

GaAs monolithic integrated multi-function chip

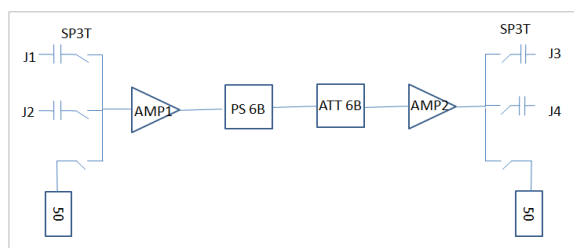
5.0~6.0GHz

key indicator

- Frequency range: 5.0~6.0GHz
- Phase shift accuracy root mean square: 2.5 °
- Root mean square attenuation accuracy: 0.3dB
- Gain: 10.5dB
- Chip size: 5.0mm×3.5mm×0.1mm

typical application

- Radar and electronic countermeasures
- RF/Microwave Circuit
- Military and aerospace
- Wave control module
- phase modulation

Functional block diagram**Product Introduction**

AY1461 is an integrated amplifier, switch, phase shifter and attenuator

Subtractive C Band multi-function chip, using GaAs 0.5m

Manufactured by m-pHEMT process, gain is 10.5dB, phase shift accuracy is uniform

The square root is less than 2.5, the attenuation accuracy root mean square is less than 0.3, 0/+5V logic

The edit level controls the phase shift attenuation.

The chip uses an on-chip metallization process to ensure good grounding,

No additional grounding measures are required, easy to use and easy to use on the back of the chip

Metallization treatment, suitable for eutectic sintering or conductive adhesive bonding process.

Electrical properties

($T_A=25^{\circ}\text{C}$, $V_G=+5\text{V}$, $V_E=-5\text{V}$, control level=0/+5V, $Z=50\Omega$)

Index	Minimum	Typical value	Max	Unit
frequency	5.0~6.0			GHz
Gain	—	10.5	—	dB
Output PdB -one	—	14	—	dBm
noise	—	4.7	—	dB
Isolation	—	-52	—	dB
Phase shift input standing wave ratio	—	—	1.6	: 1
Phase shift output standing wave ratio	—	—	1.2	: 1
Phase shift amplitude fluctuation	—	—	± 0.5	dB
Phase shift accuracy	-5	—	4	°
Phase shift accuracy root mean square	—	—	2.5	°
Attenuate input standing wave	—	—	1.6	: 1
Attenuated output standing wave	—	1.3	—	: 1
Attenuate phase fluctuation	—	—	4	°
Attenuation accuracy	-0.8	—	0.4	dB
Root mean square attenuation accuracy	—	0.3	—	dB

Absolute maximum rating

Maximum input power	+23dBm	Operating temperature	-55 °C ~ + 85 °C
Maximum input power	8V	storage temperature	-65 °C ~ + 150 °C

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Phase-shifting truth table (0:0V, 1:+5V)

Phase shift	PC1	PC2	PC3	PC4	PC5	PC6
Zero state	0	0	0	0	0	0
-5.625 °	1	0	0	0	0	0
-11.25 °	0	1	0	0	0	0
-22.5 °	0	0	1	0	0	0
-45 °	0	0	0	1	0	0
-90 °	0	0	0	0	1	0
-180 °	0	0	0	0	0	one
-354.375 °	1	1	1	1	1	one

Attenuation truth table (0:0V, 1:+5V)

Phase shift	PC1	PC2	PC3	PC4	PC5	PC6
Zero state	0	0	0	0	0	0
-5.625°		0	0	0	0	0
-11.25°	0	1	0	0	0	0
-22.5°	0	0	1	0	0	0
-45°	0	0	0	1	0	0
-90°	0	0	0	0	1	0
-180°	0	0	0	0	0	1
-354.375°	1	1	1	1	1	1

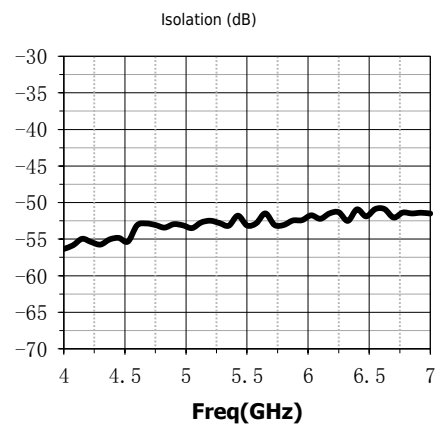
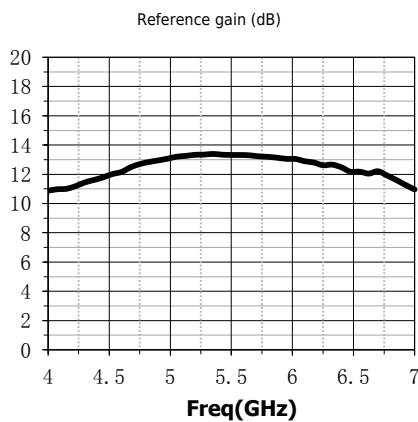
Control voltage

state	Bias condition
0	0~0.2V
1	4.5~5.5V

Bias voltage & current

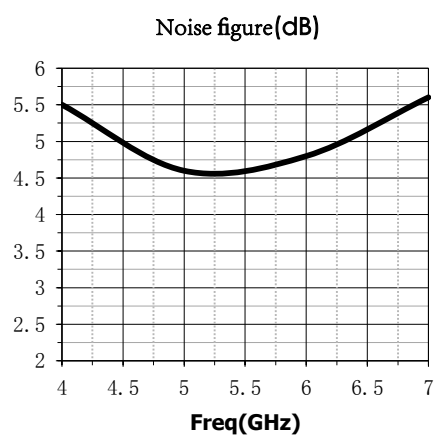
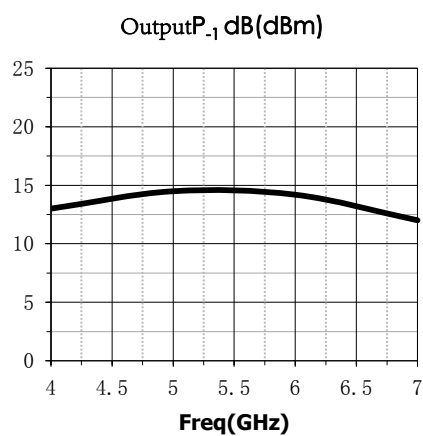
V_D	I_D	V_E	I_E
5V	90mA	-5V	18mA

Typical test curve (bare chip test)

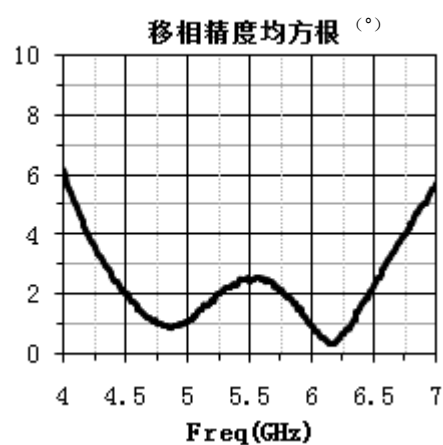
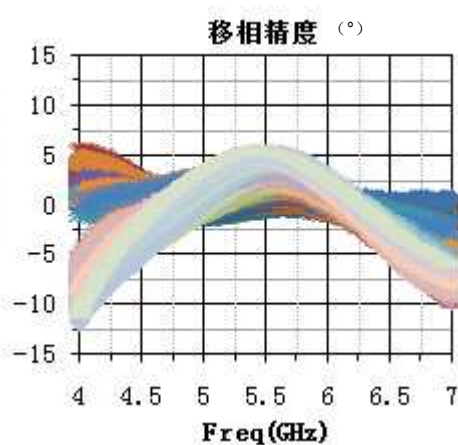
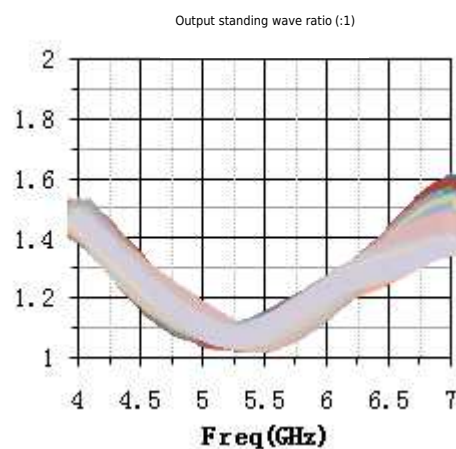
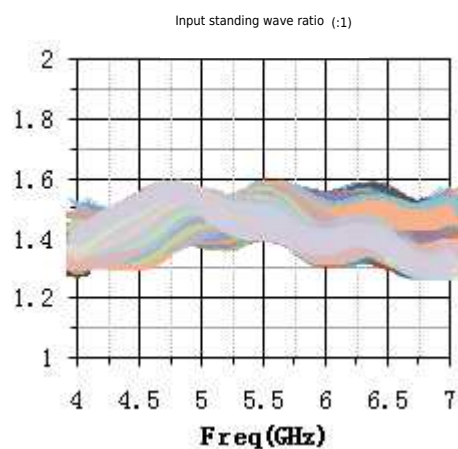


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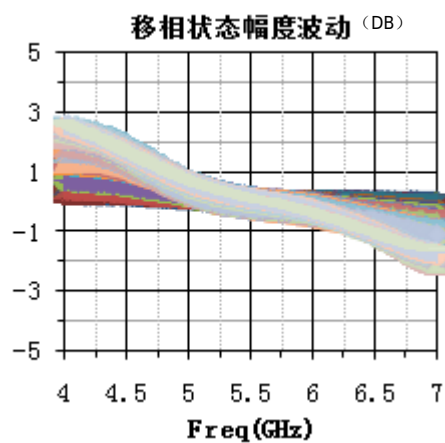


1)Phase shift part

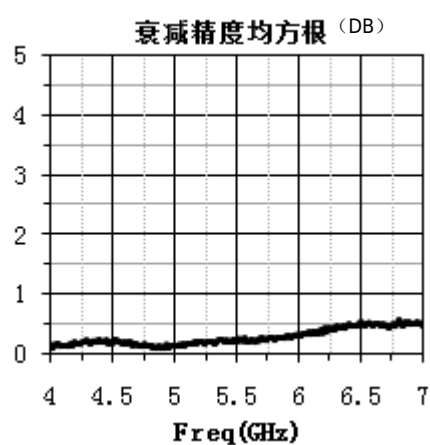
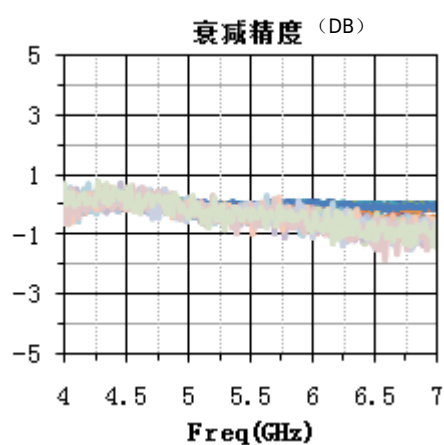
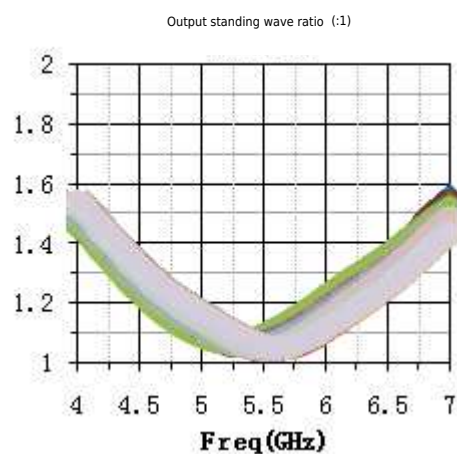
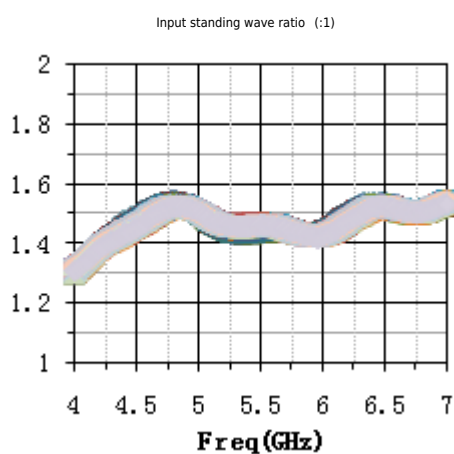


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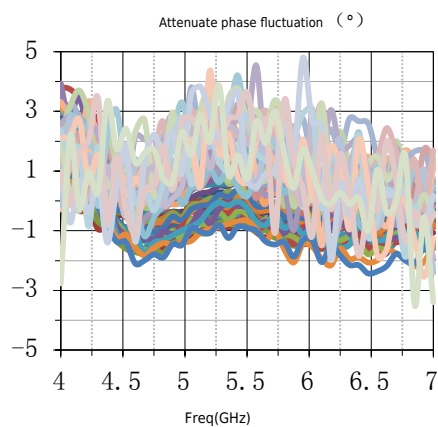


2) Attenuation part

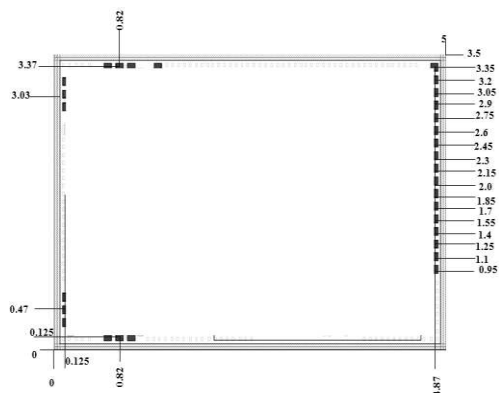


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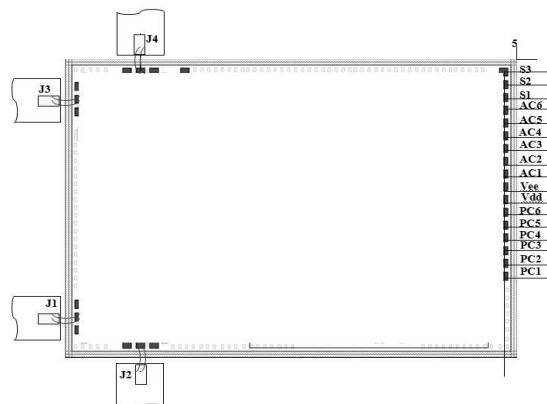
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Shape and port size (mm)



Recommended assembly drawing



Precautions

Gallium arsenide MMIC devices are susceptible to damage from electrostatic discharge. Precautions should be taken during transportation, assembly and testing.