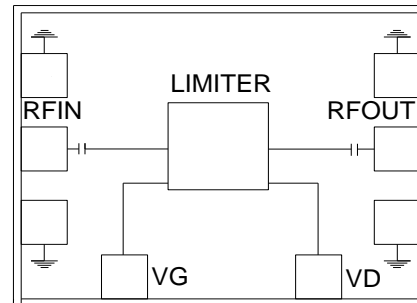


2-20 GHz Power Limiter

Features

- ◆ Frequency Range : 2-20 GHz
- ◆ 0 dB insertion loss
- ◆ 3 dBm power limiting
- ◆ 5-15 dBm limiting range
- ◆ Input Return Loss > 10 dB
- ◆ Output Return Loss > 10 dB
- ◆ DC decoupled input and output
- ◆ 0.15 μm InGaAs pHEMT Technology
- ◆ Chip dimension: 1.6 x 1.6 x 0.1 mm

Functional Diagram



Typical Applications

- ◆ Protective circuitry
- ◆ Hard limiting

Description

The AMT1762011 is an amplifier limiter MMIC designed to work from 2 to 20 GHz. The limiter has a limiting range of 5-15 dBm. The insertion gain is a nominal 3 dB and varies within ± 1.5 dB over the frequency range. The input /output return losses are better than 10 dB over the entire frequency band. The die is fabricated using a reliable 0.15 μm InGaAs pHEMT technology and has small footprint.

Absolute Maximum Ratings ⁽¹⁾

Parameter	Absolute Maximum	Units
RF Input Power	20	dBm
Drain Voltage (V_D)	5.5	V
Gate Voltage (V_G)	0 to -1	V
Operating Temperature	-55 to +85	$^{\circ}\text{C}$
Storage Temperature	-65 to +120	$^{\circ}\text{C}$

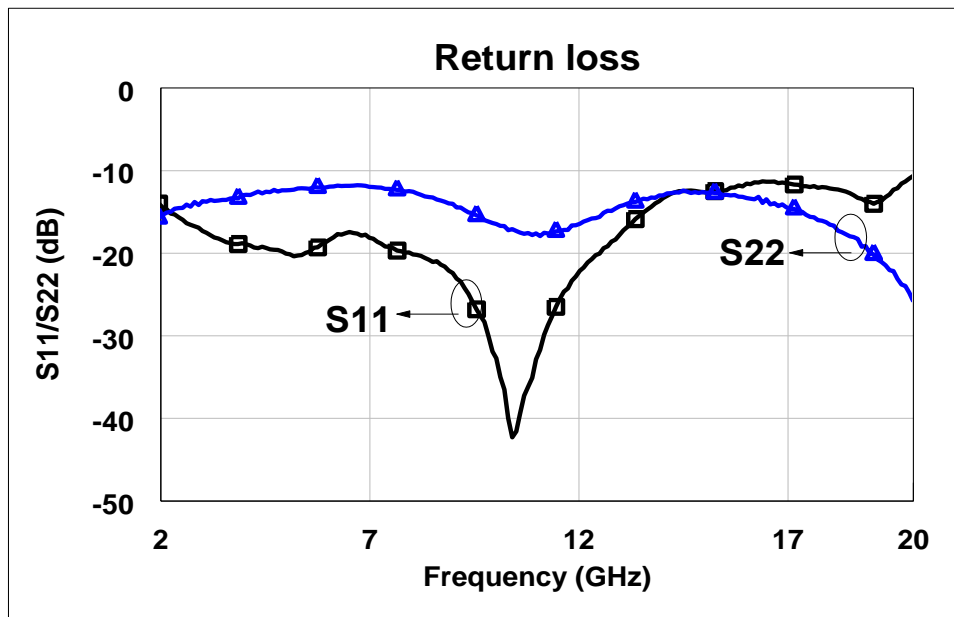
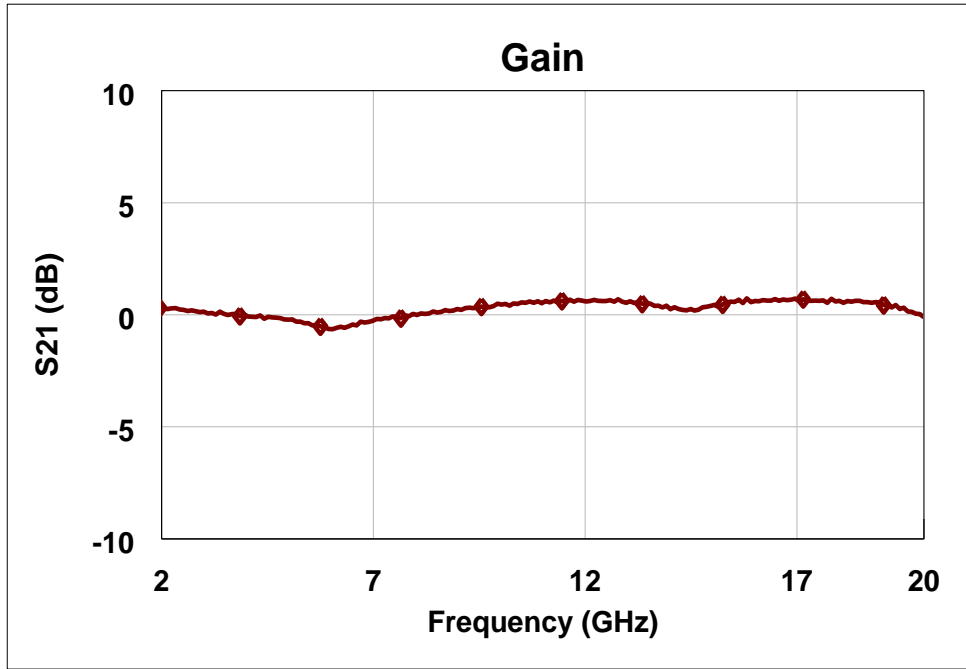
1. Operation beyond these limits may cause permanent damage to the component

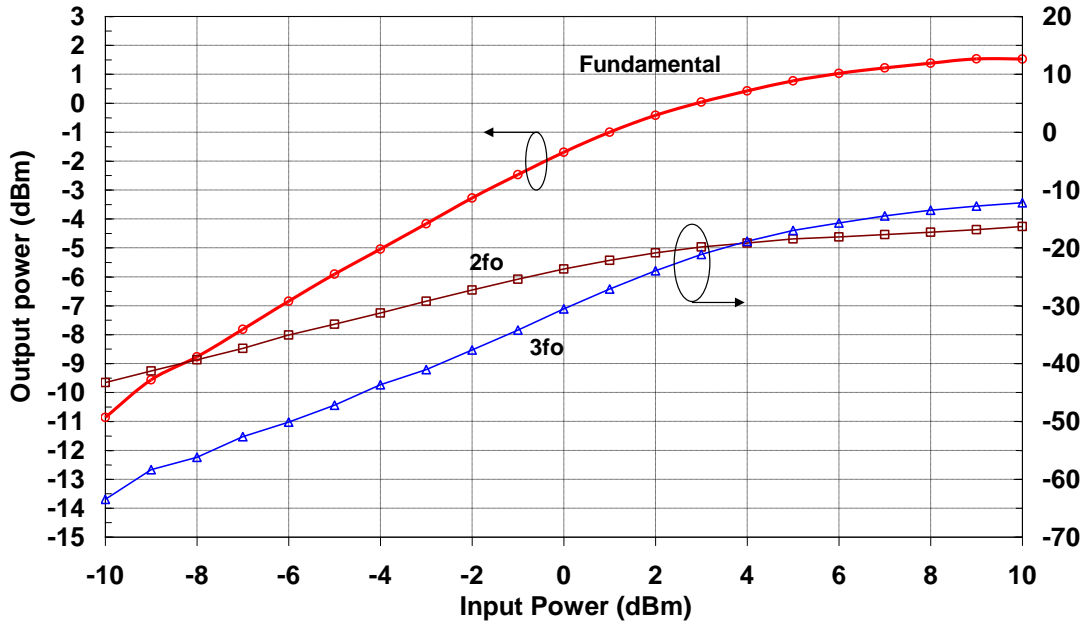
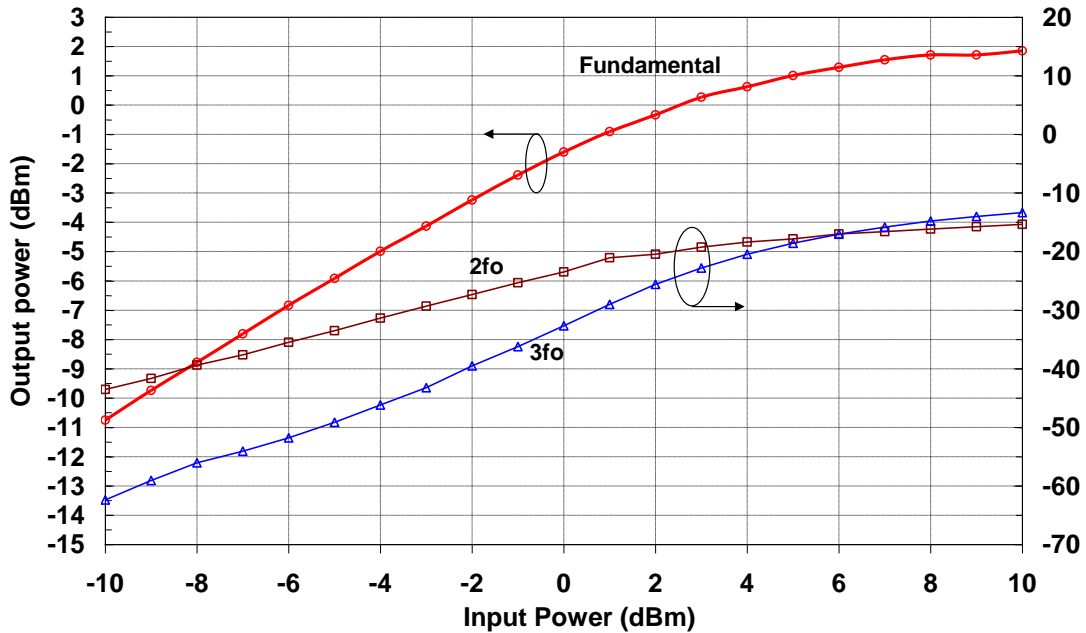
Electrical Specifications ⁽¹⁾ @ T_A = 25 °C, V_D=+1V, V_G=-0.3V, Z_o =50 Ω

Parameter	Value	Units
Bandwidth	2 - 20	GHz
Limiting range	5 – 15	dBm
Insertion Gain (typ.)	0.2±0.5	dB
Output power	3	dBm
Input Return loss (max.)	-10	dB
Output Return Loss(max.)	-10	dB
Voltage	V _d =+1, V _g =-0.3	V
Current	I _d =8	mA

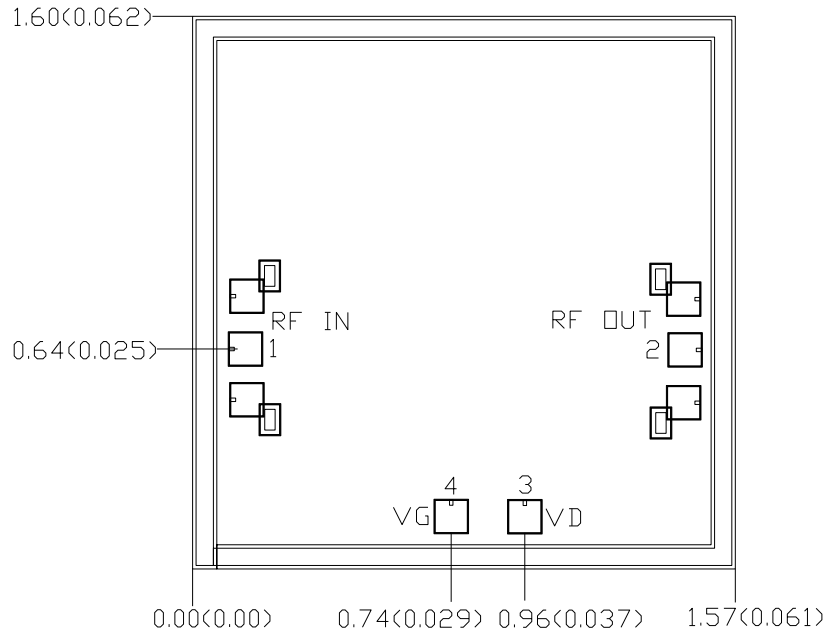
Note:

1. Electrical specifications as measured in test fixture.

Test fixture data
 $V_D=1V, V_G=-0.3V, T_A=25^\circ C$


Test fixture data
 $V_D=1V, V_G=-0.3V, T_A=25^\circ C$
Power characteristics @ 2 GHz

Power characteristics @ 6 GHz


Mechanical Characteristics



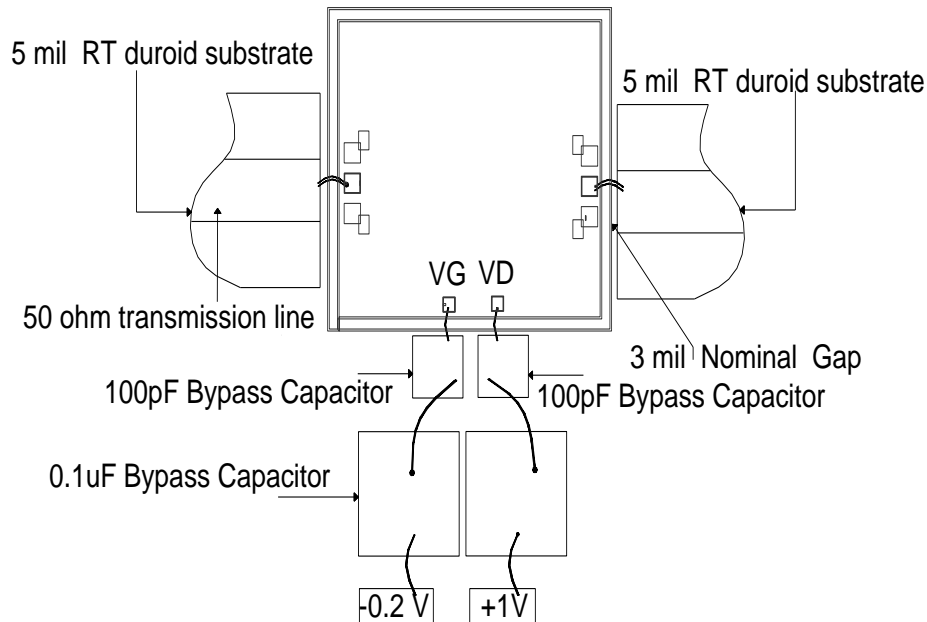
Units: Millimeters [Inches]

All RF and DC bond pads are 100µm x 100µm

Note:

1. Pad no. 4: VG
2. Pad no. 3: VD
3. Pad no. 1 : RF Input
4. Pad no. 2 : RF Output

Recommended Assembly Diagram



Note:

1. Two 1 mil (0.0254mm) bond wires of minimum length should be used for RF input and output.
2. Two 1 mil (0.0254mm) bond wires of minimum length should be used from chip bond pad to 100pF capacitor.
3. Input and output 50 ohm lines are on 5 mil substrate.
4. 0.1 μ F capacitors may be additionally used as a second level of bypass for reliable operation.

Die attach: For Epoxy attachment, use of a two-component conductive epoxy is recommended. An epoxy fillet should be visible around the total die periphery. If Eutectic attachment is preferred, use of fluxless AuSn (80/20) 1-2 mil thick preform solder is recommended. Use of AuGe preform should be strictly avoided.

Wire bonding: For DC pad connections use either ball or wedge bonds. For best RF performance, use of 150 - 200 μ m length of wedge bonds is advised. Single Ball bonds of 250-300 μ m though acceptable, may cause a deviation in RF performance.



GaAs MMIC devices are susceptible to Electrostatic discharge. Proper precautions should be observed during handling, assembly & testing

All information and Specifications are subject to change without prior notice