

TM5014

DC - 20 GHz Low Noise Amplifier



Product Features

Low Noise Figure: 2.5 dB
DC Supply: +8 V @ 60 mA
P1dB: 16 dBm
Gain: 14 dB
50 Ohm Matched Input/Output
Die size: 3.0 x 1.56 x 0.1 mm

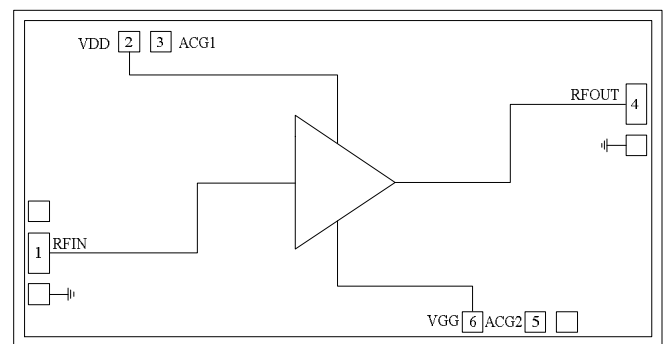
General Description

The TM5014 is a GaAs MMIC low noise amplifier which operates from DC to 20 GHz. The amplifier can be biased with a ultra-low DC current of 60 mA. The noise figure is 2.5 dB. The TM5014 is a 50 ohm matched design which eliminates the need for RF port matching. The die is 4 mil thick and the backside is plated for simultaneous RF and DC ground.

Applications

- Test Instrumentation
- Microwave Radio
- Driver Amplifier
- Fiber Optics
- Compatible with Both Epoxy and Eutectic Die Attachment

Functional Diagram



Electrical Specifications, VDD = 8.0 V, T_A = 25 °C

Parameter	Min	Typ	Max	Min	Typ	Max	Units
Frequency Range		DC - 10			10 - 20		GHz
Gain		14			13.5		dB
Input Return Loss		-25			-15		dB
Output Return Loss		-15			-25		dB
Output P1dB		17			16		dBm
Saturated Output Power		19			17.5		dBm
Output Third Order Intercept (OIP 3)		29			28		dBm
Noise Figure (NF)		2.5			2.5		dB
Supply Current		60			60		mA

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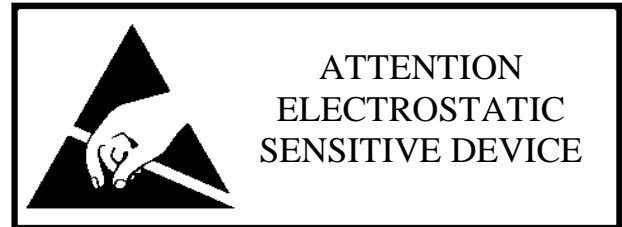


Absolute Maximum Ratings

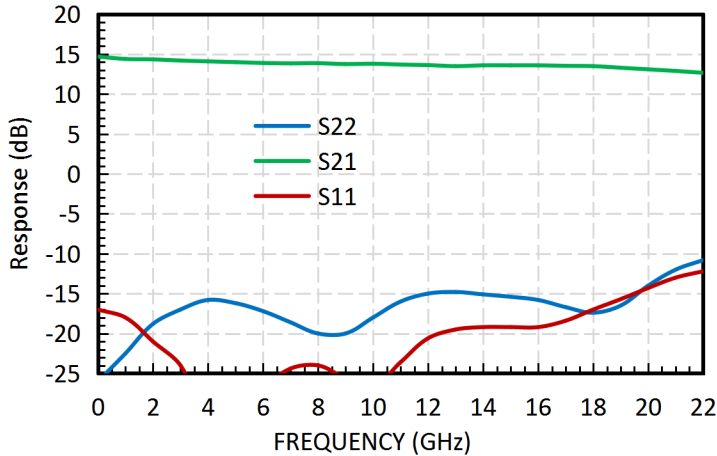
Parameter	Rating
Storage Temperature	-65 to 150 °C
Operating Temperature	-55 to 85 °C
Drain Voltage	+9 V
Gate Voltage	-2 to 0 V
Channel Temperature	175 °C
Thermal Resistance (Channel to die bottom)	40 °C/W

Recommended Operating Conditions

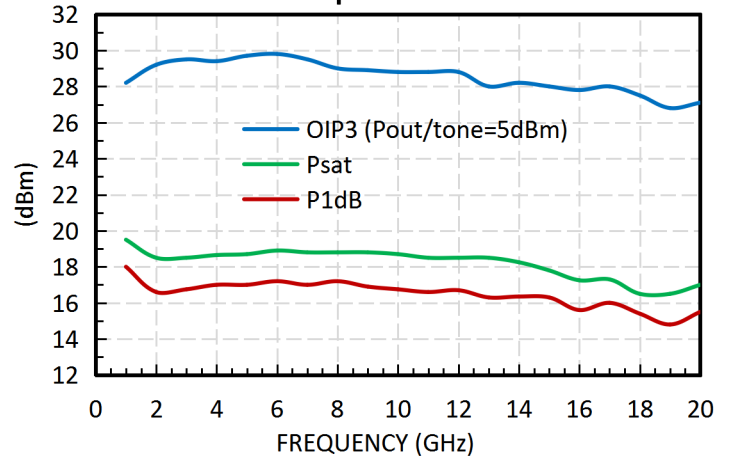
Parameter	Min	Typ	Max	Units
VDD		8		V
IDD		60		mA



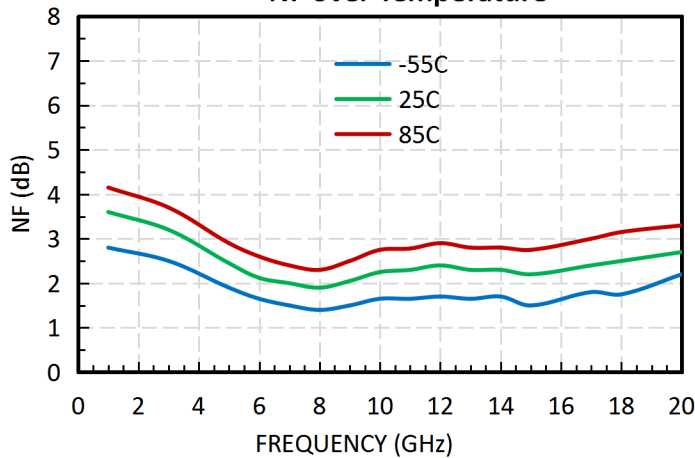
Gain & Return Loss



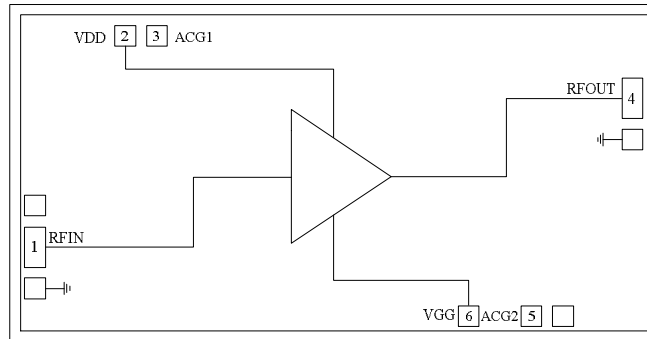
Output Power



NF over Temperature



Pin Description



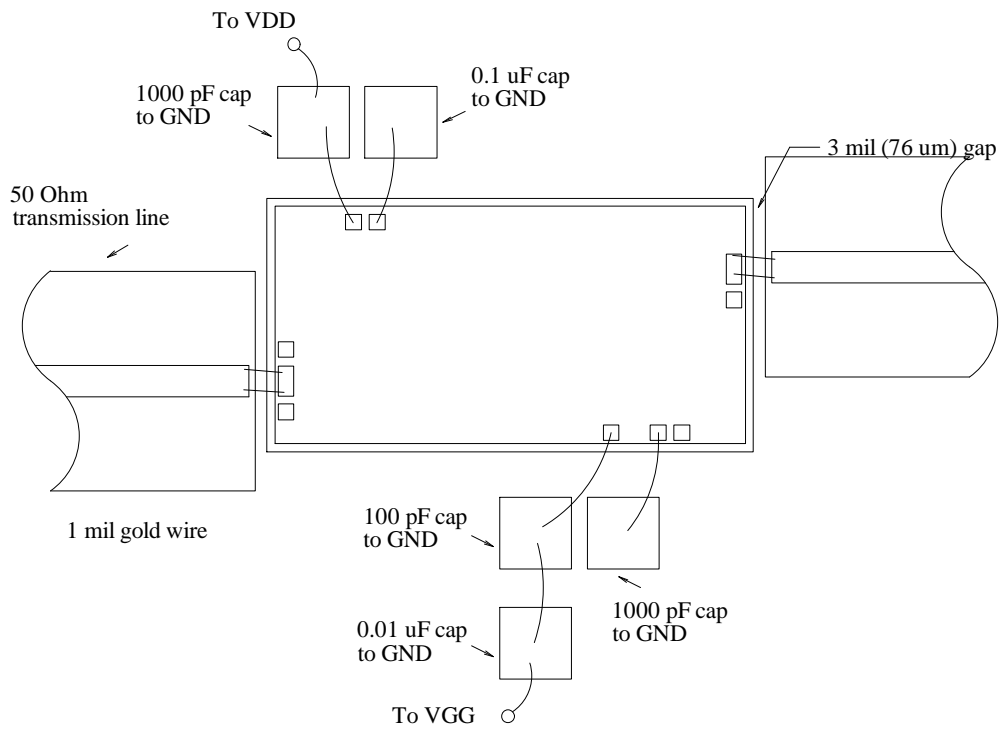
Pad	Function	Description	Interface Schematic
1	RFIN	50 Ohm matched and DC coupled input	
2	VDD	Power supply voltage. External bypass capacitor per application circuit	
3	ACG1	Low frequency AC ground termination. Attach bypass capacitor per application circuit.	
4	RFOUT	50 Ohm matched and DC coupled output.	
5	ACG2	Low frequency AC ground termination. Attach bypass capacitor per application circuit.	
6	VGG	Gate control for amplifier. Adjust this voltage for the desired IDD.	

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Assembly Diagram



Application Circuit

