tyco Electronics

M/A-COM

GaAs MMIC Power Amplifier, 2 W, 14.0 - 14.5 GHz

AM42-0007-DIE
V4

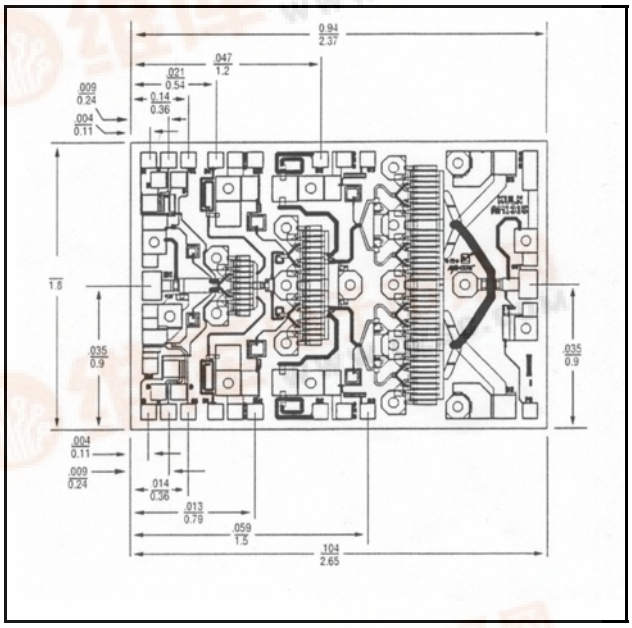
Features

- High Linear Gain: 22 dB Typical.
- High Saturated Output Power: +33 dBm Typical
- High Power Added Efficiency: 22% Typical
- High P1dB: +32 dBm Typical
- 50 Ω Input / Output Broadband Matched
- Integrated Output Power Detector
- High Performance Ceramic Bolt Down Package

Description

M/A-COM's AM42-0007-DIE is a three stage MMIC linear power amplifier fabricated on a mature 0.5 micron MBE based GaAs process. The AM42-0007-DIE employs a fully matched chip with integral bias networks and output power detector. This GaAs MMIC power amplifier is ideally suited for used as an output stage or driver in applications for VSAT applications.

Functional Schematic



Ordering Information

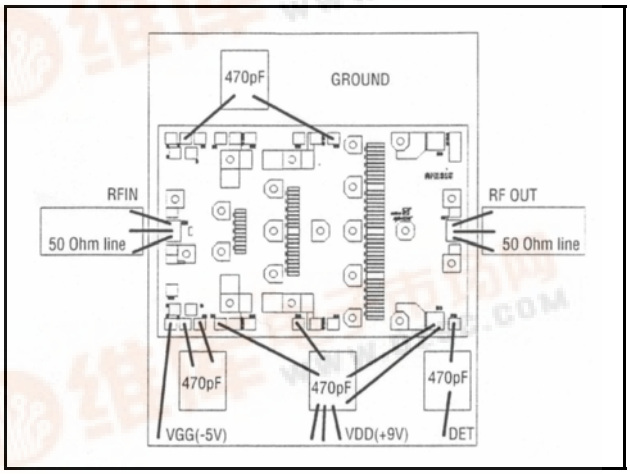
Part Number	Package
AM42-0007-DIE	DIE

Absolute Maximum Ratings [1,2]

Parameter	Absolute Maximum
V_{DD}	+12 Volts
V_{GG}	-10 Volts
Power Dissipation	17.9 W
RF Input Power	+23 dBm
ChannelTemperature	+150 °C
Storage Temperature	-65 °C to +150 °C

1. Exceeding any one or combination of these limits may cause permanent damage to this device.
2. Back of die temperature (T_B) = +25°C.

Typical Bias Configuration [3,4]



3. Nominal bias is obtained by first connecting –5 volts to pin V_{GG} (resistor network used) followed by connecting +9 volts to pin V_{DD}. Note sequence.
4. It is recommended that the die be mounted with Au/Sn eutectic performs for good RF ground and thermal interface.

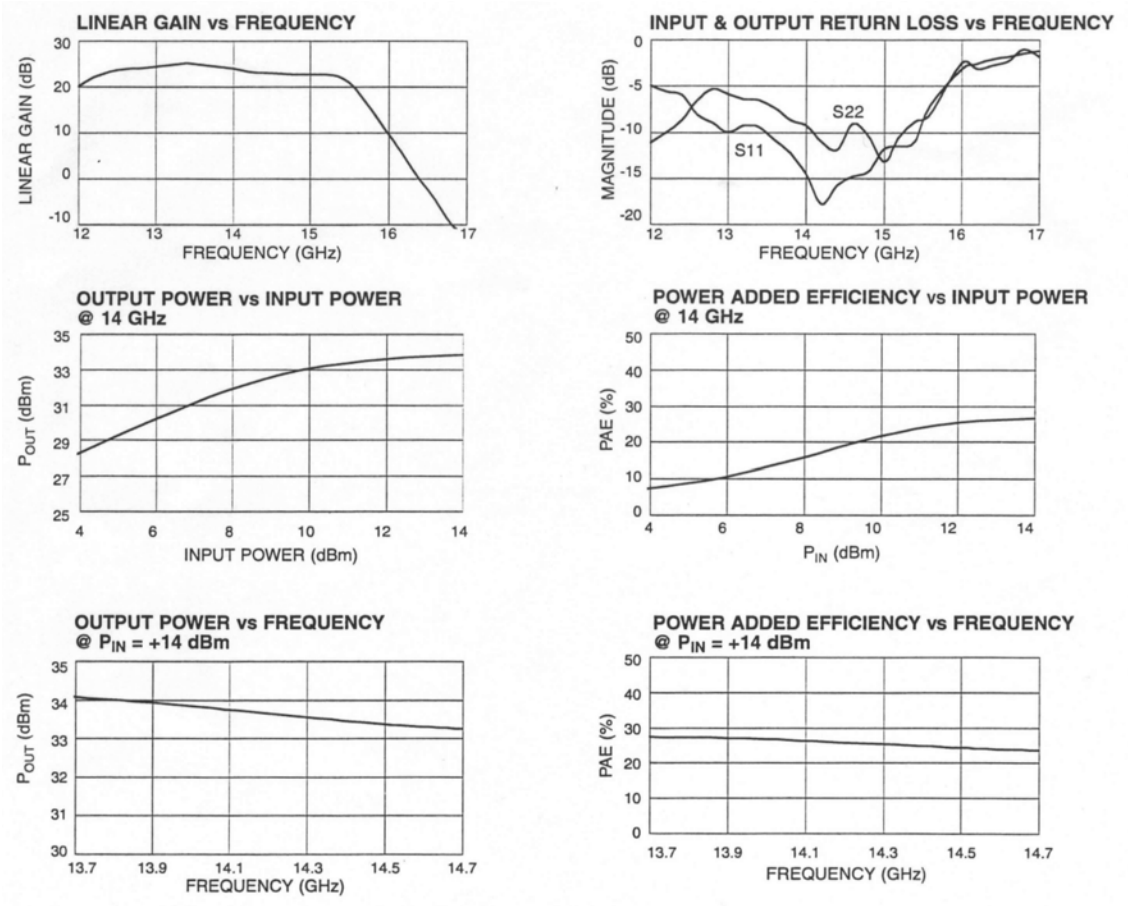
- **North America** Tel: 800.366.2266 / Fax: 978.366.2266
- **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300
- **Asia/Pacific** Tel: 81.44.844.8296 / Fax: 81.44.844.8298

Electrical Specifications [5]: T_B = +25°C , V_{DD} = +9 V, V_{GG} = -1.2V, Z_0 = 50Ω

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Linear Gain	$P_{IN} \leq$ 0 dBm	dB	—	22	—
Input VSWR	—	Ratio	—	2.5:1	—
Output VSWR	—	Ratio	—	2.7:1	—
Saturated Output Power	$P_{IN} \leq$ +14 dBm	dBm	—	+33	—
Output Power @ 1dB Compression		dBm	31	+32	—
Output IP_3		dBm	—	41	—
Power Added Efficiency (PAE)	$P_{IN} \leq$ +14 dBm	%	—	22	—
Bias Current	I_{DSQ} (No RF)	mA	—	850	—
	I_{GG} (No RF)	mA	—	0.1	—
Thermal Resistance	θ CB2[6]	°C/W	—	7	—
Detector Output Voltage (V_{DET})	Pin = +3 dBm, Ids = 750 mA Typ.	V	—	+3.5	—

5. 100% on wafer tested (50 µs pulse width, 20% duty factor) without resistor network on gates.
6. Channel to die backside.

Typical Performance @ 25°C



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