

TM5057

DC - 22 GHz 1 Watt Power Amplifier



Product Features

High P1dB Output Power: +28 dBm
High Psat Output Power: +31 dBm
High Gain: 14 dB
DC Supply: +10 V @ 400 mA
50 Ohm Matched Input/Output
Die size: 2.94 x 1.6 x 0.1 mm

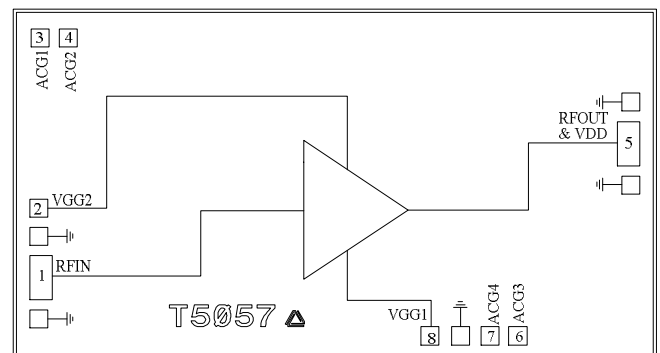
General Description

The TM5057 is a wideband distributed power amplifier die which operates from DC to 22 GHz. The amplifier delivers 14 dB of gain with a corresponding output 1dB compression point of +28 dBm. The TM5057 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
- Telecommunication Infrastructure
- Fiber Optics
- Compatible with Both Epoxy and Eutectic Die Attachment

Functional Diagram



Electrical Specifications, VDD = 10 V, VGG2 = 3.5 V, IDD = 400 mA, TA = 25 °C

Parameter	Min	Typ	Max	Min	Typ	Max	Units
Frequency Range		DC - 10			10 - 22		GHz
Gain		13.5			14.5		dB
Input Return Loss		-15			-15		dB
Output Return Loss		-15			-15		dB
Output P1dB		28			28		dBm
Saturated Output Power		30.5			31		dBm
Output Third Order Intercept (OIP 3)		40			38		dBm
Noise Figure (NF)		4.5			4.5		dB
Supply Current		400			400		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	-3 to 0 V
Gate Voltage VGG2	VDD-8 to VDD-4
Channel Temperature	175 °C
Thermal Resistance (Channel to die bottom)	15 °C/W

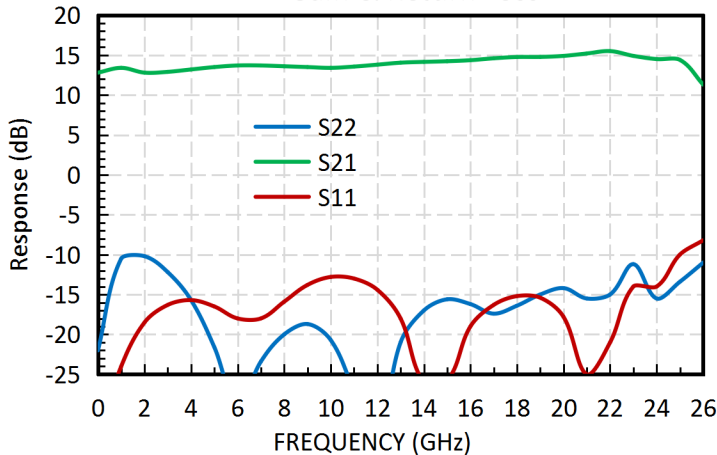
Recommended Operating Conditions

Parameter	Min	Typ	Max	Units
VDD		10		V
IDD		400		mA
VGG2		3.5		V

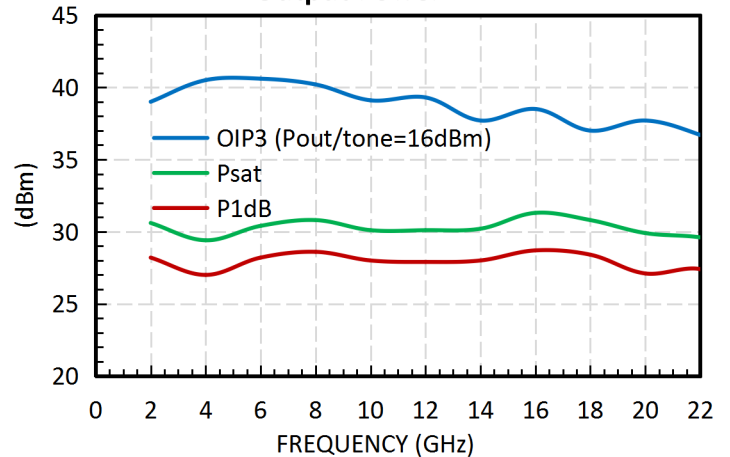


ATTENTION
ELECTROSTATIC
SENSITIVE DEVICE

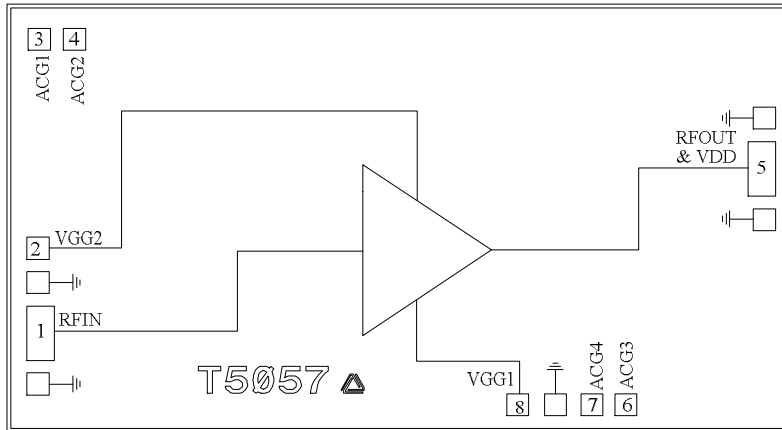
Gain & Return Loss

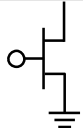
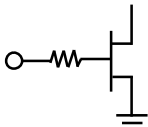
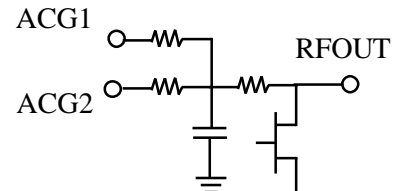
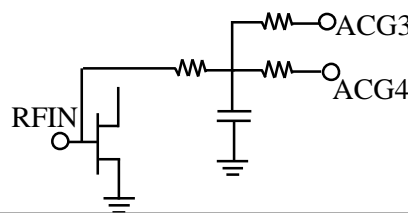
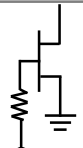


Output Power

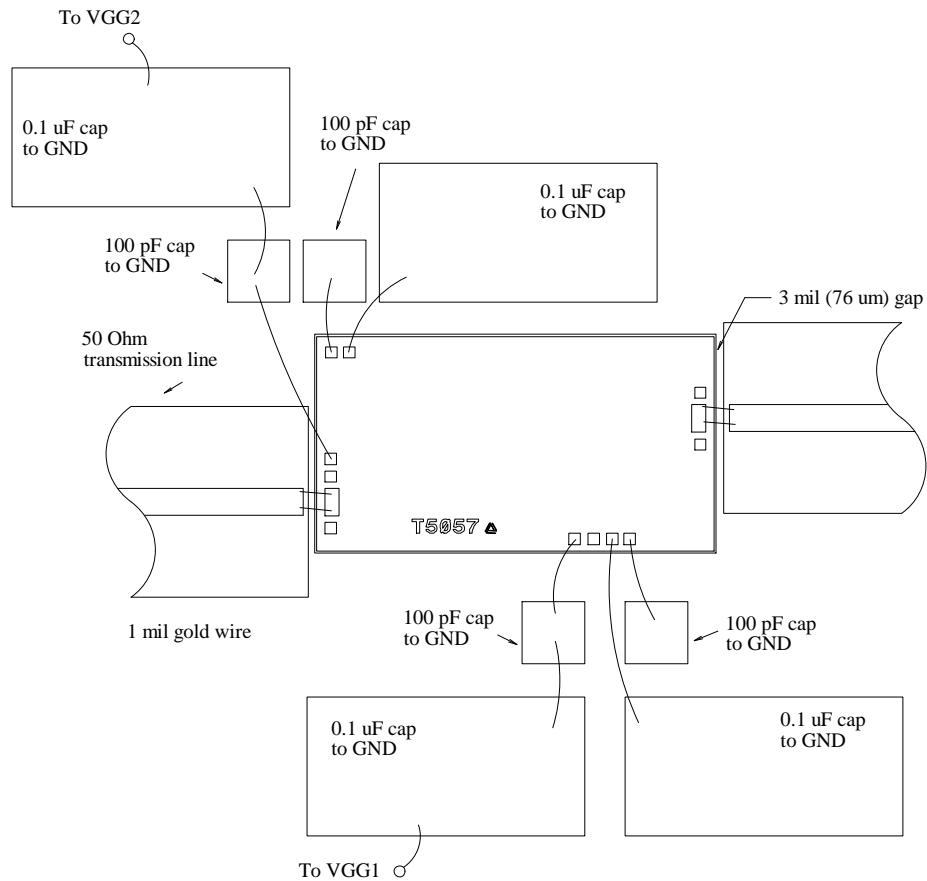


Pin Description



Pad	Function	Description	Interface Schematic
1	RFIN	50 Ohm matched and DC coupled input	
2	VGG2	Gate control 2 for amplifier. Recommended voltage is 3.5V	
3, 4	ACG1, ACG2	Low frequency AC ground termination. Attach bypass capacitor per application circuit.	
5	RFOUT & VDD	50 Ohm matched output and supply voltage. External bias-T required per application circuit.	
6, 7	ACG3, ACG4	Low frequency AC ground termination. Attach bypass capacitor per application circuit.	
8	VGG1	Gate control 1 for amplifier. Adjust this voltage for the desired IDD.	

Assembly Diagram



Application Circuit

