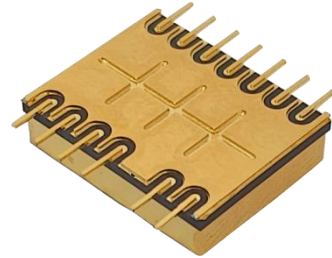


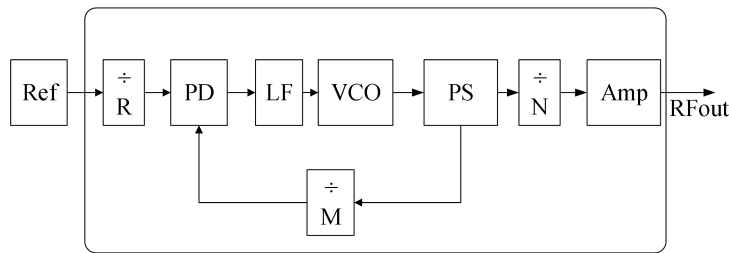
Mini universal frequency source A, 0.1~19.4GHz

Performance characteristics

- Operating frequency: 0.1~19.4GHz
- Frequency step: 1KHz~100MHz
- Output power: ≥ 0 dBm
- Supply voltage: +3.3V
- Control mode: SPI
- Outline Dimensions: 15x12x3.5mm
- Packaging form: ceramic packaging
- Working temperature: $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$



Principle diagram



Product Introduction

GF031-001T194A is a mini universal frequency source with an output frequency range of 0.1-19.4GHz. It can achieve a minimum frequency hopping step of 1kHz and a typical phase noise value of $-99\text{dBc}/\text{Hz}@1\text{K}@8\text{GHz}$, $-106\text{dBc}/\text{Hz}@10\text{K}@8\text{GHz}$, output power ≥ 0 dBm. It is housed in a ceramic package, suitable for SMT.

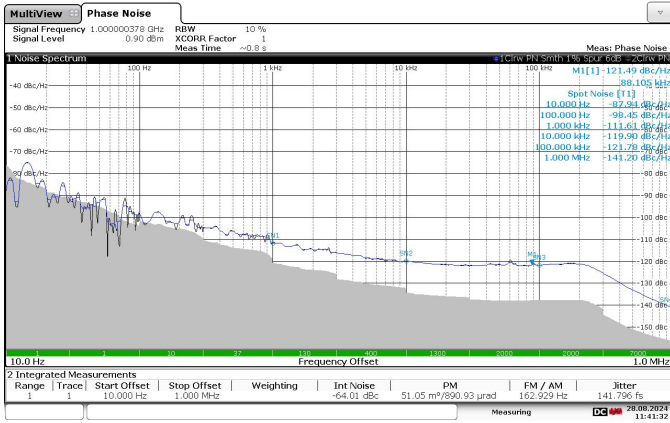
Electrical parameters(TA = +25°C, 50Ω system)

Parameter	Min	Typ	Max	Unit
Operating frequency	0.1	8	19.4	GHz
Output power		≥ 0		dBm
Frequency step	0.001	1	100	MHz
Spurious		≥ 50		dBc
Phase noise		-99		dBc/Hz@1K
		-106		dBc/Hz@10K
		-108		dBc/Hz@100K
		-115		dBc/Hz@1M
Current		≤ 260		mA

Mini universal frequency source A, 0.1~19.4GHz

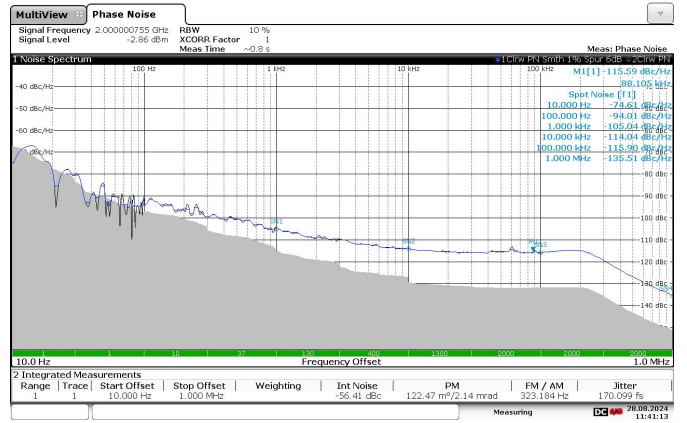
Main indicator testing curve

1GHz phase noise @25°C



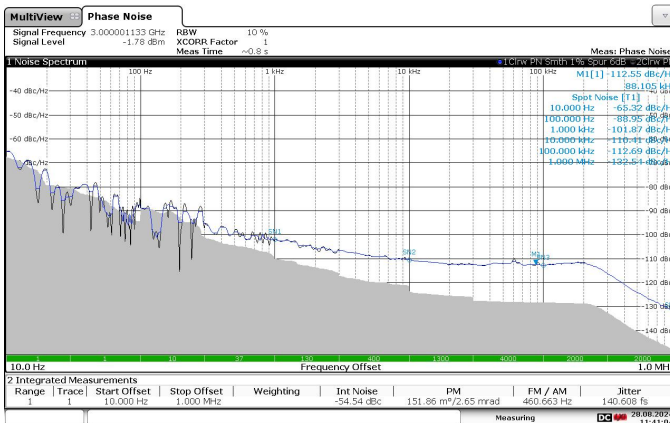
11:41:32 28.08.2024

2GHz phase noise @25°C



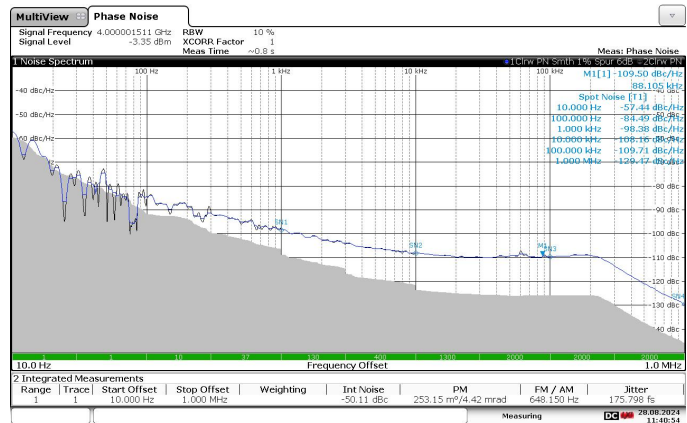
11:41:13 28.08.2024

3GHz phase noise @25°C



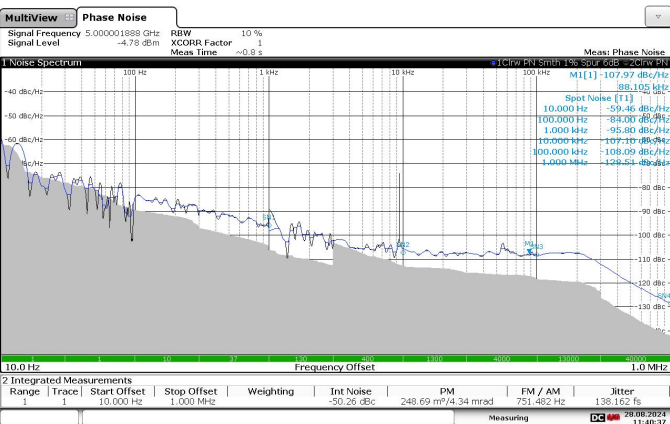
11:41:05 28.08.2024

4GHz phase noise @25°C



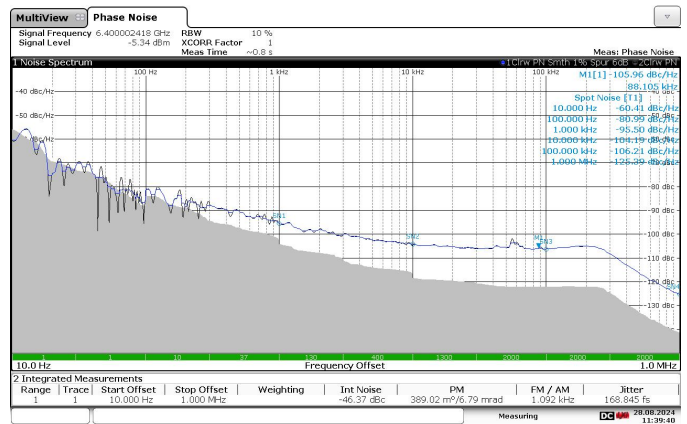
11:40:54 28.08.2024

5GHz phase noise @25°C



11:40:37 28.08.2024

6.4GHz phase noise @25°C

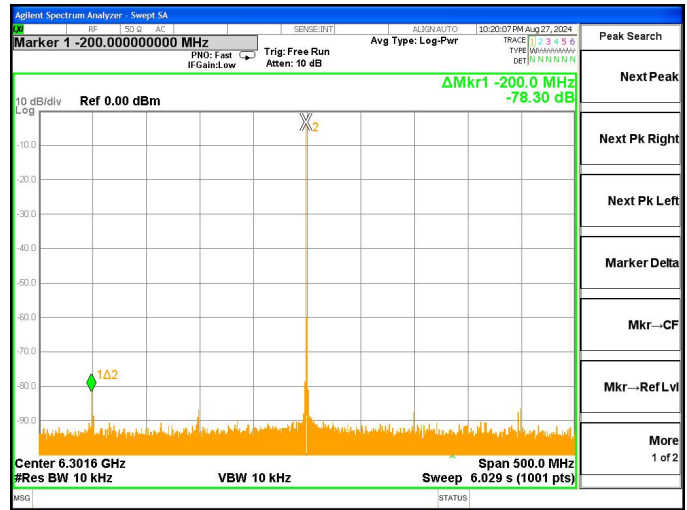
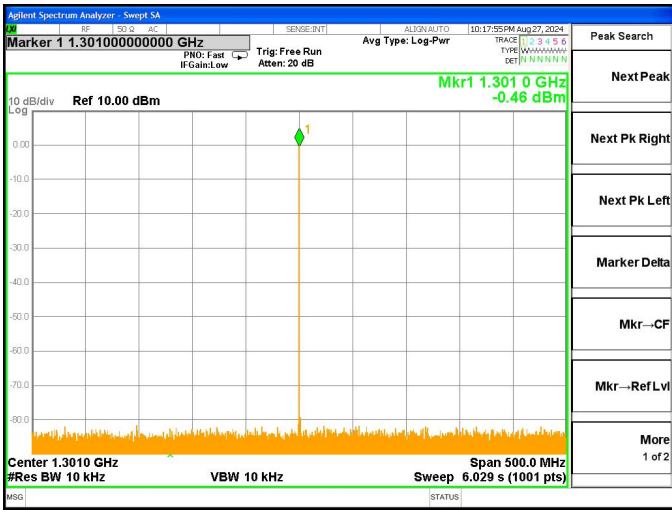


11:39:40 28.08.2024

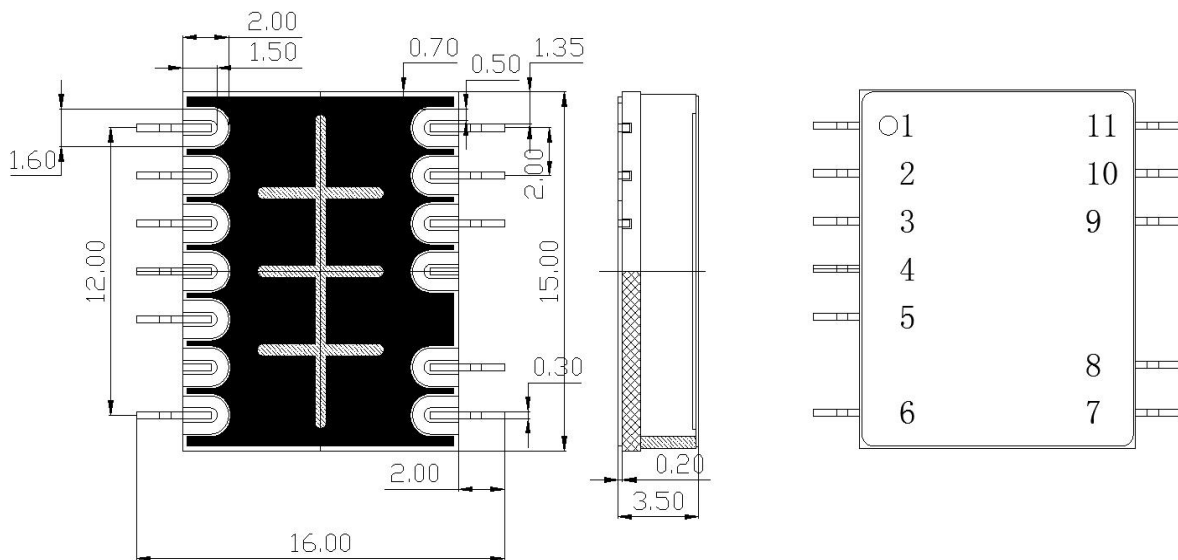
1.301GHz spurious @25°C

6.301GHz spurious @25°C

Mini universal frequency source A, 0.1~19.4GHz



External structure



Pin	Function	Description
1	LE	Enable
2	DATA	data
3	CLK	Clock
4	LD	Lock indication: Locked at high level, unlocked at low level
5	REF	100M reference input
6	GND	Ground
7	+3.3V	+3.3V power supply
8	RFout	RF output
9	GND	Ground
10	NC	Not connected
11	NC	Not connected

Mini universal frequency source A, 0.1~19.4GHz

Control requirements

The output module frequency is controlled through SPI serial port, and the control method is as follows:

The total length of SPI serial port data DI is 64 bits (8 bytes), as shown in the table.

Definition of DI for receiving data								
	D7	D6	D5	D4	D3	D2	D1	D0
The 1st byte	LSB							
⋮	⋮							
The 8th byte	MSB							
Remark: <ul style="list-style-type: none"> ● The order of receiving data is: first receive the first byte, then the second byte, until the 8th byte. In each byte, the high bits come first and the low bits come last; ● The frequency step is 1kHz. 								

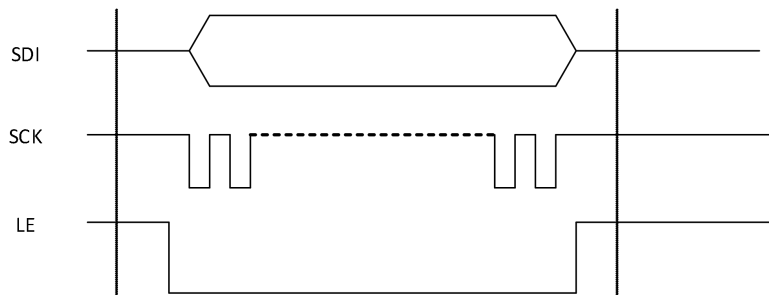


Fig. SPI serial port timing diagram

Instructions:

- 1) LE is the enable signal, when LE is at a low level, the data and clock signals are valid.
- 2) SCK is a clock signal that can support a maximum clock frequency of 10MHz, LVTTTL level.
- 3) SDI is serial input data, valid when SCK rises, LVTTTL level.

Remark

- Unit: mm;
- Frequency hopping time does not include communication time;
- The larger the step, the faster the hopping time, and the better the spurious;
- The power supply of the product needs to be filtered to prevent interference from power ripple on sensitive components;
- The device should be stored in a dry and nitrogen environment. When the device cannot be used up

Mini universal frequency source A, 0.1~19.4GHz

after being unpacked, it should be immediately stored in a drying oven or vacuum sealed to avoid absorbing moisture from the air;

- Devices are sensitive to static electricity, and attention should be paid to anti-static measures during storage, transportation, assembly, and use;
- This product is suitable for reflow soldering installation process, with a maximum reflow soldering peak temperature of 210 °C.