



actual size

# Oscillator JO32 · 1.8 V ~ 3.3 V

- SMD Oscillator with Stop Function · 3.2 x 2.5 mm
- LVCMOS / HCMOS compatible output
- Variable supply voltage 1.8 V ~ 3.3 V
- Very low current consumption
- Seam sealed ceramic/metal package



RoHS compliant



Pb free



REACH  
compliant



Conflict  
mineral free

## GENERAL DATA

| TYPE                              |                  | JO32 1.8 V ~ 3.3 V                                           |
|-----------------------------------|------------------|--------------------------------------------------------------|
| frequency range                   |                  | 1.0 ~ 50.0 MHz (15 pF max.)                                  |
| frequency stability over all*     |                  | ± 25 ppm ~ ± 100 ppm (table 1)                               |
| current consumption               |                  | see table 2                                                  |
| supply voltage V <sub>DC</sub>    |                  | 1.8 V -10 % ~ 3.3V +10% variable                             |
| temperature                       | operating        | -10 °C ~ +70 °C up to -40 °C ~ +125 °C (table 1)             |
|                                   | storage          | -55 °C ~ +125 °C                                             |
| output                            | rise & fall time | 6ns max. (1.8V) / 5ns max. (≥ 2.5V)                          |
|                                   | load max.        | 15 pF                                                        |
|                                   | current max.     | 4 mA                                                         |
|                                   | low level max.   | 0.4 V                                                        |
|                                   | high level min.  | V <sub>DC</sub> - 0.4V                                       |
| output enable time max. / typ.    |                  | 1 ms / 0.5 ms                                                |
| output disable time max.          |                  | 200 ns                                                       |
| start-up time max. / typ.         |                  | 1 ms / 0.5 ms (t <sub>0</sub> when V <sub>DC</sub> > 1.62 V) |
| standby function                  |                  | stop                                                         |
| standby current max.              |                  | 10uA (T1) / 20uA (T2, T3)                                    |
| phase jitter 12 kHz ~ 20.0 MHz    |                  | < 1.0 ps RMS                                                 |
| symmetry at 0.5 x V <sub>DC</sub> |                  | 45% ~ 55% max. (ref. +25 °C)                                 |

note: rise time: 0.1 VDC ~ 0.9 VDC / fall time: 0.9 VDC ~ 0.1 VDC

## TABLE 1: FREQUENCY STABILITY CODE

| stability code   |    | A<br>± 100 ppm | B<br>± 50 ppm | G<br>± 30 ppm | C<br>± 25 ppm |
|------------------|----|----------------|---------------|---------------|---------------|
| -20 °C ~ +70 °C  |    | ○              | ○             | ○             | ○             |
| -40 °C ~ +85 °C  | T1 | ○              | ○             | ○             |               |
| -40 °C ~ +105 °C | T2 | ○              | ○             |               |               |
| -40 °C ~ +125 °C | T3 | ○              |               |               |               |

○ available

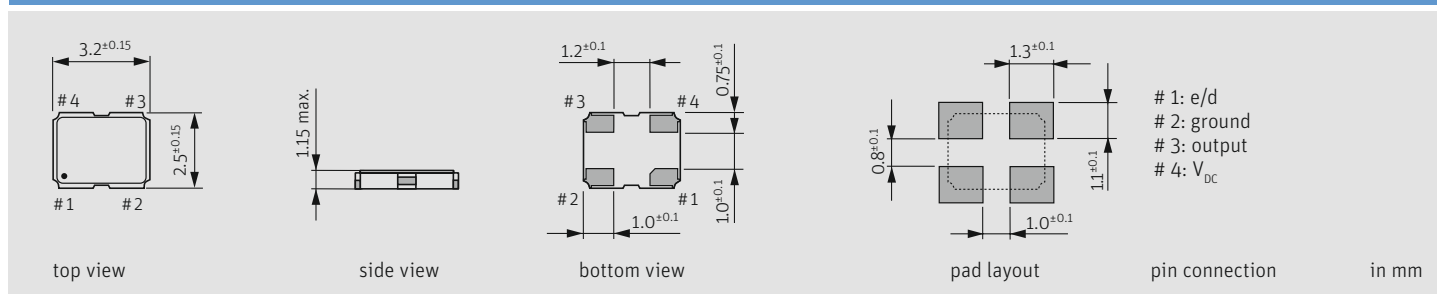
\* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year.

## TABLE 2: CURRENT CONSUMPTION MAX.

| Supply current max. | load  | 1.8 V  | 2.5 V  | 3.3 V  |
|---------------------|-------|--------|--------|--------|
| 1.0 ~ 9.9 MHz       | 15 pF | 1.0 mA | 1.3 mA | 2.0 mA |
| 10.0 ~ 19.9 MHz     | 15 pF | 1.6 mA | 2.0 mA | 3.0 mA |
| 20.0 ~ 29.9 MHz     | 15 pF | 2.2 mA | 3.0 mA | 4.0 mA |
| 30.0 ~ 39.9 MHz     | 15 pF | 2.5 mA | 3.5 mA | 5.0 mA |
| 40.0 ~ 50.0 MHz     | 15 pF | 3.0 mA | 4.5 mA | 6.0 mA |

note: please also refer to I/V plots showing typical supply current at 5pF / 10pF / 15pF

## DIMENSIONS



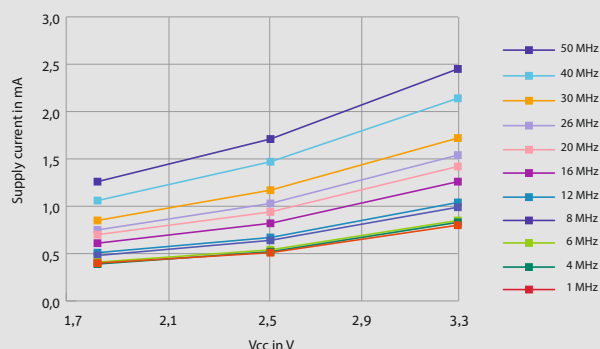
## ORDER INFORMATION

| 0          | frequency      | type | frequency stability code | supply voltage code | output load code | option                                                                                            |
|------------|----------------|------|--------------------------|---------------------|------------------|---------------------------------------------------------------------------------------------------|
| Oscillator | 1.0 ~ 50.0 MHz | JO32 | see table 1              | 1V3 = 1.8 V ~ 3.3 V | 1 = 15 pF        | blank = -20 °C ~ +70 °C<br>T1 = -40 °C ~ +85 °C<br>T2 = -40 °C ~ +105 °C<br>T3 = -40 °C ~ +125 °C |

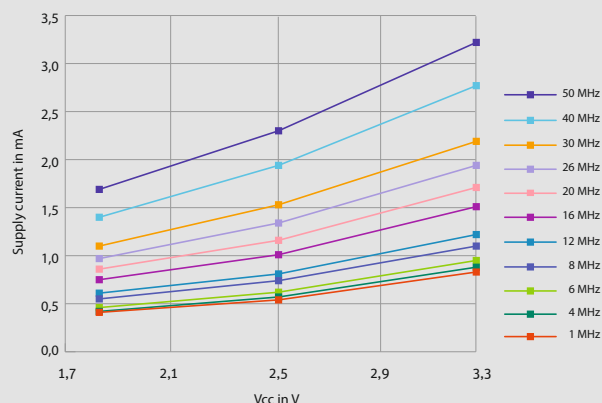
Example: 0 20.0-JO32-G-1V3-1-T1-LF (Suffix LF = RoHS compliant / Pb free)

# Oscillator J032 · 1.8 V ~3.3 V · Stop Function

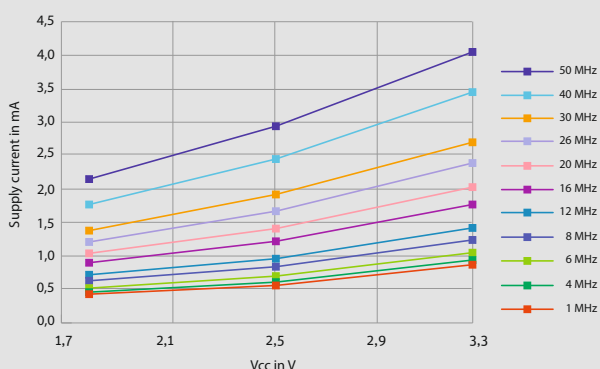
SUPPLY CURRENT VS.  $V_{CC}$  AT DIFFERENT FREQUENCIES;  $CL = 5\text{ PF}$



SUPPLY CURRENT VS.  $V_{CC}$  AT DIFFERENT FREQUENCIES;  $CL = 10\text{ PF}$



SUPPLY CURRENT VS.  $V_{CC}$  AT DIFFERENT FREQUENCIES;  $CL = 15\text{ PF}$



ENABLE / DISABLE FUNCTION

| pin #1 (e/d control)                  | pin #3 (output) |
|---------------------------------------|-----------------|
| open                                  | active          |
| high "1" ( $V_{IH} \geq 0.8 V_{DC}$ ) | active          |
| low "0" ( $V_{IL} \leq 0.2 V_{DC}$ )  | high impedance  |

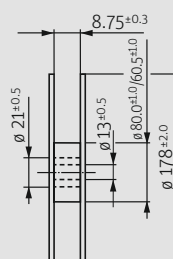
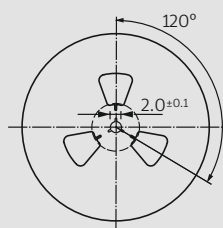
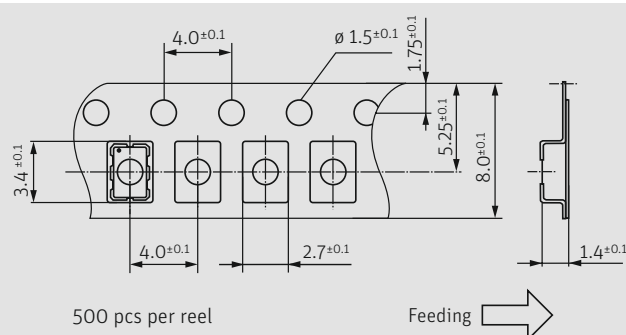
## stop function:

- oscillator stops
- output high impedance

## PACKAGING NOTE

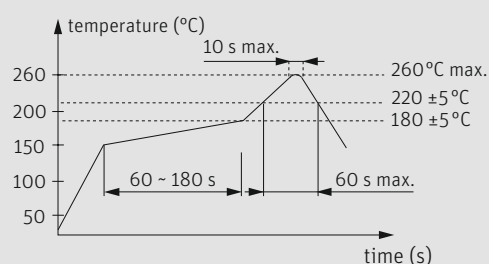
- standard packing unit is 500 pieces per reel
- non-multiple packing units are only supplied taped / bulk

## TAPING SPECIFICATION



in mm

## REFLOW SOLDERING PROFILE



## MARKING

### frequency

### company / stability code / date code

date code: A ~ M: Jan. - Dec.

3: 2023 4: 2024 5: 2025 6: 2026 7: 2027 8: 2028

| Jan. | Febr. | Mar.  | Apr. | May  | June |
|------|-------|-------|------|------|------|
| A    | B     | C     | D    | E    | F    |
| July | Aug.  | Sept. | Oct. | Nov. | Dec. |
| G    | H     | J     | K    | L    | M    |