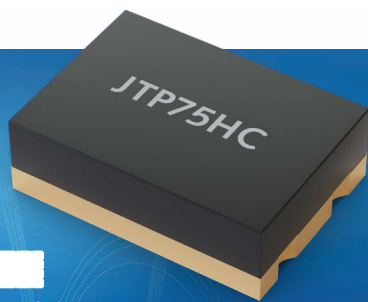




actual size

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 $-40^{\circ}\text{C} \sim +105^{\circ}\text{C}$
- 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 $+25^{\circ}\text{C}$ (*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 $V_{\text{DC}} \pm 5\%$)
	load change (*5)	± 0.1 ppm max. (at nom load $\pm 5\%$)
	aging first year (*6)	± 1.0 ppm max. (at $+25^{\circ}\text{C}$)
	aging per day (*7)	± 10.0 ppb max.
	short term (ADEV)	0.2 ppb max. / 0.1 ppb typ. with $\tau = 1$ sec
current consumption max.		10.0 mA
supply voltage V_{DC}		3.3V (all $\pm 5\%$)
temperature	operating	see table 1
	operable	$-40^{\circ}\text{C} \sim +105^{\circ}\text{C}$
	storage	$-55^{\circ}\text{C} \sim +105^{\circ}\text{C}$
output	rise/fall time max.	8ns (10% $\leftrightarrow$ 90% of VDC)
	nominal load	15 pF
	low level max.	0.4V
	high level min.	$V_{\text{DC}} - 0.4\text{V}$
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		E	F*1	H*1	G*1	J*1
temperature code		± 0.5 ppm	± 0.28 ppm	± 0.20 ppm	± 0.10 ppm	± 0.05 ppm
$-30^{\circ}\text{C} \sim +75^{\circ}\text{C}$	G	○	○	○	○	○
$-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$	K	○	○	○	○	○
$-40^{\circ}\text{C} \sim +105^{\circ}\text{C}$	P	○	○	○	○	○

○ 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	$1.65 \text{ V} \pm 1.65 \text{ V}$ at $V_{\text{DC}} = 3.3 \text{ V}$
	1610	1.65 V	± 1.00 V	$1.65 \text{ V} \pm 1.00 \text{ V}$ at $V_{\text{DC}} = 3.3 \text{ V}$
	1515	1.50 V	± 1.50 V	$1.50 \text{ V} \pm 1.50 \text{ V}$ at $V_{\text{DC}} = 3.3 \text{ V}$
	1510	1.50 V	± 1.00 V	$1.50 \text{ V} \pm 1.00 \text{ V}$ at $V_{\text{DC}} = 3.3 \text{ V}$
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 N1, N2, N3, N4: NC # 1: NC # 2: GND # 3: output # 4: V_{CC} pin connection	VCTCXO JTP75HCV N1, N2, N3, N4: NC # 1: V_{C} # 2: GND # 3: output # 4: V_{CC} in mm
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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 = $-30^{\circ}\text{C} \sim 75^{\circ}\text{C}$ K = $-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$ P = $-40^{\circ}\text{C} \sim 105^{\circ}\text{C}$	3.3 = 3.3 V	see table 3	see table 2
Example: 0 10.0-JTP75HCV-F-K-3.3-1616-08X0-LF (Suffix LF = RoHS compliant / Pb free)							

Oscillator JTP75HC(V) · Precision TCXO & VCTCXO

PHASE NOISE INFORMATION

phase noise at f ₀ 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.

PACKAGING NOTE

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

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

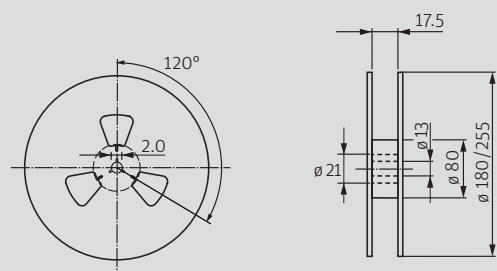
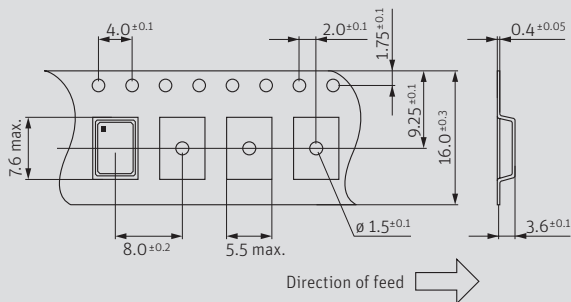
NOTE

- 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

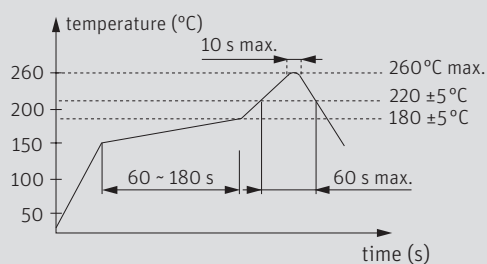
- *1: Measured frequency observed with T_A=+25°C and C_L=15pF, at nominal V_{DC} and nominal center V_C (if applicable) within 30 days after ex-factory. The measured frequency is referenced to the specified nominal frequency.
- *2: At specified reflow soldering profile, tested with T_A=+25 °C and C_L=15pF, 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 (optional) / date code (WWYY)
date code: two digits for week and two digits for year