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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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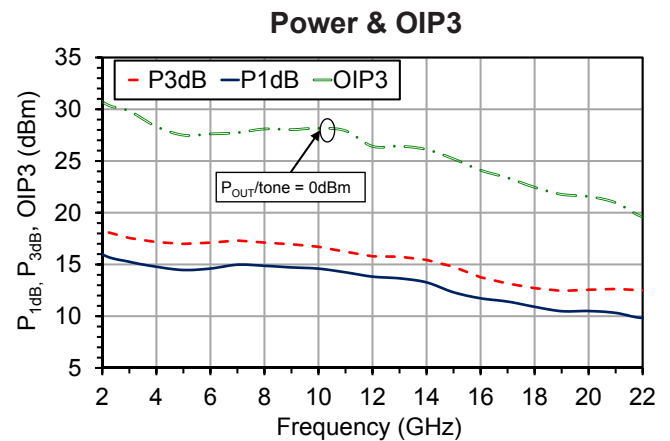
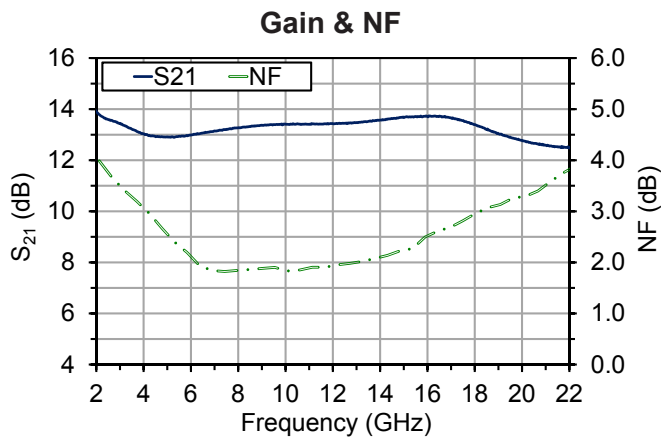
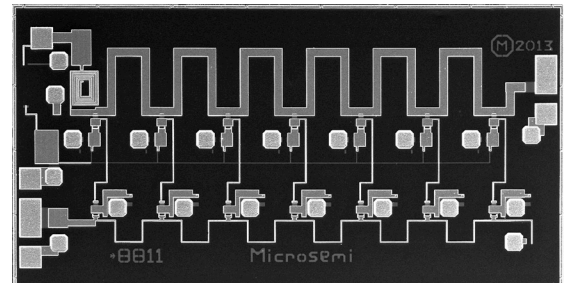
## 2-22GHz, 13dB Gain Low-Noise Wideband Distributed Amplifier

### Features

- >15dBm  $P_{1dB}$  with 1.8dB NF and 13dB gain at 10GHz
- Gain flatness  $\sim \pm 0.75$ dB
- <2dB NF from 6-12GHz
- Single supply voltage of +5V @ 50mA
- Input and Output matched to 50 $\Omega$
- 1.5mm x 2.82mm x 0.1mm die size

### Applications

- Instrumentation
- Electronic warfare
- Microwave communications
- Radar



**Typical Performance (CW, Typical Device, RF Probe):**  $T_A = 25^\circ\text{C}$ ,  $V_{DD} = 5\text{V}$

Parameter	Min	Typ	Max	Units
Frequency	2	-	22	GHz
Small Signal Gain	12.5	-	14.0	dB
Noise Figure	1.8	2.5	4.0	dB
Output Power, $P_{1dB}$	10	13	16	dBm
Output Power, $P_{3dB}$	12	15	18	dBm
Output IP3	19	26	31	dBm
Drain Current		50		mA

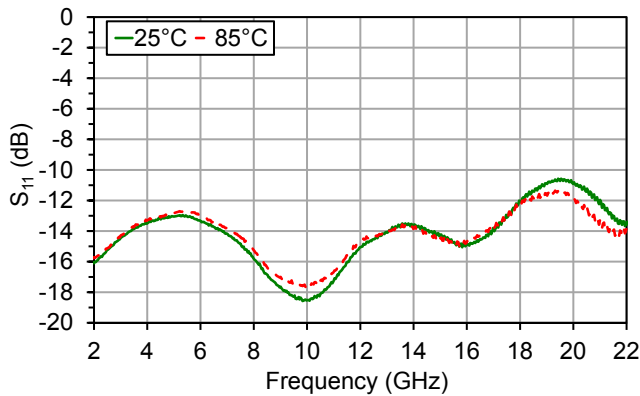




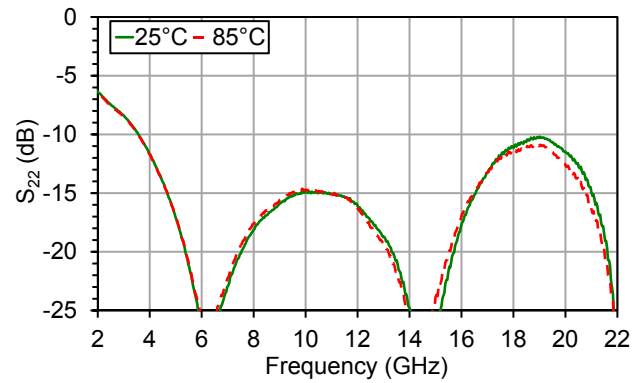
## Typical Performance, RF Probe

$V_{DD} = 5V$ ,  $I_{DD} = 50mA$ ,  $T_A = 25^\circ C$  unless otherwise noted

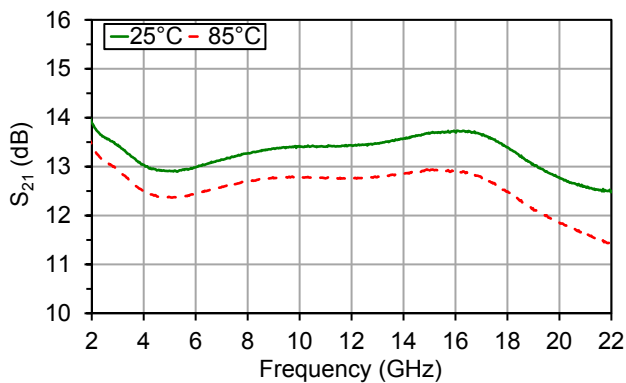
### $S_{11}$ Over Temperature



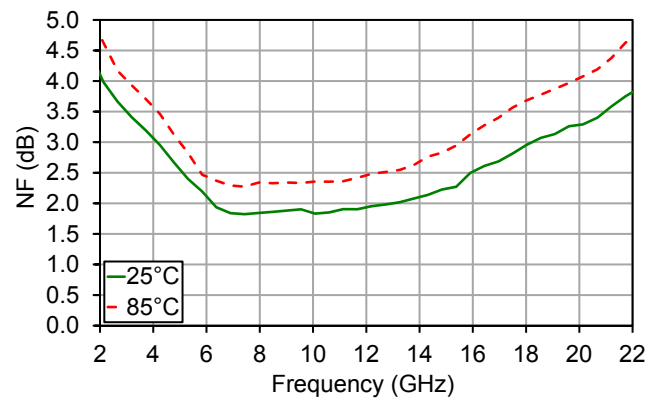
### $S_{22}$ Over Temperature



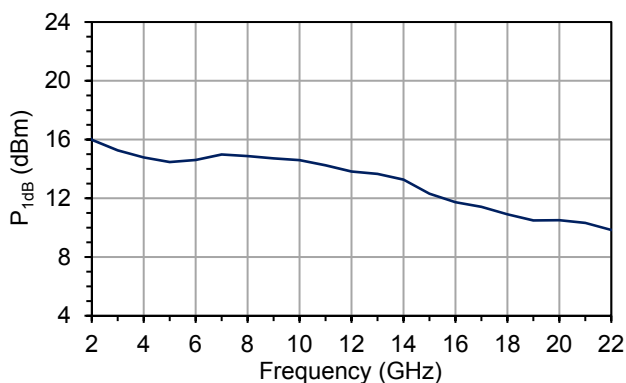
### $S_{21}$ Over Temperature



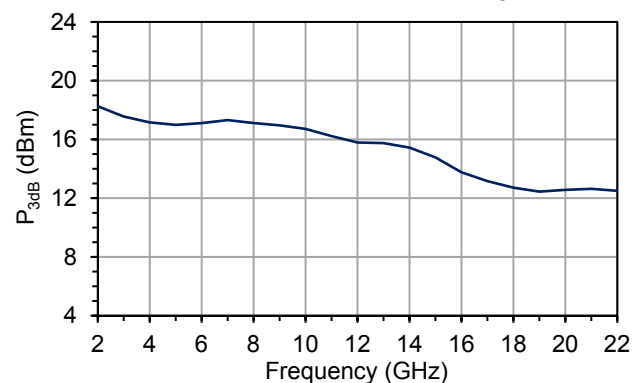
### NF Over Temperature



### $P_{1dB}$ Over Frequency



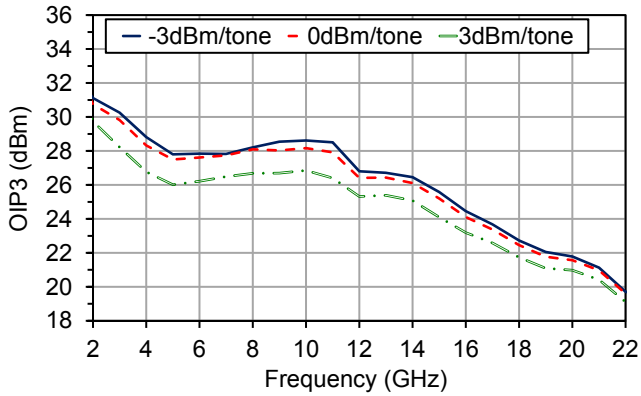
### $P_{3dB}$ Over Frequency



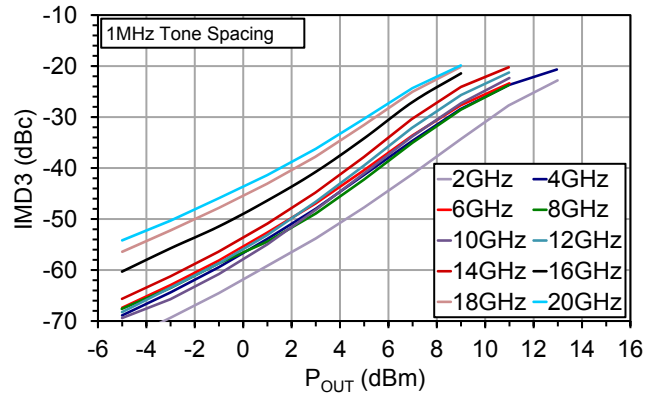
## Typical Performance, RF Probe

$V_{DD} = 5V$ ,  $I_{DD} = 50mA$ ,  $T_A = 25^\circ C$  unless otherwise noted

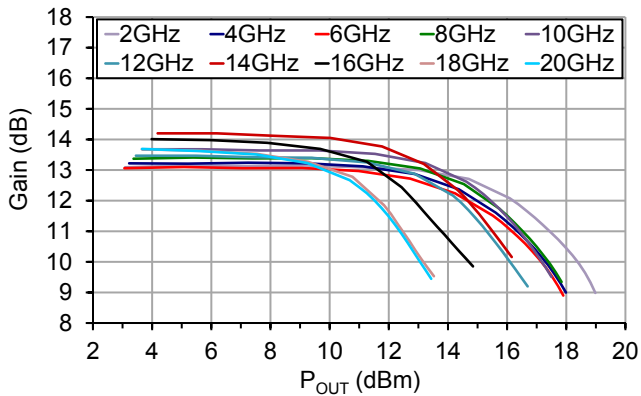
### OIP3 Over Frequency



### IMD Sweep Over Frequency

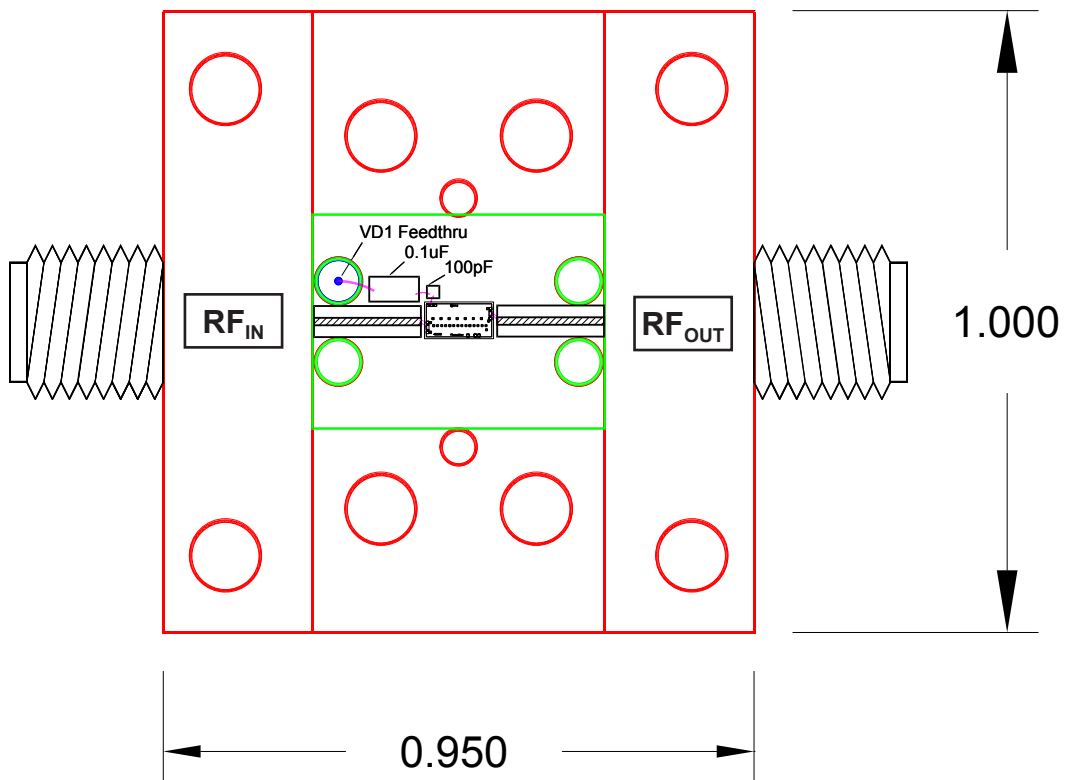


### Power Sweep Over Frequency



### Connectorized Test Fixture

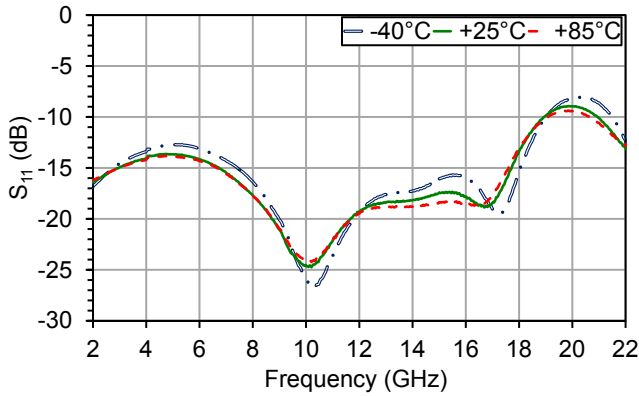
With SMK 2.92mm Connectors



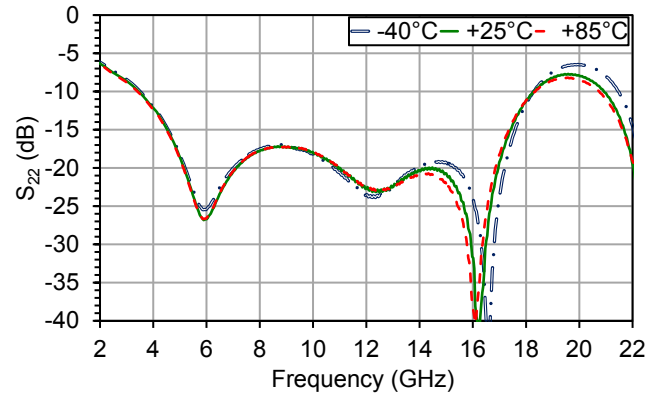
## Typical Performance, Connectorized Test Fixture

$V_{DD} = 5V$ ,  $I_{DD} = 50mA$ ,  $T_A = 25^\circ C$  unless otherwise noted

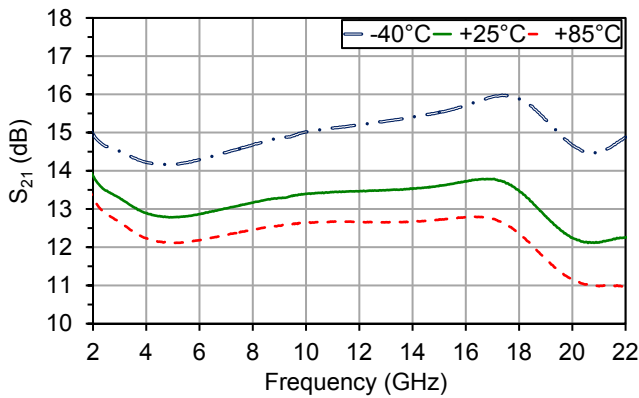
### $S_{11}$ Over Temperature



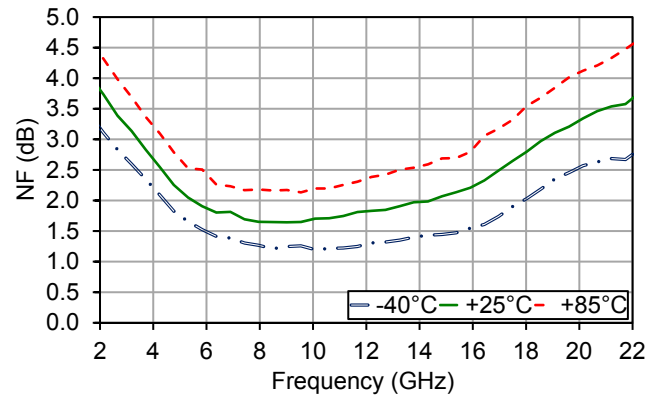
### $S_{22}$ Over Temperature



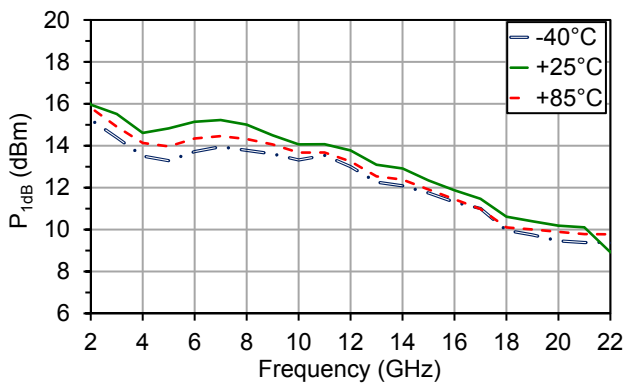
### $S_{21}$ Over Temperature



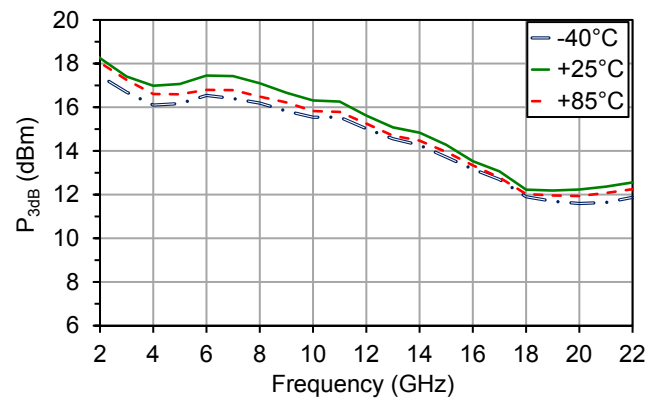
### NF Over Temperature



### $P_{1dB}$ Over Frequency



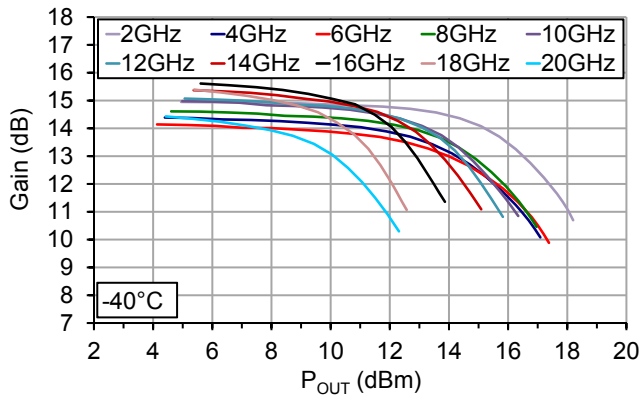
### $P_{3dB}$ Over Frequency



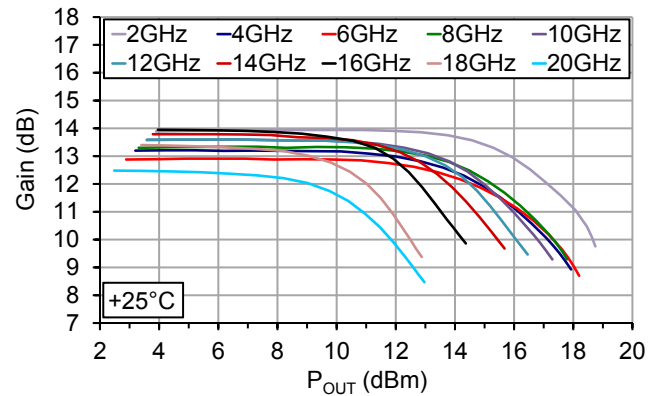
# Typical Performance, Connectorized Test Fixture

$V_{DD} = 5V$ ,  $I_{DD} = 50mA$ ,  $T_A = 25^\circ C$  unless otherwise noted

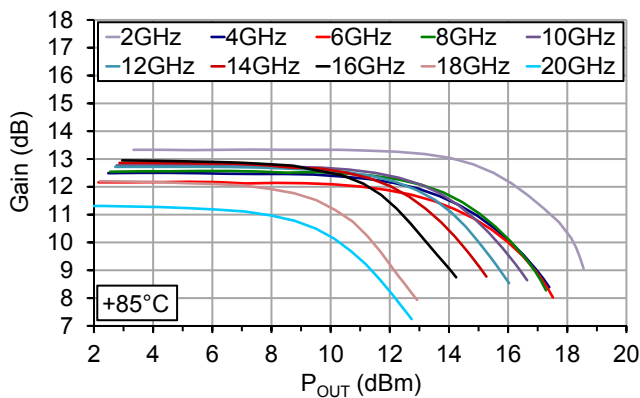
**Power Sweep,  $-40^\circ C$**



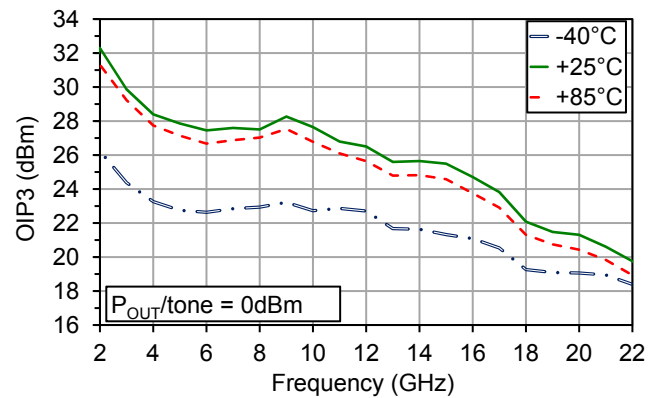
**Power Sweep,  $+25^\circ C$**



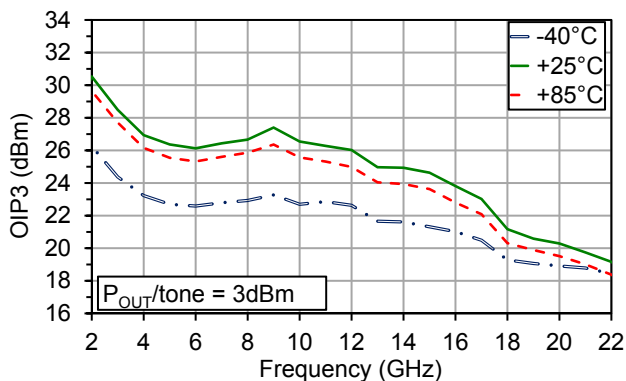
**Power Sweep,  $+85^\circ C$**



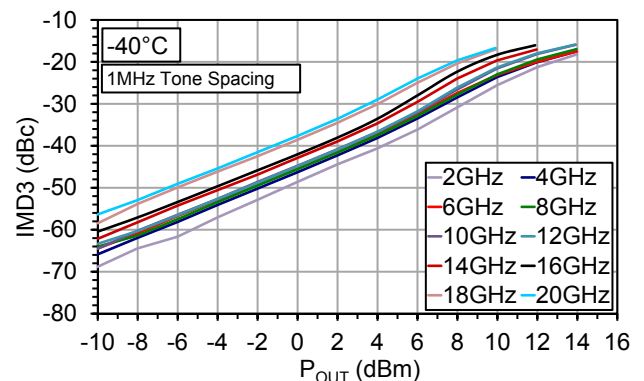
**OIP3,  $P_{OUT}/tone = 0dBm$**



**OIP3,  $P_{OUT}/tone = 3dBm$**



**IMD3 Sweep,  $-40^\circ C$**

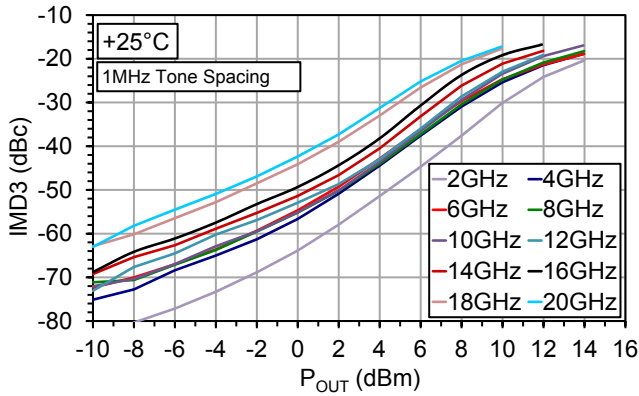




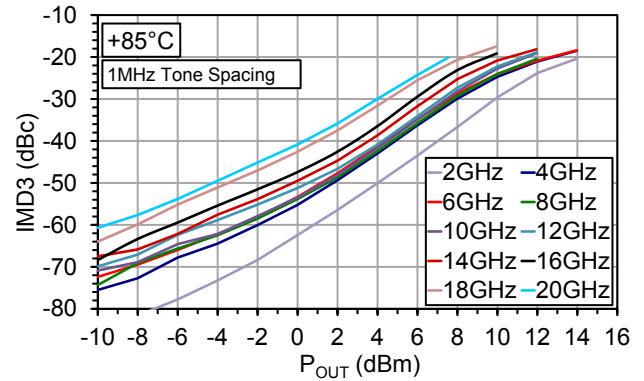
## Typical Performance, Connectorized Test Fixture

$V_{DD} = 5V$ ,  $I_{DD} = 50mA$ ,  $T_A = 25^\circ C$  unless otherwise noted

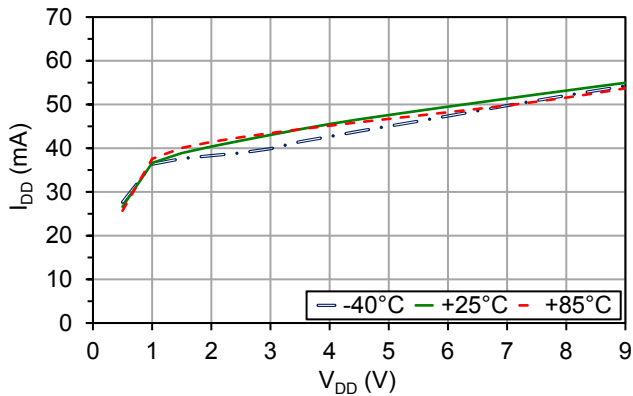
**IMD3 Sweep, +25°C**



**IMD3 Sweep, +85°C**

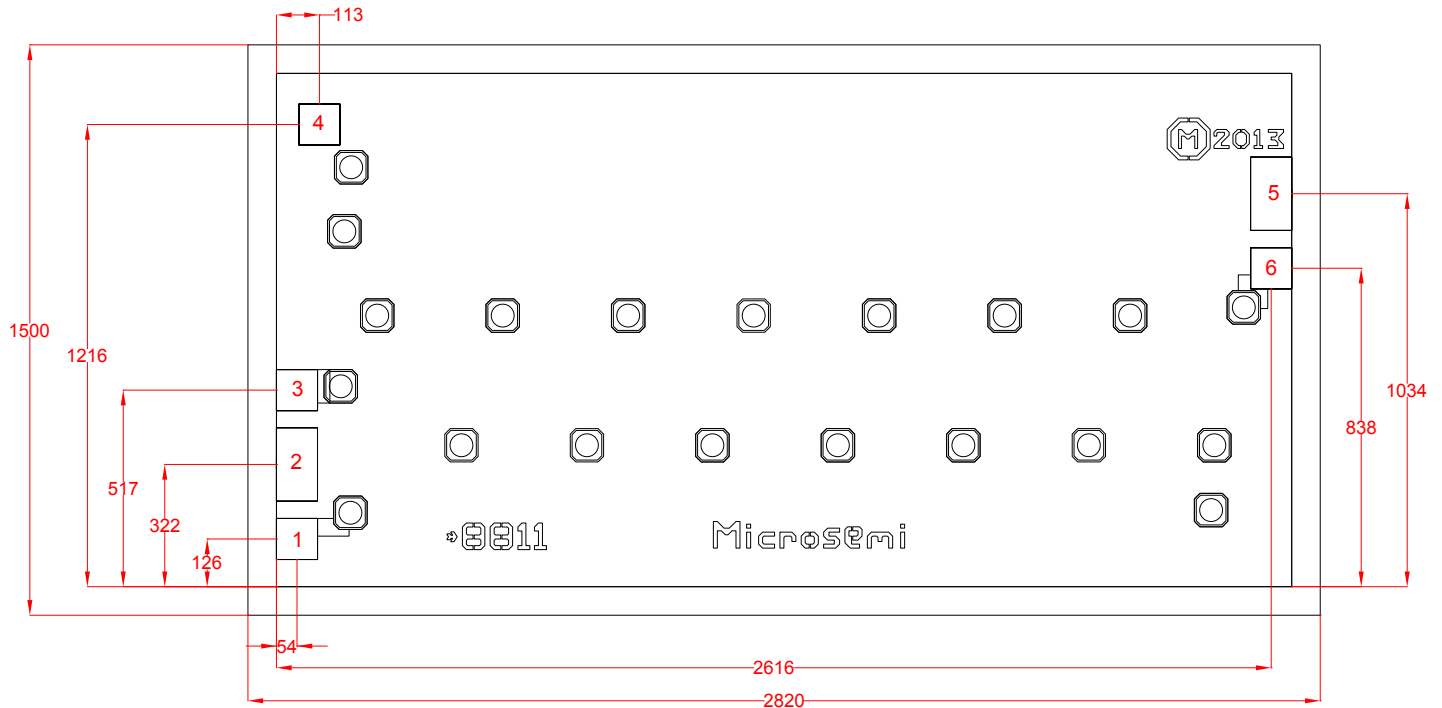


**DC**



**Chip layout showing pad locations.**

All dimensions are in microns. Die thickness is 100 microns. Backside metal is gold, bond pad metal is gold. Refer to Die Handling Application Note MM-APP-0001 (visit [www.microsemi.com/mmics](http://www.microsemi.com/mmics)).


**Table 3: Pad Descriptions**

Pad #	Description	Pad Dimensions ( $\mu\text{m}$ )
1, 3, 6	Ground	100 x 100
2	RF <sub>IN</sub> , Pad is AC Coupled	100 x 190
5	RF <sub>OUT</sub> , Pad is AC Coupled	100 x 190
4	V <sub>DD</sub>	100 x 100

**Biasing**

MMA003AA is a self-biased device with single positive supply. Apply V<sub>DD</sub> to pad 4.

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