



Oscillator JOX254H(V) · (VC)OCXO

- oven controlled crystal oscillator (OCXO or VCOCXO)
- HCMOS output, 25.4 mm x 25.4 mm
- superior frequency stability, best option ± 0.5 ppb
- wide temperature range up to $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
- frequency control option available (VCOCXO)
- supply voltage options 3.3 V, 5.0 V (option 12.0 V)



RoHS compliant



Pb free



REACH
compliant



Conflict
mineral free

GENERAL DATA (OVERVIEW OF OPTIONS)

TYPE		JOX254H / JOX254HV
frequency range		10.0 ~ 100.0 MHz (see table 1)
frequency tolerance / stability	at $+25^{\circ}\text{C}$ (*1)	± 50 ppb / ± 100 ppb max.
	temperature (*2)	± 0.5 ppb $\sim \pm 50$ ppb, examples see table 2
	supply voltage (*3)	± 0.2 ppb $\sim \pm 20$ ppb max. (at $V_{\text{DC}} \pm 5\%$)
	load change (*4)	± 0.2 ppb $\sim \pm 20$ ppb max (at nom load $\pm 5\%$)
	aging first year (*5)	± 50 ppb ~ 300 ppb max. (at $+25^{\circ}\text{C}$)
temperature	aging per day (*6)	± 0.5 ppb ~ 5.0 ppb max. (at $+25^{\circ}\text{C}$)
	operating	up to $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$, see table 2
	operable	up to $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
storage		$-55^{\circ}\text{C} \sim +105^{\circ}\text{C}$
supply voltage V_{DC}		3.3 V ($\pm 5\%$) / 5.0 V ($\pm 5\%$) / 12.0 V ($\pm 5\%$)
steady current consumption		250 mA typ. / 400 mA max. (example)
warm-up current consumption		650 mA typ. / 800 mA max. (example)
warm-up time (*7)		5 minutes typ.
output	low level max.	0.4 V
	high level min.	2.4 V
	duty cycle	50 % $\pm 5\%$ typ. / 50 % $\pm 10\%$ max.
	rise & fall time max.	6 ns at nominal load of 15 pF
V_{C} frequ. tuning range JOX254HV		± 0.5 ppm min. $\sim \pm 2.5$ ppm min.
V_{C} frequ. tuning voltage JOX254HV		1.65 V ± 1.65 V at $V_{\text{DC}} = 3.3$ V
		2.50 V ± 2.50 V at $V_{\text{DC}} = 5.0$ V
		2.50 V ± 2.50 V at $V_{\text{DC}} = 12.0$ V
input impedance of V_{C} min.		100 k Ω
V_{C} frequ. tuning linearity max.		10%
phase noise at $f_0 = 10.0$ MHz, $V_{\text{DC}} = 5.0$ V	at 10 Hz	-125 dBc/Hz typ.
	at 100 Hz	-150 dBc/Hz typ.
	at 1 KHz	-155 dBc/Hz typ.
	at 10 KHz	-160 dBc/Hz typ.
	at 100 KHz	-160 dBc/Hz typ.

TABLE 1: DEVELOPED FREQUENCIES

all frequencies in MHz:	10.0	12.80	16.3840	19.20
	20.0	38.40	40.0	100.0

TABLE 2: FREQUENCY STABILITY CODE (EXAMPLES)

frequency stability temperature code	E ± 50 ppb	G ± 20 ppb	I ± 5.0 ppb	L ± 2.0 ppb	N ± 0.5 ppb
$-10^{\circ}\text{C} \sim +70^{\circ}\text{C}$	F	O	O	O	O
$-20^{\circ}\text{C} \sim +70^{\circ}\text{C}$	B	O	O	O	O
$-30^{\circ}\text{C} \sim +85^{\circ}\text{C}$	M	O	O	O	O
$-40^{\circ}\text{C} \sim +70^{\circ}\text{C}$	N	O	O	O	O
$-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$	K	O	O	O	O

O = ask for availability or other frequency stability options

TABLE 3: VC DEPENDENT FREQUENCY TUNING RANGE CODING METHOD

V_{C} frequency tuning range of JOX254	code	minimal	maximal
options may not be available at all frequencies, individually ask for other options	05X0	± 0.5 ppm	undefined
	10X0	± 1.0 ppm	undefined
	0510	± 0.5 ppm	± 1.0 ppm
	0815	± 0.8 ppm	± 1.5 ppm
	0824	± 0.8 ppm	± 2.4 ppm
	1525	± 1.5 ppm	± 2.5 ppm
	25X0	± 2.5 ppm	undefined

TABLE 4: VC CENTER VOLTAGE AND VC RANGE CODING METHOD

V_{C} center voltage and V_{C} range	code	center and range of V_{C}	at supply
	16	1.65 V ± 1.65 V	± 3.3 V
	25	2.50 V ± 2.50 V	± 5.0 V
	25	2.50 V ± 2.50 V	± 12.0 V

Important Note: This generic datasheet can't show all available options. Therefore, please contact our sales team for specific options not shown in this datasheet.

(*1) ~ (*7): Please refer to the examples for test conditions on page 2

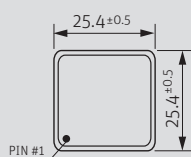
ORDER INFORMATION

0	frequency	type	supply voltage	frequency stability code	operating temp. code	control voltage (for JOX254HV)	tuning range (for JOX254HV)	internal spec. code
Oscillator	10.0 ~ 100.0 MHz	JOX254H = OCXO JOX254HV = VCOCXO	3 = 3.3 V 5 = 5.0 V 12 = 12.0 V	E ~ N see table 2	F ~ K see table 2	see table 4	see table 3	

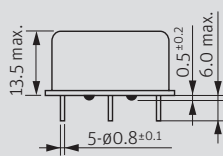
Example: 0 10.0-JOX254HV-5-N-K-25-05X0-MCBE-LF (Suffix LF = RoHS compliant / Pb free)

Oscillator JOX254H(V) · OCXO & VCOCXO · PIN TYPE

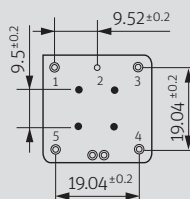
DIMENSIONS



top view



side view



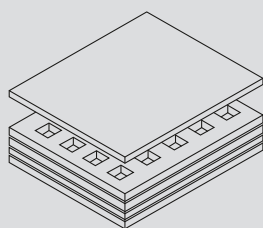
bottom view

OCXO	VCOCXO
JOX254	JOX254V
# 1: output	# 1: output
# 2: GND	# 2: GND
# 3: NC	# 3: V_{control}
# 4: NC	# 4: NC (option ref. voltage)
# 5: V_{DC}	# 5: V_{DC}

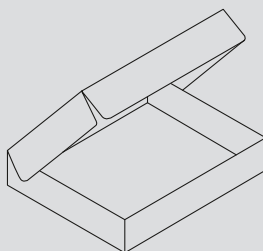
pin connection

in mm

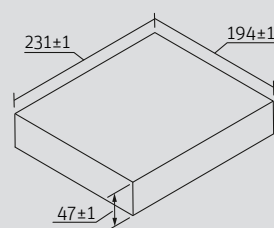
PACKING



buffer material



cardboard – max. 20 pcs



dimensions in mm

PACKAGING NOTE

- typically supplied in a carton box
- a full carton box contains 20 pcs.

NOTE

- for best supply noise rejection, connect a capacitor of 100 nF and a second capacitor of 10 μF closely to the supply voltage pins
- a separate voltage supply rail ensures the best phase noise

TEST CONDITIONS (EXAMPLES)

- *1: Measured frequency after 15 minutes of operation, observed with $T_A = +25^\circ\text{C} \pm 1^\circ\text{C}$, at nominal V_{DC} , the nominal load and nominal center V_c (if applicable) and within 30 days after ex-factory. The measured frequency is referenced to the specified nominal frequency.
- *2: T_A varied in the specified operating temperature range. The frequency variation is normalized to $f_{\text{ref}} = (f_{\text{max}} + f_{\text{min}})/2$, 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.
- *3: Frequency variation if V_{DC} is varied by $\pm 5\%$ of nominal V_{DC} , frequency variation is normalized to frequency observed at nominal V_{DC} , nominal center V_c (if applicable), $T_A = +25^\circ\text{C}$ and nominal load.
- *4: Frequency variation if the load is varied by $\pm 5\%$ of nominal load, frequency variation is normalized to frequency observed at nominal V_{DC} , nominal center V_c (if applicable), $T_A = +25^\circ\text{C}$ and nominal load.
- *5: Long-term maximum frequency deviation at $T_A = +25^\circ\text{C} \pm 1^\circ\text{C}$ over the specified time, referred to the ex-factory status at constant T_A , nominal V_{DC} , and nominal V_c (if applicable). The frequency reference is determined at $T_A = +25^\circ\text{C}$, at nominal V_{DC} , nominal center V_c (if applicable), nominal load and 30 days of operation. Normally, the largest frequency deviation occurs within the 1st year.
- *6: Maximum frequency deviation within 24 hours in a steady state. The initial status acquired at $T_A = +25^\circ\text{C}$, at nominal V_{DC} , nominal center V_c (if applicable), nominal load and after 30 days of continuous operation.
- *7: Time until the maximum frequency deviation is less than a specified value, referred to the final frequency. This final frequency is acquired after 1h of continuous operation at $T_A = +25^\circ\text{C}$, at nominal V_{DC} , nominal center V_c (if applicable) and nominal load.