



actual size

Oscillator JRO32 • 32.768 kHz

- Ceramic / Metal Package, 3.2 x 2.5 mm
- Low Power Type for Real Time Clocks (RTC)
- Uses Internal Tuning Fork Crystal
- Variable Supply Voltage 1.2 – 5.5 V



RoHS compliant



Pb free



REACH compliant



Conflict mineral free

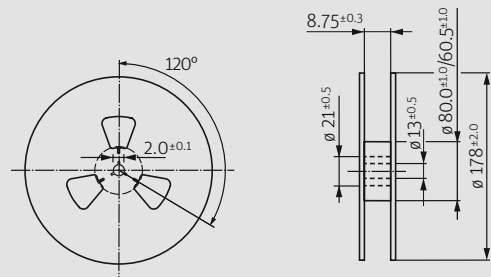
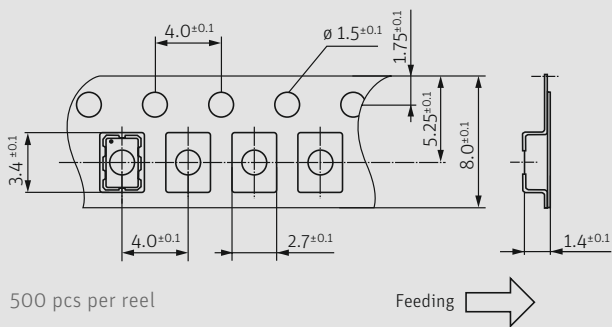
| GENERAL DATA | | ENABLE / DISABLE FUNCTION | |
|--|---|--|-----------------------------------|
| TYPE | JRO32 32.768 kHz for Real Time Clocks | pin #1 (e/d control) | pin #3 (output) |
| frequency | 32.768 kHz | open | undefined |
| frequency tolerance at 25 °C | +5 ±20 ppm | high "1" ($V_{IH} \geq 0.8 V_{DC}$) | active |
| frequency stability over temp. (ref to frequ. at +25 °C) | -90 ppm ~ +10 ppm for -20 °C ~ +70 °C -140 ppm ~ +10 ppm for -40 °C ~ +85 °C | low "0" ($V_{IL} \leq 0.2 V_{DC}$) | high impedance |
| current consumption (no load) | 2.5 µA (5.0 V), 1.5 µA (3.3 V) | enable condition: | disabled conditions: |
| supply voltage range V_{DC} | 1.5 V -25% ~ 5.0 V +10% | • pull the e/d pin to "H" if the oscillator should always be enabled | • internal oscillator active |
| temperature | operating* -10 °C ~ +70 °C / -40 °C ~ +85 °C | • pin #1 should never be left open | • output disabled, high impedance |
| | storage -55 °C ~ +125 °C | | |
| output | rise & fall time 200 ns | | |
| | load max. 15 pF | | |
| | current max. 400 µA | | |
| | low level max. 0.4 V | | |
| | high level min. $V_{DC} - 0.4 V$ | | |
| output enable time | 0.15 s/typ. 0.5 s/max. | | |
| output disable time max. | 150 ns | | |
| start-up time max. | 1 s | | |
| standby function | tristate | | |
| standby current max. | 1 µA | | |
| symmetry at 0.5 x V_{DC} | 40% ~ 60% max. | | |
| CURRENT CONSUMPTION | | | |
| V_{DC} | | at 15 pF | |
| 5.0 V | | 7.0 µA | |
| 3.3 V | | 5.5 µA | |
| 2.8 V | | 5.0 µA | |
| 2.5 V | | 4.5 µA | |
| 1.8 V | | 3.5 µA | |
| 1.5 V | | 3.0 µA | |
| NOTE | | | |
| | | * a wider temperature range up to +105 °C may be available, ask for availability | |

| DIMENSIONS | | | | | |
|------------|-----------|-------------|------------|---|-------|
| | | | | # 1: e/d # 2: ground # 3: output # 4: V_{DC} | in mm |
| top view | side view | bottom view | pad layout | pin connection | |

| ORDER INFORMATION | | | | | | |
|--|--------------|-------|----------------------------------|---|------------------|--|
| 0 | frequency | type | frequency stability code | supply voltage code | output load code | option |
| Oscillator | 0.032768 MHz | JRO32 | TF = tuning fork characteristics | V = variable supply voltage 1.2 V ~ 5.5 V | 1 = 15 pF | blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C T1 = -40 °C ~ +105 °C (ask) |
| Example: 0 0.032768-JRO32-TF-V-1-T1-LF (Suffix LF = RoHS compliant / Pb free) | | | | | | |

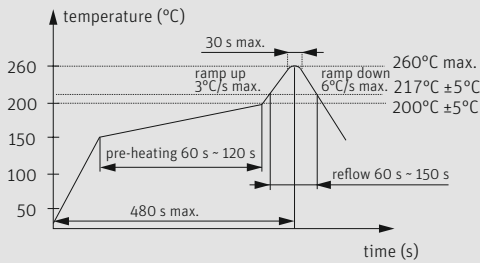
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TAPING SPECIFICATION



in mm

REFLOW SOLDERING PROFILE



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

MARKING

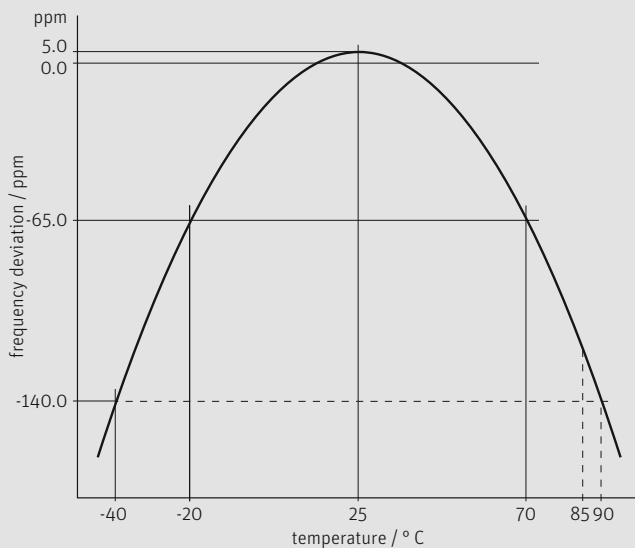
frequency / date code

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 |

NOMINAL TEMPERATURE CHARACTERISTICS



PACKAGING NOTE

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