# EURO QUARTZ

# **EQXO-1000XN Series Oscillators**

## 14 pin Dual-in-Line

### **PRODUCT FEATURES**

- Industry-standard 14 pin DIL package for compatibility
- Highly reliable industrial CMOS oscillator
- -55°C to +125°C Wide operating temperature
- Supply voltage 1.8V, 2.5V, 3.3V or 5.0 Volts DC
- Femto second integrated phase jitter 150fs typical
  Superior phase noise performance
- ITAR FDFF
- ITAR FREE

### DESCRIPTION

The Euroquartz EQXO-1000XN series of 14 pin dual-in-line CMOS oscillators consist of a universal, hi-temp quartz crystal oscillator in a hermetically-sealed package. The oscillators provide a reliable source of clock signals with superior phase noise and jitter performance at low unit cost. The EQXO-1000XN series is ITAR free and manufactured in the UK.

### SPECIFICATION

Series Number:EQXO-1000XNFrequency Range: $1.75$ MHz to 60MHzFrequency Stability*: $\pm 50$ ppm across -55°C + 125°CSupply Voltage: $\pm 100$ ppm across -55°C + 125°CSupply Voltage: $+1.8$ Volts $\pm 10\%$ : $+2.5$ Volts $\pm 10\%$ : $\pm 2.5$ Volts $\pm 10\%$ : $+3.3$ Volts $\pm 10\%$ $\pm 5.0$ Volts $\pm 10\%$ Output LoadHCMOS:15pF (50pF is available. Add 50p to end of part number)Rise/Fall Time $1.8 - 2.5$ Volts: $10ns$ (max.) $3.3 - 5.0$ Volts: $10ns$ (max.)Measured between 10% to 90% waveform (CL=15pF)Duty Cycle:Standard:50% $\pm 10\%$ ; Option 50% $\pm 5\%$ is available, add 'S' to part number.Operating Temperature Range: $-55^\circ$ to $+125^\circ$ CStart-up Time: $5ms$ (max.)Current Consumption: $1.75 - 20$ MHz $1.8$ Vob $2$ mA $3.3$ Vob $3$ mA $5.0$ Vob $5$ mA $3.3$ Vob $5$ mA $5.0$ Vob $5$						
Frequency Stability*: $\pm 50$ ppm across $-55^{\circ}C + 125^{\circ}C$ $\pm 100$ ppm across $-55^{\circ}C + 125^{\circ}C$ Supply Voltage: $+1.8$ Volts $\pm 10\%$ : $+2.5$ Volts $\pm 10\%$ : $+3.3$ Volts $\pm 10\%$ $+5.0$ Volts $\pm 10\%$ $+5.0$ Volts $\pm 10\%$ Output LoadHCMOS: $15pF$ (50pF is available. Add $50p$ to end of part number)Rise/Fall Time $1.8 - 2.5$ VDD: $3.3 - 5.0$ VDD: $7ns$ (max.) Measured between 10% to 90% waveform (CL=15pF)Duty Cycle:Standard:50% $\pm 10\%$ ; Option 50% $\pm 5^{\circ}$ is available, add 'S' to part number.Operating Temperature Range: $-55^{\circ}$ to $+125^{\circ}C$ Start-up Time: $5ms$ (max.) $2mA$ Current Consumption: $1.75 - 20$ MHz $3mA$ $1.8V^{DD}$ $2mA$ $4mA$ $2.5V_{DD}$ $3mA$ $5mA$ $3.3V_{DD}$ $4mA$ $5mA$ $3.3V_{DD}$ $5mA$ $5mA$ $3.3V_{DD}$ <		-	EQXO-1000XN			
$\pm 100 \text{ppm across} -55^{\circ}\text{C} + 125^{\circ}\text{C}$ Supply Voltage: $+ 1.8 \text{ Volts} \pm 10\%;$ $+ 2.5 \text{ Volts} \pm 10\%;$ $+ 3.3 \text{ Volts} \pm 10\%;$ $+ 3.3 \text{ Volts} \pm 10\%;$ $+ 3.3 \text{ Volts} \pm 10\%;$ $+ 5.0 \text{ Volts} \pm 10\%;$ $+ 5.$	Frequency Ran	ge:	1.75MHz to 60MHz			
+2.5 Volts ±10%:         +3.3 Volts ±10%         +5.0 Volts ±10%         +5.0 Volts ±10%         +5.0 Volts ±10%         Output Load       HCMOS:         15pF (50pF is available. Add 50p to end of part number)         Rise/Fall Time         1.8 - 2.5VDD:         3.3 - 5.0VDD:         10ns (max.)         Measured between10% to 90%         waveform (CL=15pF)         Duty Cycle:         Standard:50% ±10%;         Operating Temperature Range:         -55° to +125°C         Start-up Time:         Current Consumption:         1.8VDD         2mA         4mA         5.0VDD         3mA         5mA         8mA         5.0VDD         5mA         8mA         50VDD         5mA         5mA         8mA	Frequency Stat	pility*:				
Output LoadHCMOS:15pf (50pF is available. Add 50p to end of part number)Rise/Fall Time1.8 - 2.5VDD: 3.3 - 5.0VDD:7ns (max.) 10ns (max.) Measured between10% to 90% waveform (CL=15pF)Duty Cycle:Standard:50% ±10%; Option 50% ±5% is available, add 'S' to part number.Operating Temperature Range:-55° to +125°CStart-up Time:5ms (max.)Current Consumption:1.75 - 20MHz1.8VDD2mA2.5VDD3mA3.3VDD4mA5.0VDD5mA3.3VDD5mA5.0VDD5mAStart option:0utput is high impedance when '0' (<0.8 Volts) is applied to Pin 1, (internal pull-up). Disable time = 150ns max.SSB Phase Noise (26MHz, 3.3V)10KHzOffset:10Hz10Hz10Hz15Hz10KHz15Hz10KHz150fs(typ)[12kHz to 20MHz integ]	Supply Voltage:		+2.5 Volts ±10%: +3.3 Volts ±10%			
1.8 - 2.5VDD:       7ns (max.)         3.3 - 5.0VDD:       10ns (max.)         Measured between 10% to 90%       waveform (CL=15pF)         Duty Cycle:       Standard:50% ±10%;         Operating Temperature Range:       -55° to +125°C         Storage Temperature Range:       -55° to +125°C         Storage Temperature Range:       -55° to +125°C         Start-up Time:       5ms (max.)         Current Consumption:       1.75 - 20MHz       20 - 60MHz         1.8VDD       2mA       4mA         2.5VDD       3mA       5mA         3.3VDD       4mA       6mA         5.0VDD       5mA       8mA         Tristate Option:       Output is high impedance when '0' (<0.8 Volts) is applied to Pin 1, (internal pull-up).	Output Load	HCMOS:	15pF (50pF is available. Add			
Duty Cycle:Standard:50% ±10%; Option 50%±5% is available, add 'S' to part number.Operating Temperature Range:-55° to +125°CStorage Temperature Range:-55° to +125°CStart-up Time:5ms (max.)Current Consumption:1.75 - 20MHz1.8VDD2mA2.5VDD3mA3.3VDD4mA6mA5.0VDD5mA7.1istate Option:Output is high impedance when '0' (<0.8 Volts) is applied to Pin 1, 	Rise/Fall Time		10ns (max.) Measured between10% to 90%			
Storage Temperature Range:       -55° to +125°C         Start-up Time:       5ms (max.)         Current Consumption:       1.75 - 20MHz       20 - 60MHz         1.8VDD       2mA       4mA         2.5VpD       3mA       5mA         3.3VDD       4mA       6mA         5.0VpD       5mA       8mA         Tristate Option:       Output is high impedance when '0' (<0.8 Volts) is applied to Pin 1, (internal pull-up). Disable time = 150ns max.	Duty Cycle:		Standard:50% ±10%; Option 50%±5% is available, add			
Start-up Time:         5ms (max.)           Current Consumption:         1.75 - 20MHz         20 - 60MHz           1.8VDD         2mA         4mA           2.5VDD         3mA         5mA           3.3VDD         4mA         6mA           5.0VDD         5mA         8mA           Tristate Option:         Output is high impedance when '0' (<0.8 Volts) is applied to Pin 1, (internal pull-up). Disable time = 150ns max.           SSB Phase Noise (26MHz, 3.3V)         Offset:         10Hz           Offset:         10Hz         10NHz         1MHz           dBc:         -94         -127         -142         -156         -161         -163           Phase Jitter(RMS)         [26MHz, 3.3V]:         150fs(typ)[12kHz to 20MHz integ]         150fs(typ)[12kHz to 20MHz integ]	Operating Tem	nperature Range:				
Current Consumption:         1.75 - 20MHz         20 - 60MHz           1.8VDD         2mA         4mA           2.5VDD         3mA         5mA           3.3VDD         4mA         6mA           5.0VDD         5mA         8mA           Tristate Option:         Output is high impedance when '0' (<0.8 Volts) is applied to Pin 1, (internal pull-up). Disable time = 150ns max.	Storage Tempe	erature Range:	-55° to +125°C			
1.8Vpp       2mA       4mA         2.5Vpp       3mA       5mA         3.3Vpp       4mA       6mA         5.0Vpp       5mA       8mA         Tristate Option:       Output is high impedance when '0' (<0.8 Volts) is applied to Pin 1, (internal pull-up). Disable time = 150ns max.         SSB Phase Noise (26MHz, 3.3V)       Offset:       10Hz       10kHz       1MHz       5MHz         dBc:       -94       -127       -142       -156       -161       -163       -163         Phase Jitter(RMS) [26MHz, 3.3V]:       150fs(typ)[12kHz to 20MHz integ]       150fs(typ)[12kHz to 20MHz integ]       150fs(typ)[12kHz to 20MHz integ]	Start-up Time:	-				
2.5Vpp       3mA       5mA         3.3Vpp       4mA       6mA         5.0Vpp       5mA       8mA         Tristate Option:       Output is high impedance when '0' (<0.8 Volts) is applied to Pin 1, (internal pull-up). Disable time = 150ns max.         SSB Phase Noise (26MHz, 3.3V)       Offset:       10Hz         Offset:       10Hz       10Hz       10kHz         Max       -127       -142       -156       -161       -163         Phase Jitter(RMS)       [26MHz, 3.3V]:       150fs(typ)[12kHz to 20MHz integ]	Current Consu	mption:	1.75 - 20MHz	20 - 60MHz		
3.3Vpp       4mA       6mA         5.0Vpp       5mA       8mA         Tristate Option:       Output is high impedance when '0' (<0.8 Volts) is applied to Pin 1, (internal pull-up). Disable time = 150ns max.	1.8VDD		2mA	4mA		
5.0Vpp       5mA       8mA         Tristate Option:       Output is high impedance when '0' (<0.8 Volts) is applied to Pin 1, (internal pull-up). Disable time = 150ns max.	2.5VDD		3mA	5mA		
Tristate Option:Output is high impedance when '0' (<0.8 Volts) is applied to Pin 1, (internal pull-up). Disable time = 150ns max.SSB Phase Noise (26MHz, 3.3V)Offset:10Hz10Hz10Hz5MHzOffset:10Hz100Hz1kHz10kHz1MHz5MHzdBc:-94-127-142-156-161-163-163Phase Jitter(RMS)[26MHz, 3.3V]:150fs(typ)[12kHz to 20MHz integ]	3.3VDD		4mA	6mA		
'0' (<0.8 Volts) is applied to Pin 1, (internal pull-up). Disable time = 150ns max.         SSB Phase Noise (26MHz, 3.3V)         Offset:       10Hz         10Hz       10HHz         10Hz       10Hz			5mA	8mA		
Offset:         10Hz         10Hz         1kHz         10kHz         10kHz         1MHz         5MHz           dBc:         -94         -127         -142         -156         -161         -163         -163           Phase Jitter(RMS)         [26MHz, 3.3V]:         150fs(typ)[12kHz to 20MHz integ]	Tristate Option:		Output is high impedance when '0' (<0.8 Volts) is applied to Pin 1, (internal pull-up).			
dBc: -94 -127 -142 -156 -161 -163 -163 Phase Jitter(RMS) [26MHz, 3.3V]: 150fs(typ)[12kHz to 20MHz integ]	SSB Phase Noi					
	Phase Jitter(RM	\S) [26MHz, 3.3V]:	150fs(typ)[12kHz	150fs(typ)[12kHz to 20MHz integ]		
				±2ppm max. For first year		

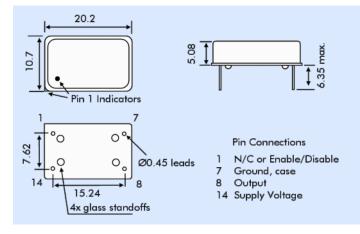
\* The frequency stability parameter is inclusive of frequency adjustment at 25°C and any variations due to load change, ageing,

## 1.75MHz to 60.0MHz





#### **OUTLINE & DIMENSIONS**



Out Voltage Level	Supply Voltage			
our vollage Level	+1.8 V	+2.5 V	+3.3 V	+5.0 V
Logic Hi '1' (90% VDD max.)	1.62V	2.25V	2.97V	4.5V
Logic Lo '0' (10% VDD max.)	0.18V	0.25V	0.33V	0.5V

#### PART NUMBER GENERATION

EQXO-1000XN series oscillator part numbers derived as follows: Example: **10.000MHz EQXO-1050XNT3**:

