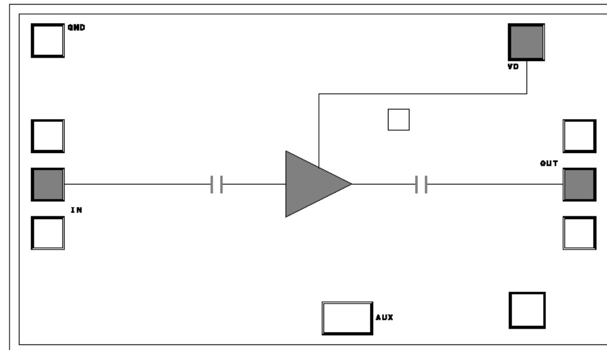
Features

- Low Noise Amplifier (Single DC Biased)
- Frequency: 18 - 40GHz
- Small Signal Gain:
  19.5dB@18GHz
  19dB@40GHz Typical
- Gain Flatness: ±1.5dB Typical
- Noise Figure:2.7dB Typical
- P1dB: 15dBm Typical
- Power Supply: +5V/75mA
- Input/Output: 50Ω
- Chip Size: 1.85 x 1.05 x 0.1mm

Typical Applications

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

Functional Block Diagram



Electrical Specifications

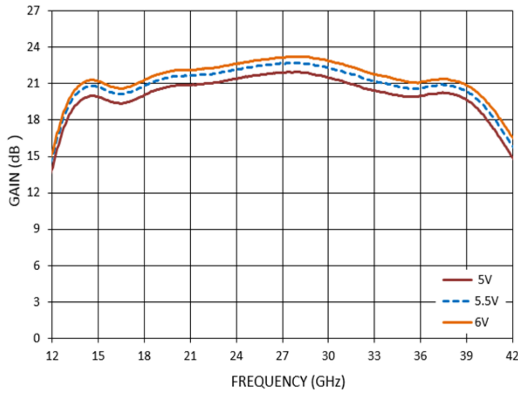
TA = +25°C, VD = 5V, IDD = 75mA Typical

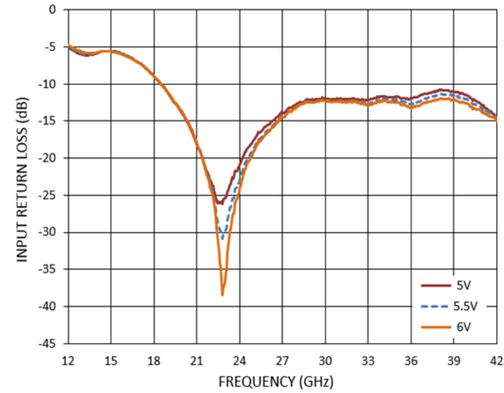
Parameters	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency		18-30			30-40		GHz
Small Signal Gain		21			20		dB
Gain Flatness		±1.0			±1.0		dB
Noise Figure		3.1			2.7		dB
P1dB - Output 1dB Compression	12	15		12	15		dBm
Past - Saturated Output Power)		16			16		dBm
OIP3 - Output Third Order Intercept		22			22		dBm
Input Return Loss		15			15		dB
Output Return Loss		12			10		dB

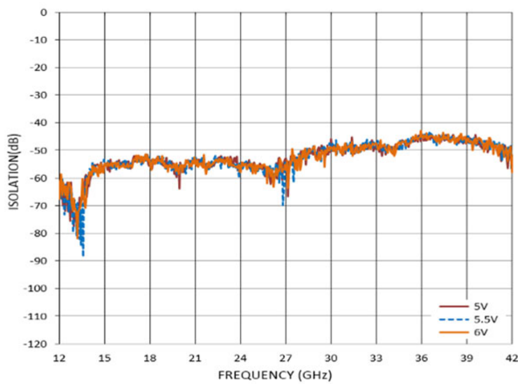
MML705F

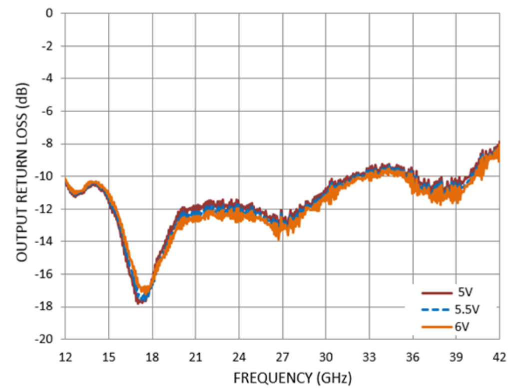
Low Noise Amplifier MMIC 18 - 40GHz

Measurement Plots: S-parameters

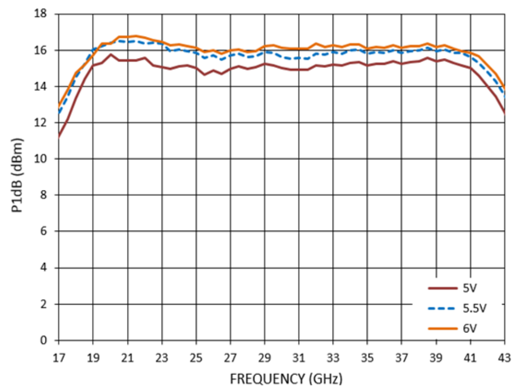




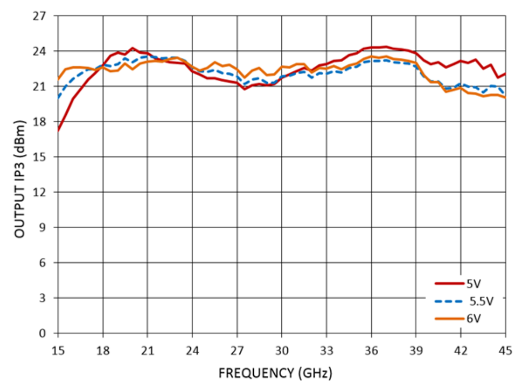




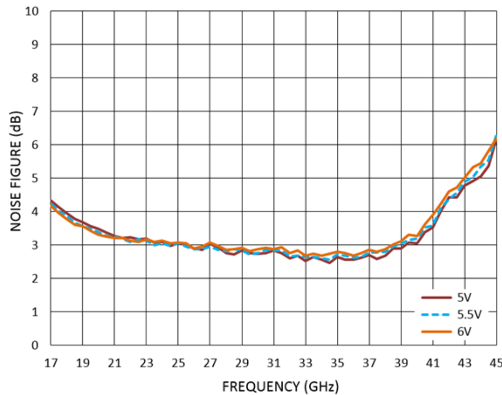
Measurement Plots: P1dB



Measurement Plots: OIP3



Measurement Plots: Noise Figure



Absolute Maximum Ratings

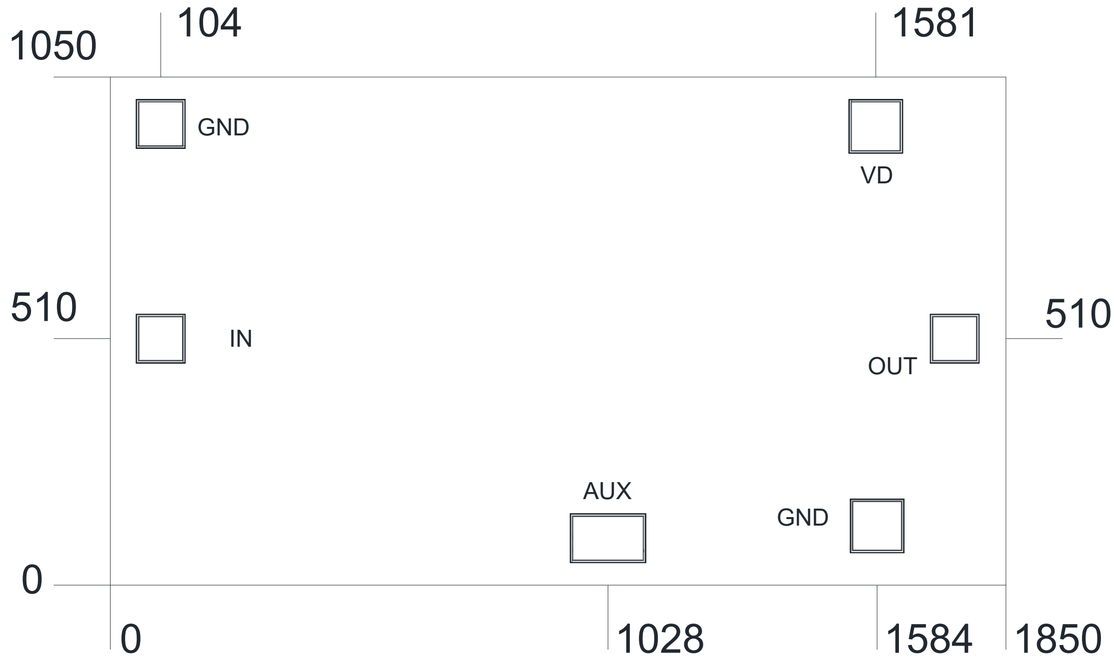
Drain Bias Voltage (VD)	+7V
RF Input Power (RFIN)(VD=+5V)	+10 dBm
Channel Temperature	150 °C
Continuous Pdiss (T = 85 °C)(derate 24 mW/°C above 85 °C)	25dBm
Thermal Resistance (channel to die bottom)	50°C/W
Operating Temperature	-55 to +85 °C
Storage Temperature	-55 to +150 °C

Typical Supply Current vs. Vdd

VD (V)	IDD (mA)
+5	75
+5.5	90
+6	105

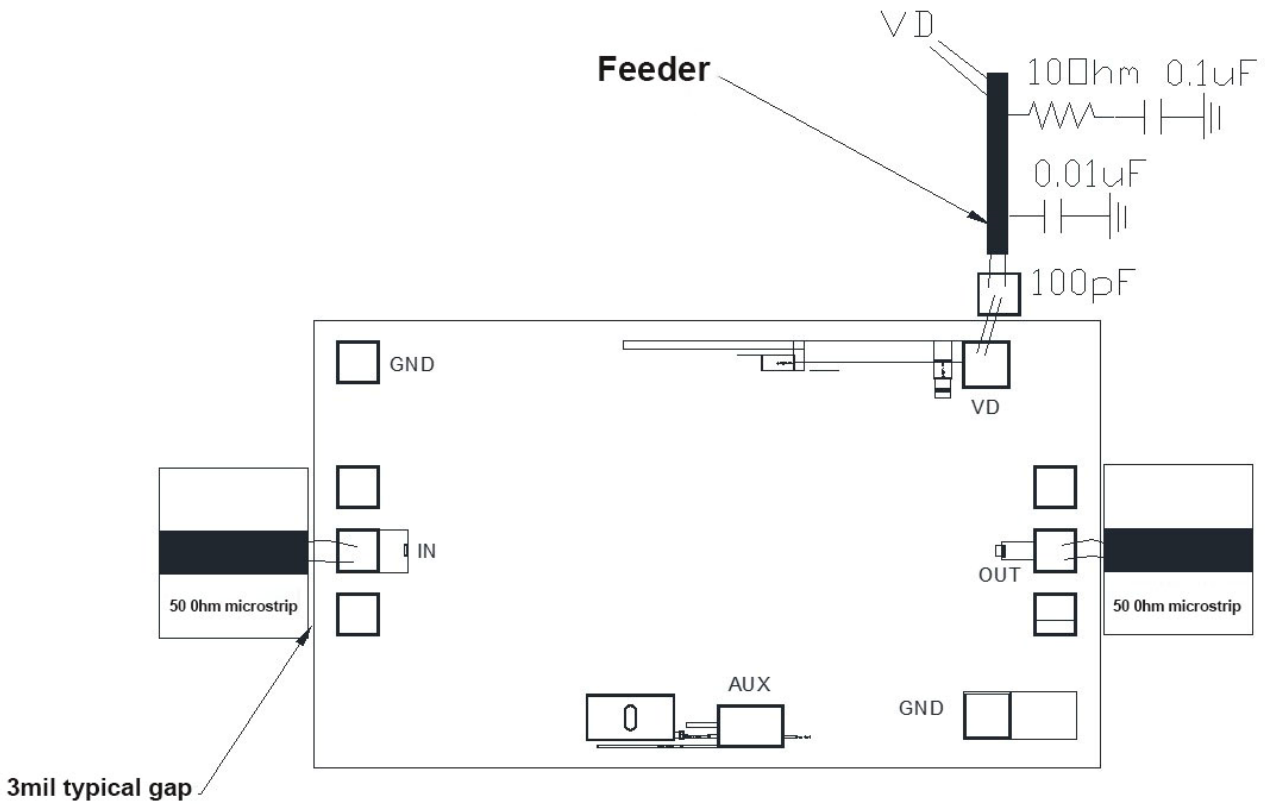
ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Outline Drawing:
All Dimensions in µm

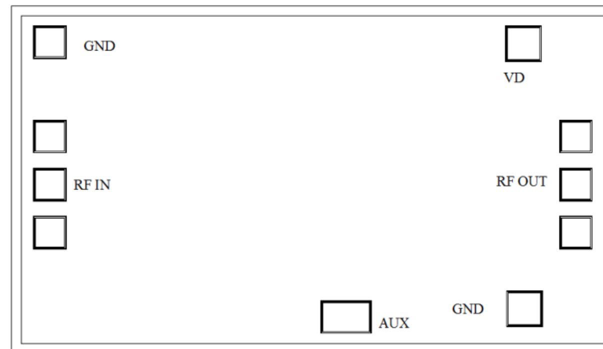


Notes:
1. Die thickness: 100um
2. DC bond pad is 100 x 100 µm^2
3. RF IN/OUT bond pad is 100 x 100 µm^2
4. DC bond pad is 100 x 100 µm^2
5. No DC Blocking Capacitor needed for RF input & RF output
6. Bond pad metalization: Gold
7. Backside metalization: Gold
8. Backside of the die (GND)

Assembly Drawing



No	Function	Description
1	RF IN	Signal input terminal, connected to 50Ω circuit
2	RF OUT	Signal output terminal, connected to 50Ω circuit
3	VD	Connect to external 100pF and 0.01uF bypass capacitors.
9	GND1, GND2	Ground pad.



Biasing and Operation

Performance is optimized when the drain voltage VD is set to +5 V.

Turn ON procedure:

1. Connect Input and Output with 50 Ohm source/load.
2. Apply positive drain voltage VD and set to +5V
3. Apply RF signal

Turn OFF procedure:

1. Turn off RF signal
2. Turn off positive drain voltage VD

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