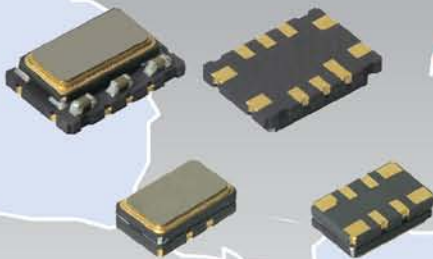
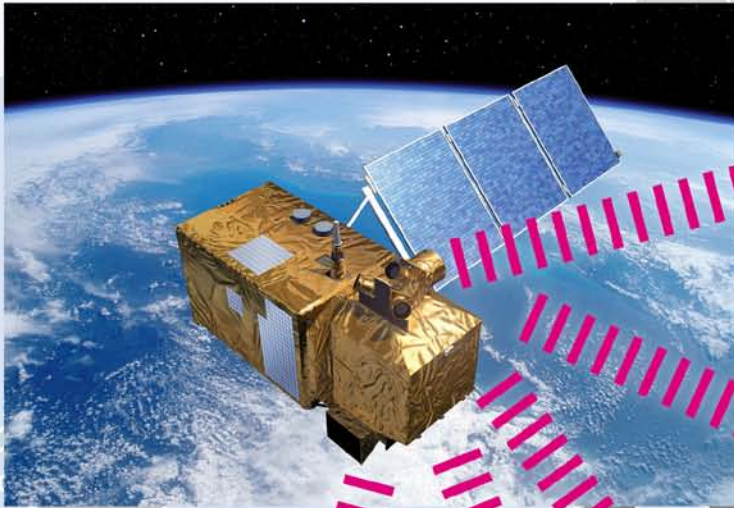


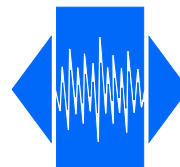


**TCXO** High Precision Analogue Compensated Crystal Oscillators

**for Location and Navigation**

GPS, GALILEO, GLONASS, COMPASS, QZSS, MSAS and COSPAS-SARSAT





## for location and navigation

<b>Applications</b>	<ul style="list-style-type: none"> <li>• GPS, GALILEO, GLONASS, COMPASS, QZSS &amp; MSAS</li> <li>• COSPAS-SARSAT</li> <li>• Mobile radio, satellite communications</li> </ul>
---------------------	--

<b>Features</b>	<ul style="list-style-type: none"> <li>• Tight stability: <math>\pm 0.5</math> ppm over -40 to +85 °C <math>\pm 0.25</math> ppm over -40 to +85 °C on request</li> <li>• Low G-sensitivity: 1.5 ppb/g Gamma <math>\Gamma</math> standard 0.5 ppb/g Gamma <math>\Gamma</math> on request</li> <li>• Short term stability: <math>&lt; 1 \times 10^{-10}</math> @ <math>\tau = 1</math> s</li> </ul>
-----------------	---

<b>Standard frequencies</b>	<b>10.0, 12.2880, 16.3840, 20.0, 25.0, 32.5120, 33.60, 49.1520 &amp; 50.0 MHz</b>		
<b>Frequency range</b>	<b>10.0 ~ 52.0 MHz</b>		
Frequency stability vs. temperature reference to (F <sub>MAX</sub> +F <sub>MIN</sub> )/2	$\leq \pm 0.5$ ppm $\leq \pm 1.0$ ppm $\leq \pm 1.0$ ppm	over -40 to +85 °C over -55 to +85 °C over -40 to +95 °C	standard on request on request
vs. supply change	$\leq \pm 0.2$ ppm	$\pm 5$ %	
vs. load change	$\leq \pm 0.1$ ppm	$\pm 5$ %	
vs. aging	$\leq \pm 1.0$ ppm	1 <sup>st</sup> year	
Frequency slope	$\leq 0.05$ ppm/°C	over operating temperature	
G-sensitivity	$< 1.5$ ppb/g $< 0.5$ ppb/g	Gamma $\Gamma$ Gamma $\Gamma$	standard on request
Short term stability (ADEV)	$< 1 \times 10^{-10}$	$\tau = 1$ s	
Supply voltage (Vdc)	+2.7 V to +5.0 V	nominal value needs to be defined, standard: 3.3 V and 5.0 V $\pm 5$ %	
Supply current	$< 3$ mA $< 8$ mA	10 MHz ~ 25 MHz up to 52 MHz	
Output signal	Clipped sine wave	CMOS	
Output level	$> 0.8$ V <sub>p-p</sub>	$V_{OH} > 0.9 \times V_{dc} / V_{OL} < 0.1 \times V_{dc}$	
Output load	10 k $\Omega$ // 10 pF	$\leq 15$ pF	
Symmetry (duty cycle)		45 / 55 @ $\frac{1}{2}$ V <sub>dc</sub>	
Tri-state function	Input $\geq 0.7 \times V_{dc}$ or open Input $\leq 0.3 \times V_{dc}$ or GND	Output $\rightarrow$ oscillation Output $\rightarrow$ high impedance	
Jitter (rms) 1 $\sigma$	$< 0.5$ ps	@ F <sub>j</sub> = 12 kHz ~ 20 MHz	
Phase noise @ 20.0 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	-20 ~ +70 °C -40 ~ +85 °C	indoor outdoor (extended temperature range on request)	
Storage temperature range	-55 ~ +125 °C		
Packing units	tape & reel	500 or 1000 pieces	

Environmental	Reference STD.		Test condition
Vibration sinusoidal	IEC 60028-2-6	IEC 60679-1-5.6.7	Test Fc, 30 min per axis 10 Hz – 55 Hz with 0.75 mm, 55 Hz – 2 kHz with 10 g
Shock	IEC 60028-2-27	IEC 60679-1-5.6.8	Test Ea, 3 x per axis, 100 g, 6 ms half sine pulse
Solderability	IEC 60028-2-20 IEC 60028-2-58	IEC 60679-5.6.3	Test Ta (235 $\pm 2$ ) °C Method 1 Test Tb Method 1A, 5 s

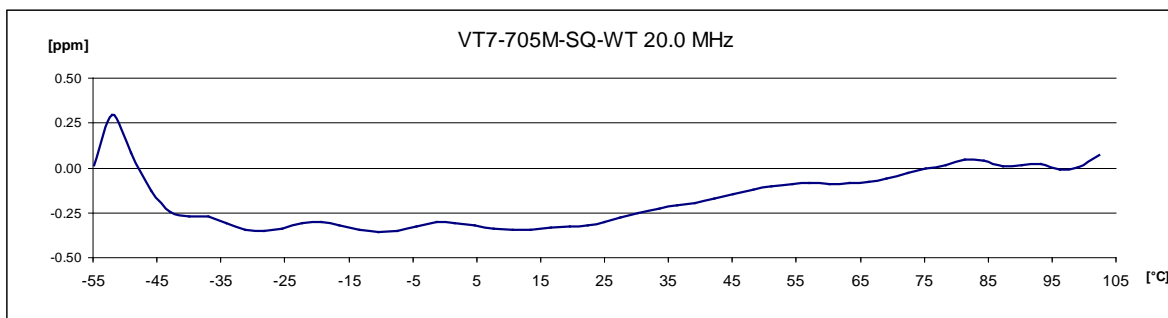
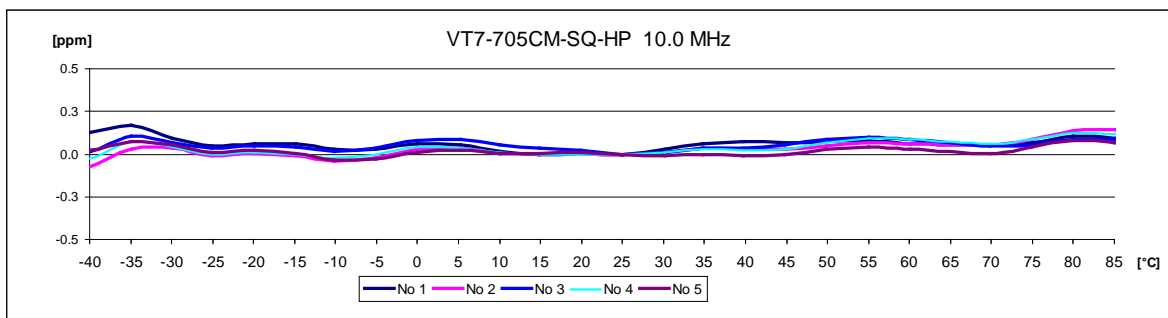


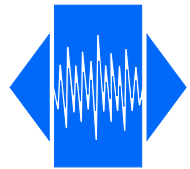
## for location and navigation

### Package outline and recommended solder pattern

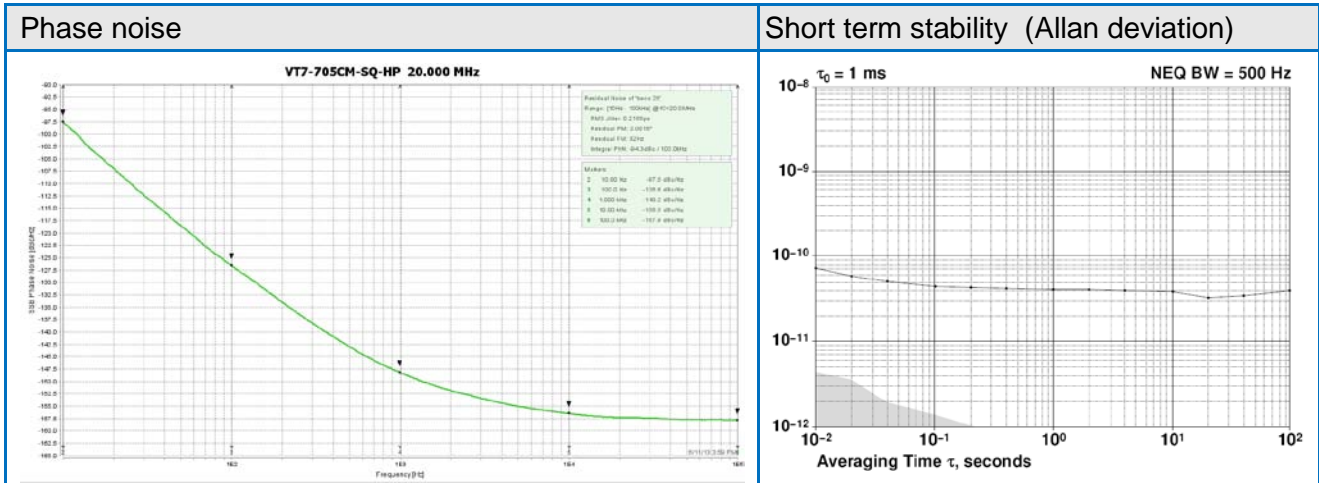
<p><b>TX7-705CM-SQ-HP</b></p> <p>Pin function</p> <ul style="list-style-type: none"> <li># 1 Do not connect</li> <li># 5 GND</li> <li># 6 Output</li> <li># 9 Tri-state</li> <li># 10 Vdc</li> </ul> <p>Do not connect: #2, #3, #4, #7 &amp; #8</p> <p>Solder pattern</p>	<p><b>TX7-705CM-TQ-HP</b></p> <p>Pin function</p> <ul style="list-style-type: none"> <li># 1 Do not connect</li> <li># 2 GND</li> <li># 3 Output</li> <li># 4 Vdc</li> </ul> <p>Solder pattern</p>
<p><b>TX7-503CM-SQ-HP</b></p> <p>Pin function</p> <ul style="list-style-type: none"> <li># 1 Do not connect</li> <li># 4 GND</li> <li># 5 Output</li> <li># 6 Tri-state (Enable)</li> <li># 8 Vdc</li> </ul> <p>Do not connect: #2, #3 &amp; #7</p> <p>Solder pattern</p>	<p><b>IR reflow soldering temperature</b></p> <p>Temp [°C]</p> <p>Peak temp (10 sec max)</p> <p>more than 30 60 to 100 20 to 40 time (sec)</p> <p>ramp up preheating heating</p> <p>Reflow conditions per JEDEC J-STD-020, 260 °C max.</p>

### Frequency deviation vs. temperature

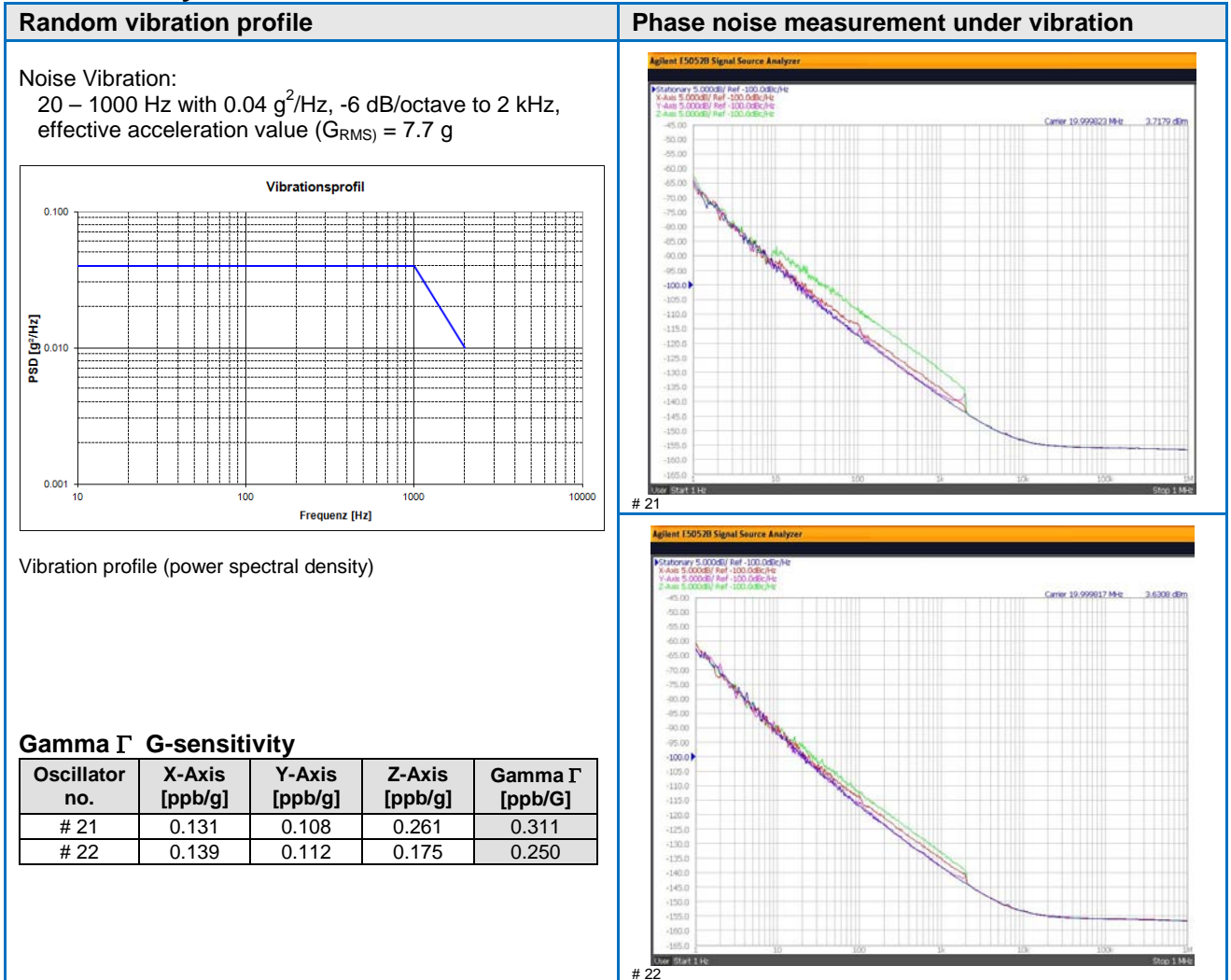




## for location and navigation



## G-sensitivity measurement



QuartzCom, more than frequency

QuartzCom AG  
Bischofstrasse 11  
CH 2544 Bettlach  
Switzerland

Fax +41 32 644 24 05  
Tel +41 32 644 24 00  
E-Mail sales@quartzcom.com  
[www.quartzcom.com](http://www.quartzcom.com)

