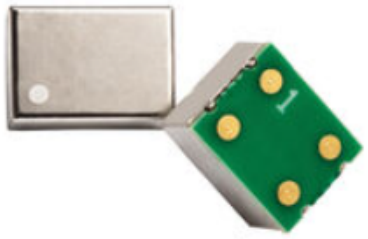
A RAMI TECHNOLOGY Company

# Oven Controlled Crystal Oscillator

## OX4570B-D3-7-32.000-3.3



### ELECTRICAL SPECIFICATIONS

| PARAMETER | SYMBOL | CONDITION | VALUE | | | UNIT |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| Nominal Frequency | $f_o$ | | | 32.000 | | MHz |
| Supply Voltage | $V_s$ | Vs ±5% @ 25°C | 3.135 | 3.3 | 3.465 | V |
| Input Current | $I_S$ | Steady state, @ 25°C | | | 150 | mA |
| | $I_{S,w}$ | During warm-up ,@ 25°C | | | 450 | mA |
| Warm-up Time | tw | Vs, Ta=+25°C, within ±100ppb of final frequency with reference after 1 hours on | | | 20 | s |
| Frequency Calibration | $\Delta f/f_0$ | Vc=1.65V, Ta=+25°C, after 15min power on ref. to nominal frequency before reflow | -500 | | +500 | ppb |
| Frequency Stability vs. Temperature | $\Delta f/f_0$ ($T_a$) | Ta= -40°C…+85°C, measurement referenced to 25°C | -70 | | +70 | ppb |
| Frequency Stability vs. Supply Voltage | $\Delta f/f_0$ ($\Delta V_{CC}$) | Ta=25°C, Vs±5%, load=15pF | -10 | | +10 | ppb |
| Frequency Stability vs. Load Change | $\Delta f/f_0$ ($\Delta l$) | Load change ±5% max | -10 | | +10 | ppb |
| Aging, after 30 Days of Operation | $\Delta f/\Delta t_y$ | Per day | -3 | | +3 | ppb |
| | $\Delta f/\Delta t_y$ | First year | -0.5 | | +0.5 | ppm |
| | $\Delta f/\Delta t_y$ | 10 years | -3 | | +3 | ppm |
| Short Term Stability | | Still air, Ta=+25°C,after power on 1hour | | | 0.08 | ppb/s |
| Control Voltage Range | | | 0 | 1.65 | 3.3 | V |
| Frequency Tuning Range | | Vc=0V | -5 | | -3 | ppm |
| | | Vc=1.65V | -500 | | +500 | ppb |
| | | Vc=3.3V | +3 | | +5 | ppm |
| Slope | | Positive | | | | |
| Linearity | | | | | 10 | % |
| Input Impedance | | | 100 | | | kΩ |
| Operating Temperature Range | $T_a$ | | -40 | | +85 | °C |
| Storage Temperature Range | $T_{(stg)}$ | Absolute max | -55 | | +105 | °C |

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## LVCMOS OUTPUT CHARACTERISTICS

| PARAMETER | SYMBOL | CONDITION | VALUE | | | UNIT |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| Output Levels | VOL | Vs = 3.3V, load = 15pF | | | 0.4 | V |
| | VOH | $V_s$ = 3.3V, load = 15pF | 2.4 | | | |
| Duty Cycle | DC | load = 15pF | 45 | | 55 | % |
| Rise/Fall Time | $t_r/t_f$ | 10% ~ 90% Vout | | | 5 | ns |
| Load | | | | 15 | | pF |
| Spurious | | | | | -70 | dBc |

## PHASE NOISE

| PARAMETER | SYMBOL | CONDITION | VALUE | | | UNIT |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. / Nom. | Max. | |
| @10 Hz Offset | £ (Δf) | | | -100 | -95 | dBc/Hz |
| @100 Hz Offset | £ (Δf) | | | -130 | -125 | dBc/Hz |
| @1 kHz Offset | £ (Δf) | | | -150 | -145 | dBc/Hz |
| @10 kHz Offset | £ (Δf) | | | -155 | -150 | dBc/Hz |
| @100 kHz Offset | £ (Δf) | | | -156 | -155 | dBc/Hz |
| @1 MHz Offset | £ (Δf) | | | -156 | -160 | dBc/Hz |

## ENVIROMENTAL CHARACTERISTICS

| | |
|---|---|
| Storage temperature range | -55°C to +105°C |
| Drop Test | The test shall be carried out as the provisions of the IEC60028-2-32 test Ed.<br>10cm height, 3 times on hard board with thickness of 3cm |
| Bumping Test | Device are bumped to three mutually perpendicular axes at peak acceleration of 400m/s², each 4000±10times, 6ms pulse duration time |
| Vibration Test | Frequency range: 1Hz-4Hz-100Hz-200Hz<br>Acceleration: 0.0001g²/Hz-0.01g²/Hz-0.01g²/Hz-0.001g²/Hz<br>Grms=1.15g<br>Sweep time: 30 minutes (perpendicular axes each sweep time) |
| Mechanical Shock | 100g, 6mS duration, 1/2 sine wave, 3 shocks each direction along 3 mutually perpendicular planes. |
| Thermal shock | 0.5h@-40℃，0.5h@+85℃，Note: the changing time < 30 seconds, cycling for 100 times |

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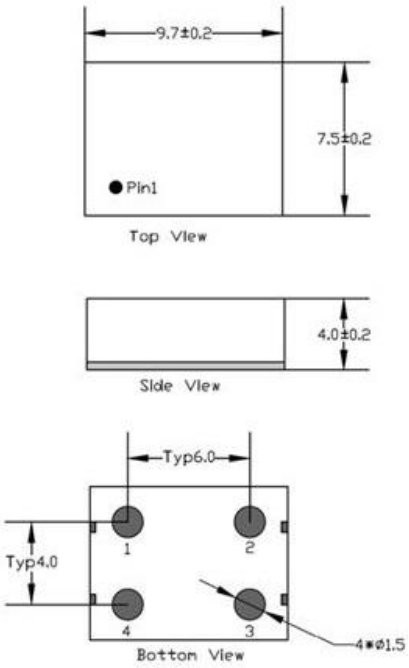
## MECHANICAL DIMENSIONS AND PIN FUNCTIONING




**Unit : mm**

| PIN | SYMBOL | FUNCTION |
|---|---|---|
| 1 | Vc | Voltage Control |
| 2 | GND | Ground |
| 3 | OUT | RF Output |
| 4 | $V_S$ | Supply Voltage |

| | Signed | Date |
|---|---|---|
| **Created** | CP | August 14, 2023 |
| **Eng. approved** | SP | August 14, 2023 |
| **REV A** | | |

RoHS Compliant

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