

# TM5051

## DC - 52 GHz Medium Power Amplifier



### Product Features

Ultra Wide Bandwidth: DC - 52 GHz  
Low DC Supply: +8 V @ 105 mA  
Input/Output pads aligned for a straight signal flow  
Gain: 12 dB  
P1dB: 21 dBm  
50 Ohm Matched Input/Output  
Die size: 2.94 x 1.6 x 0.1 mm

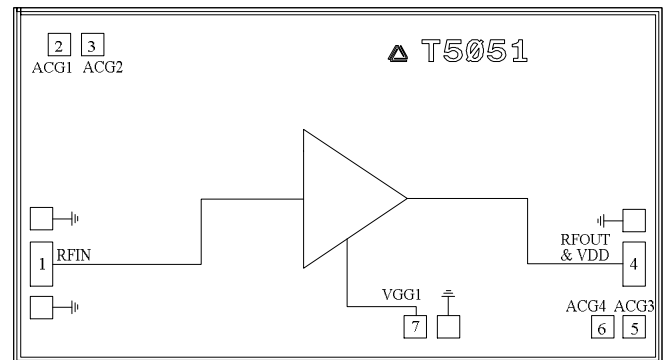
### Applications

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

### General Description

The TM5051 is a GaAs MMIC distributed amplifier which operates from DC to 52 GHz. It 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.

### Functional Diagram



### Electrical Specifications, VDD = 8.0 V, IDD = 105 mA, TA = 25 °C

Parameter	Min	Typ	Max	Min	Typ	Max	Units
Frequency Range		DC - 36			36 - 52		GHz
Gain		11			12		dB
Input Return Loss		-15			-15		dB
Output Return Loss		-15			-15		dB
Output P1dB		22			18		dBm
Noise Figure (NF)		3			7		dB
Supply Current		105			105		mA

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### Absolute Maximum Ratings

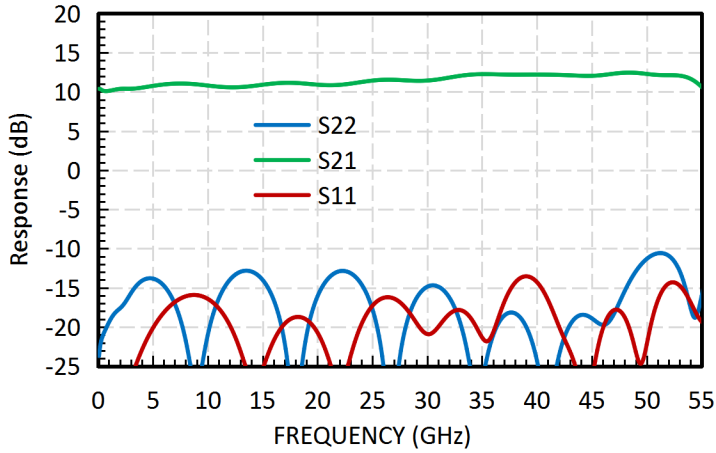
Parameter	Rating
Storage Temperature	-65 to 150 °C
Operating Temperature	-55 to 85 °C
Drain Voltage	+12 V
Gate Voltage VGG1	-2 to 0 V
Channel Temperature	175 °C
Thermal Resistance (Channel to die bottom)	40 °C/W

### Recommended Operating Conditions

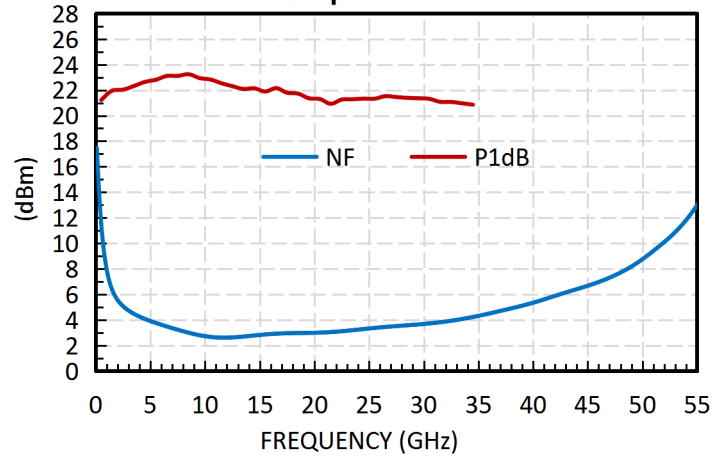
Parameter	Min	Typ	Max	Units
VDD		8		V
IDD		105		mA



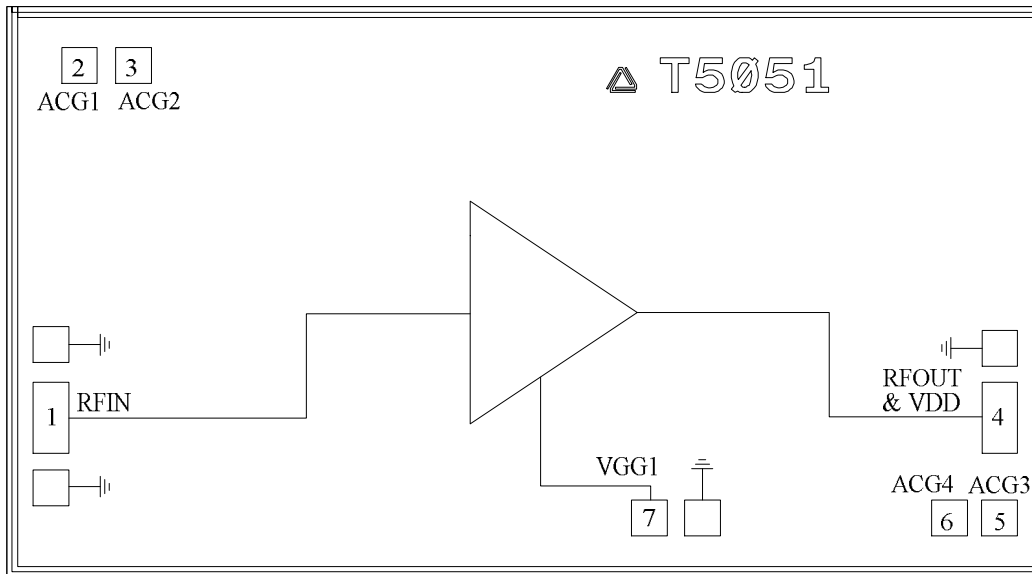
Gain & Return Loss

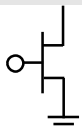
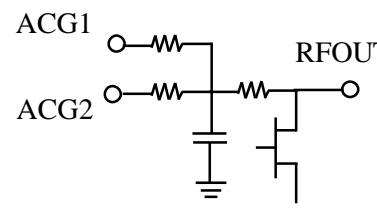
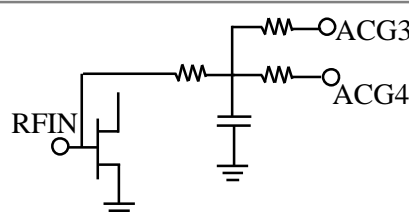
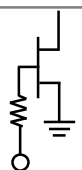


Output Power and NF

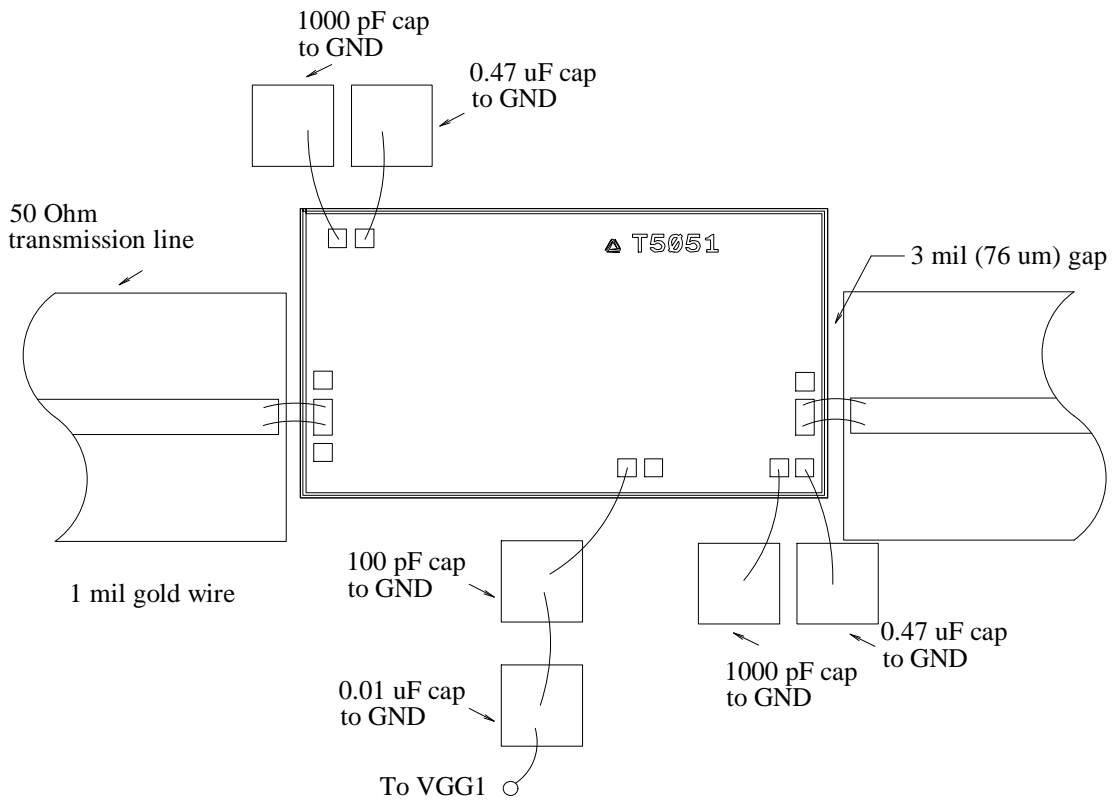


### Pin Description



Pad	Function	Description	Interface Schematic
1	RFIN	50 Ohm matched and DC coupled input	
2, 3	ACG1, ACG2	Low frequency AC ground termination. Attach bypass capacitor per application circuit.	
4	RFOUT & VDD	50 Ohm matched output and supply voltage. External bias-T required per application circuit.	
5, 6	ACG3, ACG4	Low frequency AC ground termination. Attach bypass capacitor per application circuit.	
7	VGG1	Gate control 1 for amplifier. Adjust this voltage for the desired IDD.	

## Assembly Diagram



## Application Circuit

