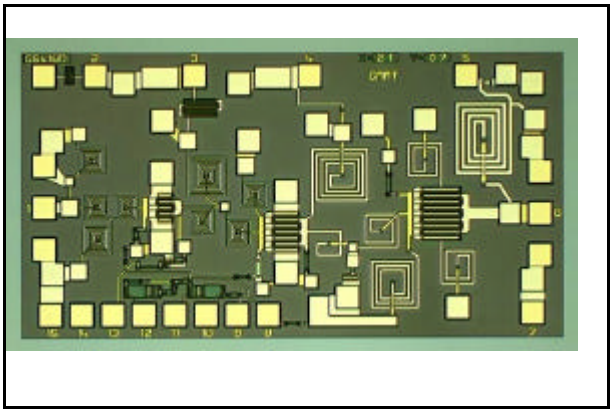
GaAs MMIC POWER AMPLIFIER, 5-6GHz



Features

- 24 dB Gain typical
- F20 MESFET technology
- 24dBm Output Power
- High, Medium 1, Medium 2
- & Low Gain States
- PAE (Max) 25%

Description

The P35-4721-000-200 is a high performance Gallium Arsenide Power Amplifier MMIC. It is primarily intended for wireless applications in the 5 - 6 GHz bandwidth such as U-NII (Unlicensed National Information Infrastructure) and HIPERLAN (High Performance Local Area Network).

The three-stage amplifier requires plus and minus 5V power supplies. Also incorporated into the design is the ability to switch between four gain states, High, Medium1, Medium2 and Low Gain, as well as a chip standby mode which typically draws 0.1mA. In addition the design has been optimised for the effects of a single bondwire at both the input and output.
The die is fabricated using MCL's F20 Gallium Arsenide MESFET MMIC process and is fully protected using Silicon Nitride passivation for excellent performance and reliability.

Electrical Performance

Ambient temperature = 22±3° C, Z_O = 50Ω, V_{gg} = -5V, V_{dd} = +5V

Parameter	Condition	Min	Typ	Max	Units
Small signal gain (High Gain)	5GHz - 6GHz	22	24	-	dB
Gain Flatness	5GHz - 6GHz	-	±1.0	-	dB
Input Return Loss	5GHz - 6GHz	10	18	-	dB
Output Return Loss	5GHz - 6GHz	10	18	-	dB
P-1dB Output Power	5GHz - 6GHz	-	22	-	dBm
TOI	5.5GHz	-	32	-	dBm
Supply current (Idd)	Disabled	-	0.1	1	mA
Supply current (Idd)	Enabled (No RF)	-	210	-	mA

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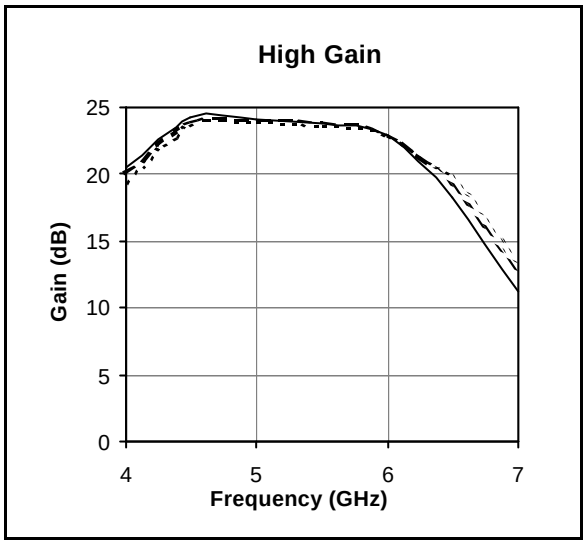
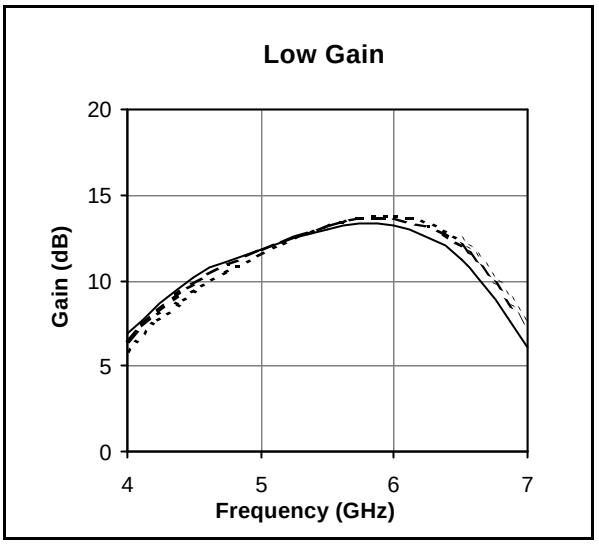
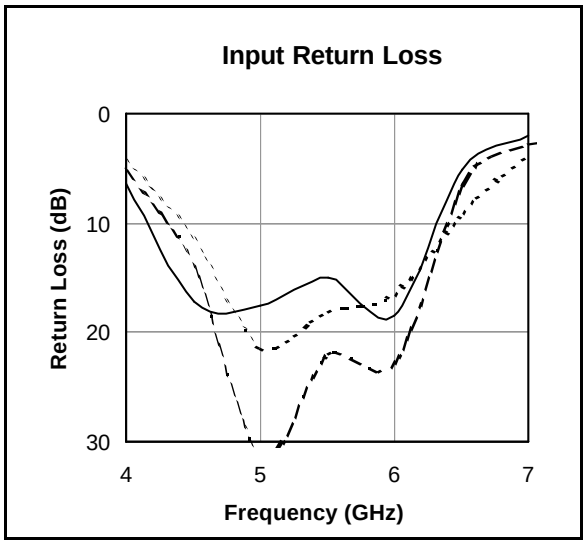
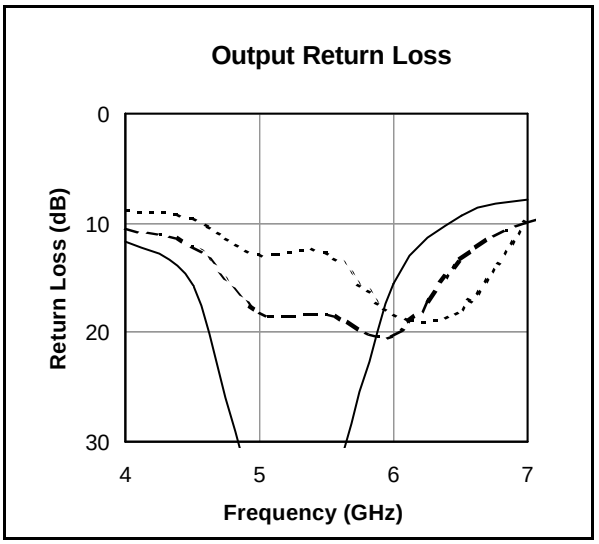
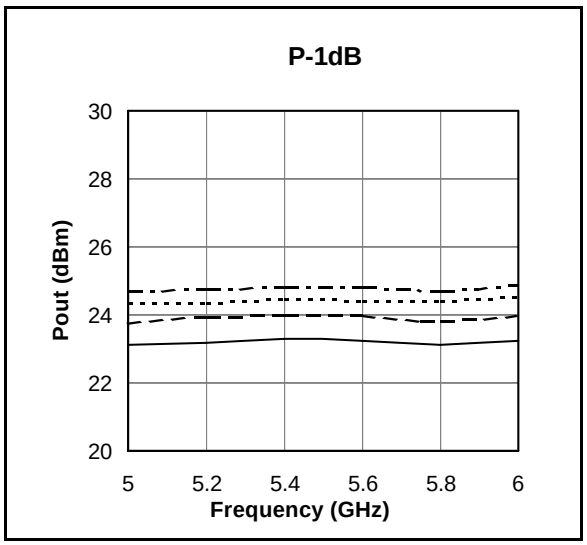
RF Performance at 22°C











——RFOW Result
– –0.3nH Inductance on both RF input and output
---- 0.7nH Inductance on both RF input and output

P-1dB	Vdd
——	5.5V
– –	6.0v
.....	6.5V
–--	7.0V

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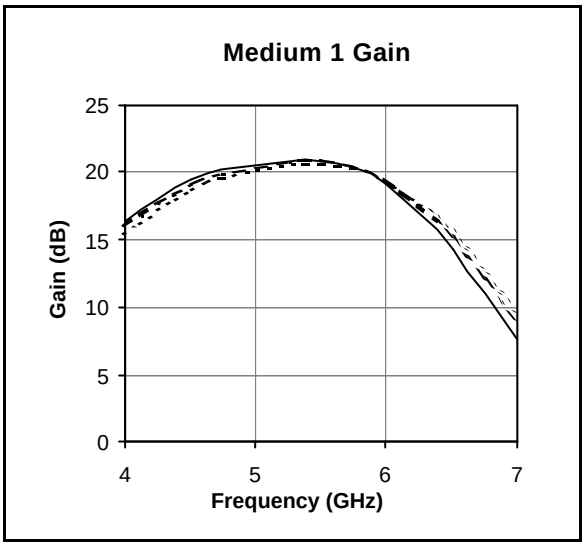

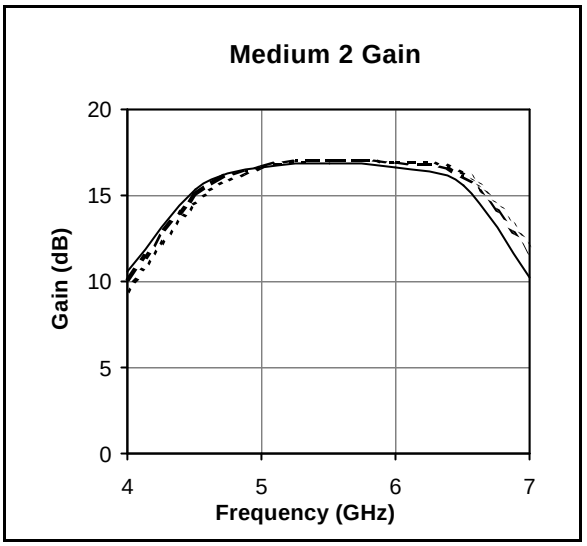

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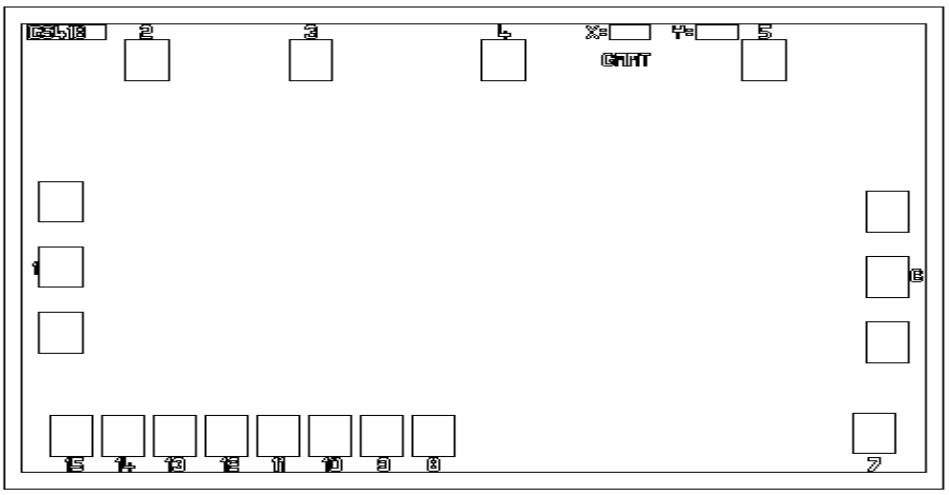
Die Outline



Die size: 1.47 x 2 .71 mm
DC Bond pad size: 120µm square
RF Bond pad size: 120µm square
Die thickness: 200µm

Pad Details

Pad	Function
1	RF Input
2	Gnd
3	V_{d1} = +5V
4	V_{d2} = +5V
5	V_{d3} = +5V
6	RF Output
7	Gnd
8	V_{g3} Sense N/C
9	Enable Low Gain 1
10	Enable High Gain 1
11	V_{g1} V_{g2} Sense N/C
12	V_{gg} = -5V
13	Enable High Gain 2
14	N/C
15	Gnd

Truth Table

Pad 9	Pad 10	Pad 13	Gain Setting
0V	O/C	0V	Low
O/C	0V	0V	Medium 1
0V	O/C	-5V	Medium 2
O/C	0V	-5V	High
O/C	-5V	0V/-5V	Amplifier Disabled

Absolute maximum Ratings

Max Vd	+7.0V
Max Vgg	-5.0V
Operating temperature	-55°C to 125°C
Storage temperature	-65°C to +150°

Ordering Information

P35-4721-000-200

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