

FEATURES

- Ceramic substrate and ruggedized mounts for high reliability
- Industry-standard 8 pin DIL package for ease of design
- Full screening to MIL-O-55310C, Class B available
- Radiation tolerant version available for space applications

DESCRIPTION

EQXO-2000BM 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 8 pin DIL oscillator package. EQXO-2000BM 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 EQXO-2000BM series oscillators provide an accurate and reliable source of clock signals regardless of the severity of the environment in which it operates.

RADIATION TOLERANCE

For equipment to be used in space or the upper atmosphere the EQXO-2000BM series oscillators may be produced in a radiation tolerant version. Designated EQXO-2000BMH, this variant of the oscillator will withstand ionizing radiation to resist electrical failures for a total radiation dose of 40krad(SI).

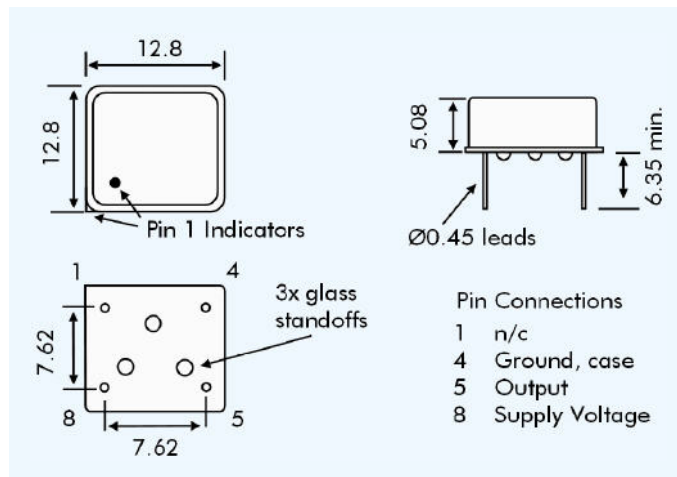
SPECIFICATION

Model No:	EQXO-2000BM
Frequency Range:	30kHz to 70.0MHz
Calibration Tolerance at 25°C:	±10ppm to ±25ppm
Frequency Stability*	
EQXO-2100BM:	±100ppm over -55° to +125°C
EQXO-2050BM:	±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

OUTLINE & DIMENSIONS

MODEL NUMBERS

Model Number	Calibration Tolerance at 25°C	Frequency Stability -55° to +125°C	Radiation Tolerant
EQXO-2050BM	±10ppm	±50ppm	No
EQXO-2100BM	±25ppm	±100ppm	No
EQXO-2050BMH	±10ppm	±50ppm	Yes
EQXO-2100BMH	±25ppm	±100ppm	Yes

MIL SCREENING

EQXO-2000BM series oscillators may be ordered screened i.a.w. the schedules detailed in 'Qualification Approval and Environmental Specification' on page 2 of this specification.

PART NUMBER GENERATION

Frequency / Model Number / Screening (if required)

Example: 10.000MHz EQXO-2100BMH Screened

STANDARD FREQUENCIES & SPECIFICATIONS

Stock Number	Frequency	Specification
WK00032A	32.7680kHz	±100ppm -55~+125°C
WK00080A	80.0000kHz	±100ppm -55~+125°C
WK00100A	100.000kHz	±100ppm -55~+125°C
WK00307A	307.200kHz	±100ppm -55~+125°C
WK00500A	500.000kHz	±100ppm -55~+125°C
WK01000A	1.00000MHz	±100ppm -55~+125°C
WK01228A	1.22880MHz	±100ppm -55~+125°C
WK03686A	3.68640MHz	±100ppm -55~+125°C
WK04915A	4.91520MHz	±100ppm -55~+125°C
WK06000A	6.00000MHz	±100ppm -55~+125°C
WK06400A	6.40000MHz	±100ppm -55~+125°C
WK08000A	8.00000MHz	±100ppm -55~+125°C
WK09216A	9.21600MHz	±100ppm -55~+125°C
WK10000A	10.0000MHz	±100ppm -55~+125°C
WK12000A	12.0000MHz	±100ppm -55~+125°C
WK14745A	14.7456MHz	±100ppm -55~+125°C
WK15375A	15.3750MHz	±100ppm -55~+125°C
WK16000A	16.0000MHz	±100ppm -55~+125°C
WK18000A	18.0000MHz	±100ppm -55~+125°C
WK20000A	20.0000MHz	±100ppm -55~+125°C
WK24000A	24.0000MHz	±100ppm -55~+125°C
WM025A00	25.0000MHz	±100ppm -55~+125°C
WM030A00	30.0000MHz	±100ppm -55~+125°C
WM032A00	32.0000MHz	±100ppm -55~+125°C
WM033A33	33.3330MHz	±100ppm -55~+125°C
WM040A00	40.0000MHz	±100ppm -55~+125°C
WM050Z00	50.0000MHz	±100ppm -55~+125°C
WM064Z00	64.0000MHz	±100ppm -55~+125°C

QUALIFICATION APPROVAL & ENVIRONMENTAL SPECIFICATION

Vibration:	10Hz to 60Hz, 0.75mm displacement, 60Hz to 2000Hz, 98.1m/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 inY1 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-2000BM 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-2000BM series oscillators so manufactured have the letter 'H' appended to the 'BM' in the part number suffix:

20.000MHz EQXO2100BMH

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.