

**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-1000BMS and 3000BMS 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-1000BMS series oscillators incorporates a custom designed, all-ceramic oscillator substrate and a ruggedized three-point SMD 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-3000BMS series oscillators are otherwise identical to EQXO-1000BMS 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-1000BMS and 3000BMS series oscillators may be produced in a radiation tolerant version. Designated EQXO-x000BMHDS, 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-1000BMS or 3000BMS
Frequency Range:	30kHz to 70.0MHz
Calibration Tolerance at 25°C:	±10ppm to ±25ppm
Frequency Stability*	
EQXO-1100BMS:	±100ppm over -55° to +125°C
EQXO-1050BMS:	±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**

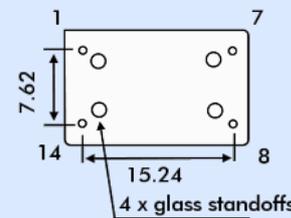
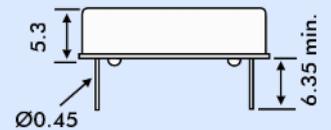
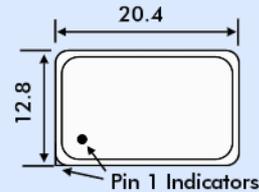
Frequency Range	Supply Current (mA max.)	Rise/Fall Time (ns max.)
30kHz ~ 1.0MHz	10	10
1.0MHz ~ 4.0MHz	15	10
4.0MHz ~ 20MHz	20	10
20MHz ~ 35MHz	35	10
35MHz ~ 50MHz	40	5
50MHz ~ 65MHz	70	5

**MIL SCREENING**

EQXO-1000BMS 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.

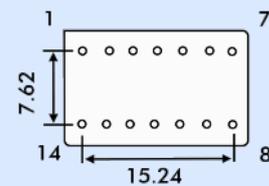
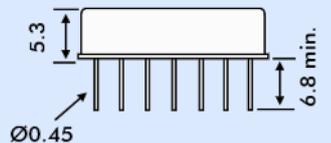
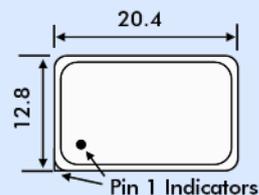
**OUTLINE & DIMENSIONS**

**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-1050BMS	±10ppm	±50ppm	No	4
EQXO-1100BMS	±25ppm	±100ppm	No	4
EQXO-1050BMHDS	±10ppm	±50ppm	Yes	4
EQXO-1100BMHDS	±25ppm	±100ppm	Yes	4
EQXO-3050BMS	±10ppm	±50ppm	No	14
EQXO-3100BMS	±25ppm	±100ppm	No	14
EQXO-3050BMHDS	±10ppm	±50ppm	Yes	14
EQXO-3100BMHDS	±25ppm	±100ppm	Yes	14

**QUALIFICATION APPROVAL & ENVIRONMENTAL SPECIFICATION**

Vibration:	10Hz to 60Hz, 0.75mm displacement, 60Hz to 2000Hz, 98.1 m/s <sup>2</sup> acceleration 30 minutes in each of three mutually- perpendicular planes.
Shock:	981 m/s <sup>2</sup> 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 <sup>-8</sup> 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 <sup>2</sup> for 1 minute in Y1 plane.
Seal:	Fine leak not to exceed 1x10 <sup>-8</sup> 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-1000BMDS 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-1000BMDS series oscillators so manufactured have the letter 'H' appended to the 'BM' in the part number suffix:

**20.000MHz EQXO-1100BMHDS**

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-1100BMHDS Screened**

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

*N.B. Contains 0.024g Pb*