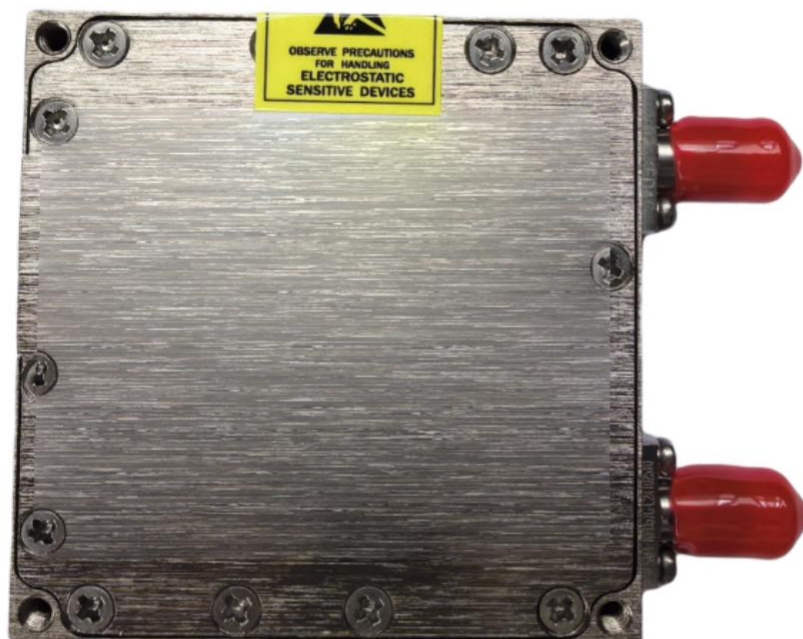


LOW PHASE NOISE FREQUENCY SYNTHESIZER



50 MHz to 22.6 GHz

Low phase noise
SPI control
0.1 Hz frequency step
Frequency switching time: $\leq 400 \mu\text{s}$
50 × 50 × 13 mm package
Weight: $\leq 80 \text{ g}$

The OTFS21-22-400 is a low phase noise frequency synthesizer with an output frequency range of 50 MHz to 22.6 GHz. It uses SPI control and a 100 MHz external reference. The frequency step is 0.1 Hz and the frequency switching time is $\leq 400 \mu\text{s}$. Output power is $4 \pm 5 \text{ dBm}$. The module measures 50 × 50 × 13 mm and weighs $\leq 80 \text{ g}$. It operates from a +12 V $\pm 0.5 \text{ V}$ supply over a temperature range of -40 to +70 °C.

TECHNICAL SPECIFICATIONS

OTFS21-22-400

Property	Value
Output frequency range	50 MHz-22.6 GHz
Frequency step	0.1 Hz
Frequency switching time	≤400 μs
Output power	4 ±5 dBm
Spurious level	≤-70 dBc typical; ≤-65 dBc maximum
Harmonic level	≤-5 dBc
Fractional-frequency components	Components at 1/2 and 3/2 of the output frequency: ≤-20 dBc (11.3-22.6 GHz)
Reference frequency	100 MHz
Reference input power	7 ±3 dBm
Reference phase noise	≤-133 dBc/Hz at 100 Hz offset; ≤-155 dBc/Hz at 1 kHz offset; ≤-165 dBc/Hz at 10 kHz offset; ≤-165 dBc/Hz at 100 kHz offset; ≤-170 dBc/Hz at 1 MHz offset
Supply voltage	+12 V ±0.5 V; maximum +15 V
Supply current	0.65 A typical; 0.9 A maximum
Control interface	SPI
Operating temperature	-40 to +70 °C
Storage temperature	-55 to +85 °C
Dimensions	50 × 50 × 13 mm
Weight	≤80 g
Reference connector	Removable SMA-K
RF output connector	Removable 2.92 mm female
Power/control connector	53261-0771-7P; 1.25 mm pitch
Frequency stability	Tracks the external reference

PHASE NOISE & INTERFACES

OTFS21-22-400 | Phase Noise (dBc/Hz)

Output Frequency	100 Hz	1 kHz	10 kHz	100 kHz	1 MHz
1 GHz	-105	-127	-135	-135	-135
5 GHz	-91	-113	-122	-122	-122
10 GHz	-85	-107	-116	-116	-116
22.6 GHz	-79	-101	-110	-110	-110

Column headings specify frequency offset from the carrier. Output frequency is listed in the first column. Values and limit signs follow the source tables.

Source Catalogue Notes

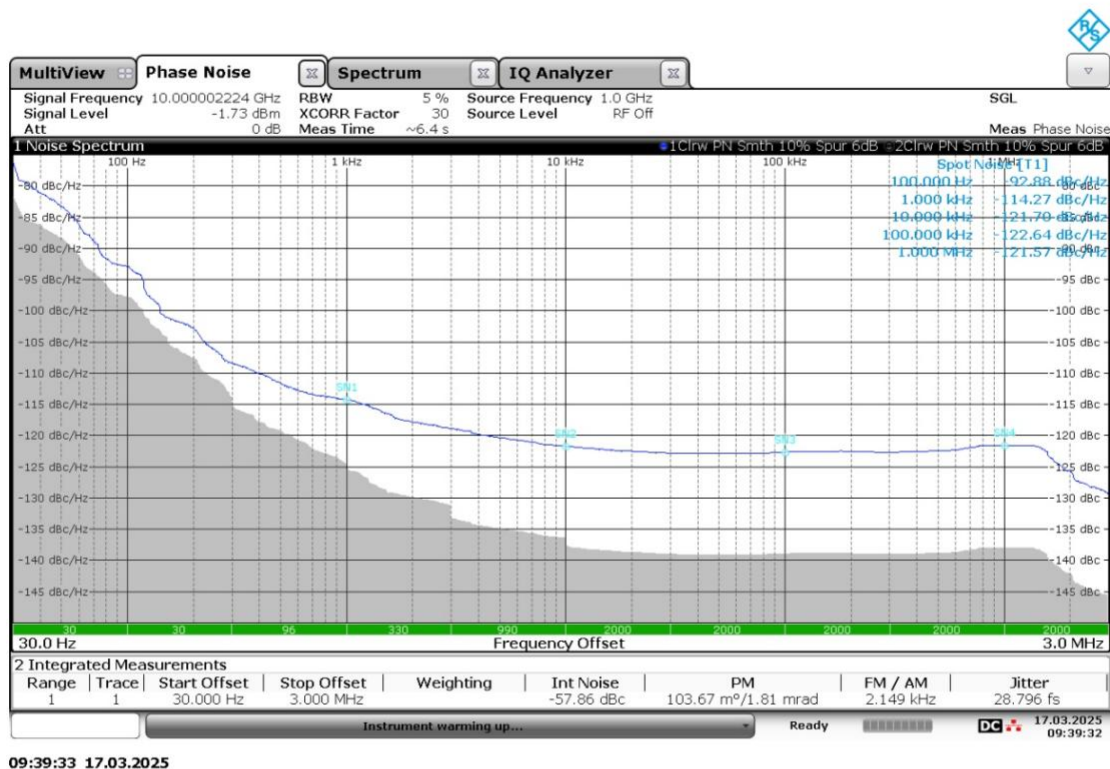
The feature list quotes -110 dBc/Hz at 1 kHz offset and -119 dBc/Hz at 10 kHz offset, at 10 GHz output. These figures correspond to the 25 μ s option; use the model-specific phase-noise tables for other versions.

Connector Definitions

Connector	Definition
RF in	Removable SMA-K; pin diameter 0.38 mm
RF out	Removable 2.92 mm female; pin diameter 0.38 mm
Power/control	53261-0771-7P; 1.25 mm pitch; single-row, right-angle

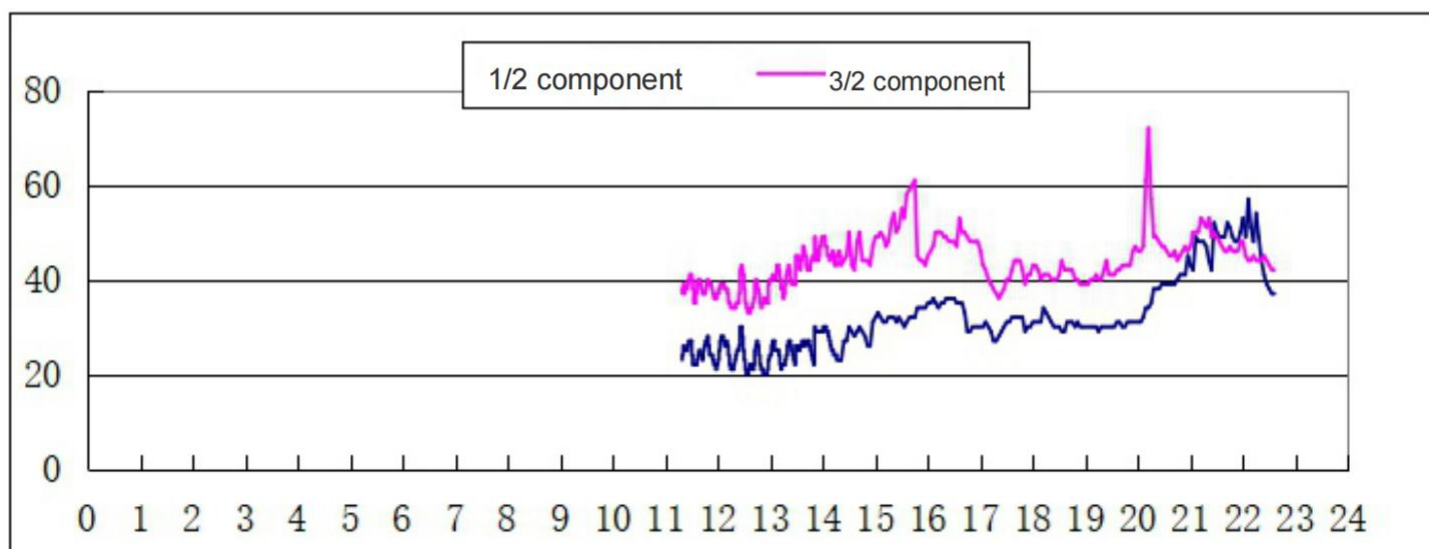
MEASUREMENT CURVES

10 GHz Phase Noise Measurement



Source series measurement example. Curves represent the illustrated test conditions.

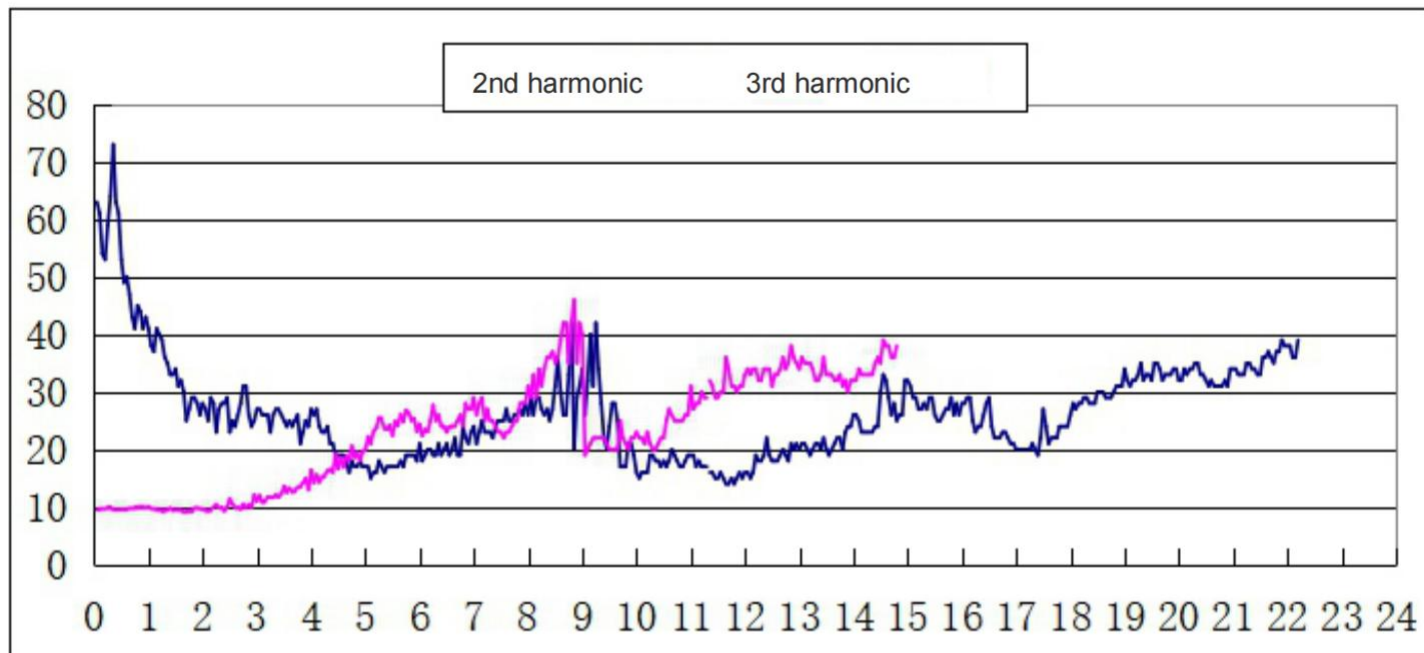
1/2 and 3/2 Component Suppression



Source series measurement example. Curves represent the illustrated test conditions.

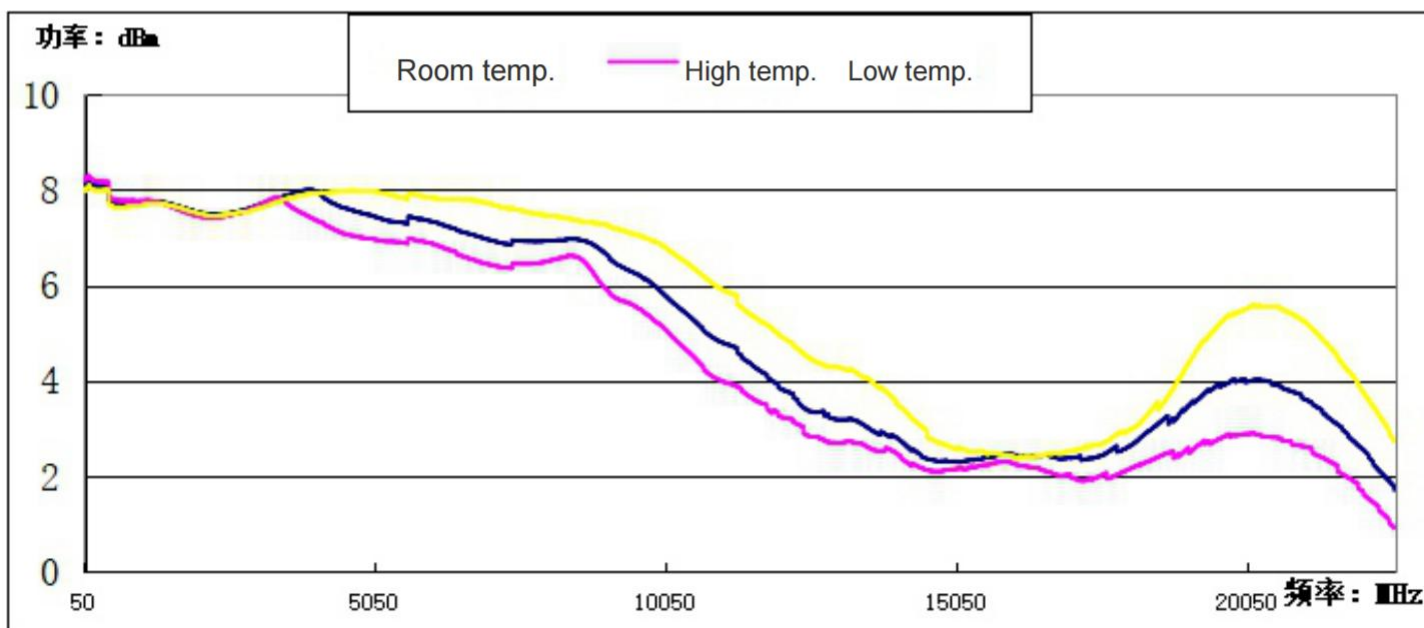
MEASUREMENT CURVES

Second and Third Harmonic Suppression



Source series measurement example. Curves represent the illustrated test conditions.

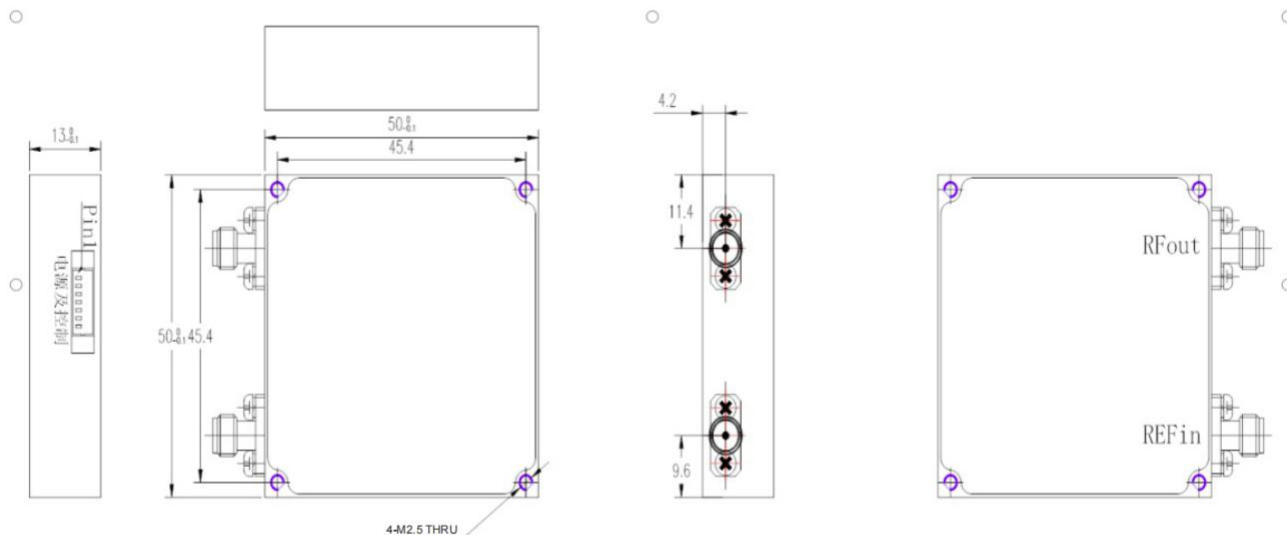
Output Power vs. Frequency and Temperature



Source series measurement example. Curves represent the illustrated test conditions.

OUTLINE & PIN ASSIGNMENTS

Mounting Dimensions



Dimensions in mm.

53261-0771-7P Pin Assignments (1.25 mm pitch, single-row, right-angle)

Pin	Definition
1	+12 V supply
2	GND
3	MOSI: SPI interface
4	LE: SPI interface
5	MISO: SPI interface
6	SCK: SPI interface
7	LD: high when locked