

CMM-2 GaAs MMIC Amplifier

Specifications ($T_A = 25^\circ\text{C}$, $V_{DD} = 8\text{V}$, 2-6 GHz)

Parameters	Units	Min	Typ	Max
Small Signal Gain	dB	11.0	12.5	
Gain Flatness	$\pm\text{dB}$		0.5	1.0
Input VSWR	—		1.7:1	2.0:1
Output VSWR	—		2.0:1	2.5:1
Reverse Isolation	dB	25	30	
Gain Variation Over Temperature (-55 to +95°C)	$\pm\text{dB}$		0.75	1.00
Noise Figure	dB		5.5	7.0
1 dB Gain Compression Power Output	dBm	8	10	
Current	mA		35	50

Absolute Maximum Ratings

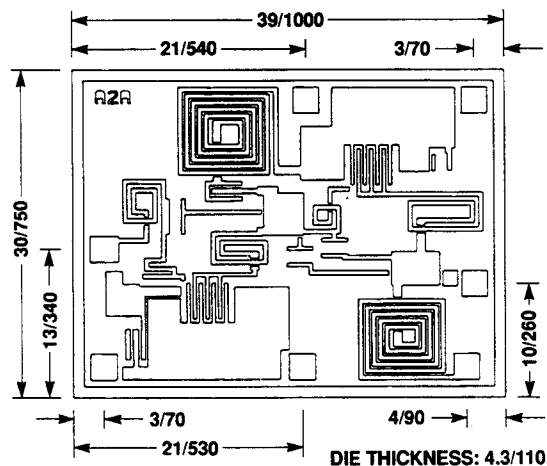
Parameter	Rating
Voltage	11V
Continuous Power Dissipation	1.25 W
Channel Temperature	+175°C
Storage Temperature	-65°C to +175°C
Mounting Temperature	+320°C
Input Power	+20 dBm
θ_{JC}	60°C/W

Die Attach and Bonding Procedures

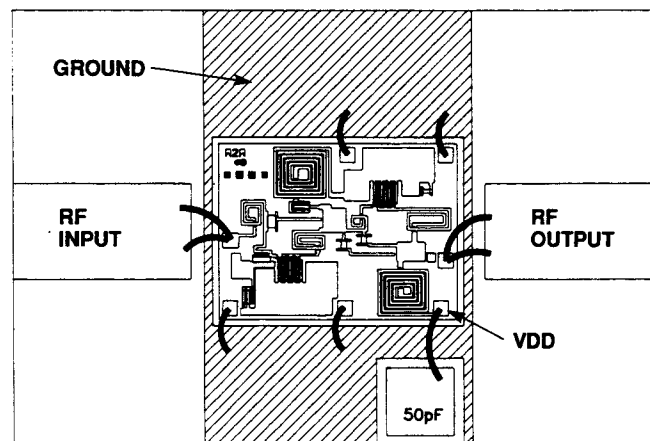
Die Attach: Conductive epoxy or preform die attach is recommended. For preform die attach: Preform: AuSn (80% Au, 20% Sn); Stage Temperature: 290°C, $\pm 5^\circ\text{C}$; Handling Tool: Tweezers; Time: 1 min or less.

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.

Chip Diagram (Dimensions in Mils/ μm)

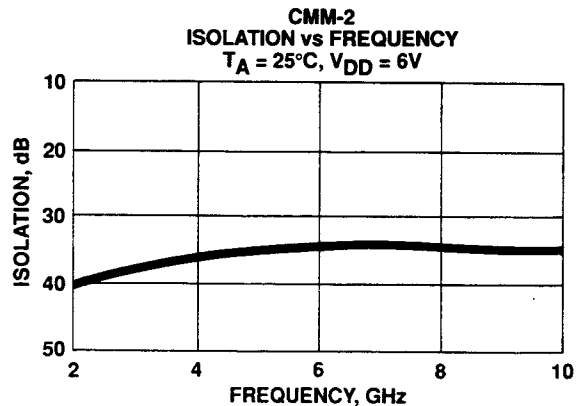
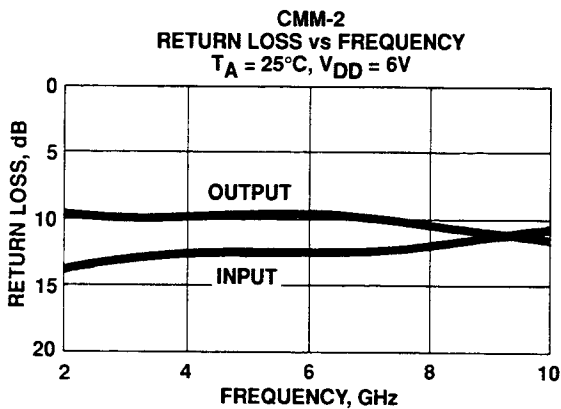
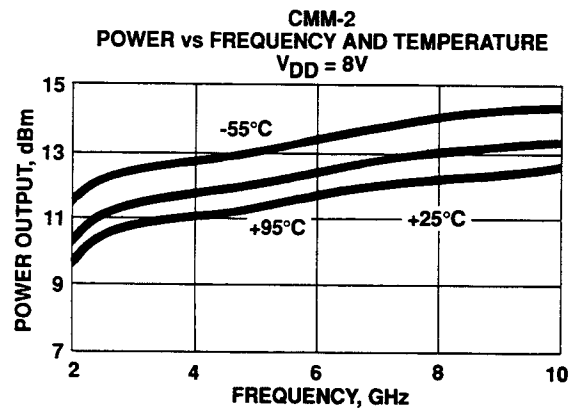
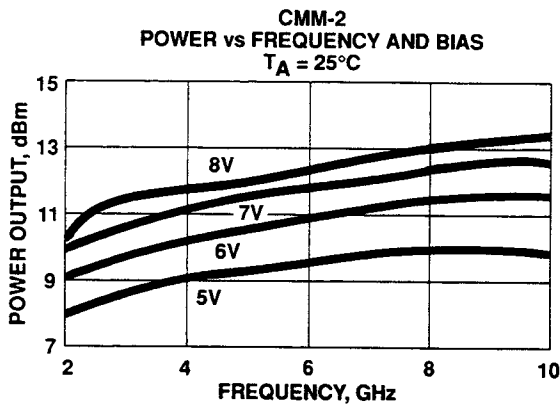
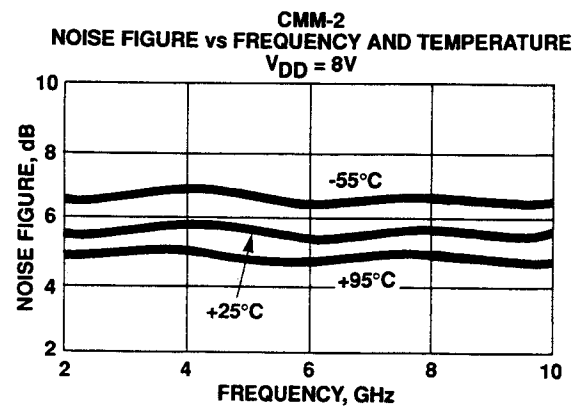
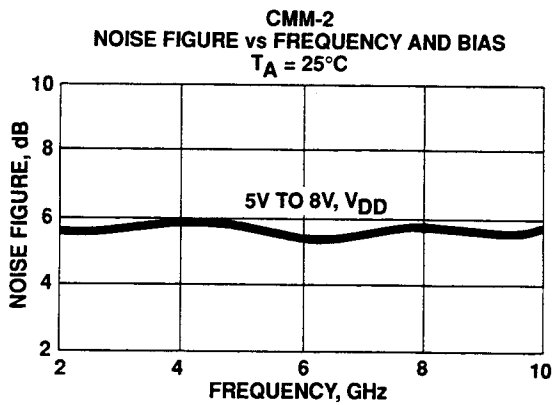
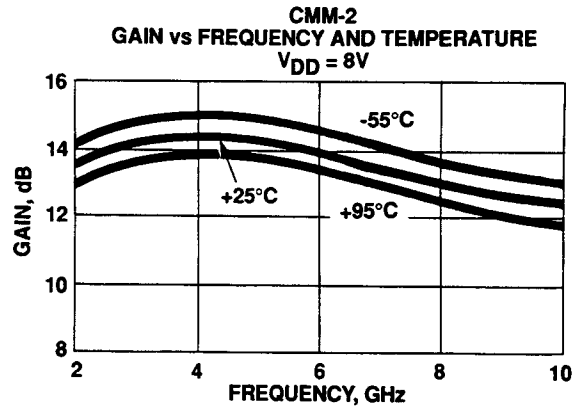
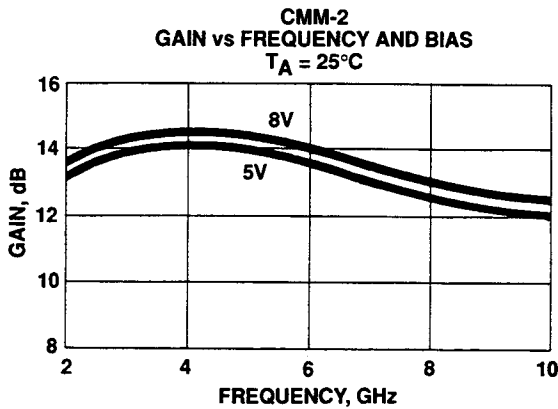


Bonding Diagram



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Typical Performance ($T_A = 25^\circ\text{C}$)



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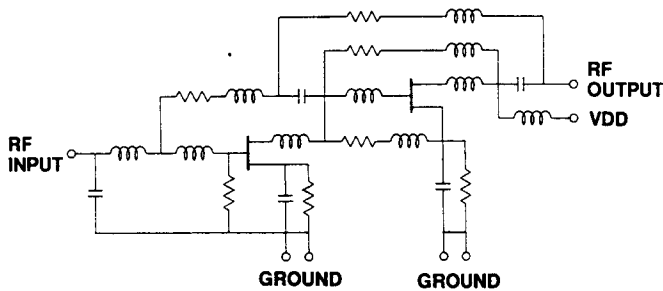
Typical Scattering Parameters, $T_A = 25^\circ\text{C}$ (S-Parameters Include Bonding Wire Parasitics)

CMM-2

$V_{DD} = 8\text{V}$

Frequency (GHz)	S_{11}		S_{21}			S_{12}			S_{22}		
	(dB)	(Mag) (Ang)	(dB)	(Mag) (Ang)	(dB)	(Mag) (Ang)	(dB)	(Mag) (Ang)	(dB)	(Mag) (Ang)	
2.0	-14.2	0.194 -147.7	13.4	4.677 23.2	-40.6	0.009 26.6	-9.8	0.323 -166.0			
3.0	-13.4	0.223 -163.4	14.1	5.070 -34.5	-37.7	0.013 24.1	-10.8	0.290 178.1			
4.0	-12.6	0.234 -176.2	14.2	5.129 -78.4	-36.2	0.015 30.0	-10.1	0.312 160.5			
5.0	-12.6	0.228 176.6	14.1	5.070 -116.1	-35.9	0.016 19.8	-10.0	0.317 143.7			
6.0	-12.7	0.232 169.6	13.9	4.955 -150.9	-35.8	0.016 19.1	-9.8	0.322 129.2			
7.0	-12.5	0.238 163.5	13.4	4.677 177.5	-35.6	0.017 21.2	-10.0	0.316 116.0			
8.0	-12.1	0.248 157.0	13.0	4.467 148.1	-35.2	0.017 17.0	-10.5	0.298 104.5			
9.0	-11.8	0.258 149.4	12.7	4.315 120.5	-35.0	0.018 14.7	-11.3	0.272 94.4			
10.0	-11.6	0.264 137.8	12.4	4.169 94.3	-35.0	0.018 9.9	-12.1	0.247 84.4			

Equivalent Circuit



Wafer Qualification Procedure

**100% DC Test
100% Visual Insp.**

**Sample Mechanical
Evaluation**

**Sample Circuit
Performance Tests***

NF, Gain, P₋₁ dB,
VSWR

**Reliability
Assessment**

*80% of tested samples must meet specifications for wafer acceptance.

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Specifications subject to change.

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