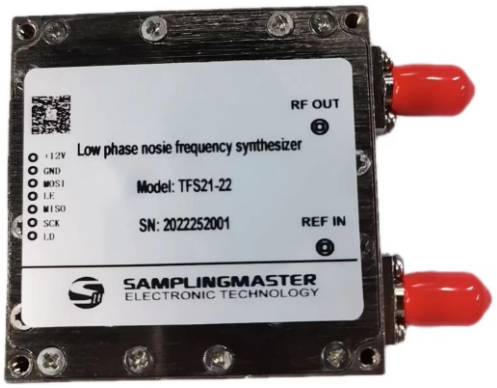
SIMON
Elektronika Teknologio Co.,Ltd

TFS21-22

Frequency Synthesizer

Key Features

1. **Output Frequency: 50 MHz – 22.6 GHz**
2. **Small Size: 50 x 50 x 13 mm**
3. **Phase Noise: -122dBc/Hz @ 10 kHz (10 GHz)**
4. **Control Interface: SPI**



External Reference

Input Frequency	100 MHz
Reference Power (dBm)	7±2
Frequency Stability	Synchronized to External Reference
Phase Nois	≤ -155 dBc/Hz @1kHz
Input Impedance(Ω)	50

Frequency Output

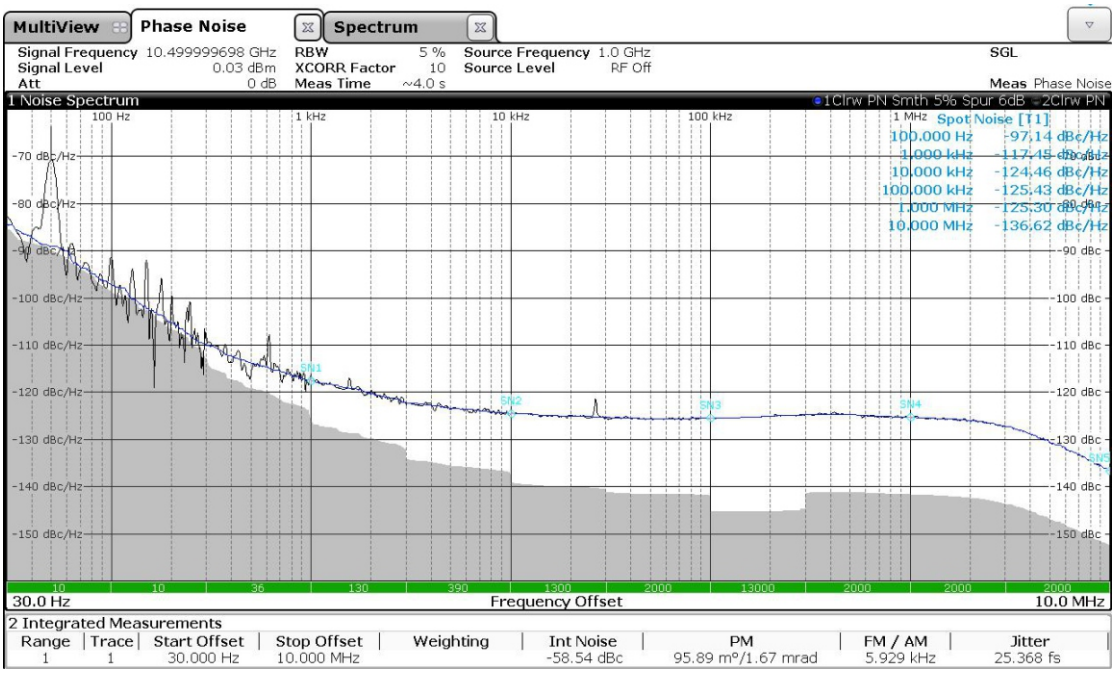
Output Frequency	50 – 22600 MHz
Frequency Step	0.1 Hz
	0.1 mHz (Option 2)
Frequency Switching Time	≤ 400 µs
	≤ 200 µs (Option 1)
	≤ 25 µs (Option 2)
Spurious	-70 dBc (TYP) / -65 dBc (MAX) ≤ -20 dBc (1/2 & 3/2 Harmonics for 11.3G–22.6GHz)
Harmonics	≤ -5 dBc
Output Power	4 ±5 dBm
Note 1: For 200µs switching time, the TFS21-22 requires a 30-second startup time after each power-on. For 25µs switching time, it requires a 5-second startup time after each power-on.	

Phase Noise (dBc/Hz)

Model	TFS21-22-400/TFS21-22-200			
Offset	1GHz	5GHz	10GHz	22.6GHz
100Hz	-105	-91	-85	-79
1kHz	-127	-113	-107	-101
10kHz	-135	-122	-116	-110
100kHz	-135	-130	-116	-110
1MHz	-135	-130	-116	-110

Model	TFS21-22L-25			
Offset	1GHz	5GHz	10GHz	22.6GHz
100Hz	-115	-98	-92	-86
1kHz	-135	-121	-115	-109
10kHz	-143	-128	-122	-116
100kHz	-143	-128	-124	-116
1MHz	-143	-128	-124	-116

10.5GHz Phase Noise (TFS21-22L-25)



Power Supply Requirements

Operating Voltage:	+12 ±0.5 V
Maximum Voltage	+15 V
Operating Current	900 mA (Max)

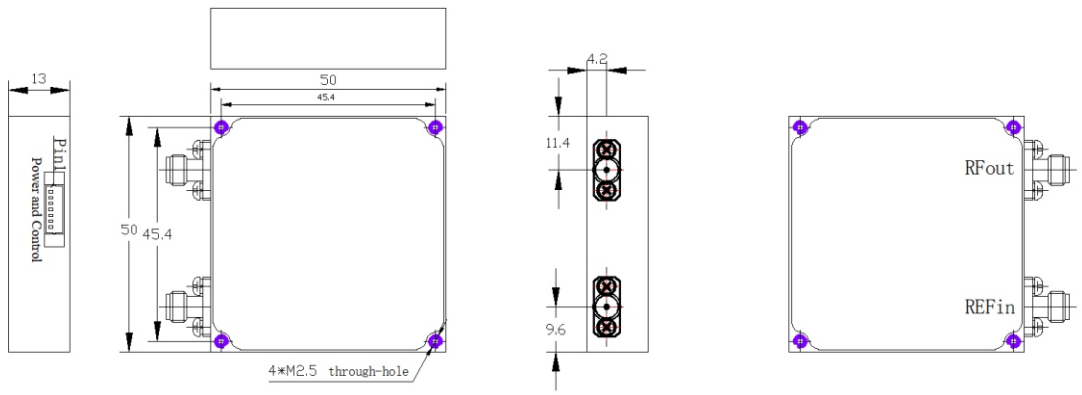
Power Supply Requirements

Operating Temperature:	-40°C to +70°C
Storage Temperature:	-55°C to +85°C

Power Supply Requirements

Dimensions	50 × 50 × 13 mm
Weight	≤ 80 g

Dimensions



Connector Definitions

REF in	SMA-K (Detachable)
RF out	2.92mm (K Female) (Detachable)
Power & Control	53261-0671-7P (1.25mm Pitch, 7-pin Single Row Horizontal Header)

Power & Control Interface Pinout	
Pin	Function
1	+12V (Power)
2	GND (Ground)
3	MOSI (SPI Communication)
4	LE (SPI Communication)
5	MISO (SPI Communication)
6	SCK (SPI Communication)
7	LD (Lock Detect: High = Locked)

Ordering Information

Model	Order P/N	Description
Standard	TFS21-22-400	Switching Time: 400 μs
Option 1	TFS21-22-200	Switching Time: 200 μs
Option 2	TFS21-22L-25	Switching Time: 25 μs