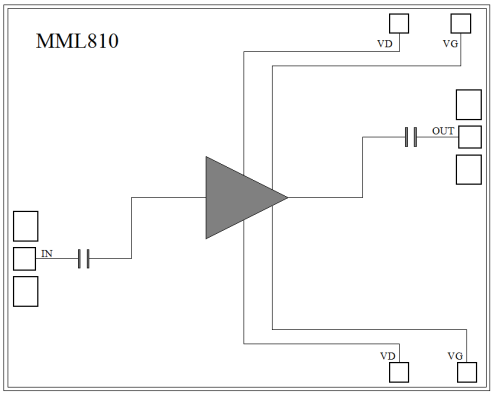
Features

- Frequency: 40-75GHz
- Small Signal Gain: 25dBTypical
- Gain Flatness: ±3.0dB Typical
- Noise Figure:4.0dB Typical
- P1dB: 22dBm Typical
- Power Supply:
  VD=+3.5V@309mA ,VG=-0.25V
- Input/Output: 50Ω
- Chip Size: 2.02 x 1.6 x 0.05mm

Functional Block Diagram



Typical Applications

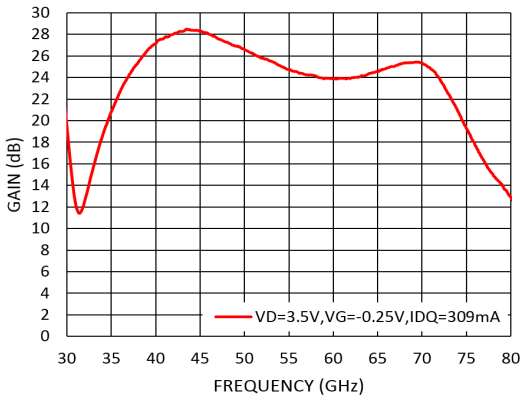
- Test Instrumentation
- Microwave Radio & VSAT
- Military & Space
- Telecom Infrastructure
- Fiber Optics

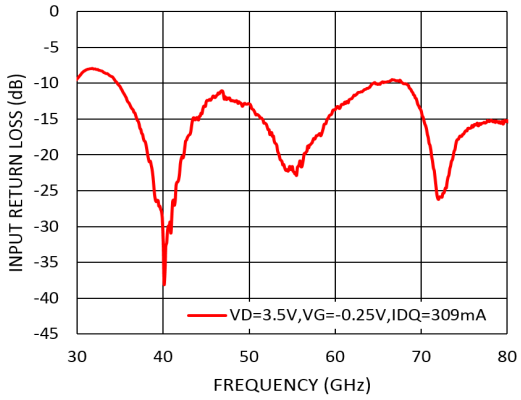
Electrical Specifications

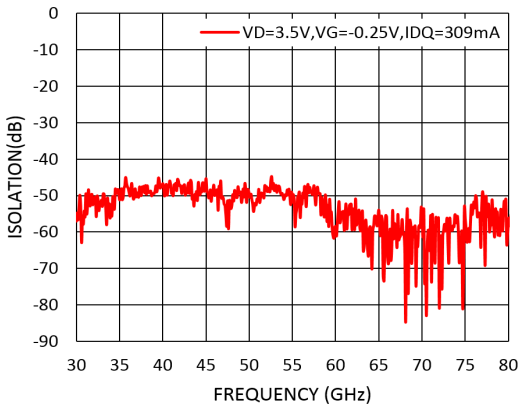
TA = +25°C, VD = +3.5V , VG=-0.25V , IDD = 309mA Typical

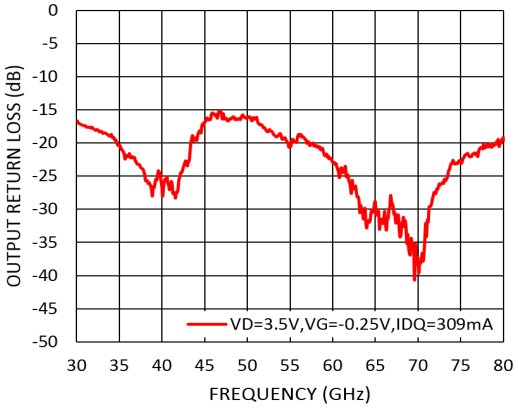
Parameters	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency	40 - 50			50 - 75			GHz
Small Signal Gain	25	27		18	22		dB
Gain Flatness		±1.0			±3.0		dB
Noise Figure		4.0			4.8		dB
P1dB - Output 1dB Compression		21			22		dBm
Psat - Saturated Output Power		23			24		dBm
OIP3 - Output Third Order Intercept		31			32		dBm
Input Return Loss		-12			-10		dB
Output Return Loss		-15			-20		dB

Measurement Plots: S-parameters

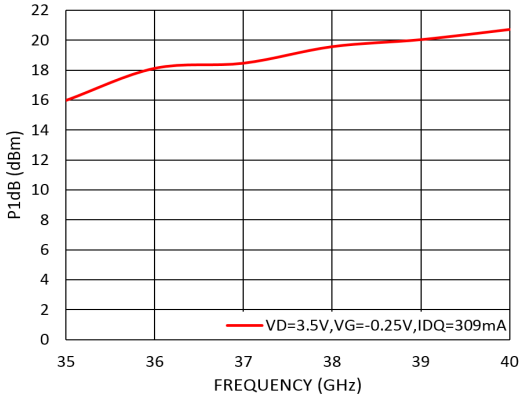




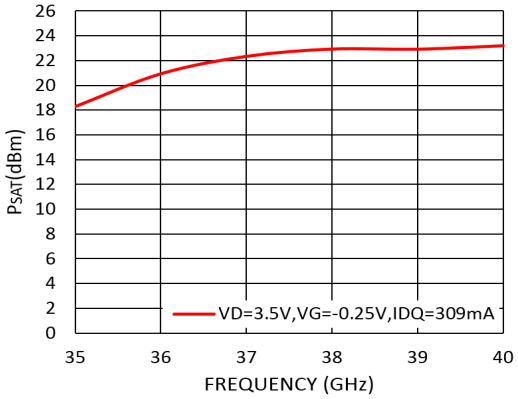




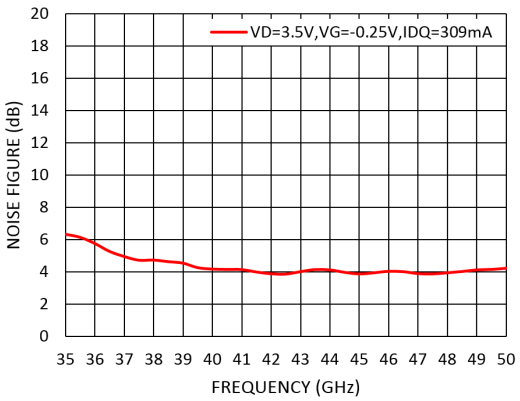
Measurement Plots: P1dB



Measurement Plots: PSAT



Measurement Plots: Noise Figure



Absolute Maximum Ratings

Drain Bias Voltage (VD)	+4.5V
Gate Bias Voltage (VG)	-2V to 0V
RF Input Power (RFIN)@(+3.5V)	+15dBm
Channel Temperature	175°C
Continuous Pdiss (T = 85 °C) (derate 17.8mW/°C above 85 °C)	1.6W
Thermal Resistance (channel to die bottom)	20°C/W
Operating Temperature	-55°C to +85 °C
Storage Temperature	-65°C to +150 °C

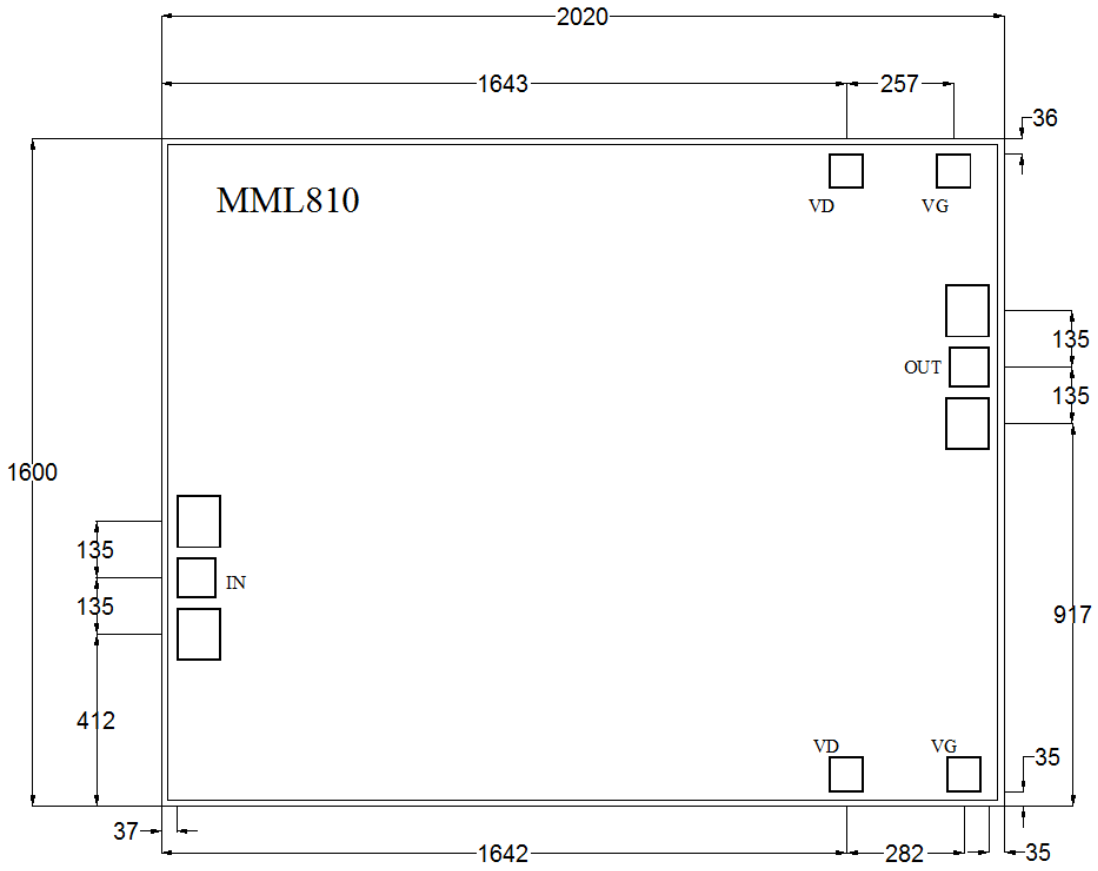
Typical Supply Current vs. VD,VG

VD (V)	VG (V)	IDD (mA)
+3.5	-0.25	309

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Outline Drawing:

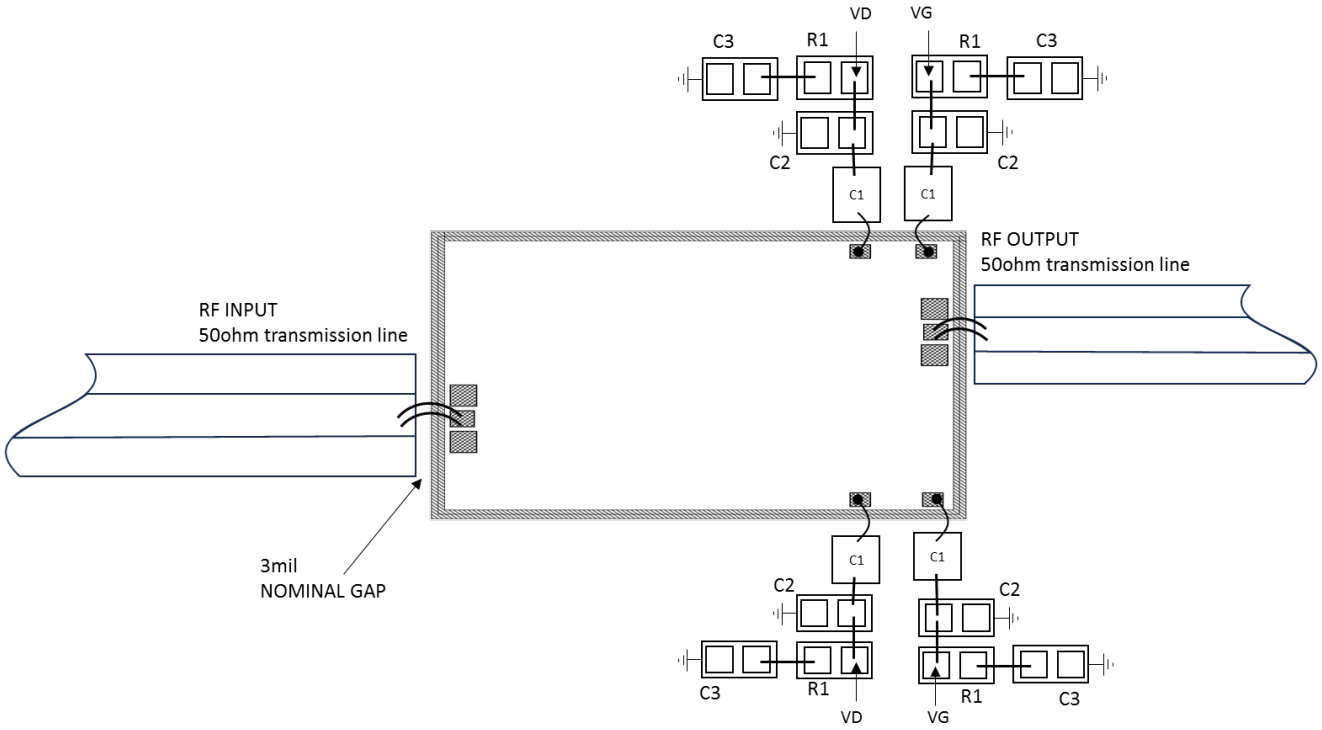
All Dimensions in µm



Notes:

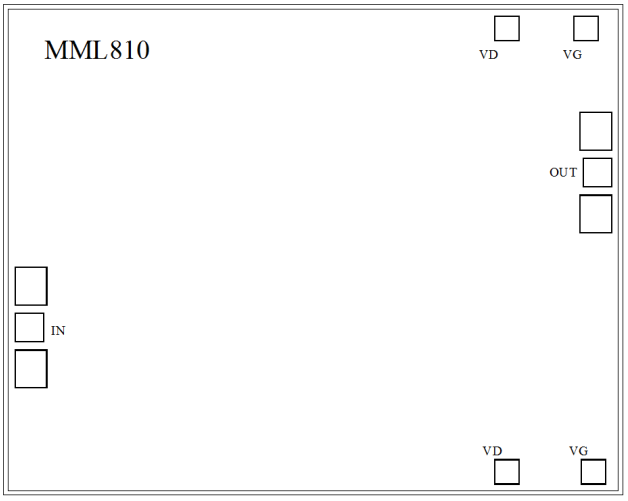
1. **Die thickness: 50µm**
2. **VD bond pad is 77*77µm^2**
3. **VG bond pad is 77*77µm^2**
4. **RF IN/OUT bond pad is 90*90µm^2**
5. **Bond pad metalization: Gold**
6. **Backside metalization: Gold**

Assembly Drawing



Item	Description
C1	100pF Example: Presidio Part: MVB3030X103M2H5C1
C2	0.01µF Example: TDK Part:C1005X7R1H103K050BB (0402)
C3	0.1µF Example: Murata Electronics Part:GRM033Z71C104KE14D (0201)
R1	10Ω Example: Yageo Part:RC0201FR-0710RP

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.
4	VG	Gate Biases for the Amplifier.
5	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. Set the gate bias voltages,VG to −2V.
3. Set the drain bias voltages VD to +3.5V .
4. Increase the gate bias voltages to achieve a quiescent supply current of 309 mA.
5. Apply RF signal.

Turn OFF procedure:

1. Turn off the RF signal.
2. Decrease the gate bias voltages, VG to −2V to achieve a I_{DQ} = 0 mA (approximately).
3. Decrease the drain bias voltages to 0 V.
4. Increase the all gate bias voltages to 0 V.