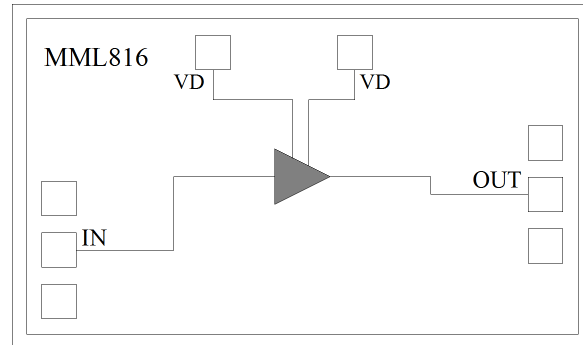


**Features**

- Single Biasing Voltage (Self Biased)
- Frequency: 0.05-20GHz
- Small Signal Gain: 21.5dB Typical
- Gain Flatness:  $\pm 1.0$ dB Typical
- Noise Figure: 1.6dB Typical
- P1dB: 12dBm Typical
- Power Supply: +5V@71mA
- Input/Output: 50 $\Omega$
- Chip Size: 1.599 x 0.95 x 0.1mm

**Typical Application**

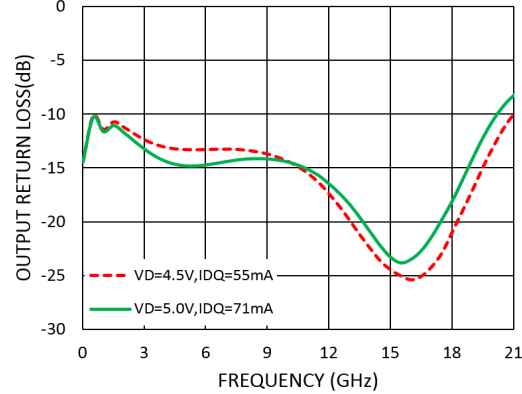
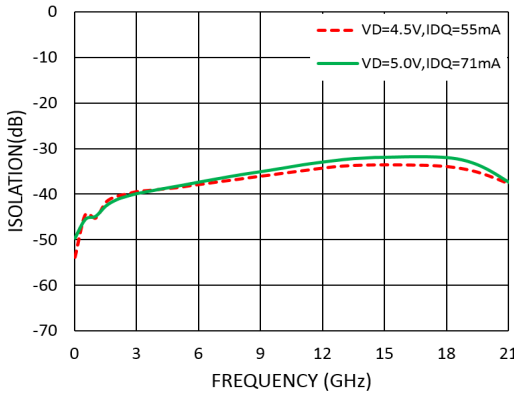
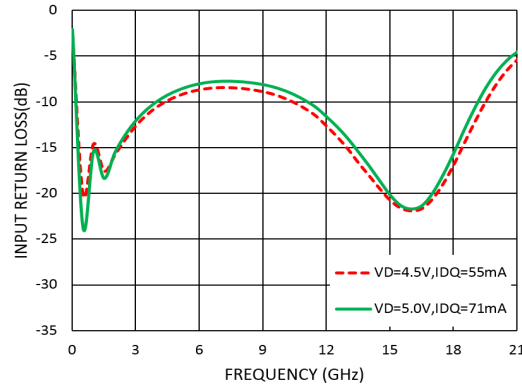
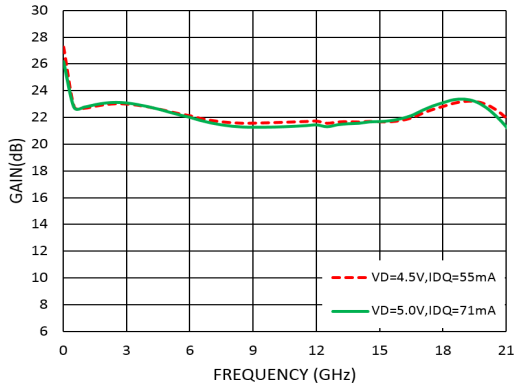
- Test Instrumentation
- Microwave Radio & VSAT
- Military & Space
- Telecom Infrastructure
- Fiber Optics

**Functional Block Diagram**

**Electrical Specifications**
**TA = +25°C, VD = +5V, IDD = 71mA Typical**

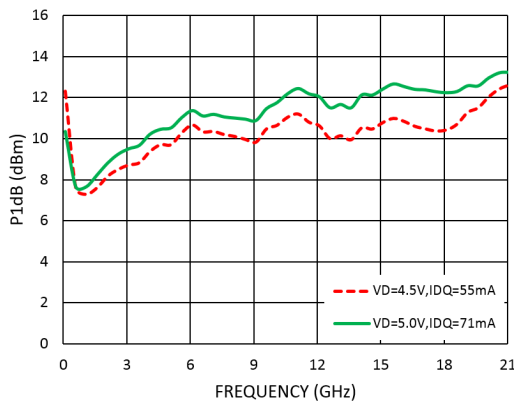
Parameters	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
<b>Frequency</b>	<b>0.05</b>		<b>12</b>	<b>12</b>		<b>20</b>	<b>GHz</b>
<b>Small Signal Gain</b>	<b>20</b>	<b>21.5</b>		<b>20</b>	<b>21.5</b>		<b>dB</b>
<b>Gain Flatness</b>		<b><math>\pm 1.0</math></b>			<b><math>\pm 1.0</math></b>		<b>dB</b>
<b>Noise Figure</b>		<b>1.6</b>			<b>1.7</b>		<b>dB</b>
<b>P1dB - Output 1dB Compression</b>	<b>7</b>	<b>10</b>		<b>10</b>	<b>12</b>		<b>dBm</b>
<b>Psat - Saturated Output Power</b>		<b>13</b>			<b>13.5</b>		<b>dBm</b>
<b>OIP3 - Output Third Order Intercept</b>		<b>20</b>			<b>23</b>		<b>dBm</b>
<b>Input Return Loss</b>		<b>-8</b>			<b>-12</b>		<b>dB</b>
<b>Output Return Loss</b>		<b>-13</b>			<b>-15</b>		<b>dB</b>



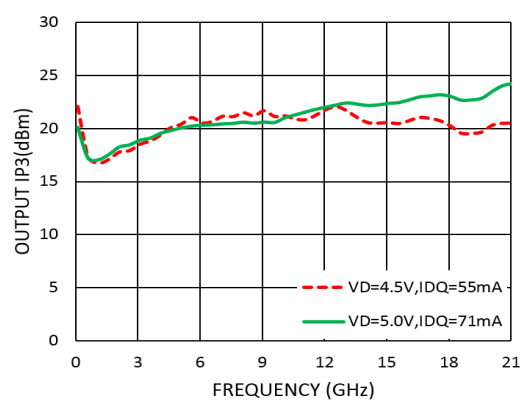
### Measurement Plots: S-parameters

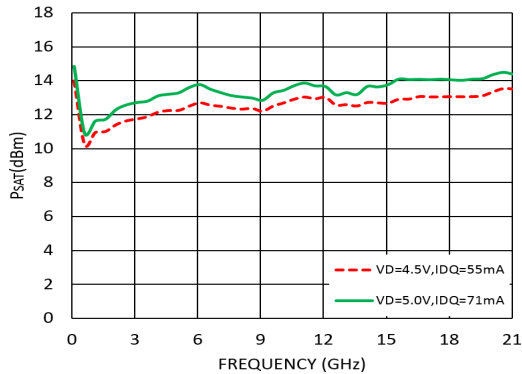
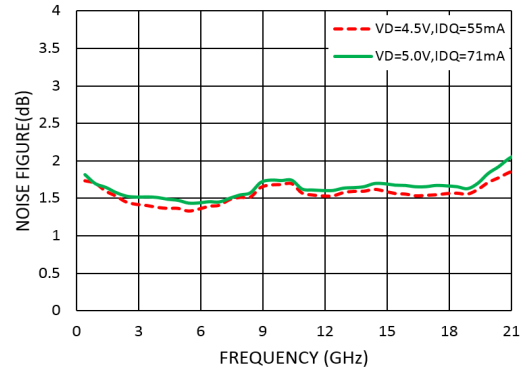


### Measurement Plots: P1dB



### 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>+10dBm</b>
Channel Temperature	<b>220°C</b>
Continuous Pdiss (T = 85 °C) (derate 7.8mW/°C above 85 °C)	<b>0.7W</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**

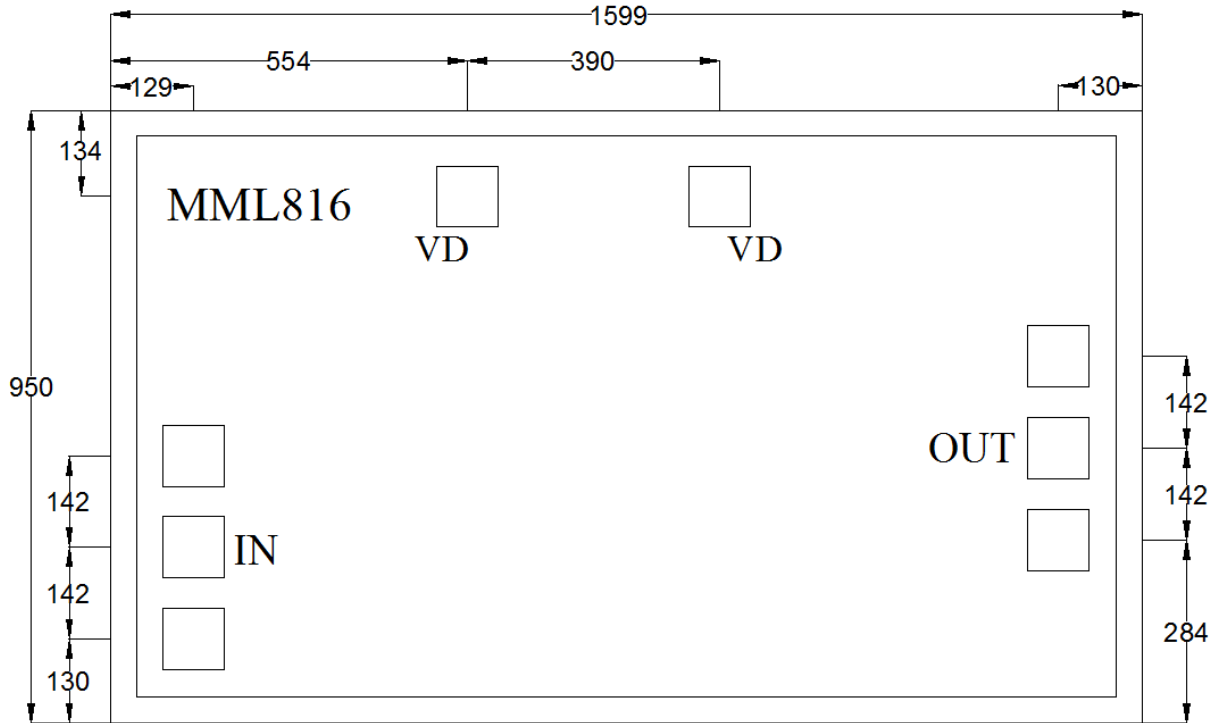
VD (V)	IDD (mA)
<b>+4.5</b>	<b>55</b>
<b>+5.0</b>	<b>71</b>


**ELECTROSTATIC SENSITIVE DEVICE  
OBSERVE HANDLING PRECAUTIONS**



### Outline Drawing:

All Dimensions in  $\mu\text{m}$

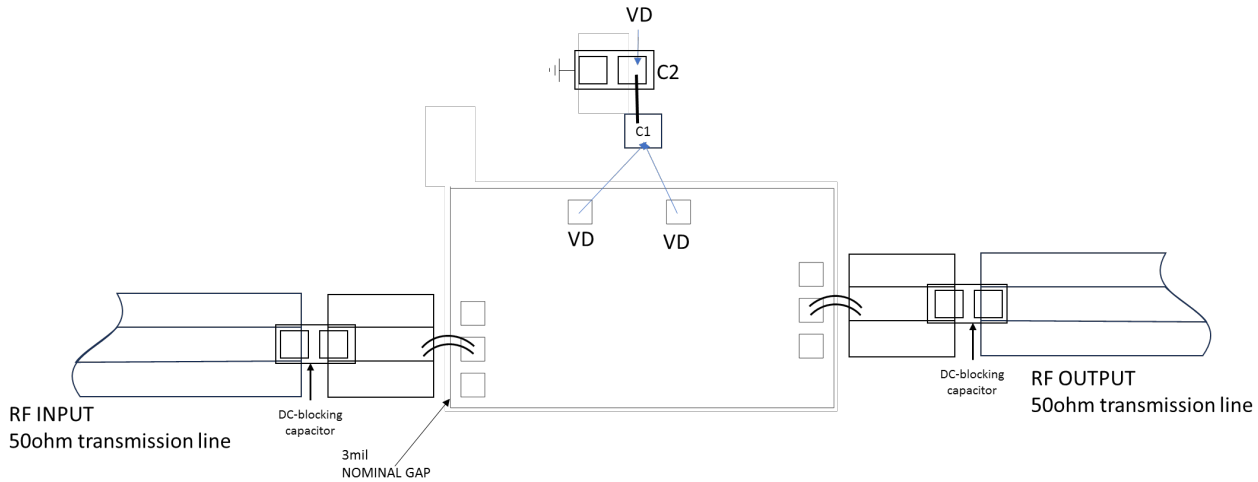


#### Notes:

1. Die thickness: 100 $\mu\text{m}$
2. DC bond pad is 95\*95 $\mu\text{m}^2$
3. RF IN/OUT bond pad is 95\*95 $\mu\text{m}^2$
4. Bond pad metalization: Gold
5. Backside metalization: Gold

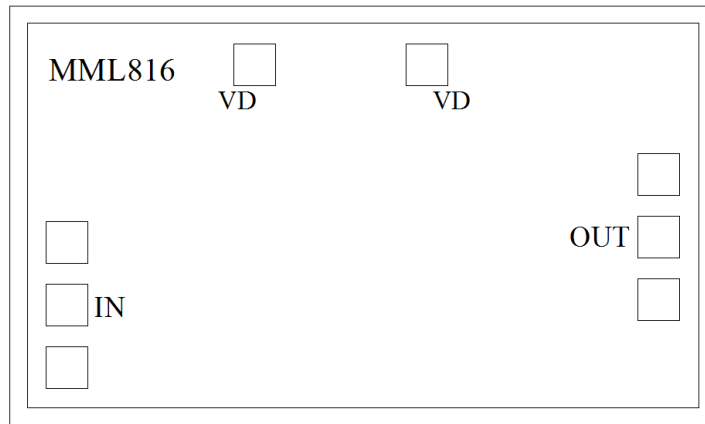


### Assembly Drawing



Item	Description	Item	Description
DC-blocking capacitor	0.1 $\mu\text{F}$ Example: Passiveplus Part: 0402BB104KW500	C2	1 $\mu\text{F}$ Example: KYOCERA AVX Part:116XK102M100TT
C1	100pF Example: Presidio Part: MVB3030X103M2H5C1	C3	0.1 $\mu\text{F}$ Example: Murata Electronics Part:GRM033Z71C104KE14D (0201)

No	Function	Description
1	RF IN	Signal input terminal, connected to 50 $\Omega$ circuit; blocking capacitor required.
2	RF OUT	Signal output terminal, connected to 50 $\Omega$ circuit; blocking capacitor required.
3	VD	Drain Biases for the Amplifier. External bypass capacitors of 1 $\mu\text{f}$ 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  $V_D$  and set to +5V .
3. Apply RF signal.

### Turn OFF procedure:

1. Turn off the RF signal.
2. Turn off the positive drain voltage  $V_D$ .

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