Performance report for SiT3372 - 148.5 MHz, HCSL

This performance report contains the following data:

- Phase noise
- Random phase jitter
- Output waveforms
- Pull range linearity
- Frequency stability over temperature
- Period jitter
- Duty cycle
- Rise/Fall time
- Amplitude
- Current consumption

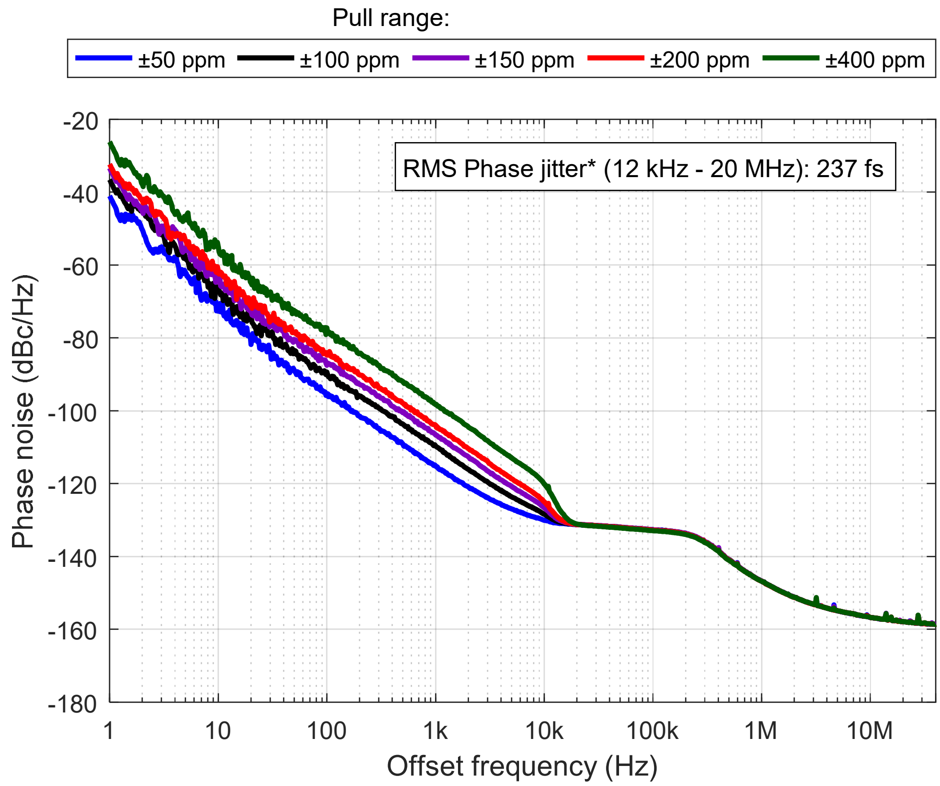

Figure 1: Phase noise, 3.3 V

Integrated phase jitter value applies for ±50 ppm to ±400 ppm pull ranges

Table 1: Phase noise

Phase noise dBc/Hz					
Frequency offset (Hz)	Pull range (ppm)				
	±50	±100	±150	±200	±400
1	-41.0	-36.6	-33.4	-32.3	-26.2
10	-72.6	-66.0	-62.8	-61.7	-55.1
100	-95.8	-89.4	-87.5	-84.8	-77.3
1 K	-115.1	-109.7	-106.7	-104.0	-98.3
10 K	-130.1	-128.4	-126.7	-125.0	-120.1
100 K	-132.7	-132.7	-132.7	-132.8	-132.9
1 M	-146.8	-146.7	-146.7	-146.8	-146.8
10 M	-156.8	-156.7	-156.8	-156.7	-156.7
40 M	-158.6	-158.6	-158.6	-158.6	-158.6

Table 2: Integrated Phase jitter

Parameter	Units	Pull range (ppm)
		±50 to ±400
Integrated Phase jitter (1.875 MHz - 20 MHz)	fs, rms	102
Integrated Phase jitter (12 kHz - 20 MHz)	fs, rms	237

Figure 2: Output waveform, 2.5 V

Figure 3: Output waveform, 3.3 V

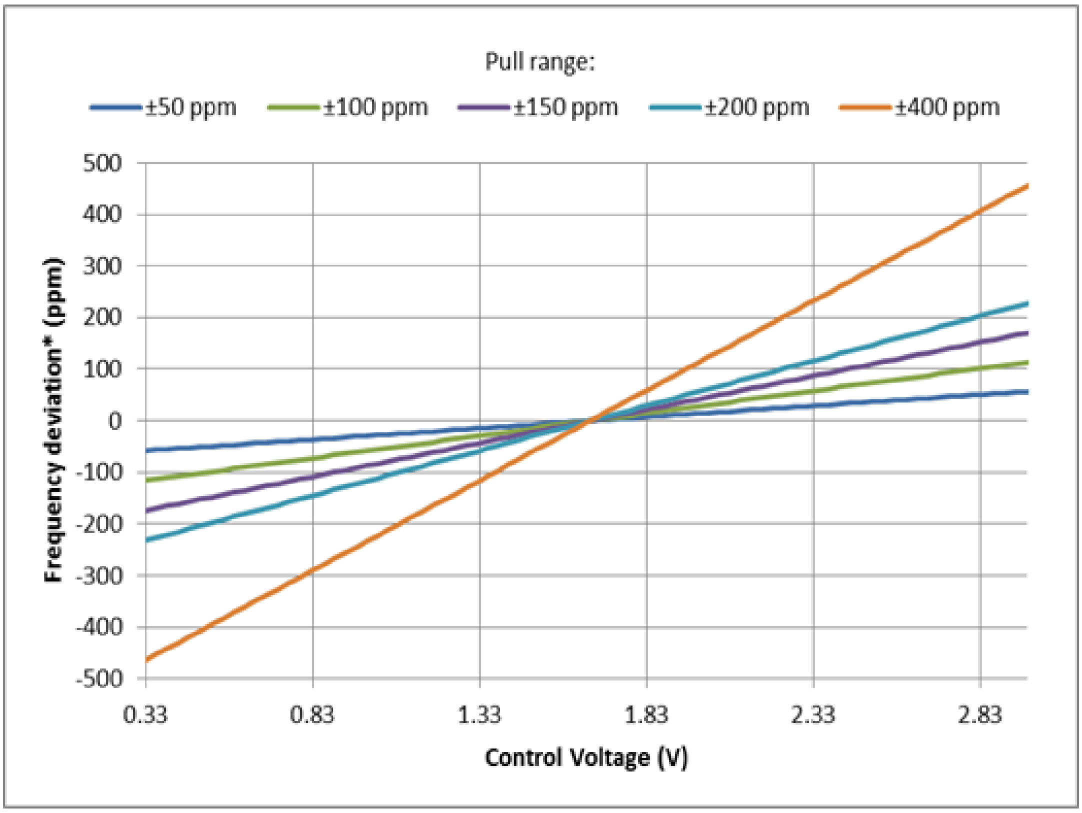

Figure 4: Frequency pull characteristic

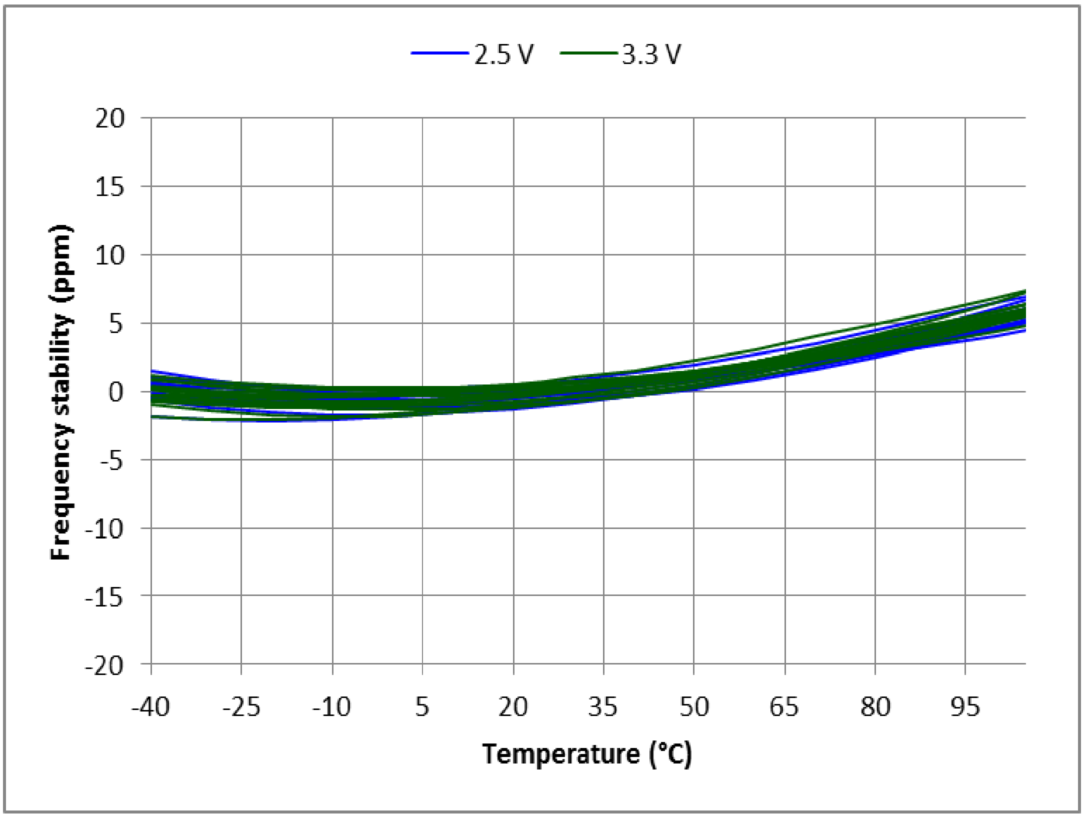

Figure 5: Frequency stability* over temperature, 2.5 V – 3.3 V, 30 devices

**SiT3372 frequency stability is independent of output frequency.*

Table 3: Summary performance data

Parameter	Units	Voltage	
		2.5 V	3.3 V
Period jitter	ps, rms	1.02	1.06
Period jitter (sample size 10,000 cycles)	ps, pk-pk	7.85	8.12
Duty cycle	%	50.1	50.1
Rise time (20% - 80%)	ps	376	373
Fall time (80% - 20%)	ps	377	375
Differential voltage swing	V	1.46	1.52
Current consumption (no load, output enabled)	mA	83.7	84.1
Current consumption (no load, output disabled)	mA	57.2	57.1

Test description

Conditions:

- Frequency: 148.5 MHz
- VDD: 2.5 V, 3.3 V
- Pull range: ±50 ppm, ±100 ppm, ±150 ppm, ±200 ppm, ±400 ppm
- Temperature: 25 °C

Equipment:

Model	Measurement / Purpose
Keysight DSA90604A (6 GHz, 20 Gsps)	Period jitter, output amplitude, rise/fall time, duty cycle
Keysight 5052B Signal Source Analyzer	Phase noise, integrated phase jitter
Keysight 34980A	Power supply current
Keysight E3631A	Power supply
Keysight 53230A	Frequency

Setup

Waveform

For waveform parameters measurement (rise/fall time, differential swing, duty cycle), both DUT outputs are terminated with 30 Ω series and 50 Ω to GND. Output signals are measured using Keysight 1134B active probe with Keysight N5425B probe head. All measurements are applied to the differential waveform. Figure 6 shows test setup diagram for waveform parameters measurement.

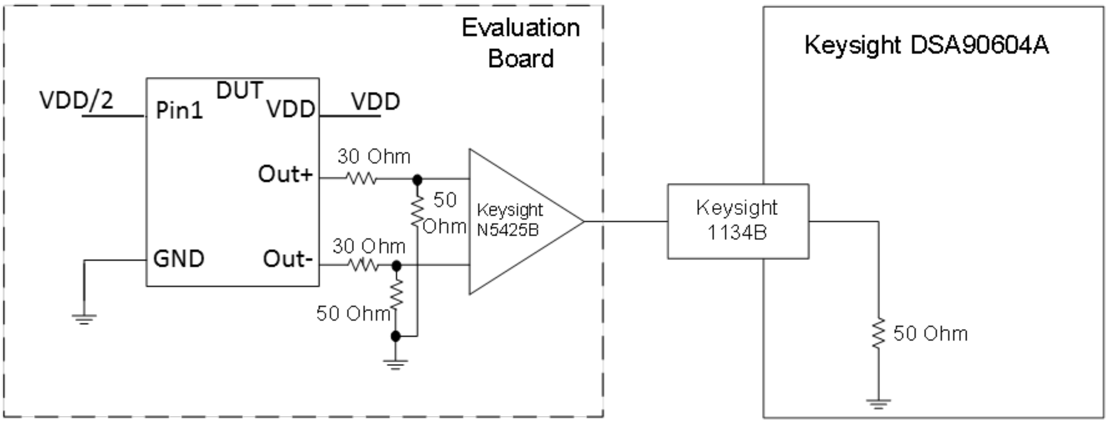

Figure 6. Test setup for measuring waveform parameters (rise/fall time, differential swing, duty cycle)

Period Jitter

For period jitter measurement output is terminated with 30 Ω series and 50 Ω to GND at the input of hi-speed comparator (ADCMP581). AC coupled comparator's output is connected to oscilloscope channel. Figure 7 shows test setup diagram for period jitter measurement.

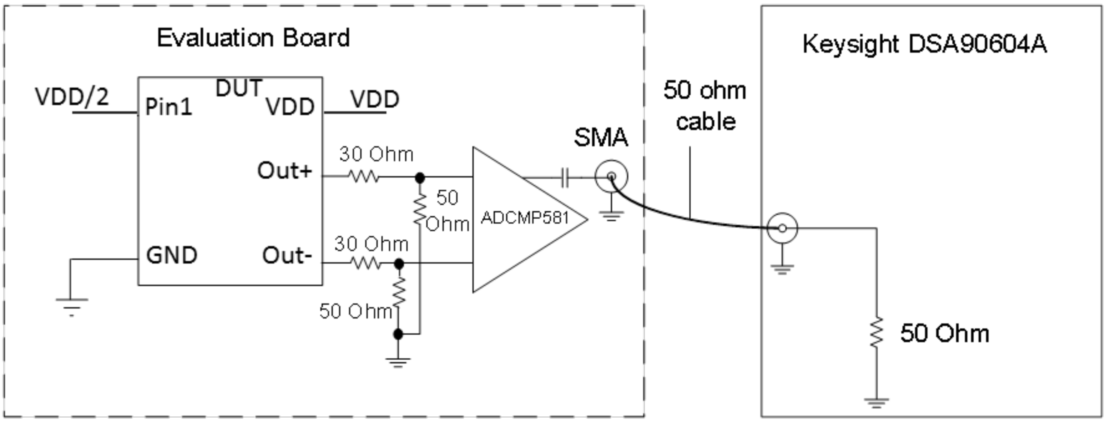

Figure 7. Test setup for measuring period jitter

Phase noise

For phase noise measurements, differential signal is converted to single-ended using impedance matching transformer. Transformer's output is connected to measurement instrument. Output is also terminated with 30 Ω series at the source side. Figure 8 shows test setup diagram for phase noise measurement.

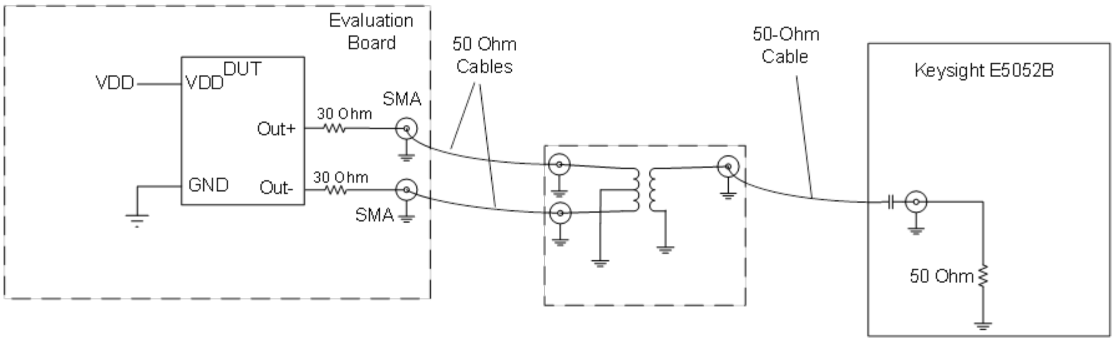

Figure 8. Test setup for measuring phase noise.

Current consumption

For Current consumption measurement device output is floating. For frequency measurement differential-to-single-ended converter is used.