AY1596

GaAs monolithic integrated driver amplifier

22GHz~38GHz

key indicator

- Frequency range: 22GHz~38GHz
- Gain: 15dB
- Output P_{-1} dB：24dBm
- Power supply: +5~+6V
- Balanced amplifier
- Chip size: 2mm×1.25mm×0.1mm

typical application

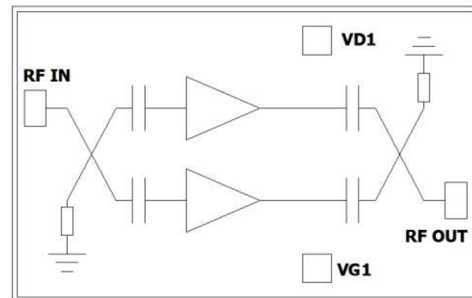
- Point-to-point communication
- Satellite Communications
- Military and aerospace
- Testing and measuring instruments
- radar

Product Introduction

AY1596 amplifier operates at 22GHz~38GHz and is a balanced amplifier made with GaAs technology. The amplifier can maintain good return loss characteristics when it is turned off and in operation.

AY1596 is suitable for microwave circuit driving, and its surface is protected by a passivation layer, and it is also suitable for high-reliability environmental applications.

Functional block diagram



Electrical performance （T_A=25℃,V_D=+5 V,I_D=250mA,Z_0=50Ω）

index	Minimum	Typical value	Max	unit
frequency	2 2 ~ 38			GHz
Small signal gain	11	15	-	dB
Small signal gain flatness	-	± 1.5	-	dB
Reverse isolation	-	- 48	-	dB
Input/output return loss	-	-13	-	dB
noise	-	6.5	-	dB
Output P_{-1}dB	-	24	-	dBm
Working voltage $(V)_D$	5	-	6	V
Working current $(I)_D$	-	250	450	mA

Absolute maximum rating

Maximum input power	+14dBm	Operating temperature	-55 ℃ ~ + 85 ℃
Channel temperature	+ 150 ℃	Storage temperature	-65 ℃ ~ + 150 ℃
Max V_D	+6.5V	Max V_G	-1.2V

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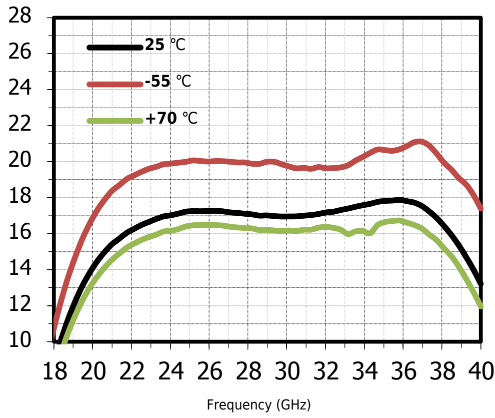
Typical test curve

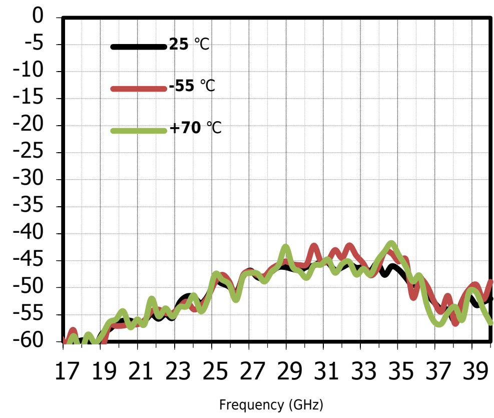
Probe test

Bias conditions: V_D=5V, I_D=250mA

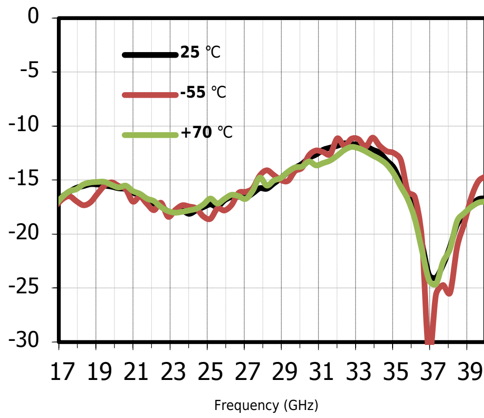
Small signal gain (dB) vs. temperature (℃)



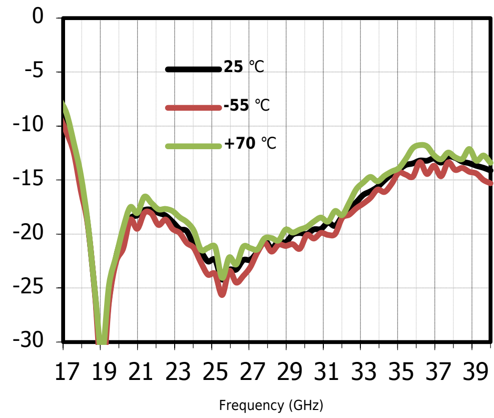
Reverse isolation (dB) vs. temperature (℃)



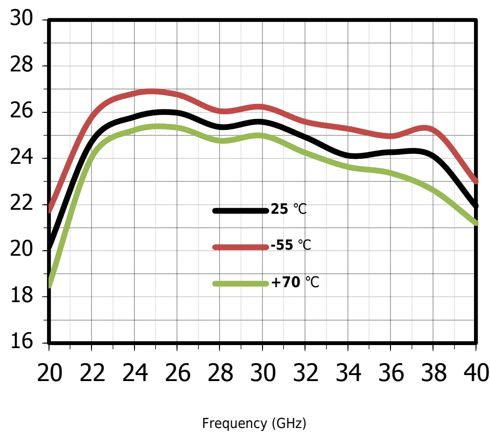
Input return loss (d B) vs. temperature (℃)



Output return loss (dB) vs. temperature (℃)



Output P_{-1}dB (dBm) vs. temperature (℃)



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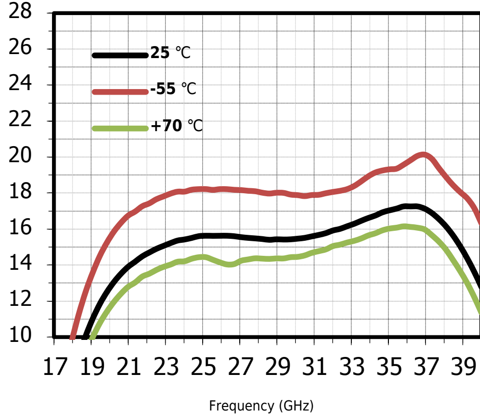
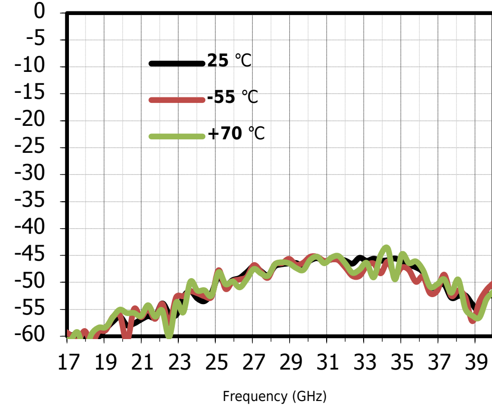
*Bias conditions: V_D=6V, I_D=250mA

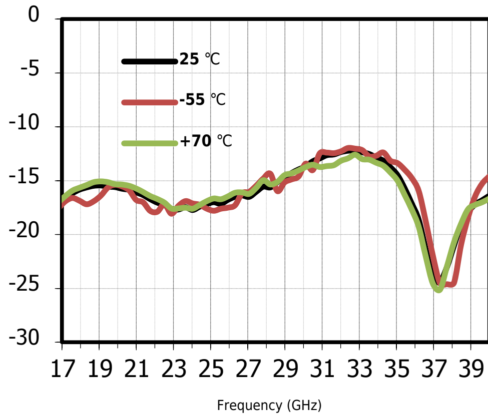
Small signal gain (dB) vs. Temperature (℃)



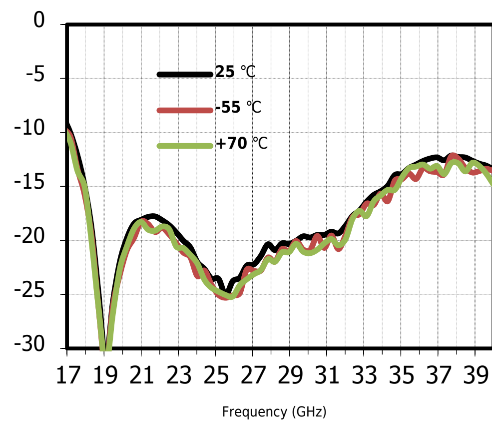
Reverse isolation (dB) vs. temperature (℃)



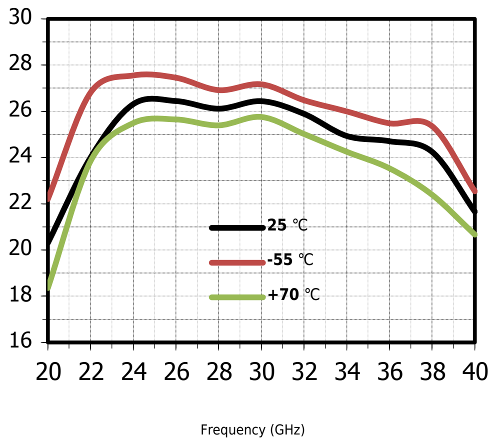
Input return loss (d B) vs. temperature (℃)



Output return loss (d B) vs. temperature (℃)



Output P_{-1}dB (dBm) vs. temperature (℃)



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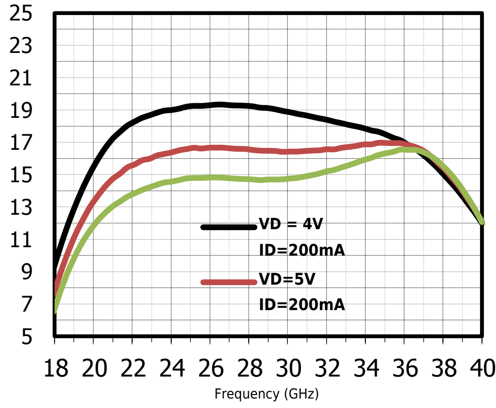
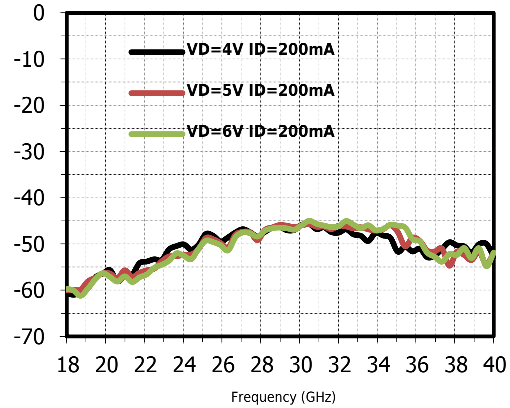
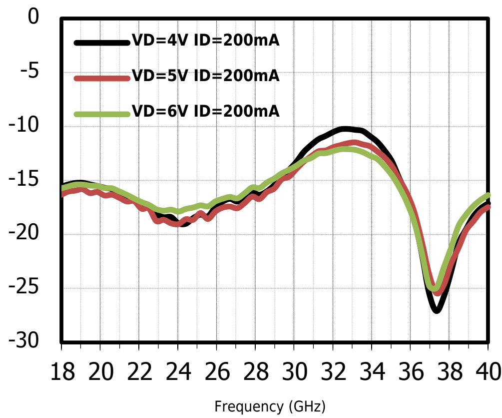
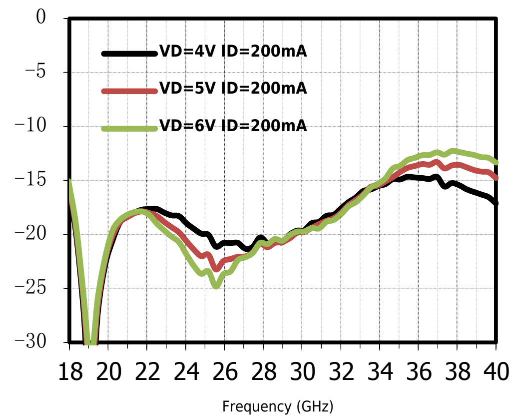
*Bias conditions: V_D=4~6V, I_D=200mA, T_A=25℃

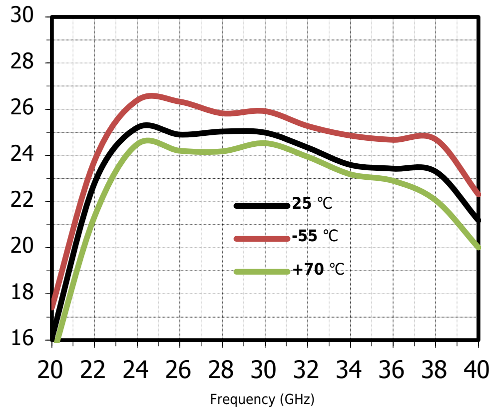


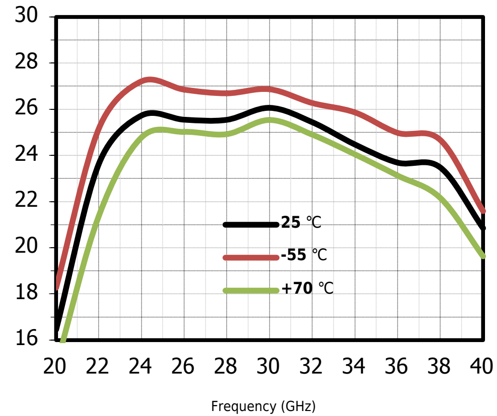






*Output P_{-1}dB(dBm) vs. bias conditions: V_D=5~6V, I_D=200mA





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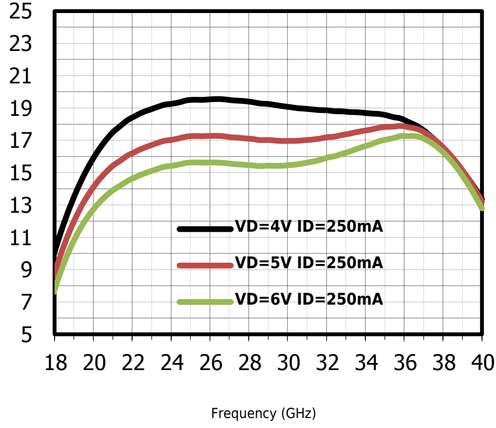
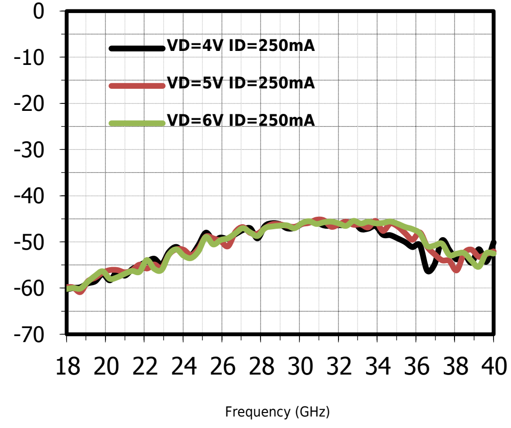
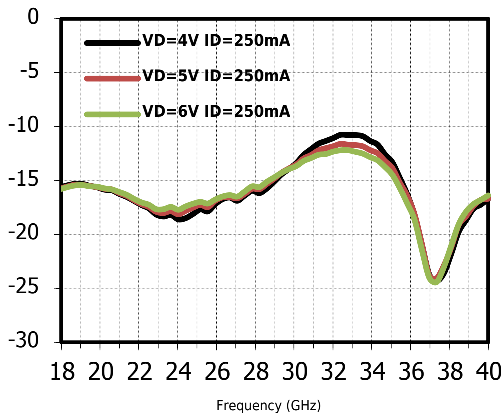
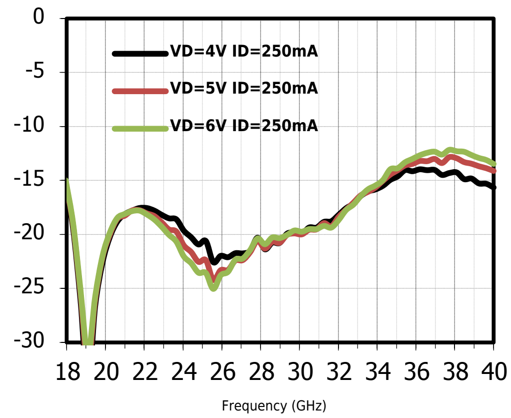
*Bias conditions: V_D=4~6V, I_D=250mA T_A=25℃









APMA

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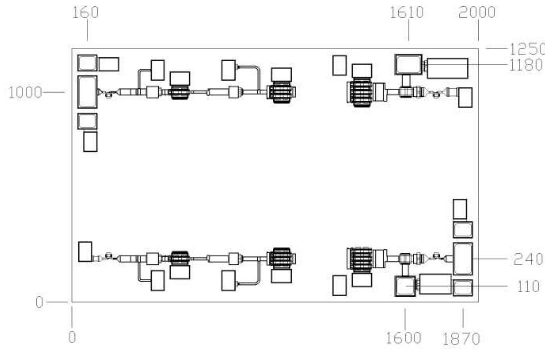
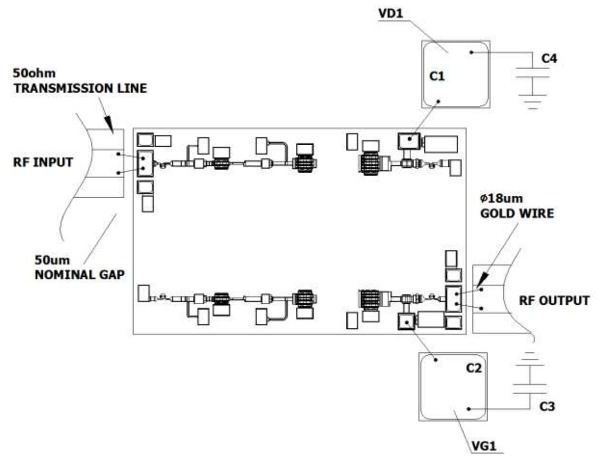
Shape and port size (µm)

RF /VG pad size: 100x100µm

V_D Pad size: 150x100µm



Recommended assembly drawing



Component list

serial number	Numerical value	model	manufacturer	Encapsulation
C3、C4	2.2uF	0603YD225KAT2A	AVX	0603
C1、C2	100pF	-	ANY	SLC

Precautions

1.AY1596 requires two sets of power supply voltages, the gate is negative voltage, and the drain is positive voltage;

When the drain voltage is set to 5V, the recommended gate voltage is set to -0.5~0.7V.

2. When using this chip, the length of the input and output key alloy wires should be shortened as much as possible;

3. The back of the chip is RF grounded. It is recommended to use high thermal conductivity conductive adhesive for bonding.

4. The bypass capacitor C3~C4 should be less than 1.5mm away from the chip.