



actual size

Oscillator JTP32CS(V) · (VC)TCXO

- precision temperature compensated crystal oscillator, 3.2 x 2.5 mm
- frequency stability ± 0.28 ppm available
- temperature range up to -40 °C ~ $+85$ °C
- JTP32CSV with frequency tuning option
- for a Stratum 3 compliant version refer to JTS32CS(V)



RoHS compliant



Pb free



REACH compliant



Conflict mineral free

GENERAL DATA		
TYPE	JTP32CS / JTP32CSV (clipped sine 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 $V_{DC} \pm 5\%$)
	load change (*5)	± 0.1 ppm max. (at nom load $\pm 5\%$)
	aging first year (*6)	± 1.0 ppm max. (at +25 °C)
	aging per day (*7)	± 0.02 ppm max.
	short term (ADEV)	0.5 ppb max. with $\tau = 1$ sec
current consumption max.	3.0 mA max.	
supply voltage V_{DC}	1.8V / 2.5V / 2.8V / 3.0V / 3.3V (all $\pm 5\%$)	
temperature	operating	see table 1
	operable	-40 °C ~ $+85$ °C
	storage	-55 °C ~ $+105$ °C
output	load nom.	10 k Ω // 10 pF
	level min.	0.8 Vpp (clipped sine)
start-up time max.	2.5 ms	
V_C frequ. tuning range JTP32CSV	see examples in table 2 (ask for options)	
V_C frequ. tuning voltage JTP32CSV	see examples in table 3 (ask for options)	
input impedance of V_C min.	100 k Ω	
V_C frequ. tuning linearity max.	10%	

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

TABLE 1: FREQUENCY STABILITY CODE

frequency stability	B	D	E	F
temperature code	± 2.0 ppm	± 1.0 ppm	± 0.5 ppm	± 0.28 ppm
-20 °C ~ +70 °C	B	O	O	O
-30 °C ~ +75 °C	G	O	O	O
-40 °C ~ +85 °C	K	O	O	O

O available

*1 frequency stability options F can be ordered as Stratum 3 compliant versions, see separate JTS32CS(V) datasheet

TABLE 2: VC DEPENDENT FREQUENCY TUNING RANGE CODING METHOD

V_C frequency tuning range	code	minimal	maximal
	0510	± 5.0 ppm	± 10.0 ppm
	0813	± 8.0 ppm	± 13.0 ppm
	1015	± 10.0 ppm	± 15.0 ppm
	05X0	± 5.0 ppm	undefined

TABLE 3: VC CODING METHOD (EXAMPLES)

V_C center voltage and V_C range	code	center of V_C	range of V_C	
	1515	1.5 V	± 1.5 V	1.5 V \pm 1.5 V at $V_{DC} = 3.0$ V & 3.3 V
	1510	1.5 V	± 1.0 V	1.5 V \pm 1.0 V at $V_{DC} = 2.5$ V & 2.8 V
	1414	1.4 V	± 1.4 V	1.4 V \pm 1.4 V at $V_{DC} \geq 2.8$ V
	1410	1.4 V	± 1.0 V	1.4 V \pm 1.0 V at $V_{DC} = 2.5$ V & 2.8 V
	0909	0.9 V	± 0.9 V	0.9 V \pm 0.9 V at $V_{DC} = 1.8$ V

DIMENSIONS

top view

side view

bottom view

pad layout

TCXO	VCTCXO
JTP32CS	JTP32CSV
# 1: GND	# 1: Vcontrol
# 2: GND	# 2: GND
# 3: output	# 3: output
# 4: V_{DC}	# 4: V_{DC}

pin connection

in mm

ORDER INFORMATION

0	frequency	type	frequency stability code	operating temp. code	supply voltage	control voltage (for JTP32CSV)	tuning range
Oscillator	9.60 ~ 50.0 MHz	JTP32CS = TCXO JTP32CSV = VCTCXO	B-G see table 1	B = -20 °C ~ $+70$ °C G = -30 °C ~ $+75$ °C K = -40 °C ~ $+85$ °C	1.8 = 1.8 V 2.5 = 2.5 V 2.8 = 2.8 V 3.0 = 3.0 V 3.3 = 3.3 V	see table 3	see table 2

Example: 0 10.0-JTP32CSV-F-K-3.3-1515-1015-LF (Suffix LF = RoHS compliant / Pb free)

Oscillator JTP32CS(V) · Precision TCXO & VCTCXO

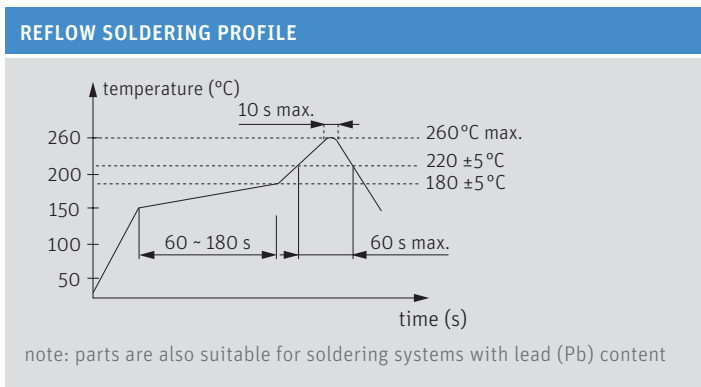
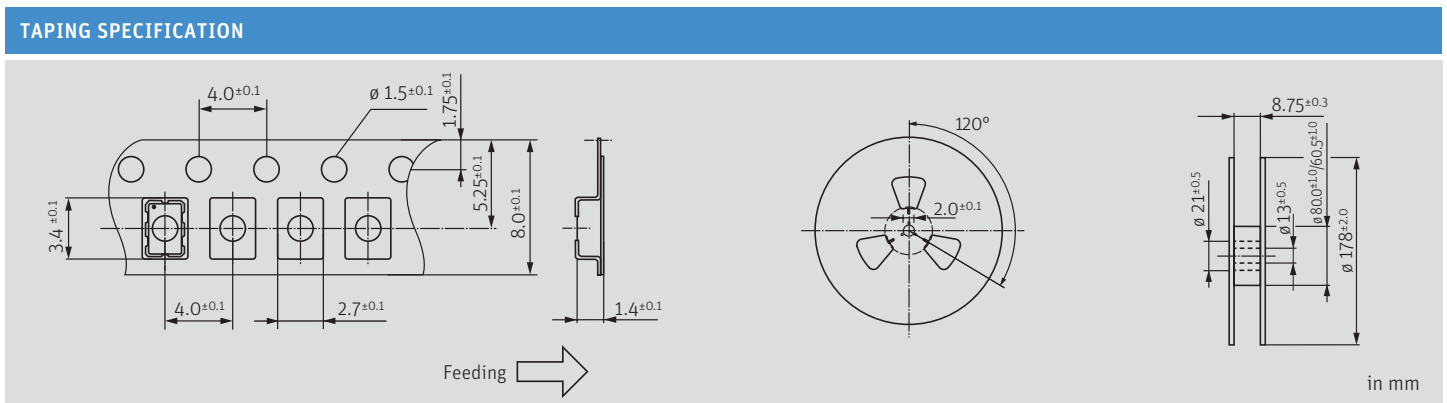
PHASE NOISE INFORMATION		
phase noise at f ₀ 10.0 MHz, V _{DC} = 3.3 V @ 25 °C	at 10 Hz	-90 dBc/Hz typ.
	at 100 Hz	-120 dBc/Hz typ.
	at 1 KHz	-140 dBc/Hz typ.
	at 10 KHz	-145 dBc/Hz typ.
	at 100 KHz	-148 dBc/Hz typ.

PACKAGING NOTE
- non-multiple packing units are only supplied taped / bulk
- moisture sensitivity: MSL1

DEVELOPED FREQUENCIES					
all frequencies in MHz:	10.0	12.80	16.320	16.3840	19.20
	19.440	20.0	25.0	26.0	30.720
	32.0	38.40	40.0	48.0	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.



MARKING
frequency / internal code (optional)
dot / D / date code (YWW)
date code: one digit for year and two digits for week
2: 2022 3: 2023 4: 2024 5: 2025 6: 2026 7: 2027