

FEATURES

- Ceramic substrate and ruggedized mounts for high reliability
- Industry-standard 14 pin DIL package, 4 pin or 14 pin
- Screening to MIL-O-55310C, Class B available
- Radiation tolerant version available for space applications



DESCRIPTION

EQXO-1000BM and 3000BM series oscillators are designed and manufactured by Euroquartz Ltd for aerospace, defence and similar applications where high-reliability clock oscillators are required. The oscillator is produced in the industry-standard 14 pin DIL oscillator package. EQXO-1000BM series oscillators incorporate a custom designed, all-ceramic oscillator substrate and a ruggedized three-point crystal mounting system inside a hermetically-sealed metal package. The specification ensures that the oscillators provide an accurate and reliable source of clock signals regardless of the severity of the environment in which it operates. EQXO-3000BM series oscillators are otherwise identical to EQXO-1000BM series oscillators but have 14 pins for extra mechanical security.

RADIATION TOLERANCE

For equipment to be used in space or the upper atmosphere the EQXO-1000BM and 3000BM series oscillators may be produced in a radiation tolerant version. Designated EQXO-x000BMH, this variant of the oscillator will withstand ionizing radiation to resist electrical failures for a total radiation dose of 40krad(SI).

SPECIFICATION

| | |
|--------------------------------|---|
| Model No: | EQXO-1000BM or 3000BM |
| Frequency Range: | 30kHz to 70.0MHz |
| Calibration Tolerance at 25°C: | ±10ppm to ±25ppm |
| Frequency Stability* | |
| EQXO-1100BM: | ±100ppm over -55° to +125°C |
| EQXO-1050BM: | ±50ppm over -55° to +125°C |
| Supply Voltage: | +5.0 Volts DC±10% |
| Output: | CMOS, 50pF/10 TTL loads |
| Ageing: | ±3pm max in first year |
| Symmetry: | 45%/55% |
| Operating Temperature Range: | -55° to +125°C |
| Storage Temperature Range: | -55° to +125°C |
| Construction: | Ceramic substrate, resistance welded can. |

* Frequency stability is inclusive of frequency adjustment at 25°C and any variations due to load change, ageing, supply voltage change (±10%) and variations attributable to shock and vibration, (see *Qualification Approval and Environmental Specification*.)

CURRENT CONSUMPTION /RISE & FALL TIMES

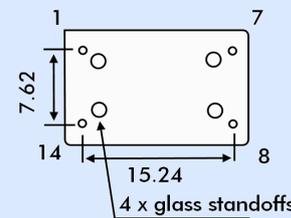
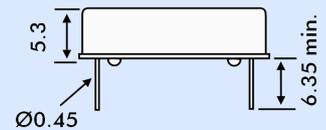
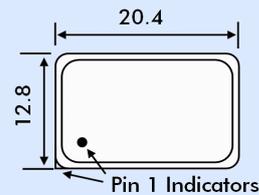
| Frequency Range | Supply Current (mA max.) | Rise/Fall Time (ns max.) |
|-----------------|--------------------------|--------------------------|
| 30kHz ~ 1.0MHz | 10 | 10 |
| 1.0MHz ~ 4.0MHz | 15 | 10 |
| 4.0MHz ~ 20MHz | 20 | 10 |
| 20MHz ~ 35MHz | 35 | 10 |
| 35MHz ~ 50MHz | 40 | 5 |
| 50MHz ~ 65MHz | 70 | 5 |

MIL SCREENING

EQXO-1000BM series oscillators may be ordered screened i.a.w. the schedules detailed in 'Qualification Approval and Environmental Specification' detailed on page 2 of this specification.

OUTLINE & DIMENSIONS

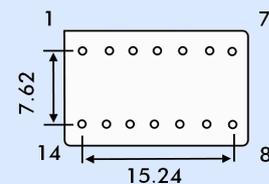
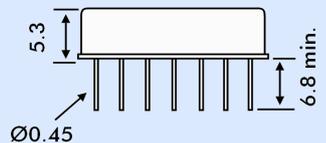
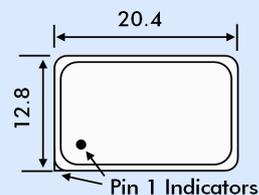
EQXO-1000 Series



Pin Connections

- 1 Not connected
- 7 Ground
- 8 Output
- 14 Supply Voltage

EQXO-3000 Series



Pin Connections

- 1~6 Not connected
- 7 Ground*
- 8 Output
- 9~13 Not connected
- 14 Supply Voltage

* Pin 7 may be tied to case specify if required

MODEL NUMBERS

| Model Number | Calibration Tolerance at 25°C | Frequency Stability -55° to +125°C | Radiation Tolerant | No. of Pins |
|--------------|-------------------------------|------------------------------------|--------------------|-------------|
| EQXO-1050BM | ±10ppm | ±50ppm | No | 4 |
| EQXO-1100BM | ±25ppm | ±100ppm | No | 4 |
| EQXO-1050BMH | ±10ppm | ±50ppm | Yes | 4 |
| EQXO-1100BMH | ±25ppm | ±100ppm | Yes | 4 |
| EQXO-3050BM | ±10ppm | ±50ppm | No | 14 |
| EQXO-3100BM | ±25ppm | ±100ppm | No | 14 |
| EQXO-3050BMH | ±10ppm | ±50ppm | Yes | 14 |
| EQXO-3100BMH | ±25ppm | ±100ppm | Yes | 14 |

STANDARD FREQUENCIES & SPECIFICATIONS
(EQXO-1000BM series parts)

| Stock Number | Frequency | Specification |
|--------------|------------|--------------------|
| OK00032A | 32.7680kHz | ±100ppm -55~+125°C |
| OK00080A | 80.0000kHz | ±100ppm -55~+125°C |
| OK00100A | 100.000kHz | ±100ppm -55~+125°C |
| OK00307A | 307.200kHz | ±100ppm -55~+125°C |
| OK00500A | 500.000kHz | ±100ppm -55~+125°C |
| OK01000A | 1.00000MHz | ±100ppm -55~+125°C |
| OK01228A | 1.22880MHz | ±100ppm -55~+125°C |
| OK03686A | 3.68640MHz | ±100ppm -55~+125°C |
| OK04915A | 4.91520MHz | ±100ppm -55~+125°C |
| OK06000A | 6.00000MHz | ±100ppm -55~+125°C |
| OK06400A | 6.40000MHz | ±100ppm -55~+125°C |
| OK08000A | 8.00000MHz | ±100ppm -55~+125°C |
| OK09216A | 9.21600MHz | ±100ppm -55~+125°C |
| OK10000A | 10.0000MHz | ±100ppm -55~+125°C |
| OK12000A | 12.0000MHz | ±100ppm -55~+125°C |
| OK14745A | 14.7456MHz | ±100ppm -55~+125°C |
| OK15375A | 15.3750MHz | ±100ppm -55~+125°C |
| OK16000A | 16.0000MHz | ±100ppm -55~+125°C |
| OK18000A | 18.0000MHz | ±100ppm -55~+125°C |
| OK20000A | 20.0000MHz | ±100ppm -55~+125°C |
| OK24000A | 24.0000MHz | ±100ppm -55~+125°C |
| OM025A00 | 25.0000MHz | ±100ppm -55~+125°C |
| OM030A00 | 30.0000MHz | ±100ppm -55~+125°C |
| OM032A00 | 32.0000MHz | ±100ppm -55~+125°C |
| OM033A33 | 33.3330MHz | ±100ppm -55~+125°C |
| OM040A00 | 40.0000MHz | ±100ppm -55~+125°C |
| OM050Z00 | 50.0000MHz | ±100ppm -55~+125°C |
| OM064Z00 | 64.0000MHz | ±100ppm -55~+125°C |

QUALIFICATION APPROVAL & ENVIRONMENTAL SPECIFICATION

| | |
|----------------------|--|
| Vibration: | 10Hz to 60Hz, 0.75mm displacement, 60Hz to 2000Hz, 98.1 m/s ² acceleration 30 minutes in each of three mutually-perpendicular planes. |
| Shock: | 981 m/s ² for 6ms, three shocks in each direction along three mutually-perpendicular planes. |
| Thermal Shock: | MIL-STD-202 Method 107 |
| Storage Temperature: | -55°C for 24 hrs., then +150°C, 24 hrs. |
| Moisture Resistance: | 85% Relative Humidity at 85°C for 24hrs. |
| Seal: | Fine leak not to exceed 1x10 ⁻⁸ mB litres of helium leakage, then Gross Leak Test. |
| Terminal Strength: | MIL-STD-202 Method 211 |
| Solderability: | MIL-STD-202 Method 208 |

SCREENING

Screening in accordance with MIL-O-55310C Class B. All devices are 100% tested to the following conditions:

| | |
|------------------------|---|
| Stabilization Bake: | Vacuum storage at 150°C for 24 hrs. |
| Temperature Cycling: | -55°C to +125°C, 10 cycles |
| Constant Acceleration: | 49000m/s ² for 1 minute in Y1 plane. |
| Seal: | Fine leak not to exceed 1x10 ⁻⁸ mB litres of helium leakage, then Gross Leak Test. |
| Dynamic Burn-in: | 125°C for 168hrs. |
| Electrical Test: | Frequency, output waveform, output Voltage/power, input current/power. |

RADIATION TOLERANT VERSIONS

Radiation tolerant versions of EQXO-1000BM series oscillators have been designed and are manufactured to ensure no functional failures will occur in any electrical test for a total radiation dose of 40krad(Si). EQXO-1000BM series oscillators so manufactured have the letter 'H' appended to the 'BM' in the part number suffix:

20.000MHz EQXO-1100BMH

A paper is available describing the general problems encountered in the design of electrical systems needing to withstand radiation encountered in the upper atmosphere and space.

PART NUMBER GENERATION

Frequency / Model Number / Plating* / Screening (if required)

Example: **10.000MHz EQXO-1100BMH Screened**

*Note: Lead and base plating is gold flashed over nickel as standard. If nickel plating only is required enter / - nickel / in this position.