



2.0 to 24.0 GHz GaAs MMIC Power Amplifier

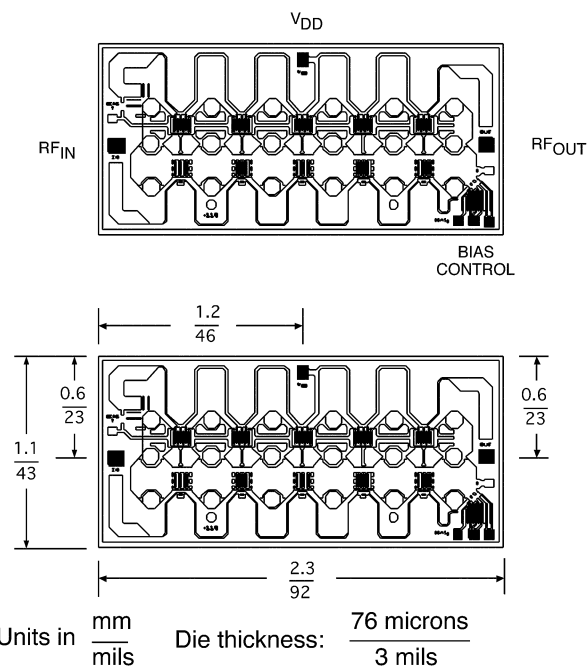
Advanced Product Information
April 2003

(1 of 2)

Features

- ❑ **Small Size:** 43 x 92 mils
- ❑ **High Gain**
- ❑ **Directly Cascadable**
- ❑ **Medium Power:** +24 dBm
- ❑ **Ion-Implanted Active Layers**
- ❑ **Silicon Nitride Passivation**

Chip Diagram



Specifications ($T_A = 25^\circ\text{C}$, $V_{DD} = 8\text{V}$)

Parameters	Units	Min	Typ	Max
Frequency Range	GHz	2.0		24.0
Small Signal Gain	dB	11.0	12.0	
Gain Flatness	\pm dB		0.5	0.85
Input/Output VSWR	—		1.8:1	2.0:1
Power Output (@1 dB Gain Compression)	dBm	22.0	24.0	
Second Order Intercept Point	dBm		40.0	
Third Order Intercept Point	dBm		30.0	
Current	mA	300		330

Absolute Maximum Ratings

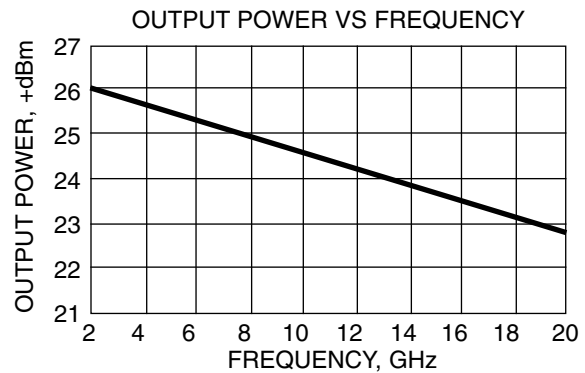
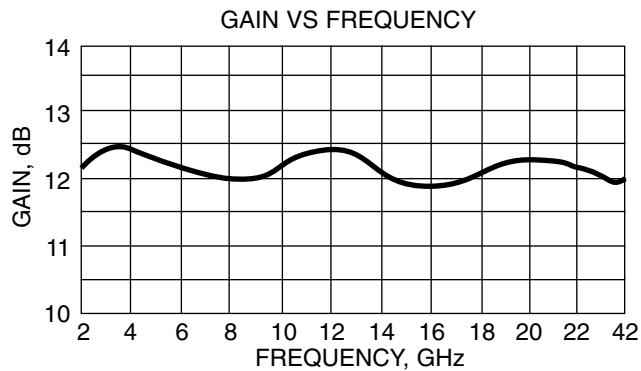
Parameter	Rating
Drain Voltage	12V
Drain Current	360 mA
Continuous Power Dissipation	3.0 W
Channel Temperature	+175°C
Storage Temperature	-65°C to +175°C
Mounting Temperature	+320°C
Input Power	+23 dBm

Die Attach and Bonding Procedures

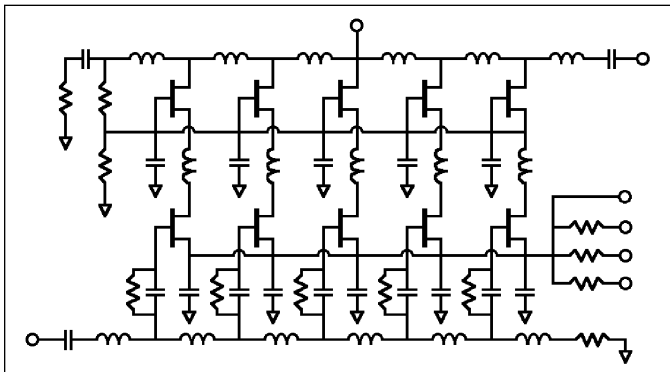
Die Attach: Eutectic die attach is recommended. For eutectic die attach: Preform: AuSn (80% Au, 20% Sn); Stage Temperature: 290°C, $\pm 5^\circ\text{C}$; Handling Tool: Tweezers; Time: 1 min or less.

Wire Bonding: Wire Size: 0.7 to 1.0 mil in diameter (pre-stressed); Thermocompression bonding is preferred over thermosonic bonding. For thermocompression bonding: Stage Temperature: 250°C; Bond Tip Temperature: 150°C; Bonding Tip Pressure: 18 to 40 gms depending on size of wire.

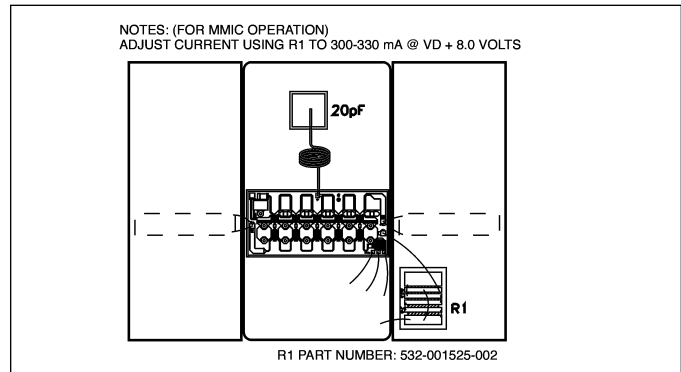
Typical Performance (TA=25°C, VDD = 8V)



Schematic Diagram



Assembly Example



Typical Scattering Parameters, T_A = 25°C (S-Parameters Include Bonding Wire Parasitics)

Freq (GHz)	S ₁₁			S ₂₁			S ₁₂			S ₂₂		
	(dB)	(Mag)	(Ang)	(dB)	(Mag)	(Ang)	(dB)	(Mag)	(Ang)	(dB)	(Mag)	(Ang)
2.0	-16.5	0.149623566	-121	12.2	4.073802778	139	-51.3	0.002722701	-6	-14.6	0.186208714	141
4.0	-16.4	0.151356125	-179	12.5	4.216965034	71	-42.6	0.007413102	1	-18.8	0.114815362	89
6.0	-19.7	0.103514217	108	12.2	4.073802778	9	-38.5	0.011885022	-59	-24.3	0.06095369	61
8.0	-25.8	0.051286138	-67	11.9	3.935500755	-50	-36.1	0.015667511	-114	-28.4	0.03801894	-112
10.0	-16.9	0.142889396	-152	12.2	4.073802778	-111	-33.0	0.022387211	-167	-21.5	0.084139514	-165
12.0	-15.8	0.16218101	151	12.2	4.073802778	-171	-32.3	0.024266101	145	-21.9	0.080352612	132
14.0	-22.6	0.074131024	106	11.9	3.935500755	129	-31.3	0.027227013	108	-21.9	0.080352612	-72
16.0	-19.7	0.103514217	-157	11.7	3.84591782	66	-32.3	0.024266101	49	-14.2	0.19498446	-130
18.0	-14.9	0.179887092	162	12.3	4.120975191	4	-32.1	0.024831331	-23	-12.1	0.248313311	-163
20.0	-19.2	0.10964782	162	12.2	4.073802778	-62	-30.0	0.031622777	-91	-11.2	0.27542287	-174
22.0	-15.1	0.175792361	175	12.0	3.981071706	-72	-28.8	0.036307805	-117	-10.6	0.295120923	179
24.0	-13.7	0.206538016	173	11.8	3.89045145	-71	-28.6	0.037153523	-126	-10.2	0.309029543	158

Ordering Information

The CMM-0224-BD is available in bare die and is shipped in Gel Pak.

Part Number for Ordering

CMM0224-BD

Optional Current Setting Resistor

Package

Bare Die

532-001525-002

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