



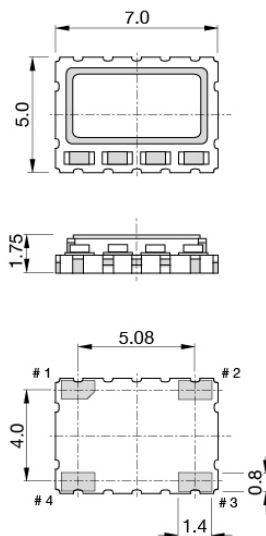
## TCXO for Galileo satellite navigation systems

- High frequency stability vs. temperature:  $\pm 0.10 \sim \pm 0.25$  ppm
- Output signal clipped sine wave or CMOS
- Low G-sensitivity (on request), shock resistant
- Low phase noise, low Allan deviation



### TX7-705CM-TQN-GAL

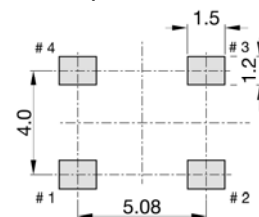
<b>Standard frequencies</b>	<b>10.0, 15.360, 16.3680, 20.0 &amp; 27.0 MHz</b>		
<b>Frequency stability</b>			
vs. temperature reference (F <sub>MAX</sub> +F <sub>MIN</sub> )/2	$\leq \pm 0.10$ ppm $\leq \pm 0.25$ ppm	over -20 ~ +70 °C over -40 ~ +85 °C	
vs. supply voltage changes reference to frequency at nominal supply	$\leq \pm 0.05$ ppm	$\pm 5$ %	
vs. load changes reference to frequency at nominal load	$\leq \pm 0.05$ ppm	$\pm 10$ %	
vs. aging	$\leq \pm 0.6$ ppm $\leq \pm 2.5$ ppm	1 <sup>st</sup> year 10 years	
Frequency slope vs. temperature	$\leq 0.02$ ppm/°C	over operating temperature	
Short term stability ADEV	$< 1 \times 10^{-10}$	$\tau = 1$ sec.	
G-sensitivity	$\leq 1.5$ ppb/g $\leq 0.5$ ppb/g	Gamma $\Gamma$ standard Gamma $\Gamma$	
Frequency tolerance ex factory	$\leq \pm 1.0$ ppm	@+25°C	
Supply voltage	+3.3 V	$\pm 5$ %	
Current consumption	< 3 mA		
Output waveform	CMOS	$V_{OH} \geq 0.9 V_{CC}$	$V_{OL} \leq 0.1 V_{CC}$
Output load	15 pF	Max.	
Symmetry (Duty)	45 ~ 55 %	@ $\frac{1}{2} V_{CC}$	
Phase noise @ 20 MHz	< -95 dBc/Hz < -125 dBc/Hz < -145 dBc/Hz < -155 dBc/Hz < -155 dBc/Hz	@ 10 Hz @ 100 Hz @ 1 kHz @ 10 kHz @ 100 kHz	
Operating temperature range	-40 ~ +85 °C		
Storage temperature range	-55 ~ +105 °C		
Reflow conditions per JEDEC J-STD-020	260 °C maximum	during 10 sec. Max.	
Moisture sensitivity	Level 1 (unlimited)		



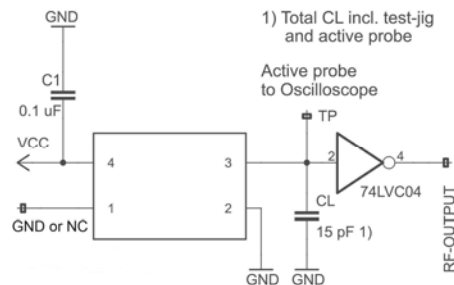
#### Pin function

- # 1 GND or NC
- # 2 GND
- # 3 RF output
- # 4 Vcc

#### Solder pattern



#### Test circuit





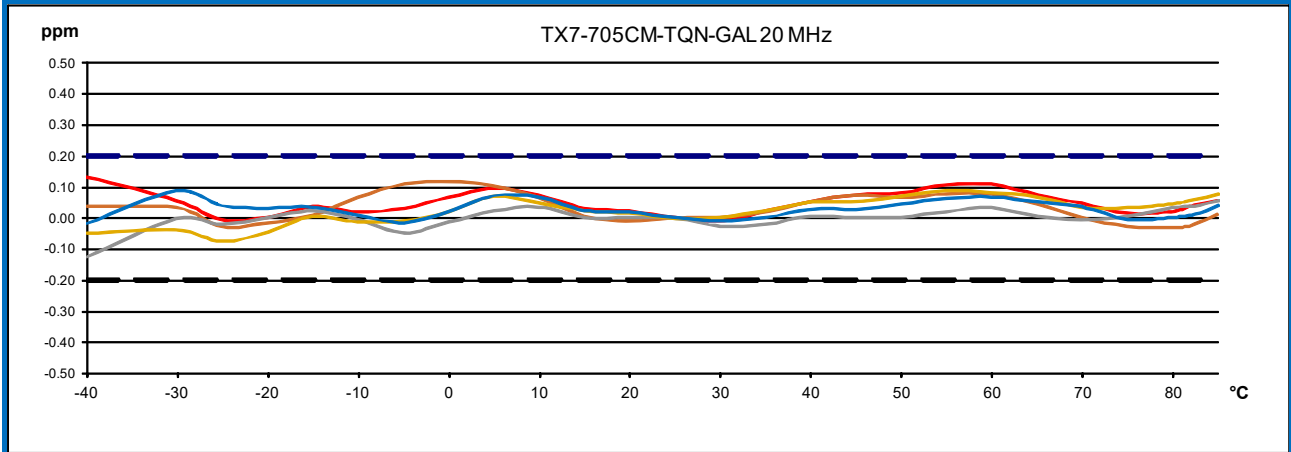
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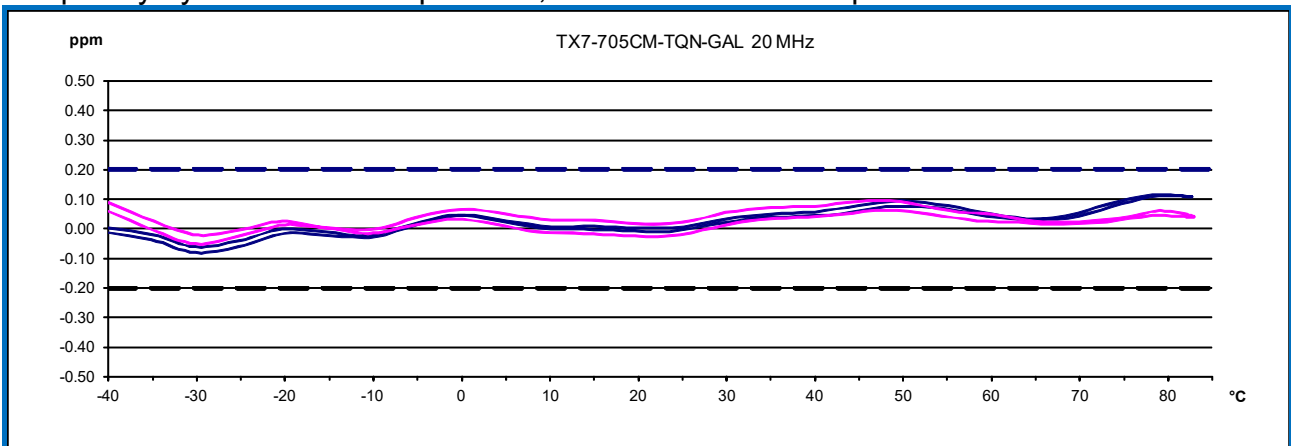


## Test data

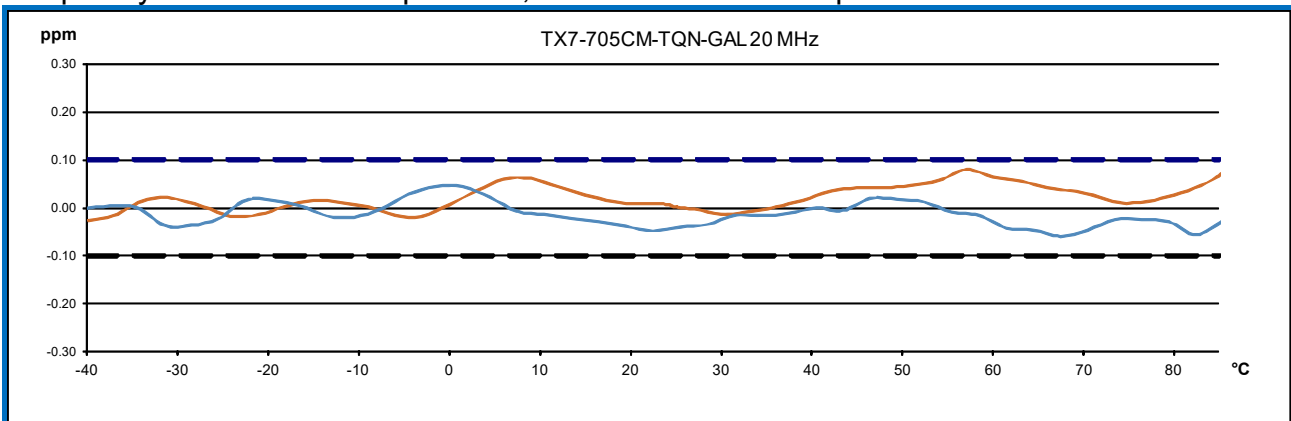
Frequency deviation vs. temperature, measured over -40 up to +85 °C



Frequency hysteresis vs. temperature, measured over -40 up to +85 °C



Frequency deviation vs. temperature, measured over -40 up to +85 °C



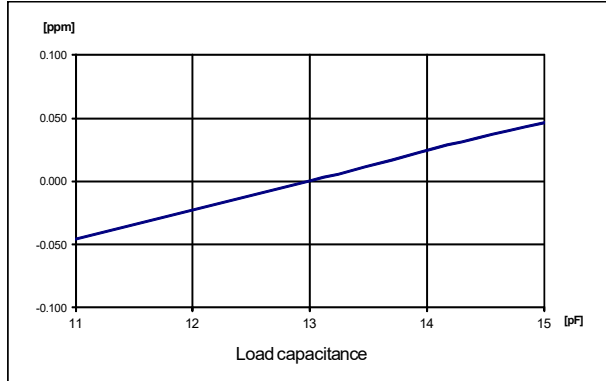


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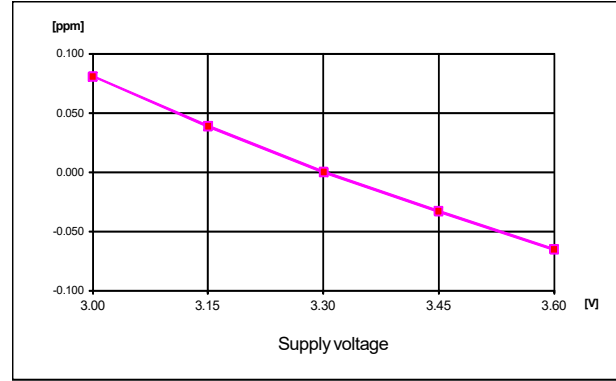
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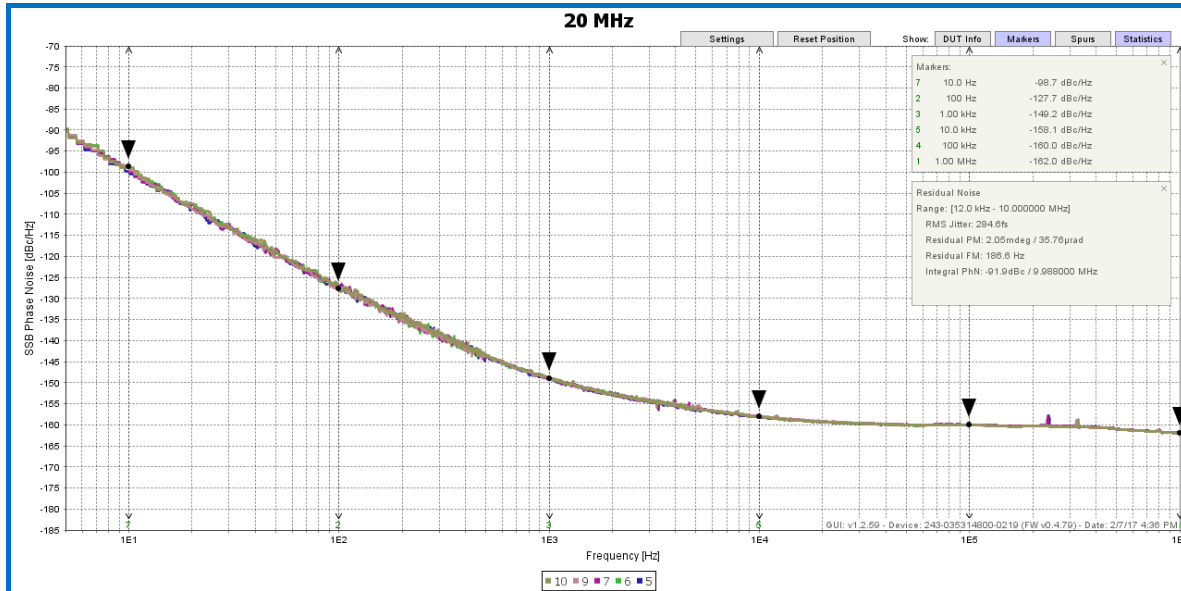
### Frequency stability vs. output load changes



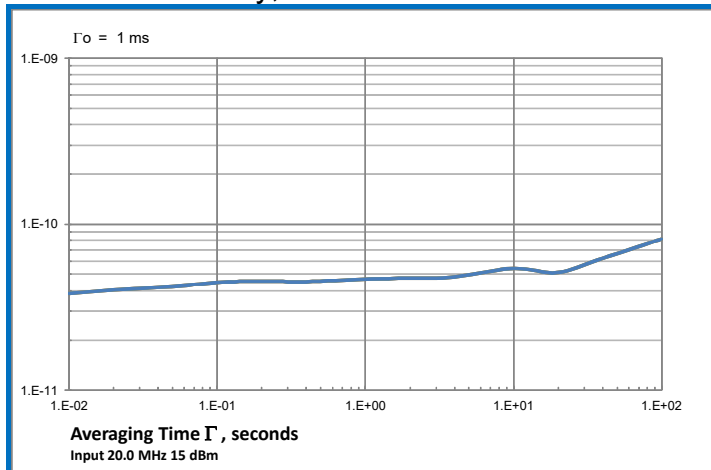
### Frequency stability vs. supply voltage changes



### Phase noise



### Short term stability, Allan deviation



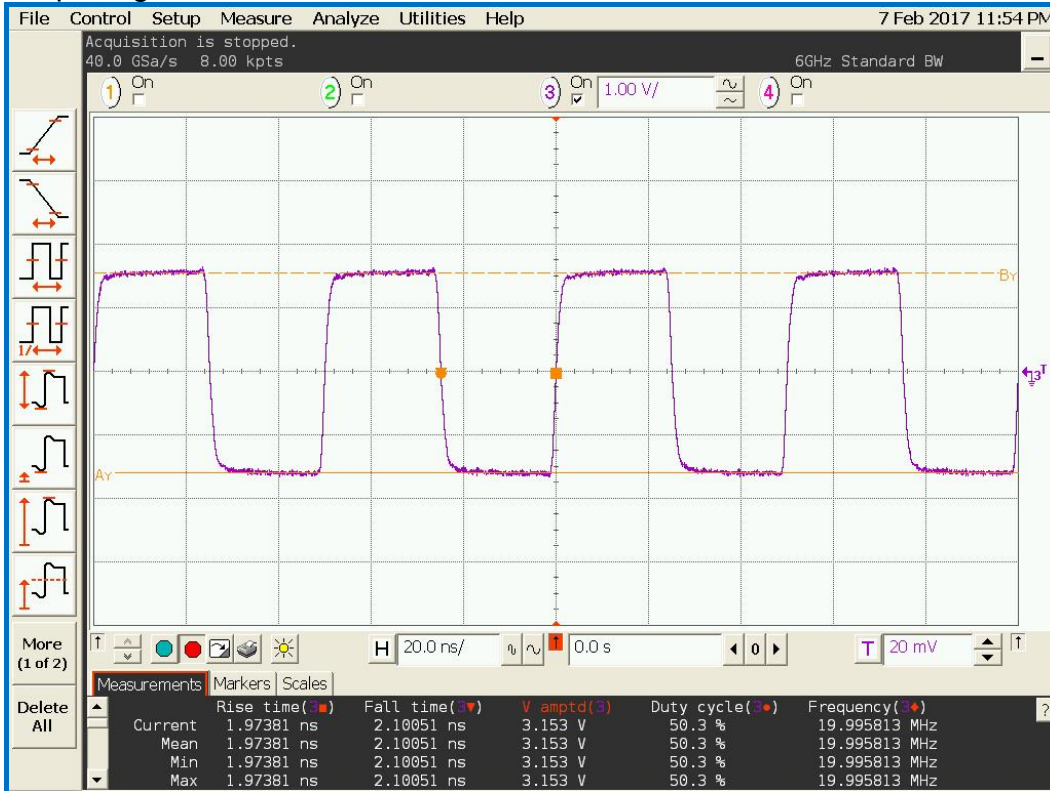


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### Output signal



### Environmental conditions

Test	IEC 60068 Part...	IEC 60679-1 Clause	MIL-STD-202G Method	MIL-STD-810F Method	MIL-PRF-55310D Clause	Test conditions (IEC)
Sealing tests (if applicable)	2-17	5.6.2	112E		3.6.1.2	Gross leak: Test Qc, Fine leak: Test Qk
Solderability	2-20	5.6.3	208H		3.6.52	Test Ta method 1,
Resistance to soldering heat	2-58		210F		3.6.48	Test Td <sub>1</sub> method 2, Test Td <sub>2</sub> method 2
Shock *	2-27	5.6.8	213B	516.4	3.6.40	Test Ea, 3 x per axis 100 g, 6 ms half-sine pulse
Vibration, sinusoidal*	2-6	5.6.7.1	201A 204D	516.4-4	3.6.38.1 3.6.38.2	Test Fc, 30 min per axis, 1 oct/min 10 Hz – 55 Hz 0,75 mm; 55 Hz – 2 kHz, 10 g
Vibration, random*	2-64	5.6.7.3	214A	514.5	3.6.38.3 3.6.38.4	Test Fdb
Endurance tests			108A			
- ageing		5.7.1			4.8.35	30 days @ 85 °C
- extended ageing		5.7.2				1000 h, 2000 h, 8000 h @ 85 °C

Other environmental conditions on request

