

**Features**

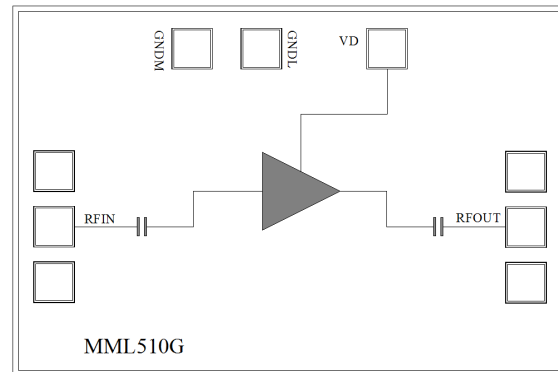
- Single Biasing Voltage (Self Biased)
- Frequency: 7-13GHz
- Small Signal Gain: 31dB Typical
- Gain Flatness:  $\pm 1.0$ dB Typical
- Noise Figure: 0.7dB Typical
- P1dB: 13dBm Typical
- Power Supply: +5V@43mA
- Input/Output: 50 $\Omega$
- Chip Size: 1.5 x 1.0 x 0.1mm

**Typical Applications**

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

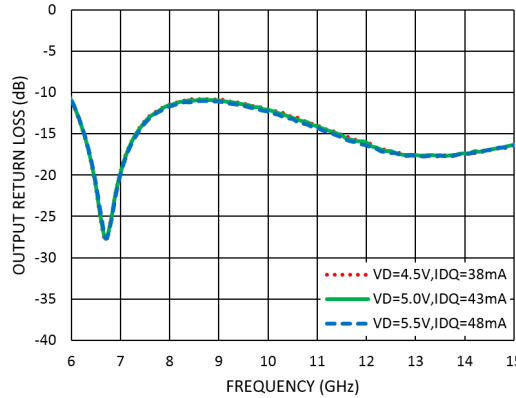
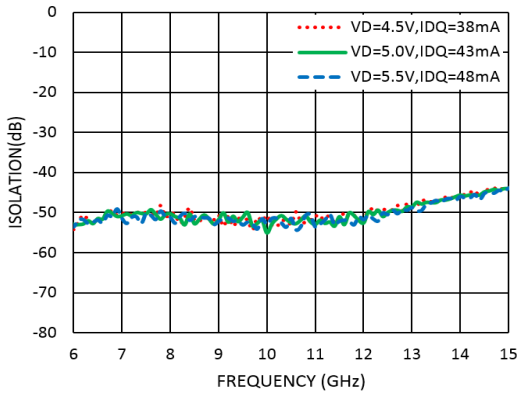
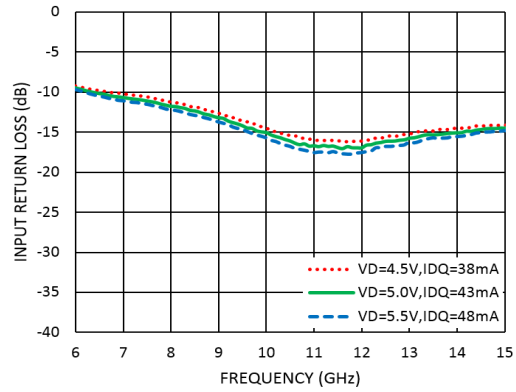
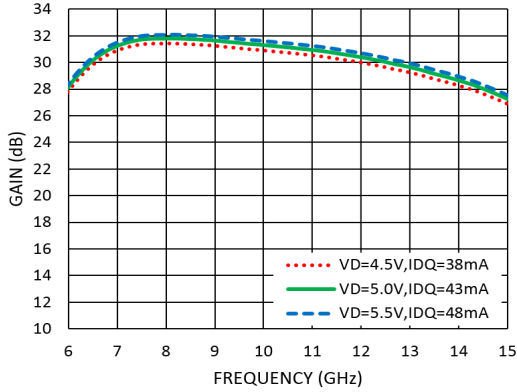
**Electrical Specifications**
**TA = +25°C, VD = +5V, IDD = 43mA Typical**

Parameters	Min.	Typ.	Max.	Units
Frequency	7		13	GHz
Small Signal Gain	29	31		dB
Gain Flatness		$\pm 1.0$		dB
Noise Figure		0.7		dB
P1dB - Output 1dB Compression	10	13		dBm
Psat - Saturated Output Power		14		dBm
OIP3 - Output Third Order Intercept		23		dBm
Input Return Loss		-14		dB
Output Return Loss		-12		dB

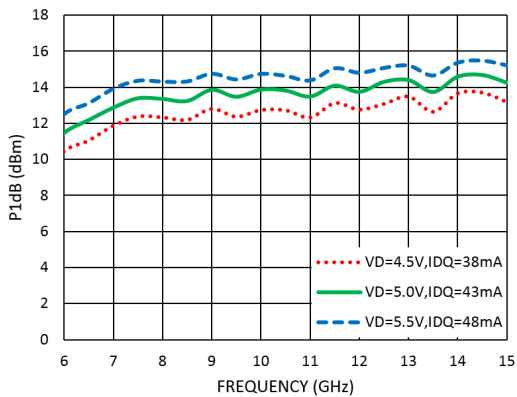
**Functional Block Diagram**




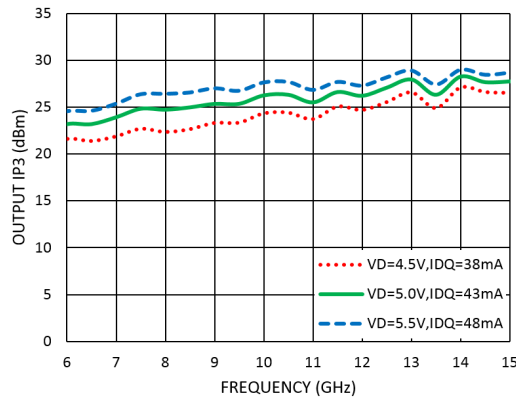
### Measurement Plots: S-parameters

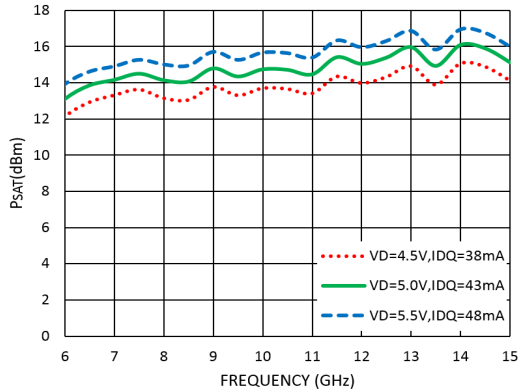
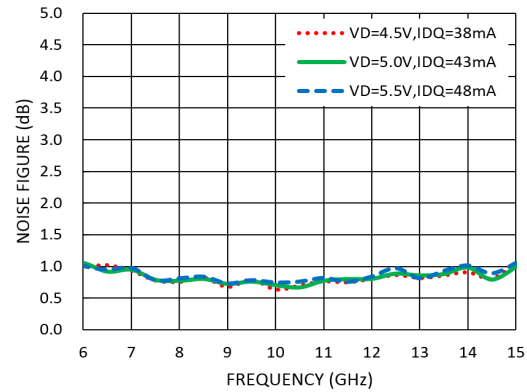


### Measurement Plots: P1dB



### Measurement Plots: OIP3



**Measurement Plots: PSAT**

**Measurement Plots: Noise Figure**

**Absolute Maximum Ratings**

Drain Bias Voltage (VD)	<b>+6V</b>
RF Input Power (RFIN)	<b>+18dBm</b>
Channel Temperature	<b>175°C</b>
Continuous P <sub>diss</sub> (T = 85 °C) (derate 3.5mW/°C above 85 °C)	<b>0.32W</b>
Thermal Resistance (channel to die bottom)	<b>50°C/W</b>
Operating Temperature	<b>-55°C to +85 °C</b>
Storage Temperature	<b>-65°C to +150 °C</b>

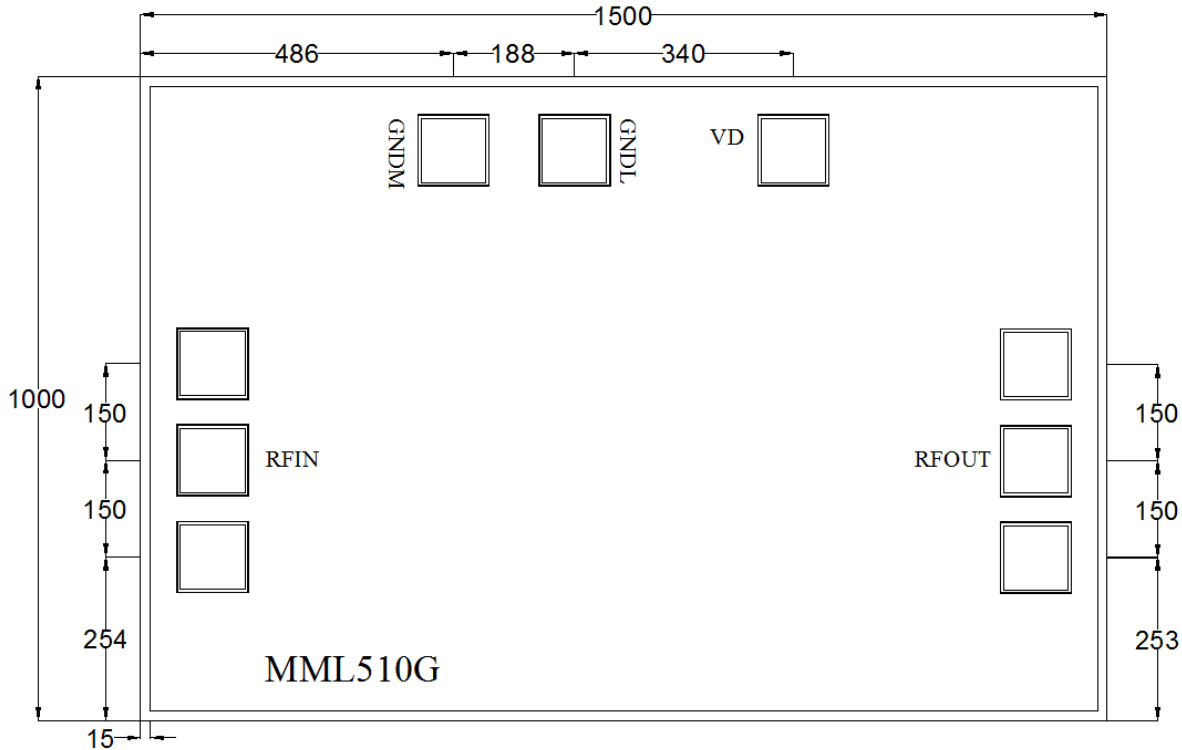
**Typical Supply Current vs. VD**

VD (V)	IDD (mA)
<b>+4.5</b>	<b>38</b>
<b>+5.0</b>	<b>43</b>
<b>+5.5</b>	<b>48</b>


**ELECTROSTATIC SENSITIVE DEVICE  
OBSERVE HANDLING PRECAUTIONS**



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

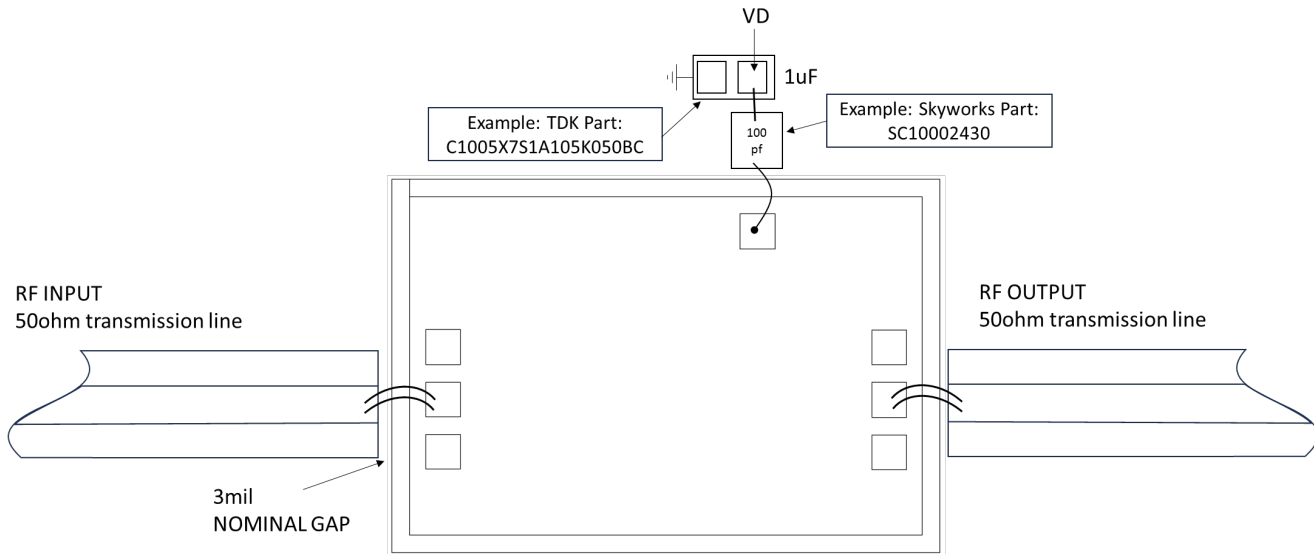


**Notes:**

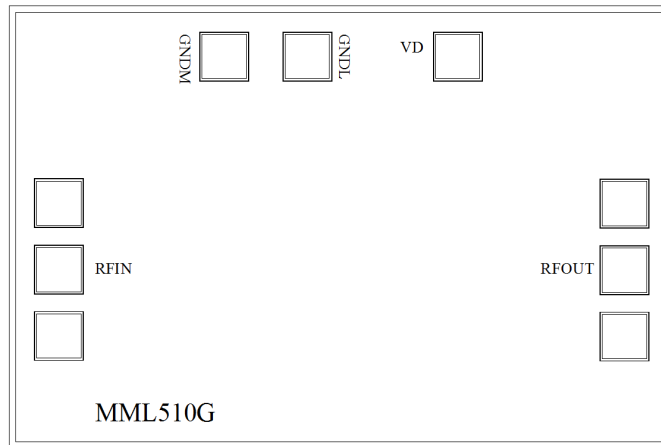
1. Die thickness: 100 $\mu\text{m}$
2. DC bond pad is 100\*100 $\mu\text{m}^2$
3. RF IN/OUT bond pad is 100\*100 $\mu\text{m}^2$
4. Bond pad metalization: Gold
5. Backside metalization: Gold



## Assembly Drawing



No	Function	Description
1	RF IN	RF Signal Input. This pad is ac-coupled and matched to 50 Ω.
2	RF OUT	RF Signal Output. This pad is ac-coupled and matched to 50 Ω.
3	VD	Connect to external 100pf and 1uf bypass capacitors.
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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