



actual size

Oscillator JO22 · 1.8 V ~ 3.3 V

- SMD Oscillator with Stop Function · 2.5 x 2.0 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 | | JO22 1.8 V ~ 3.3 V |
|-----------------------------------|--|--|
| TYPE | JO22 1.8 V ~ 3.3 V | |
| frequency range | 1.0 ~ 50.0 MHz (15 pF max.) | |
| frequency stability over all* | ± 25 ppm ~ ± 100 ppm (see table 1) | |
| current consumption | see table 2 | |
| supply voltage V _{DC} | 1.8 V -10% ~ 3.3 +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 | 6 ns max. (1.8 V) / 5 ns max. (≥ 2.5 V) |
| | load max. | 15 pF |
| | current max. | 4.0 mA |
| | low level max. | 0.4 V |
| | high level min. | V _{DC} - 0.4 V |
| 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 ₀ when V _{DC} > 1.62 V) | |
| standby function | stop | |
| standby current max. | 10 µA (T1) / 20 µA (T2, T3) | |
| phase jitter 12 kHz ~ 20.0 MHz | < 1.0 ps RMS | |
| symmetry at 0.5 x V _{DC} | 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 | B | G | C |
| | | ± 100 ppm | ± 50 ppm | ± 30 ppm | ± 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

top view side view bottom view pad layout pin connection in mm

1: e/d
2: ground
3: output
4: V_{DC}

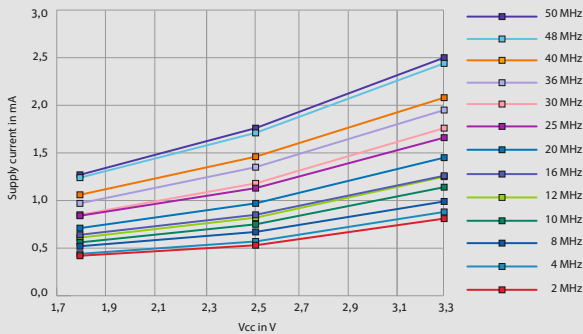
ORDER INFORMATION

| | | | | | | |
|------------|----------------|------|--------------------------|---------------------|------------------|---|
| 0 | frequency | type | frequency stability code | supply voltage code | output load code | option |
| Oscillator | 1.0 ~ 50.0 MHz | JO22 | see table 1 | 1V3 = 1.8 V ~ 3.3 V | 1 = 15 pF | blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C T2 = -40 °C ~ +105 °C T3 = -40 °C ~ +125 °C |

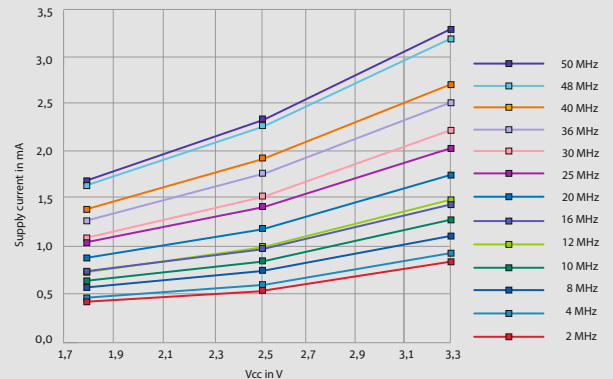
Example: 0 20.0-JO22-G-1V3-1-T1-LF (Suffix LF = RoHS compliant / Pb free)

Oscillator J022 · 1.8 V ~3.3 V · Stop Function

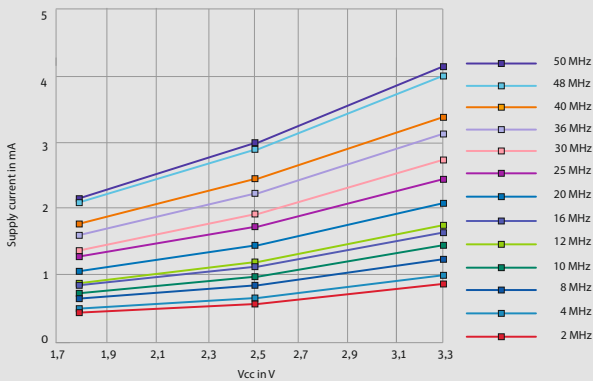
SUPPLY CURRENT VS. V_{CC} AT DIFFERENT FREQUENCIES; CL = 5 PF



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



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



ENABLE / DISABLE FUNCTION

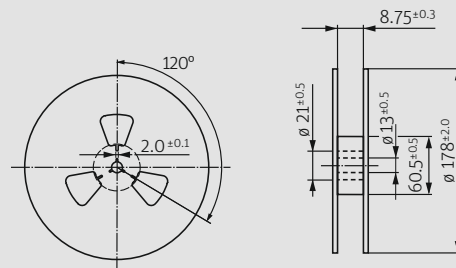
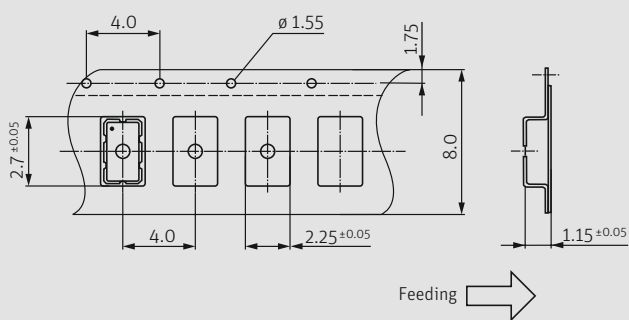
| pin #1 (e/d control) | pin #3 (output) |
|---------------------------------------|-----------------|
| open | active |
| high "1" ($V_{IH} \geq 0.8 V_{DC}$) | active |
| low "0" ($V_{IL} \leq 0.2 V_{DC}$) | high impedance |

- stop function:**
- oscillator stops
 - output high impedance

PACKAGING NOTE

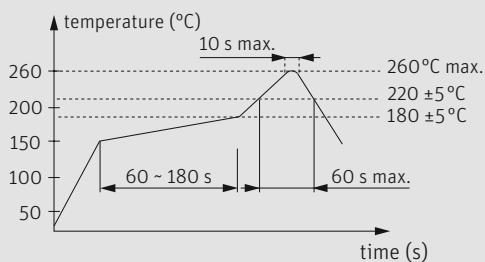
- standard packing unit is 500 pieces per reel
- customized quantities on request

TAPING SPECIFICATION



in mm

REFLOW SOLDERING PROFILE



note: parts are also suitable for soldering systems with lead (Pb) content

MARKING

frequency
company / stability code / date code

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

2: 2022 3: 2023 4: 2024 5: 2025 6: 2026 7: 2027

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