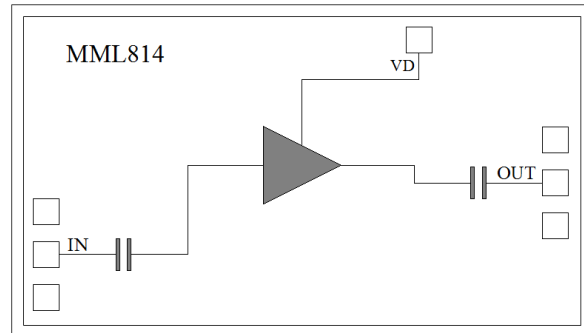


**Features**

- Single Biasing Voltage (Self Biased)
- Ultra Low Current 16mA
- Frequency: 9-20GHz
- Small Signal Gain: 23dB Typical
- Gain Flatness:  $\pm 0.25$ dB Typical
- Noise Figure: 2.0dB Typical
- P1dB: 9dBm Typical
- Power Supply: +5V@16mA
- Input/Output: 50 $\Omega$
- Chip Size: 2.03 x 1.16 x 0.1mm

**Functional Block Diagram**

**Typical Applications**

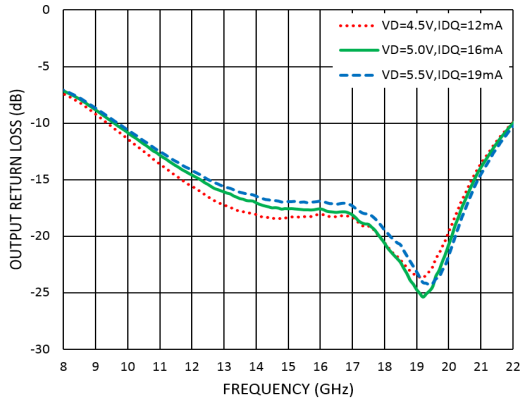
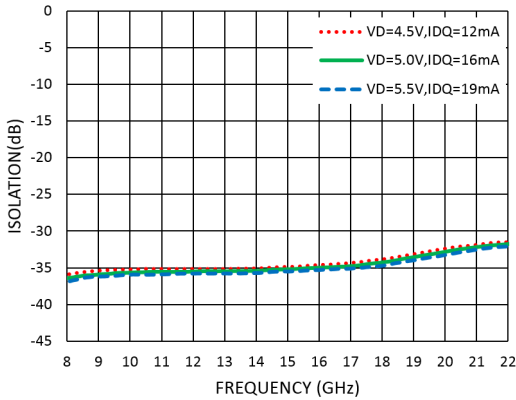
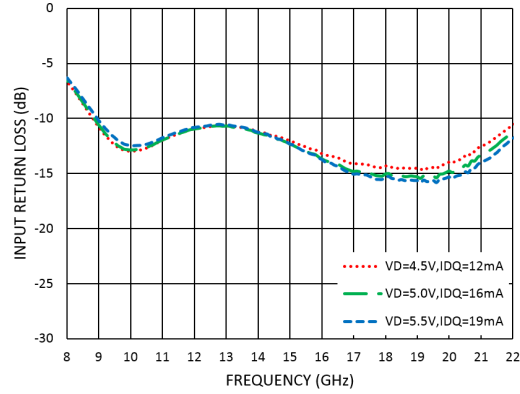
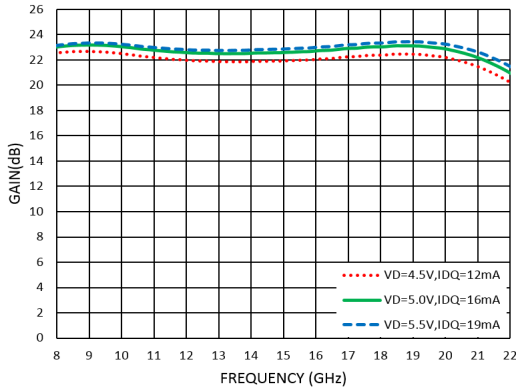
- Test Instrumentation
- Microwave Radio & VSAT
- Military & Space
- Telecom Infrastructure
- Fiber Optics

**Electrical Specifications**
**TA = +25°C, VD = +5V, IDD = 16mA Typical**

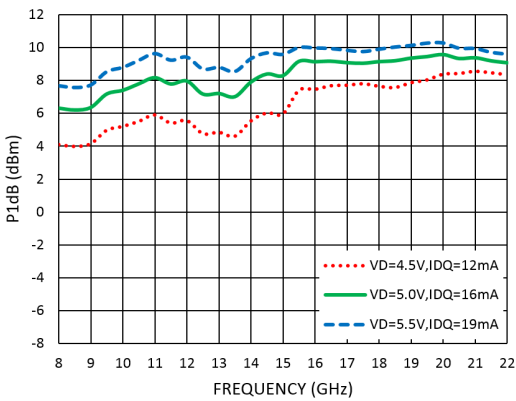
Parameters	Min.	Typ.	Max.	Units
Frequency	9		20	GHz
Small Signal Gain	22	23		dB
Gain Flatness		$\pm 0.25$		dB
Noise Figure		2.0	2.5	dB
P1dB - Output 1dB Compression	6	8		dBm
Psat - Saturated Output Power		10		dBm
OIP3 - Output Third Order Intercept		17		dBm
Input Return Loss		-12		dB
Output Return Loss		-15		dB



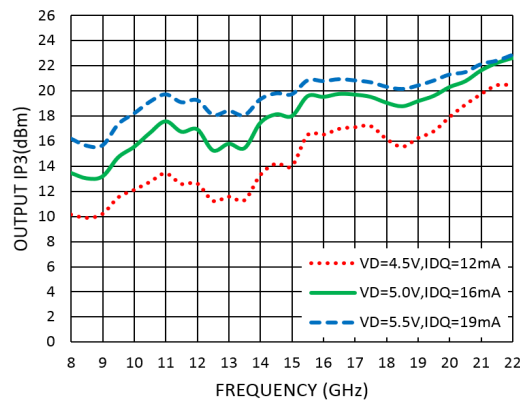
### Measurement Plots: S-parameters

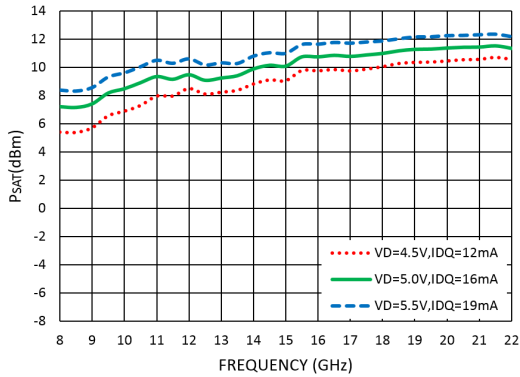
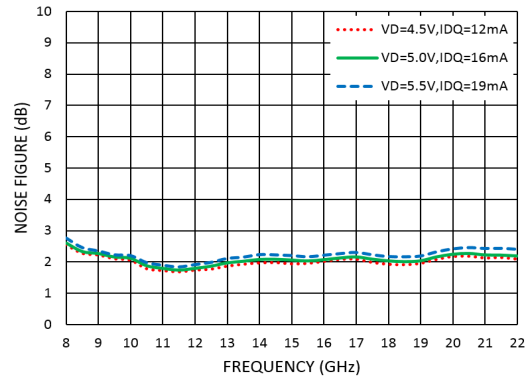


### Measurement Plots: P1dB



### Measurement Plots: OIP3



**Measurement Plots: PSAT**

**Measurement Plots: Noise Figure**

**Absolute Maximum Ratings**

Drain Bias Voltage (VD)	<b>+6.5V</b>
RF Input Power (RFIN)@(+5V)	<b>+15dBm</b>
Channel Temperature	<b>175°C</b>
Continuous Pdiss (T = 85 °C) (derate 1.9mW/°C above 85 °C)	<b>0.17W</b>
Thermal Resistance (channel to die bottom)	<b>50°C/W</b>
Operating Temperature	<b>-40°C to +85 °C</b>
Storage Temperature	<b>-65°C to +150 °C</b>

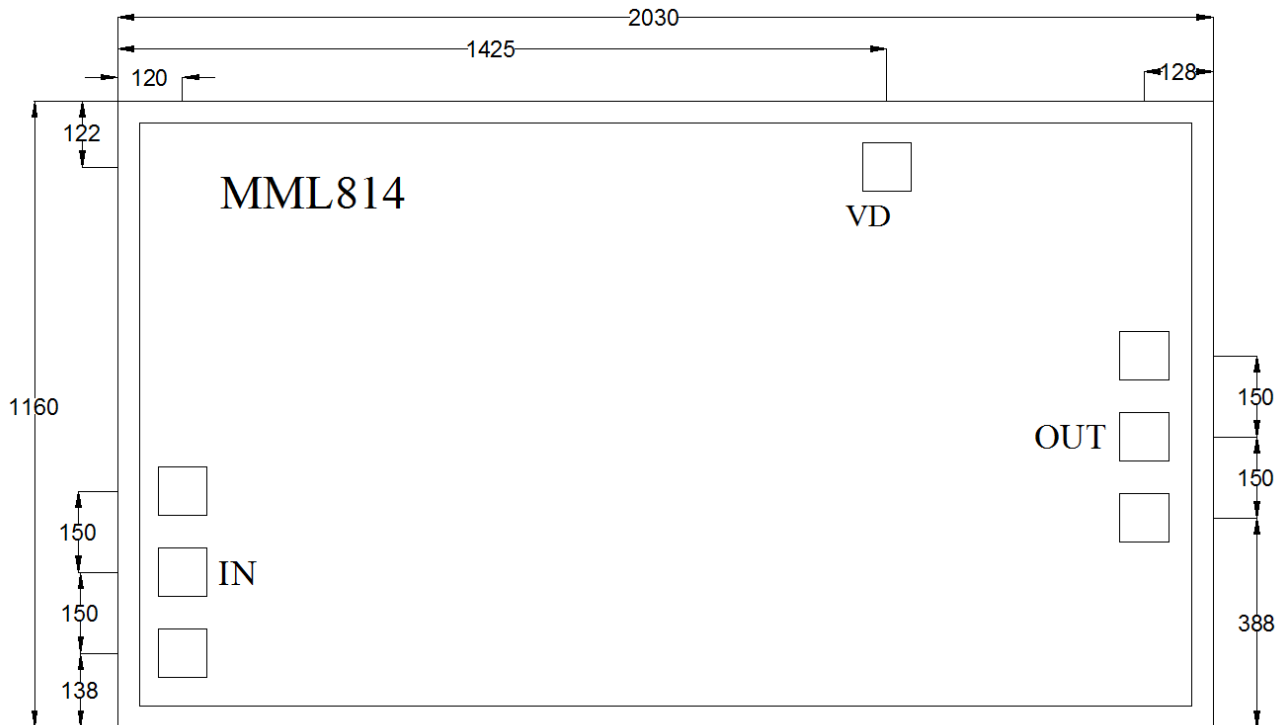
**Typical Supply Current vs. VD**

VD (V)	IDD (mA)
<b>+4.5</b>	<b>12</b>
<b>+5.0</b>	<b>16</b>
<b>+5.5</b>	<b>19</b>


**ELECTROSTATIC SENSITIVE DEVICE  
OBSERVE HANDLING PRECAUTIONS**



**Outline Drawing:**  
All Dimensions in  $\mu\text{m}$

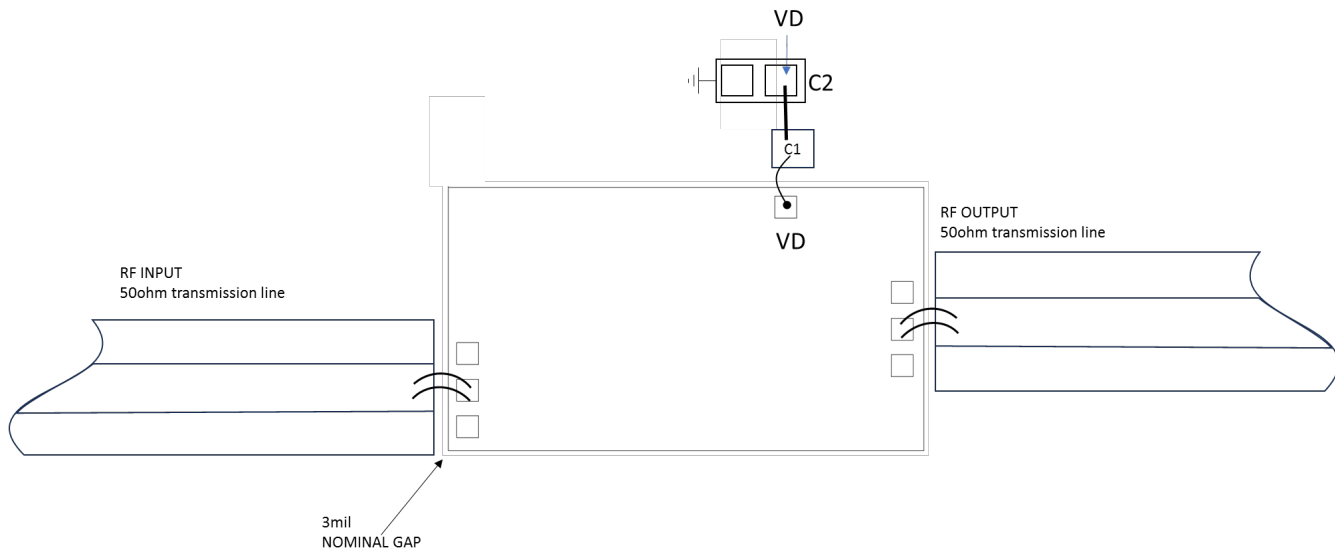


**Notes:**

1. Die thickness: 100 $\mu\text{m}$
2. VD bond pad is 90 $\times$ 90 $\mu\text{m}^2$
3. RF IN/OUT bond pad is 90 $\times$ 90 $\mu\text{m}^2$
4. Bond pad metalization: Gold
5. Backside metalization: Gold

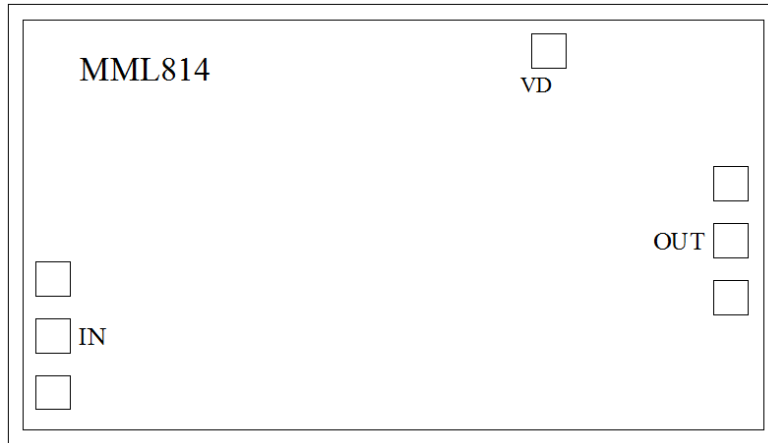


### Assembly Drawing



Item	Description
C1	100pF Example: Presidio Part: MVB3030X103M2H5C1
C2	1μF Example: KYOCERA AVX Part: 116XK102M100TT

No	Function	Description
1	RF IN	RF signal input terminal; no blocking capacitor required.
2	RF OUT	RF signal output terminal; no blocking capacitor required.
3	VD	Drain Biases for the Amplifier. External bypass capacitors of 1μf and 100pf are required for these pads.
4	Die Bottom	Die bottom must be connected to RF and dc ground.



## Biasing and Operation

### Turn ON procedure:

1. Connect GND to RF and dc ground.
2. Apply positive drain voltage VD and set to +5V .
3. Apply RF signal.

### Turn OFF procedure:

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

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