



# MEMS Oscillator

## JSO LC series · 2.8 V



RoHS compliant



Pb free



REACH compliant



Conflict mineral free

actual size



- low power oscillator with HCMOS/LVCMOS output
- compatible to industry standard packages 2016 – 7050
- extended shock & vibration resistance & temperature range
- configured to customer's specification
- very fast delivery service

GENERAL DATA	
TYPE	JSOxxCxLC 2.8 V
frequency range	1.0 ~ 110.0 MHz 115.0 ~ 137.0 MHz
frequency stability over all	±20 ppm ~ ±50 ppm (see table 1)
current consumption	see table 2
supply voltage $V_{DC}$	2.8 V ± 10%
temperature	operating
	storage
output	logic
	rise & fall time
	load max.
	current max.
	low level max.
	high level min.
	standby function (e/d)
output enable time max.	
output disable time max.	
start-up time max.	
standby current max.	
phase jitter 12 kHz ~ 20 MHz	
symmetry at $0.5 \times V_{DC}$	

note: some frequencies can't be configured, see table 5.

PACKAGING NOTE / MARKING
QTY < 250 pcs. → cut tape
QTY 250/500/1K/3K pcs. → tape and reel
Marking: lot code only

TABLE 1: FREQUENCY STABILITY CODE					
stability code / temp. code*		B ±50 ppm	G ±30 ppm	C ±25 ppm	D ±20 ppm
-20°C ~ +70°C	T0	○	○	○	○
-40°C ~ +85°C	T1	○	○	○	○
-40°C ~ +105°C	T2	○	○	○	○
-40°C ~ +125°C	T3	○	○	○	○
-55°C ~ +125°C	T8	○	○	○	○

○ available  
\* includes stability at 25°C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

TABLE 2: CURRENT CONSUMPTION TYP. (FOR MAX. ADD 30%)					
current at load	5 pF	15 pF	30 pF	60 pF	unit
output disabled	3.8	3.8	3.8	3.8	mA
1.0 ~ 19.9 MHz	4.1	4.3	5.2	6.9	mA
20.0 ~ 29.9 MHz	4.4	5.2	6.7	9.8	mA
30.0 ~ 49.9 MHz	4.8	6.2	8.3	12.7	mA
50.0 ~ 79.9 MHz	6.1	8.1	11.7		mA
80.0 ~ 110.0 MHz	7.0	10.0			mA
115.0 ~ 137.0 MHz	(9.0)	(14.0)			mA

note: current at default edge control setting "D", also refer to table 4.

TABLE 3: CONFIGURABLE STANDBY FUNCTION OPTIONS (E/D)		
pin #1 (e/d control)	option	functionality
low "0" ( $V_{IL} \leq 0.2 V_{DC}$ )	S = Stop	output weakly pulled down, oscillator in sleep mode
	T = TriState	output high impedance, oscillator operates
	N = None	oscillator output active
high "1" ( $V_{IH} \geq 0.8 V_{DC}$ )	all	oscillator output active
open*	all	oscillator output active

\* a pull up resistor is recommended in EMI stressed circuit environments.

PIN CONNECTION	
	# 4: $V_{DC}$ # 3: output # 1: e/d        # 2: GND

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**TABLE 4: MAX. RISE & FALL TIME VS. LOAD CAPACITANCE**

$C_L$	5 pF	15 pF	30 pF	5 pF	15 pF	30 pF
edge control	at 10% ~ 90% of $V_{DC}$ (ns)			at 20% ~ 80% of $V_{DC}$ (ns)		
0	1.2	2.2	4.6	0.8	1.6	3.0
1	1.3	2.4	5.2	0.9	1.8	3.5
D=2*	1.5	2.9	5.7	1.0	2.0	3.8
3	1.6	3.6	6.4	1.1	2.4	4.4
4	3.0	6.2	10.4	2.0	4.2	7.4
5	4.0	7.6	13.6	2.8	5.4	9.4
6	5.8	11.6	21.0	4.0	8.0	14.2
7	12.0	23.0	42.0	8.2	15.2	28.0

\* default edge control setting "D" at  $V_{DC} = 2.8$  V, please also refer to the supplementary information on [our homepage](#) for typical values and more details.

**TABLE 5: NON-CONFIGURABLE FREQUENCIES**

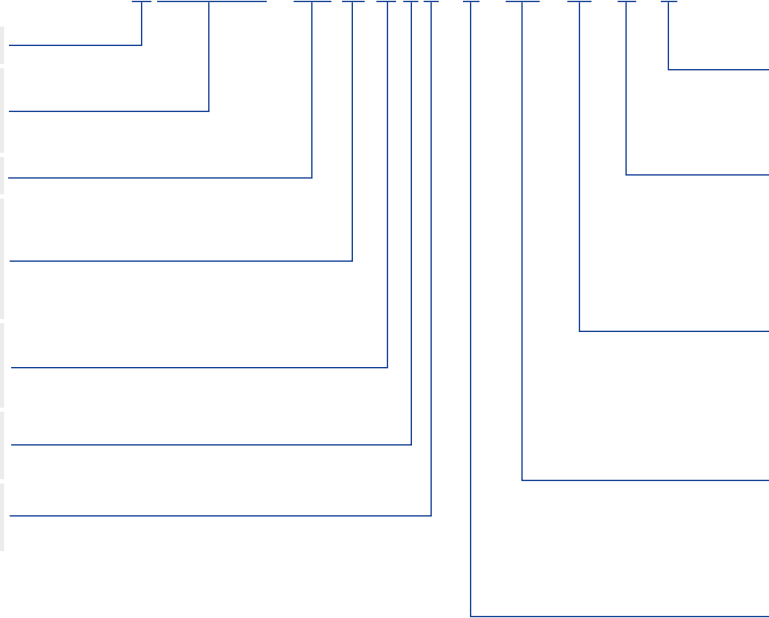
operating temperature option		operating temperature option	
T2 - (-40°C ~ +105°C)		T8 - (-55°C ~ +125°C)	
T3 - (-40°C ~ +125°C)			
from (MHz)	to (MHz)	from (MHz)	to (MHz)
61.223	61.674	61.223	61.974
69.796	70.485	69.240	70.827
79.063	79.162	78.715	79.561
81.428	82.232	80.160	80.174
91.834	92.155	80.780	82.632
94.249	94.430	91.834	95.474
94.875	94.994	96.192	96.209
97.714	98.679	96.936	99.158
110.0	115.194	110.0	119.342
117.811	118.038	-	-
118.594	118.743	120.239	120.262
122.142	122.705	121.170	121.243
123.022	123.348	121.601	123.948

## ORDER INFORMATION

### EXAMPLE

O = Oscillator
<b>frequency (8 digits), see also table 5</b> 1.0 ~ 110.0 MHz 115.0 ~ 137.0 MHz
JSO = Jauch Silicon Oscillator
<b>package</b> 75 = 7050      22 = 2520 53 = 5032      21 = 2016 32 = 3225
<b>frequency range</b> C1 = 1.0 ~ 110.0 MHz C2 = 115.0 ~ 137.0 MHz
<b>function/feature</b> L = lowpower
<b>output I/F</b> C = (H)CMOS

**0 26.123456 - JSO 75 C1 L C - B - 2.8 - T0 - S - D**

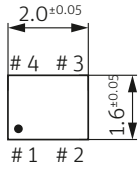


<b>edge control</b> D = default 0 - 7, see table 4
<b>standby function options</b> S = Stop T = TriState N = None
<b>temperature range</b> T0 = -20°C ~ +70°C T1 = -40°C ~ +85°C T2 = -40°C ~ +105°C T3 = -40°C ~ +125°C T8 = -55°C ~ +125°C
<b>supply voltage</b> 3.3 = 3.3 V      2.5 = 2.5 V 3.0 = 3.0 V      1.8 = 1.8 V 2.8 = 2.8 V      2V3 = 2.5 V ~ 3.3 V
<b>frequency stability overall</b> B = ± 50 ppm G = ± 30 ppm C = ± 25 ppm D = ± 20 ppm

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## DIMENSIONS

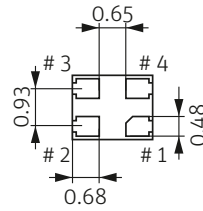
2.0 x 1.6 x 0.75  
JSO21 LC



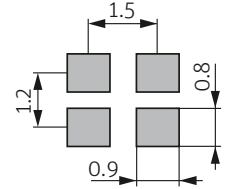
top view



side view

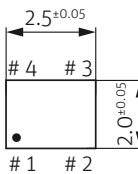


bottom view



pad layout

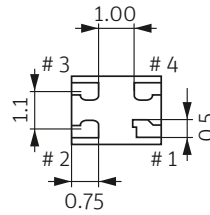
2.5 x 2.0 x 0.75  
JSO22 LC



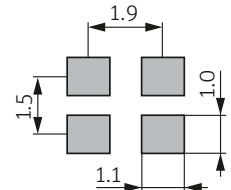
top view



side view

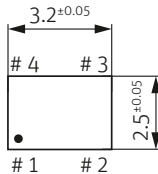


bottom view

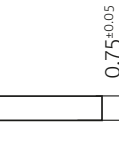


pad layout

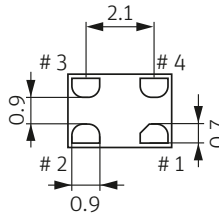
3.2 x 2.5 x 0.75  
JSO32 LC



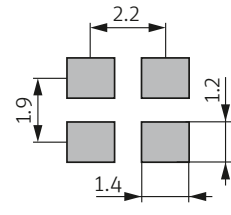
top view



side view

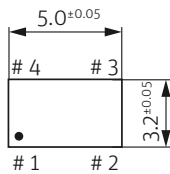


bottom view



pad layout

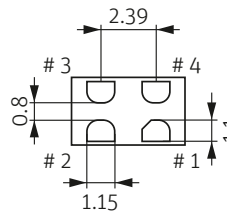
5.0 x 3.2 x 0.75  
JSO53 LC



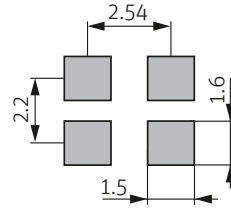
top view



side view

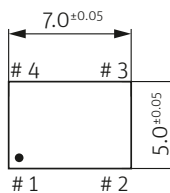


bottom view



pad layout

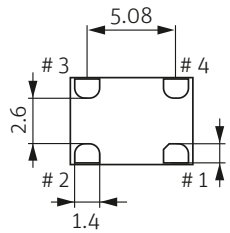
7.0 x 5.0 x 0.90  
JSO75 LC



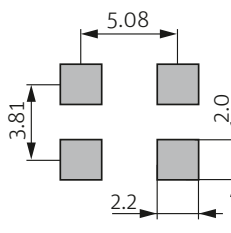
top view



side view



bottom view



pad layout

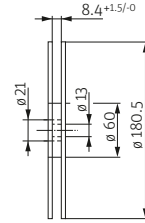
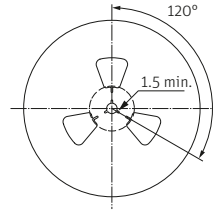
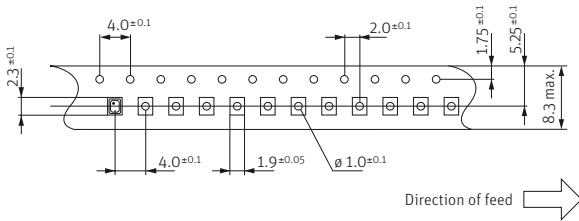
in mm

Pin connection # 1: e/d # 2: GND # 3: output # 4:  $V_{DC}$  note: a capacitor of 0.1  $\mu F$  between  $V_{DC}$  and GND is recommended

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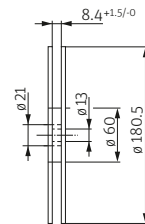
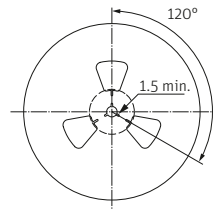
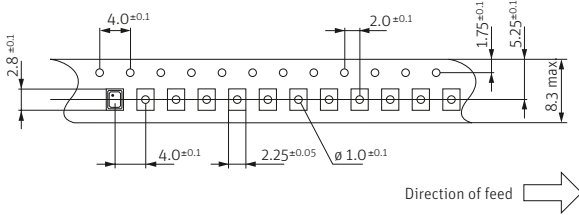
## TAPING SPECIFICATION

2.0 x 1.6 x 0.75  
JSO21 LC



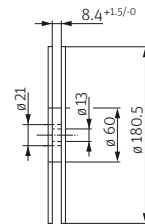
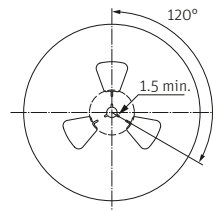
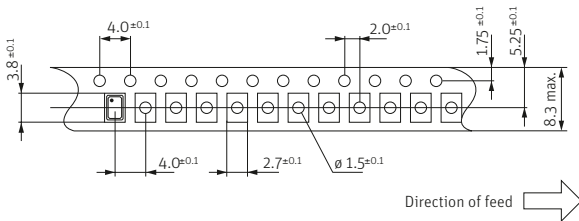
up to 3000 pcs per reel

2.5 x 2.0 x 0.75  
JSO22 LC



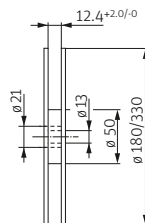
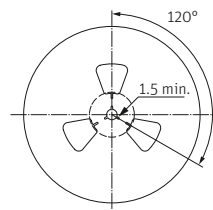
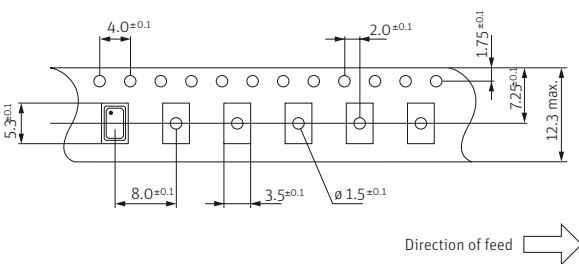
up to 3000 pcs per reel

3.2 x 2.5 x 0.75  
JSO32 LC



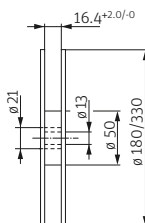
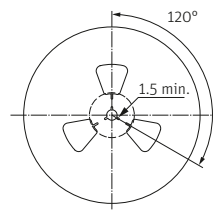
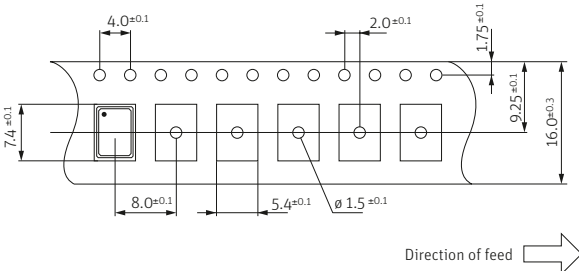
up to 3000 pcs per reel

5.0 x 3.2 x 0.75  
JSO53 LC



Ø 180: up to 1000 pcs per reel  
Ø 330: up to 3000 pcs per reel

7.0 x 5.0 x 0.90  
JSO75 LC



Ø 180: up to 1000 pcs per reel  
Ø 330: up to 3000 pcs per reel