

Oven Controlled Crystal Oscillators

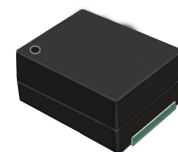
AOCJYR-24.576MHz-M6069LF



ESD Sensitive



RoHS / RoHS II Compliant



9.7 x 7.5 x 4.3 mm SMD

Moisture Sensitivity Level (MSL) – 1

OVERVIEW:

Abrakon's AOCJYR series of World's Smallest Profile, Surface Mount- Ovenized Quartz Crystal Oscillators are based on Proprietary Mercury™ ASIC technology, patented by Rakon. This Advanced Technology coupled with Rakon's proprietary manufacturing techniques enable ± 10 ppb stability over -20°C to $+70^{\circ}\text{C}$, with typical short-term aging of better than ± 2 ppb per day.

Sophisticated Integrated Oven Control architecture ensures fast warm-up time, while minimizes initial power consumption to 350mW typical at 25°C . Further, the integration of critical functionality improves overall product reliability by reducing FIT rates 10x relative to traditional discrete OCXOs.

The AOCJYR series is offered in Industry leading 9.7 x 7.5 x 4.3 mm SMT package, while AOCJYR-DIL is available in 21.7 x 13.08 x 8.6 mm leaded hermetic package.

FEATURES:

- Compact package size: 9.7 x 7.5 x 4.3mm
- Frequency stability over temperature as low as ± 50 ppb over -40 to $+85^{\circ}\text{C}$
- Low power consumption
- High reliability

APPLICATIONS:

- Stratum 3
- Small Cells
- Switches and Routers
- Time & Frequency References
- SyncE and IEEE 1588

STANDARD SPECIFICATIONS:

| Parameters | Minimum | Typical | Maximum | Units | Notes |
|---|------------|----------|-----------|-------------------------|---|
| Nominal Frequency | 24.576 | | | MHz | |
| Supply Voltage (Vdd) | 3.135 | 3.3 | 3.465 | V | |
| Input Power (warm-up) | | 1000 | | mW | |
| Input Power (steady-state) | | | 400 | mW | @ 25°C still air |
| Operable Temperature Range | -40 | | 85 | $^{\circ}\text{C}$ | |
| Storage Temperature Range | -55 | | +125 | $^{\circ}\text{C}$ | |
| Initial Frequency Tolerance @ 25°C At time of shipment | | | ± 0.5 | ppm | See Note 1 |
| Reflow Shift | | | ± 1 | ppm | After 1hr recovery @ 25°C |
| Frequency Stability over Operating Temperature Range in Still Air | | | ± 50 | ppb | Ref. to $(F_{\text{MAX}}+F_{\text{MIN}})/2$. See Note 1 |
| Slope in Still Air | | | ± 2 | ppb/ $^{\circ}\text{C}$ | Temperature ramp 1 $^{\circ}\text{C}/\text{minute}$ max. |
| Stability vs. Supply Voltage Change | | ± 10 | | ppb | $\pm 5\%$ variation in Vdd, ref. to freq. @ Vdd=3.3V |
| Load Coefficient | | ± 10 | | ppb | ± 5 pF variation in load, ref. to freq. @ 15pF load |
| Frequency Aging (per day) | | | ± 2 | ppb | See Note 3 |
| Frequency Aging (long-term stability) | First Year | | ± 1 | ppm | |
| | 10 Years | | ± 3 | ppm | |
| Warm-up Time | | <3 | | minute | See Note 2 |



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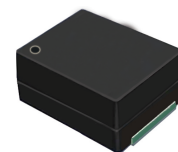
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STANDARD SPECIFICATIONS CONTINUED:

| Parameters | Minimum | Typical | Maximum | Units | Notes |
|---|----------|---------------------|----------|------------|--|
| Root Allan Variance | | 7×10^{-11} | | | @25°C, $\tau=0.1s$ |
| | | 7×10^{-11} | | | @25°C, $\tau=1.0s$ |
| | | 7×10^{-11} | | | @25°C, $\tau=10s$ |
| | | 8×10^{-11} | | | @25°C, $\tau=100s$ |
| | | 8×10^{-11} | | | @25°C, $\tau=1000s$ |
| Acceleration Sensitivity | | <2 | | ppb/g | Gamma vector of all 3 axes from 30Hz to 1500Hz |
| Output Type | LVCMOS | | | | |
| High-level Output Voltage (V_{OH}) | 90%*Vdd | | | V | |
| Low-level Output Voltage (V_{OL}) | | | 10%*Vdd | V | |
| Output Load | 10 | 15 | 20 | pF | |
| Rise and Fall Time (t_r, t_f) | | | 4 | ns | |
| Duty Cycle | 45 | | 55 | % | Measured at 50% level |
| Control Voltage (V_c) | 0.5 | | 2.5 | V | |
| Frequency Tuning Range (over Control Voltage range) | ± 5 | | ± 15 | ppm | Ref. to Frequency @ $V_c=1.5V$ |
| Frequency Tuning Linearity | | | 1 | % | Deviation from linear over control voltage range |
| Slope | Positive | | | | |
| Port Input Impedance | 80 | | | k Ω | |
| Modulation Bandwidth | | 3.5 | | kHz | |
| Phase Noise @ 24.576MHz Carrier | | | | | |
| @ 1 Hz offset | | -55 | | dBc / Hz | |
| @ 10 Hz offset | | -88 | | dBc / Hz | |
| @ 100 Hz offset | | -110 | | dBc / Hz | |
| @ 1,000 Hz offset | | -135 | | dBc / Hz | |
| @ 10,000 Hz offset | | -148 | | dBc / Hz | |
| @ 100,000 Hz offset | | -152 | | dBc / Hz | |
| @ 1,000,000 Hz offset | | -153 | | dBc / Hz | |

Note:

- The characteristics of the component may be temporarily affected by the processes of assembly and soldering. The frequency specifications apply 48 hours after assembly. Nominal conditions apply unless otherwise stated.
- Time needed for frequency to be within ± 20 ppb reference to frequency after 1hour, at 25°C. Parameter is assembly and operating history dependent
- After 30 days of continuous operation.

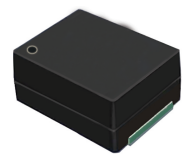


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REFERENCE DESIGN INFORMATION

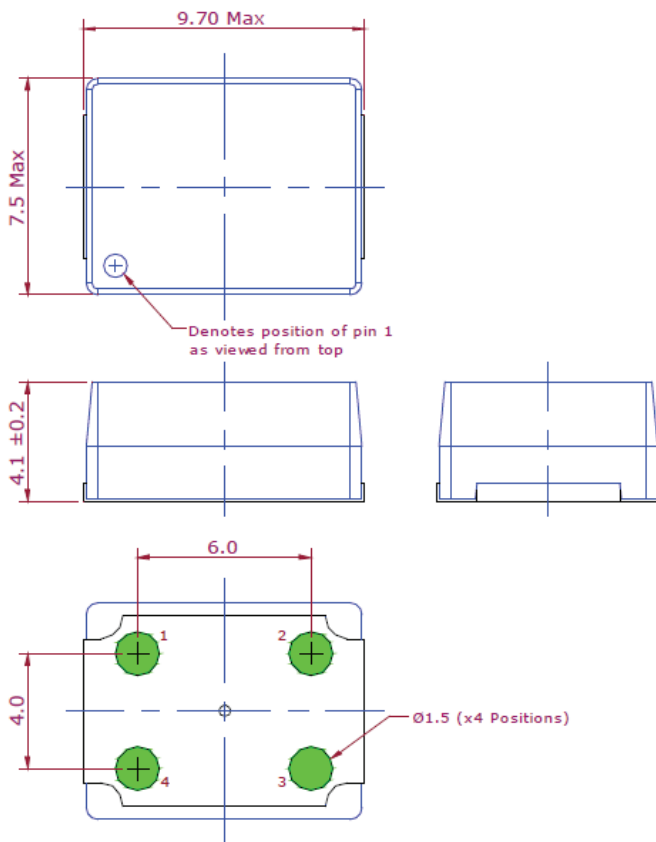
AOCJYR-24.576MHz-M6069LF is equivalent to Rakon P/N M6069LF.

PART IDENTIFICATION:

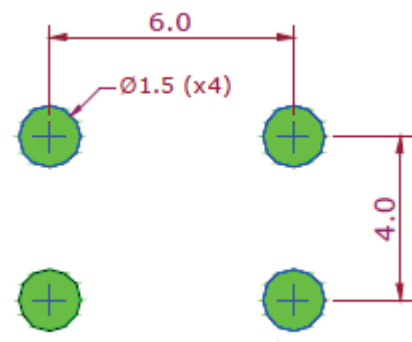
AOCJYR- 24.576MHz -M6069LF -

| Packing |
|--------------------------|
| Blank: Bulk |
| T: Tape & Reel (1k/reel) |

OUTLINE DIMENSION:



Recommended Land Pattern



| Pin | Function |
|-----|-----------------|
| 1 | Control Voltage |
| 2 | Ground |
| 3 | RF-output |
| 4 | Supply Voltage |

Note:

1. For correct operation, decouple the supply voltage with a 10µF capacitor close to the oscillator.
2. The GND of the control voltage needs to be connected directly to pin 2 as ground lead impedance may cause performance degradation.

Dimension: mm

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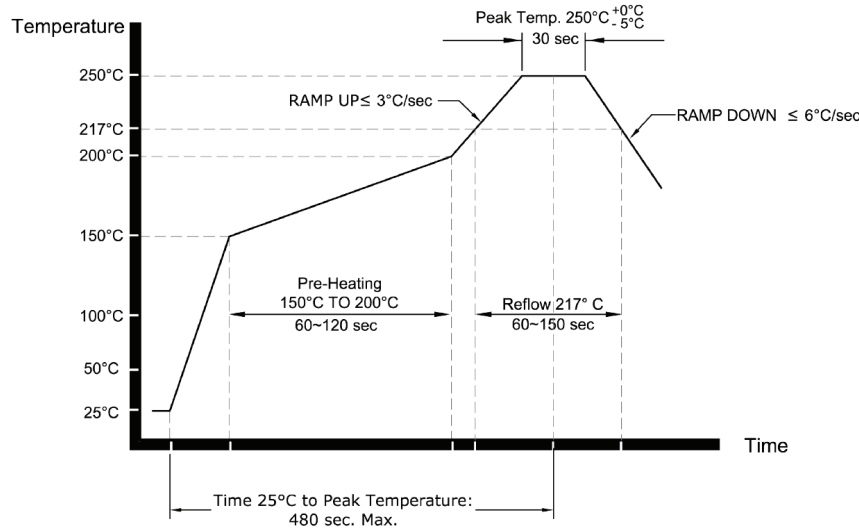


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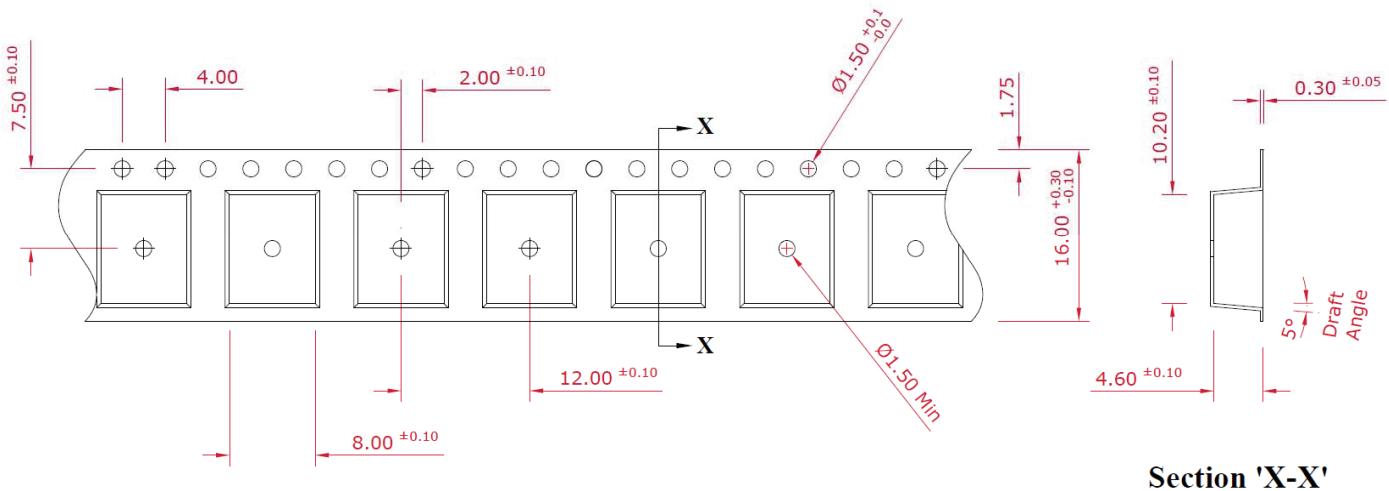
REFLOW PROFILE:



TAPE & REEL:

Packaging: 1000pcs/reel

Reel Size: Ø13"



Dimension: mm

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Revised: 08.20.14



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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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