

ISSUE 1; September 2021

### Description

- Simple package crystal oscillator (SPXO) in a seam sealed ceramic package with a metal lid and operates over a wide supply voltage range of 1.62V to 3.63V
- Note: Operating temperature range -40 to 125°C is intended for industrial use and not for safety critical applications such as automotive. Please contact IQD for alternative options.



### Frequency Parameters

- Frequency: 2.0MHz to 50.0MHz
- Frequency Stability:  $\pm 25.00\text{ppm}$  to  $\pm 100.00\text{ppm}$
- Ageing:  $\pm 3\text{ppm}$  max in 1st year @ 25°C
- Frequency Stability: inclusive of frequency tolerance at 25°C  $\pm 3^\circ\text{C}$  and over the operating temperature range.

### Electrical Parameters

- Supply Voltage: 1.62V min to 3.63V max

### Operating Temperature Ranges

- 10 to 70°C
- 40 to 85°C
- 40 to 125°C

### Output Details

- Output Compatibility: CMOS
- Drive Capability: 15pF max

### Output Control

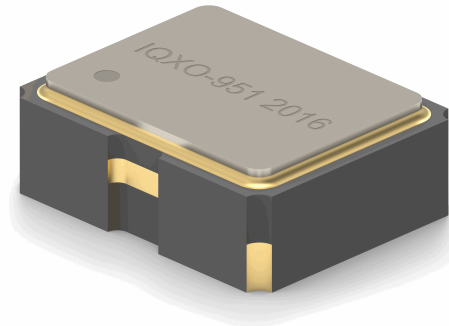
- Standby Operation:
  - Logic '1' (>70% VS) to pad 1 enables oscillator output
  - Logic '0' (<30% VS) to pad 1 disables oscillator output; when disabled the oscillator output goes to the high impedance state
  - No connection to pad 1 enables oscillator output.
- Start-up Time: 10ms max  
0.3ms typ to 90% of final amplitude (under ideal conditions @ 25°C)
- Standby Current: 10µA max, 1.1µA typ @ 25°C

### Output Levels

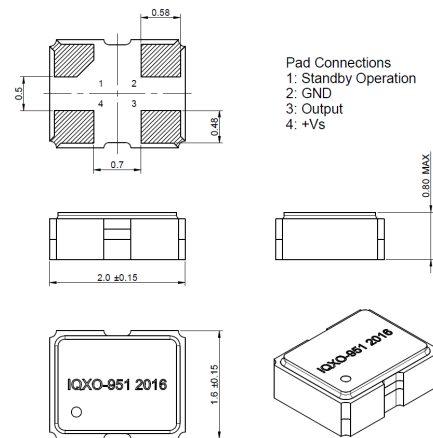
- Output Voltage Levels:
  - Output High (VoH):  $V_s - 0.4\text{V}$  min
  - Output Low (VoL): 0.4V max

### Noise Parameters

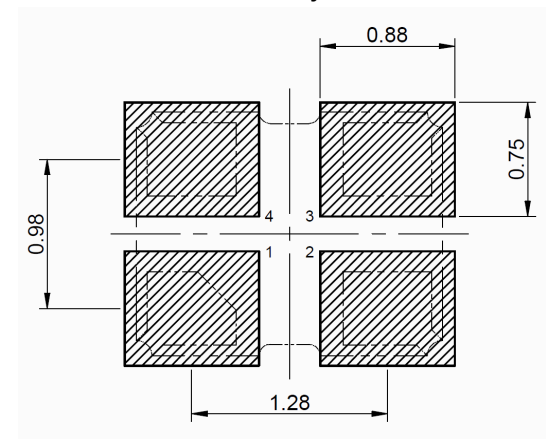
- RMS Phase Jitter (12kHz to 5MHz): 179fs typ @ 24MHz
- Phase Noise (typ @ 24MHz and @ 25°C):
  - 67dBc/Hz @ 10Hz
  - 104dBc/Hz @ 100Hz
  - 138dBc/Hz @ 1kHz
  - 143dBc/Hz @ 10kHz
  - 160dBc/Hz @ 100kHz
  - 161dBc/Hz @ 1MHz



### Outline (mm)



### Recommended Solder Pad Layout



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### Environmental Parameters

- Storage Temperature Range: -55 to 125°C
- Shock: 1500g, 0.5ms, 6 sides, impact each side 3 times.
- Vibration: 20Hz-2000Hz, 1.52mm peak amplitude, 20g acceleration in 3 mutually perpendicular planes, 20mins per axis (total 4hrs)

### Manufacturing Details

- RoHS Terminations Au
- RoHS Reflow 260°C max

### Compliance

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

### Packaging Details

- Pack Style: Cutt Cut tape  
Pack Size: 100
- Pack Style: Reel Tape and reel in accordance with  
Pack Size: 3,000 EIA-481-D

### Electrical Specification - maximum limiting values

Frequency	Frequency	Temperature Range	Stability (Min)	Current	Rise and Fall Time	Duty Cycle
		°C	ppm	mA	ns	%
2.0MHz	9.999999MHz	-10 to 70	±100.0	5	6	45/55%
		-40 to 85	±25.0	5	6	45/55%
		-40 to 125	±50.0	5	6	45/55%
10.0MHz	19.999999MHz	-10 to 70	±50.0	6	6	45/55%
		-40 to 85	±25.0	6	6	45/55%
		-40 to 125	±50.0	6	6	45/55%
20.0MHz	31.999999MHz	-10 to 70	±50.0	7	5	45/55%
		-40 to 85	±25.0	7	5	45/55%
		-40 to 125	±50.0	7	5	45/55%
32.0MHz	50.0MHz	-10 to 70	±50.0	8	5	45/55%
		-40 to 85	±25.0	8	5	45/55%
		-40 to 125	±50.0	8	5	45/55%

*This document was correct at the time of printing; please contact your local sales office for the latest version.*

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