actual size

Oscillator JTS53HC(V) · (VC)TCXO

- temp. compensated crystal oscillator, 5.0 x 3.2 mm
- low jitter Stratum 3 compliant TCXO / VCTCXO
- temperature range -40°C ~ +105°C available
- frequency stability of ± 50 ppb available
- ask for customized options

RoHS compliant · Pb free · REACH compliant · Conflict mineral free

GENERAL DATA

TYPE		JTS53HC / JTS53HCV (HCMOS output)
frequency range		9.60 ~ 50.0 MHz (see table 4 on next page)
frequency tolerance / stability	at +25 °C (*1)	± 1.0 ppm max.
	after 2x reflow (*2)	± 0.5 ppm max.
	temperature (*3)	see table 1
	supply voltage (*4)	± 0.1 ppm max. (at V_{DC} ± 5%)
	load change (*5)	± 0.1 ppm max. (at nom load ± 5%)
	aging first year (*6)	± 1.0 ppm max. (at +25 °C)
	aging per day (*7)	± 20.0 ppb max.
short term stability (ADEV) with τ = 1 sec (typ. / max.)		0.1 ppb / 0.2 ppb (stability = ±0.28 ppm)
		0.2 ppb / 0.5 ppb (stabilities < ±0.28 ppm)
holdover stability (*8)		± 0.37 ppm max.
free run frequency stability (*9)		± 4.6 ppm max.
current consumption max.		10.0 mA max.
supply voltage V_{DC}		3.3 V (all ± 5%)
tempera-ture	operating	see table 1
	operable	-40 °C ~ +105 °C
	storage	-55 °C ~ +105 °C
output	rise/fall time max.	8ns (10% <-> 90% of V_{DC})
	nominal load	15 pF
	low / high level	0.4 V max. / V_{DC} - 0.4 V min.
start-up time max.		3.0 ms

For (*1) ~ (*9) please refer to definitions shown on the 2nd page of this datasheet

TABLE 1: FREQUENCY STABILITY CODE

frequency stability / temperature code		F ± 0.28 ppm	H ± 0.20 ppm	G ± 0.10 ppm	J ± 0.05 ppm
-30 °C ~ +75 °C	G	○	○	○	○
-40 °C ~ +85 °C	K	○	○	○	○
-40 °C ~ +105 °C	P	○	○	○	▷

○ available ▷ ask if available

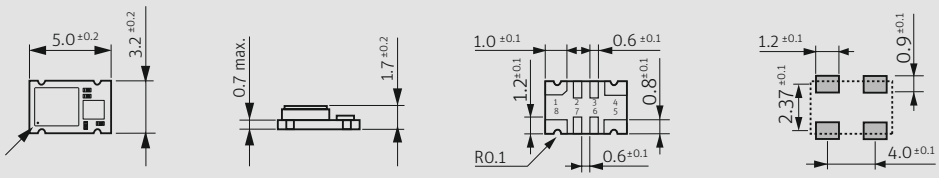
TABLE 2: VC DEPENDENT FREQUENCY TUNING RANGE CODING METHOD

V_C frequency tuning range of JTS53HCV	code	minimal	maximal
table shows examples, ask for more options	05X0	± 5.0 ppm	undefined
	08X0	± 8.0 ppm	undefined
	0510	± 5.0 ppm	± 10.0 ppm
	1015	± 10.0 ppm	± 15.0 ppm

TABLE 3: VC CODING METHOD (EXAMPLES)

V_C center voltage and V_C range	code	center of V_C	range of V_C	
	1616	1.65 V	± 1.65 V	1.65 V ± 1.65 V at V_{DC} = 3.3 V
	1610	1.65 V	± 1.00 V	1.65 V ± 1.00 V at V_{DC} = 3.3 V
	1515	1.50 V	± 1.50 V	1.50 V ± 1.50 V at V_{DC} = 3.3 V
	1510	1.50 V	± 1.00 V	1.50 V ± 1.00 V at V_{DC} = 3.3 V
V_C properties	input impedance of V_C min.			100 kOhm
	V_C frequency tuning linearity max.			10 %

DIMENSIONS



top view example · side view example · bottom view · pad layout

TCXO JTS53HC
1: NC
2, 3: NC
4: GND
5: output
6,7: NC
8: V_{CC}

VCTCXO JTS53HCV
1: VC
2, 3: NC
4: GND
5: output
6,7: NC
8: V_{CC}

pin connection · in mm

ORDER INFORMATION

0	frequency	– type	– frequency stability code	– operating temp. code	– supply voltage	– control voltage (for JTS53HCV)	– tuning range (for JTS53HCV)
Oscillator	9.60 ~ 50 MHz	JTS53HC = TCXO JTS53HCV = VCTCXO	F = ± 0.28 ppm H = ± 0.20 ppm G = ± 0.10 ppm J = ± 0.05 ppm	G = -30°C ~ 75°C K = -40°C ~ 85°C P = -40°C ~ 105°C	3.3 = 3.3 V	see table 3	see table 2

Example: O 10.0-JTS53HCV-F-K-3.3-1510-1015-LF (Suffix LF = RoHS compliant / Pb free)

Jauch Quartz GmbH • e-mail: info@jauch.com • full data can be found under: www.jauch.com

Oscillator JTS53HC(V) · Stratum 3 TCXO & VCTCXO

PHASE NOISE INFORMATION

phase noise at fO 19.2 MHz, V_{DC} = 3.3 V @ +25 °C	at 10 Hz	-93 dBc/Hz typ.
	at 100 Hz	-120 dBc/Hz typ.
	at 1 KHz	-145 dBc/Hz typ.
	at 10 KHz	-157 dBc/Hz typ.
	at 100 KHz	-159 dBc/Hz typ.

DEVELOPED FREQUENCIES

all frequencies in MHz:	10.0	12.80	13.0	16.320	16.3840
	18.4320	19.20	19.440	20.0	25.0
	30.720	32.7680	38.880	40.0	50.0

PACKAGING NOTE

– non-multiple packing units are only supplied taped / bulk
– moisture sensitivity: MSL 2

NOTE

- for best supply noise rejection, connect a capacitor of 100nF and a second capacitor of 10µF closely to the supply voltage pins
- a separate voltage supply rail ensures best phase noise
- keep digital or high frequency signals as far away from V_C pin as possible

DEFINITIONS

*1: Measured frequency observed with T_A=+25°C and C_L=15pF, at nominal V_{DC} and nominal center V_C (if applicable) within 30 days after ex-factory. The measured frequency is referenced to the specified nominal frequency.

*2: At specified reflow soldering profile, tested with T_A=+25 °C and C_L=15pF, at nominal V_{DC} and nominal center V_C (if applicable). At least 4 hours of static placement at room temperature is necessary after completion of 2 times reflow.

*3: T_A varied in the specified operating temperature range, frequency variation is normalized to the middle point of whole frequency excursion, at nominal V_{DC} and nominal center V_C (if applicable), and at nominal output load, temperature variable speed less than 2°C per minute.

*4: Frequency variation if V_{DC} is varied by ± 5% of nominal V_{DC}, frequency variation is normalized to frequency observed at nominal V_{DC}, nominal center V_C (if applicable), T_A=+25 °C and nominal load.

*5: Frequency variation if the load is varied by ± 5% of nominal load, frequency variation is normalized to frequency observed at nominal V_{DC}, nominal center V_C (if applicable), T_A=+25 °C and nominal load.

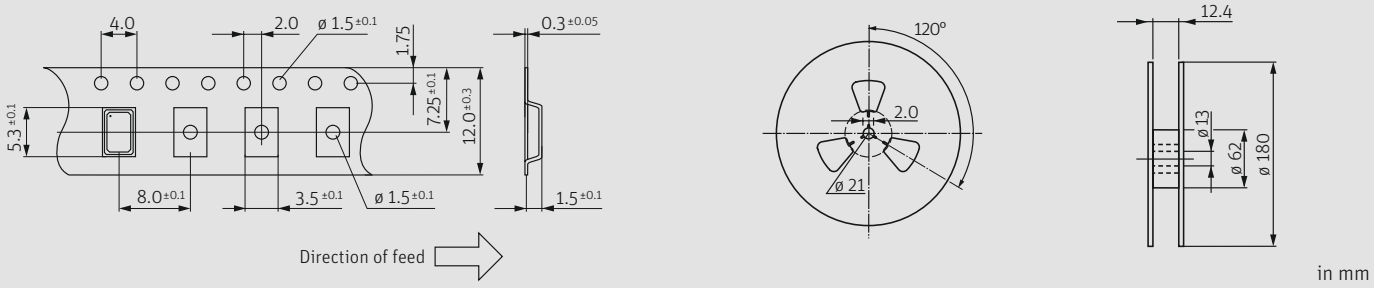
*6: The maximum 1st-year frequency deviation from the ex-factory status. T_A=+25 °C, at nominal V_{DC}, nominal center V_C (if applicable), T_A=+25 °C and nominal load. Normally, the largest frequency deviation occurs within the 1st year.

*7: The maximum frequency deviation within 24 hours in a steady state. The initial status acquired at T_A=+25 °C, at nominal V_{DC}, nominal center V_C (if applicable), nominal load and after 1h of continuous operation.

*8: The maximum frequency deviation within 24 hours including temperature variation. The initial status acquired at T_A=+25°C, at nominal V_{DC}, nominal center V_C (if applicable), nominal load and after 1h of continuous operation.

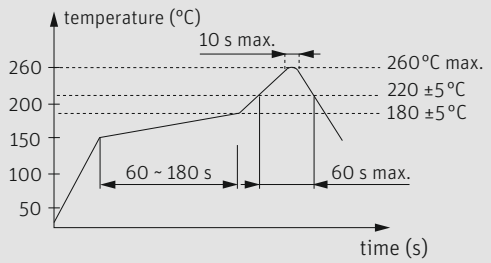
*9: The maximum frequency deviation including stability vs. temperature, tolerance ex. factory, aging over 20 years, supply and load variation.

TAPING SPECIFICATION



in mm

REFLOW SOLDERING PROFILE



note: parts are also suitable for soldering systems with lead (Pb) content

MARKING

frequency / internal code (optional)
dot / D / internal code

note: for more information please contact Jauch