

DC-20 GHz GaAs MMIC Amplifier

Preliminary

Rev. 2.0

Features

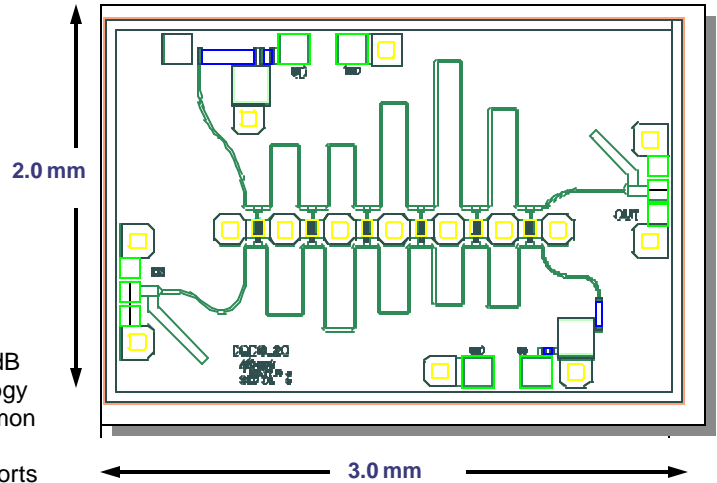
- Wide Frequency Range: DC-20 GHz
- On Chip Bias Network
- High Gain : 11 dB
- Gain Flatness: ± 0.75 dB
- Typical Psat: 21 dBm
- Return Loss: 12 dB
- Low Bias Current : 100mA

Description

The M/A-COM MAAPSM0015 is a medium power wideband AGC amplifier that typically provides 11 dB of gain with 25 dB of AGC range. The circuit topology is a six-section traveling wave amplifier using common source FETs which provide very wide bandwidth. Typical input and output return loss is 12 dB. RF ports are DC coupled, enabling the user to customize system corner frequencies. DC bias can be provided through the drain termination resistor without the need for an external bias inductor. For higher power applications, an external inductor can be used to bias the amplifier through the RFout or Vd_aux pads. Applications include OC-192 12.5 GBit/s receive AGC amplifier and lithium niobate Mach-Zehnder modulator driver amplifier.

The MAAPSM0015 requires off-chip decoupling and blocking components. Each device is 100% DC and RF tested on wafer to ensure performance compliance. The device is provided in chip form. M/A-Com fabricates the MAAPSM0015 using a 0.5 μ m gate length low noise multi-function self aligned gate (MSAG) MESFET process. This process features silicon nitride passivation and polyimide scratch protection. The die thickness is 0.003".

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Primary Applications

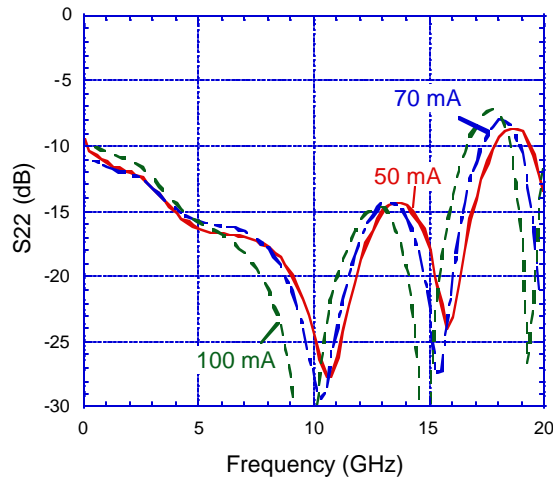
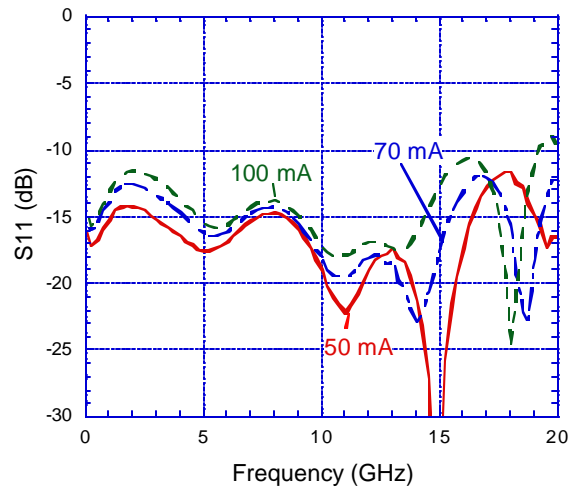
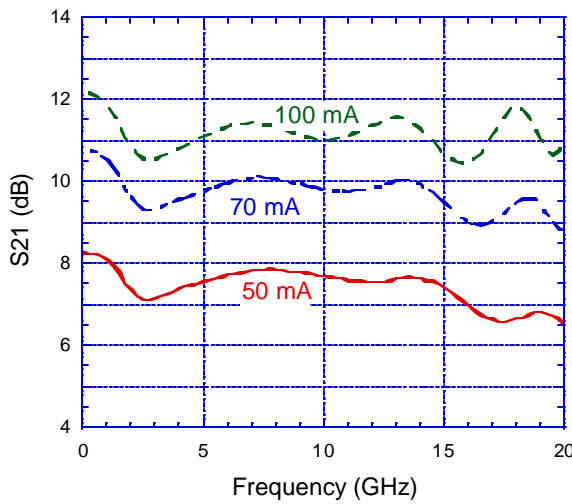
- 12.5Gbit OC-192 LN/MZ Driver
- 12.4Gbit OC-192 AGC Receiver
- SONET/SDH

Electrical Characteristics

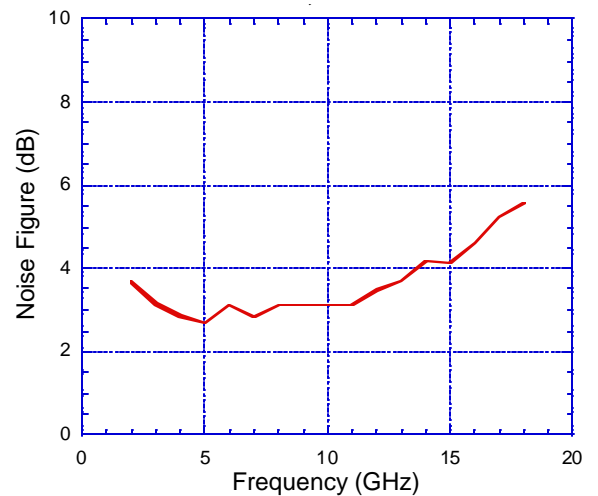
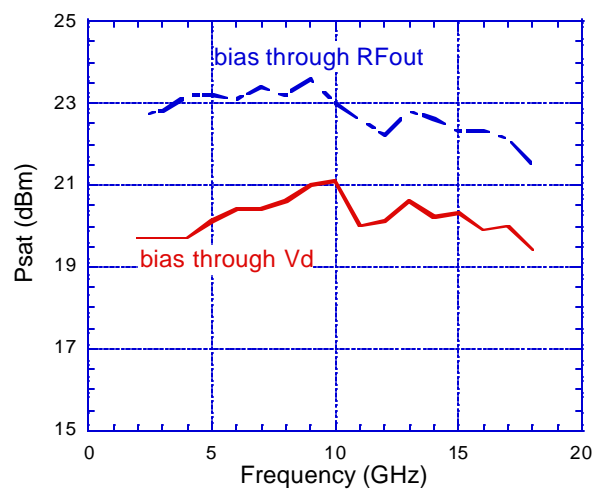
8V, 100 mA

Parameter	Typ	Units
Bandwidth	DC-20	GHz
Gain	11	dB
Gain Flatness	± 0.75	dB
Input Return Loss	-12	dB
Output Return Loss	-12	dB
Reverse Isolation	>-13	dB
P_{sat} (+8V, 100 mA)	21	dBm
Noise Figure	7	dB

DC-20GHz Carrier-Mounted Performance $V_{ds} = 8.0V, I_{ds} = 50, 70, 100mA$



DC-20GHz Wafer Probe Data $V_{ds} = 8.0V, I_{ds} = 100mA$



Specifications subject to change without notice.

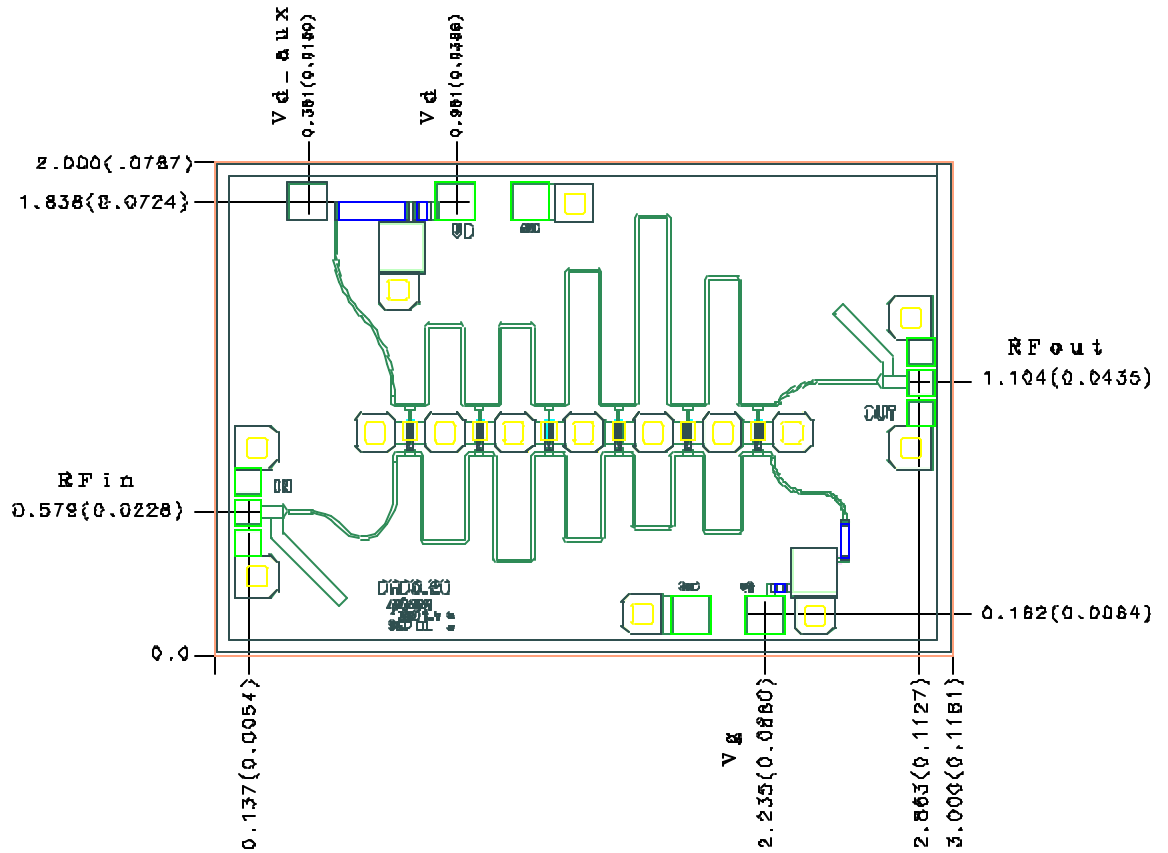
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MAAPSM0015 Bond Pad Location
All Dimensions are in mm (inches)



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