QuartzCom
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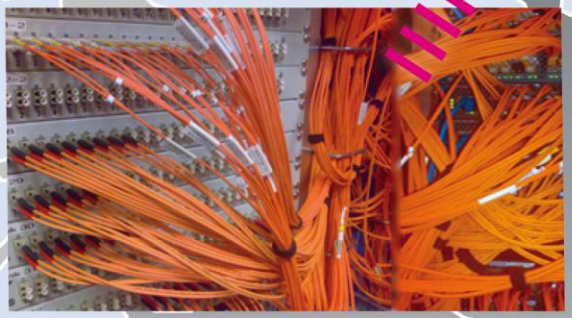
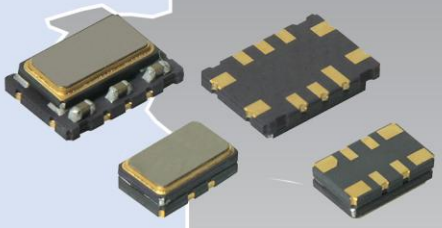
TCXO High Precision Analogue Compensated Crystal Oscillators
for STRATUM III, IEEE 1588v2

Synchronization of TDM Networks, SDH/SONET, Metro Ethernet, Fibre Channel, Wireless Communications, Wireless Backhaul





TCXO

Temperature Compensated Crystal Oscillators

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the communications company

for network synchronization

Applications	• TDM networks, SONET / SDH, Metro Ethernet • Wireless backhaul • Wireless communications, picocells, femtocells • STRATUM III, Synchronous Ethernet, IEEE 1588 v2, SETS

Features	• Holdover stability: ±0.37 ppm over 24 h • Overall stability: ±4.60 ppm including 20 years aging • Short term aging, G.813 Option 1: ±0.01 ppm over 24 h @ +25 °C

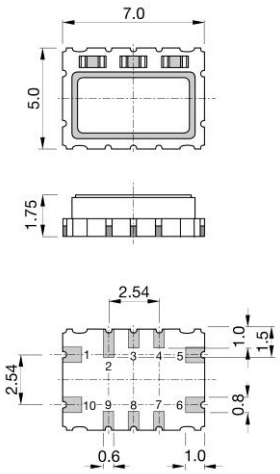
Standard frequencies	**10.0, 12.80, 16.3840, 19.440, 20.0, 21.350 25.0, 32.0, 38.880 & 40.0 MHz**	
Frequency range	**5.0 ~ 52.0 MHz**	
Frequency stability	**≤ ±4.60 ppm**	**overall inclusive** (Note #1)
Overall inclusive	frequency stability vs. temperature, tolerance ex factory, aging over 20 years, supply & load variation	
Frequency stability vs. temperature	≤ ±0.28 ppm	over operating temperature range
Long term aging	≤ ±3.0 ppm	over 20 years
Holdover stability	≤ ±0.37 ppm	over 24 h (Note #2)
Short term aging, G.813 Option 1	≤ ±0.01 ppm/day	@ +25 °C ±1 °C (Note #3)
Frequency slope	≤ 0.05 ppm/°C	over operating temperature
Short term stability (ADEV)	< 1 x 10^{-10}	@ τ = 1 s
Frequency tolerance ex factory	≤ ±0.50 ppm	@ +25 °C
Supply voltage (Vdc)	+2.7 V to +5.0 V	nominal value needs to be defined, standard: 3.3 V and 5.0 V ±5 %
Supply current	< 3 mA < 8 mA	10 MHz ~ 20 MHz up to 52 MHz
Output signal	CMOS	(Note #4)
Output level	V_{OH} > 0.9 x Vdc	V_{OL} < 0.1 x Vdc
Output load	15 pF	
Symmetry (duty cycle)	45 / 55 %	@ ½ Vdc
Tri-state function	Input ≥ 0.7 x Vdc or open Input ≤ 0.3 x Vdc or GND	Output ➔ oscillation Output ➔ high impedance
Jitter (rms) 1σ	< 0.5 ps	@ Fj = 12 kHz ~ 20 MHz
Phase noise @ 19.44 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
Storage temperature range	-55 ~ +125 °C	
Reflow Profiles as per IPC/JEDEC J-STD-020C	≤ 260 °C over 10 sec. Max.	
Moisture sensitivity	Level 1 (unlimited)	
Packing units	tape & reel	500 or 1000 pieces

Note #1: Including frequency stability vs. temperature, tolerance @ +25 °C, aging 20 years, supply & load variation
Note #2: Including frequency stability vs. temperature, supply change of ±1 % and aging over 24 h
Note #3: 1 day = 24 h
Note #4: Clipped sine wave on request

for network synchronization

Package outline and recommended solder pattern

TX7-705CM-SQ-ST3



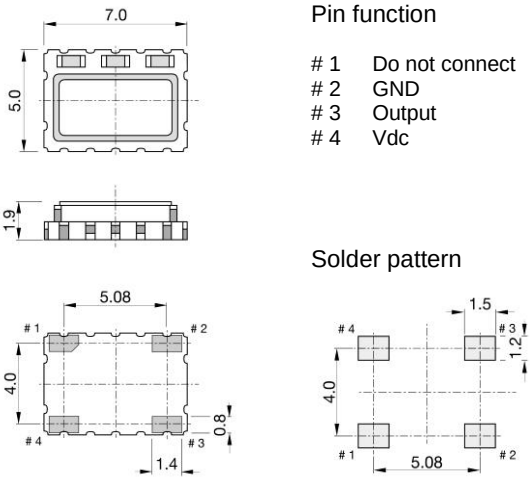
Pin function

# 1	Do not connect
# 5	GND
# 6	Output
# 9	Tri-state
# 10	Vdc

Do not connect: #2, #3, #4, #7 & #8

Solder pattern

TX7-705CM-TQ-ST3

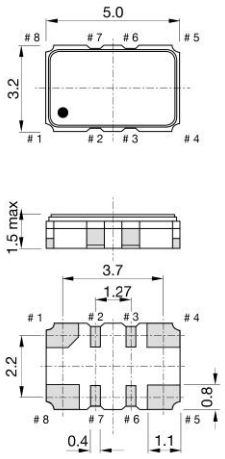


Pin function

# 1	Do not connect
# 2	GND
# 3	Output
# 4	Vdc

Solder pattern

TX7-503CM-SQ- ST3



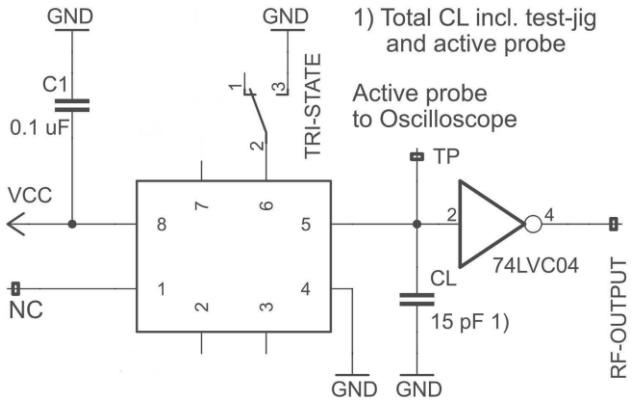
Pin function

# 1	Do not connect
# 4	GND
# 5	Output
# 6	Tri-state
# 8	Vdc

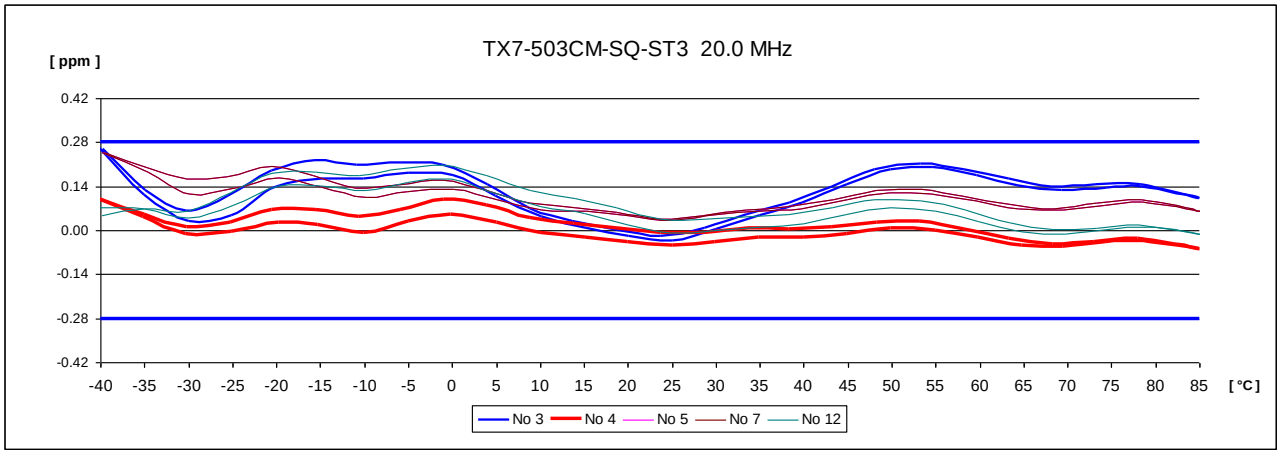
Do not connect: #2, #3 & #7

Solder pattern

IR reflow soldering temperature

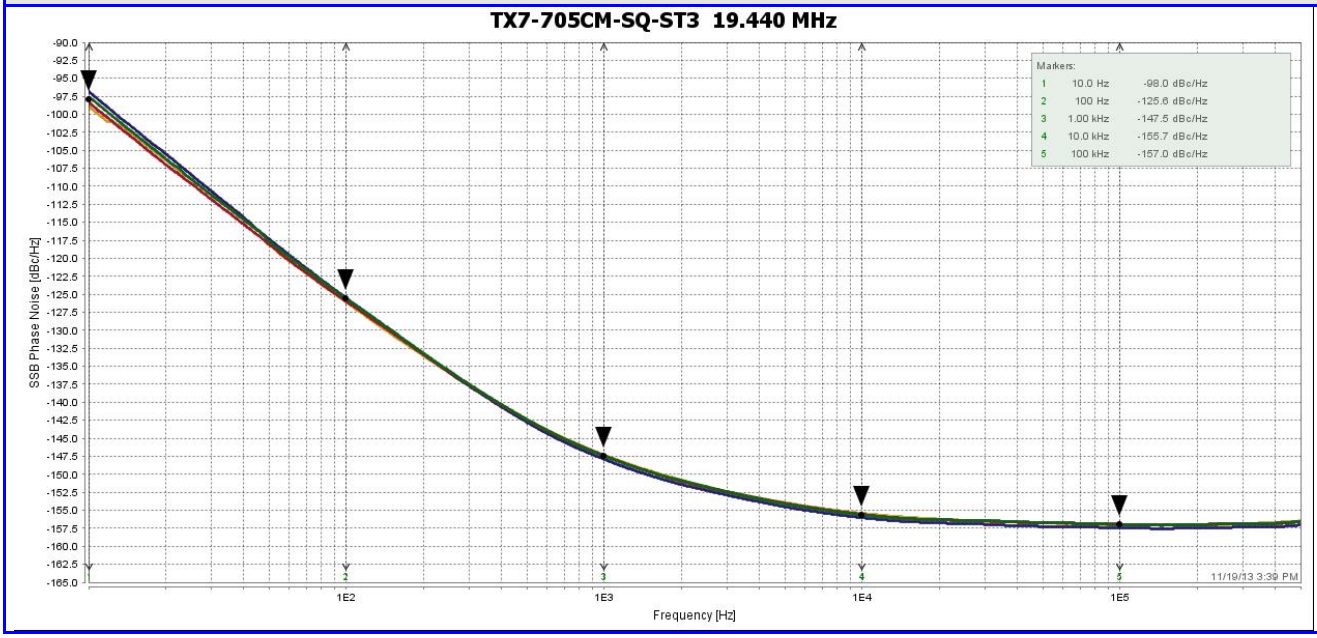


Frequency hysteresis vs. temperature



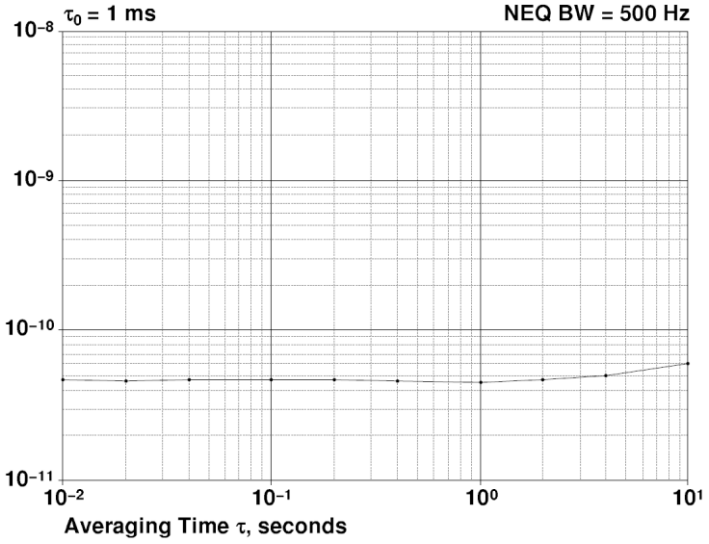
for network synchronization

Phase noise



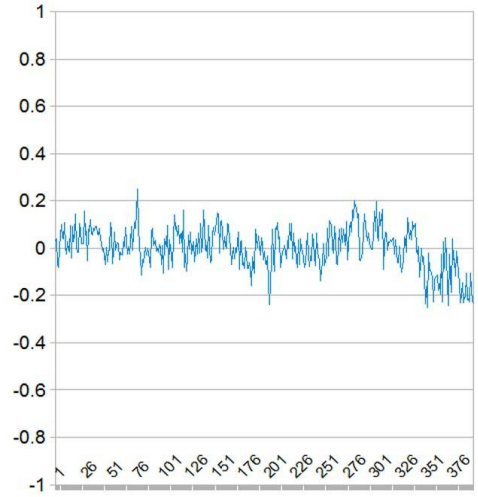
#11 ~ #14

Short term stability (Allan deviation)



#11

Frequency stability in ppb



400 continuous measurements at 150ms gate time

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 ±2) °C Method 1 Test Tb Method 1A, 5 s

QuartzCom, more than frequency

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