

ISSUE 1; December 2022

Description

- The IQPP-542 is a PLL based, one time only factory programmable (for a fast lead time) crystal oscillator in a hermetically sealed ceramic package with a metal lid. This model is not approved for on-board avionics, automotive & safety critical applications so see model IQXO-542 AUTO
- -A Tristate
- -B Standby



Frequency Parameters

- Frequency 1.0MHz to 125.0MHz
- Frequency Stability $\pm 20.00\text{ppm}$ to $\pm 50.00\text{ppm}$
- Ageing $\pm 3\text{ppm}$ max in 1st year @ 25°C

Electrical Parameters

- Supply Voltage 1.8V $\pm 5\%$
- Standby Current (Tristate): 20mA max
- Standby Current (Standby): 400 μ A max

Operating Temperature Ranges

- -20 to 70°C
- -40 to 85°C
- -40 to 105°C

Output Details

- Output Compatibility CMOS
- Drive Capability 15pF
- Start Up Time: 8ms max.
In Standby mode, the internal oscillator shuts down and the start-up time will be longer compared to Tristate mode.
- Note: To ensure optimal oscillator performance, place a by-pass capacitor of 0.1 μ F as close to the part as possible between Vs and GND pad.

Output Control

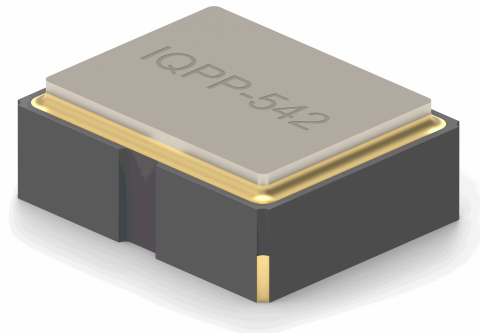
- Tristate or Standby:
Logic '1' (>70% Vs) to pad 1 enables oscillator output.
Logic '0' (<30% Vs) to pad 1 disables oscillator output; when disabled the oscillator output goes to the high impedance state.
No connection to pad 1 enables oscillator output.

Noise Parameters

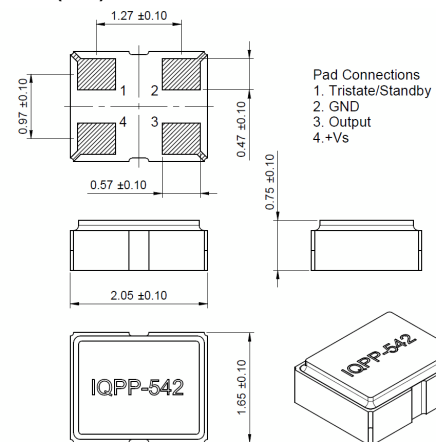
- RMS Phase Jitter @ 50MHz (12kHz to 20MHz): 2ps max

Environmental Parameters

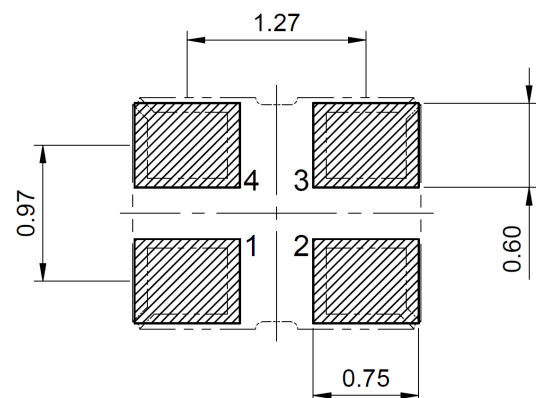
- Storage Temperature Range: -55 to 125°C
- Shock (MIL-STD-883 2002 Condition B, JESD22-B104 Condition B): 1500g, 1/2 sine, 0.5ms, 3 times in each axis.
- Vibration (MIL-STD-883 2007 Condition A, JESD22-B103 Condition 1): 10-2000Hz, 1.52mm, 20g, 4 hours in each axis.
- Thermal Shock (MIL-STD-883 1010 Condition B, JESD22-A104 Condition B): -55°C, 125°C, soak time 10mins, total of 200 cycles.



Outline (mm) -A = Tristate



Recommended Solder Pad Layout



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Manufacturing Details

- RoHS Terminations NiAu
- RoHS Reflow 260°C max, 255°C for 30s max

Ordering Information

- Frequency*
Model*
-A = Tristate or -B = Standby
Output Compatibility
Frequency Stability (over operating temperature range)*
Operating Temperature Range*
Supply Voltage
- Example
20.0MHz IQPP-542-A
CMOS ±50ppm -40 to 85C 1.8V

Compliance

- RoHS Status (2015/863/EU) Compliant
- REACH Status Compliant
- MSL Rating (JDEC-STD-033): 1

Packaging Details

- Pack Style: Reel Tape & reel in accordance with EIA-481-D
Pack Size: 3,000

Electrical Specification - maximum limiting values 1.8V ±5%

Frequency Min	Frequency Max	Temperature Range	Stability (Min)	Current Draw	Rise and Fall Time	Duty Cycle
		°C	ppm	mA	ns	%
1.0MHz	10.0MHz	-20 to 70	±50.0	25	4	45/55%
		-40 to 85	±25.0	25	4	45/55%
		-40 to 105	±25.0	25	4	45/55%
10.000001MHz	125.0MHz	-20 to 70	±20.0	25	3	45/55%
		-40 to 85	±25.0	25	3	45/55%
		-40 to 105	±25.0	25	3	45/55%

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