actual size

Oscillator JTP75HC(V) · (VC)TCXO

- precision temperature compensated crystal oscillator, 7.0 x 5.0 mm
- frequency stability of ± 50 ppb available
- temperature range up to -40°C ~ +105°C
- JTP75HCV with frequency tuning option
- for a Stratum 3 compliant version refer to JTS75HC(V)

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

GENERAL DATA

TYPE		JTP75HC / JTP75HCV (HCMOS output)
frequency range		9.60 ~ 50.0 MHz (see developed frequ.)
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)	± 10.0 ppb max.
short term stability (ADEV) with τ = 1 sec (typ. / max.)		0.1 ppb / 0.2 ppb (stabilities ≥ ±0.28 ppm)
		0.2 ppb / 0.5 ppb (stabilities < ±0.28 ppm)
current consumption max.		10.0 mA
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.	8 ns (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
V_C frequ. tuning range JTP75HCV		examples in table 2 (ask for more options)
V_C frequ. tuning voltage JTP75HCV		examples in table 3 (ask for more options)

For (*1) ~ (*7) please refer to definitions shown on the 2nd page of this datasheet

TABLE 1: FREQUENCY STABILITY CODE

frequency stability temperature code		E ± 0.5 ppm	F*1 ± 0.28 ppm	H*1 ± 0.20 ppm	G*1 ± 0.10 ppm	J*1 ± 0.05 ppm
-30 °C ~ +75 °C	G	O	O	O	O	O
-40 °C ~ +85 °C	K	O	O	O	O	O
-40 °C ~ +105 °C	P	O	O	O	O	O

O available

*1 frequency stability options F / H / G and J can be ordered as Stratum 3 compliant versions, see separate JTS75HC(V) datasheet

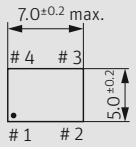
TABLE 2: VC DEPENDENT FREQUENCY TUNING RANGE CODING METHOD

V_C frequency tuning range of JTP75HCV	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
	0812	± 8.0 ppm	± 12.0 ppm

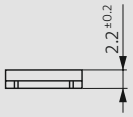
TABLE 3: VC CODING METHOD (EXAMPLES)

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 %

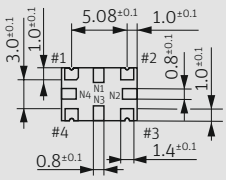
DIMENSIONS



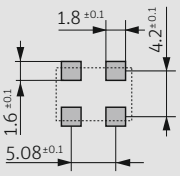
top view



side view



bottom view



pad layout

TCXO JTP75HC	VCTCXO JTP75HCV
N1, N2, N3, N4: NC	N1, N2, N3, N4: NC
# 1: NC	# 1: V_C
# 2: GND	# 2: GND
# 3: output	# 3: output
# 4: V_{CC}	# 4: V_{CC}

pin connection

in mm

ORDER INFORMATION

0	frequency	– type	– frequency stability code	– operating temp. code	– supply voltage	– control voltage (for JTP75HCV)	– tuning range (for JTP75HCV)
Oscillator	9.60 ~ 50 MHz	JTP75HC = TCXO JTP75HCV = VCTCXO	E = ± 0.50 ppm 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-JTP75HCV-F-K-3.3-1616-08X0-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 JTP75HC(V) · Precision 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:	9.60	10.0	12.80	13.0	16.3840
	18.4320	19.20	19.440	20.0	25.0
	26.0	30.720	38.880	40.0	50.0

PACKAGING NOTE

– non-multiple packing units are only supplied taped / bulk
– moisture sensitivity: MSL2

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.

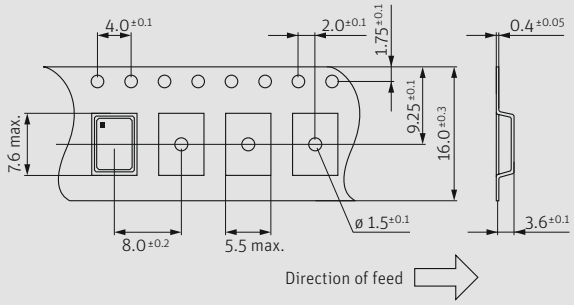
*4: Frequency variation if V_{DC} is varied by ± 5% of nominal V_{DC}, frequency variation is normalized to frequency observed at nominal V_{DC}, nominal center V_C (if applicable), T_A=+25 °C and nominal load.

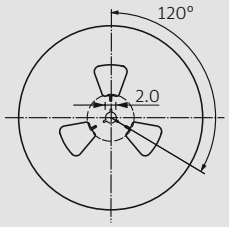
*5: Frequency variation if the load is varied by ± 5% of nominal load, frequency variation is normalized to frequency observed at nominal V_{DC}, nominal center V_C (if applicable), T_A=+25 °C and nominal load.

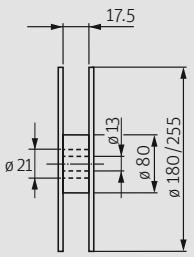
*6: The maximum 1st-year frequency deviation from the ex-factory status. T_A=+25 °C, at nominal V_{DC}, nominal center V_C (if applicable), T_A=+25 °C and nominal load. Normally, the largest frequency deviation occurs within the 1st year.

*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.

TAPING SPECIFICATION

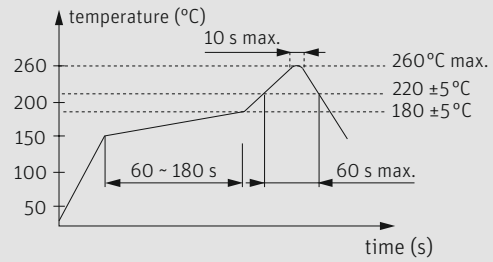






in mm

REFLOW SOLDERING PROFILE



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

MARKING

internal code (optional) / frequency
dot / internal code

note: for more information please contact Jauch