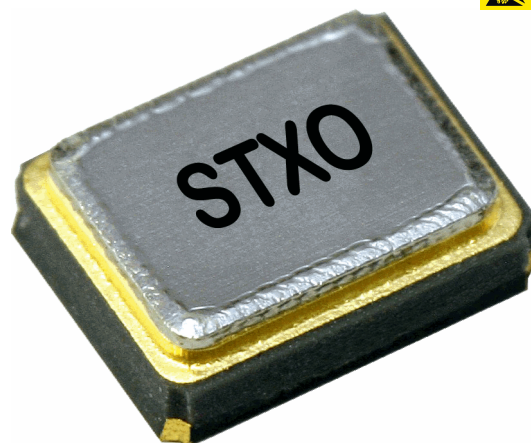


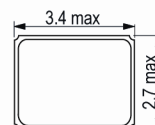
ISSUE 1; June 2019

### Description

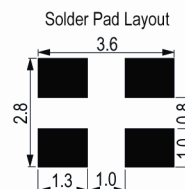
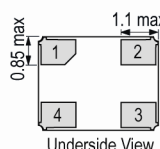
- State-of-the-art design, process, manufacturing and testing capabilities have made the development of the ultra-miniature 3.2mm x 2.5mm STXO oscillator achievable. Performance capabilities include low RMS jitter (typical <300fs), low phase noise (noise floor typical <-161dBc/Hz), tight frequency stability ( $\pm 15$  ppm total over -55 to 125°C to  $\pm 5$ ppm total over -40 to 85°C).
- HGD-SM1 30000G (Gold plated, RoHS compliant)
- HGD-SM5 30000G (Solder dipped, RoHS compliant)
- HGF-SM1 50000G (Gold plated, RoHS compliant)
- HGF-SM5 50000G (Solder dipped, RoHS compliant)
- SM1 (Gold plated, RoHS compliant)
- SM5 (Solder dipped, RoHS compliant)
- FEATURES:
  - High shock survival option up to 50000G
  - Tight frequency stability and low phase noise
  - Ultra-low Allan Deviation and RMS phase jitter
  - Ultra-low period jitter
  - Low current consumption
  - CMOS output; enable/disable with Tri-State
  - Fundamental frequency; no PLL artefacts
  - Hermetically sealed ceramic package
- APPLICATION
  - Aerospace -
  - Guidance and navigation
  - Communications
- Please note that all data given is only valid @ 25°C unless otherwise stated.



Outline (mm) -SM1 = (Gold plated, RoHS compliant)



Pad Connections	Height (H) =
1. EN or NC	SM1 1.35 max
2. GND	SM3 1.47 max
3. Output	SM5 1.47 max
4. +Vs	



### Frequency Parameters

- Frequency: 10.0MHz to 55.0MHz
- Frequency Stability:  $\pm 5.00$ ppm to  $\pm 20.00$ ppm
- Ageing:  $\pm 2$ ppm max in 1st year @ 25°C
- Note: For tighter total frequency stabilities please contact an IQD Sales Office.

### Electrical Parameters

- Supply Voltage: 2.5V  $\pm 10\%$
- Absolute Maximum Supply Voltage Rating: -0.3 to 4.0V  
Note: Operating beyond these limits may result in change or permanent damage to the oscillator.
- Supply Current (@ F=40MHz, Vs=2.5V and load=15pF): 2.7mA typ

### Operating Temperature Ranges

- 40 to 85°C
- 40 to 105°C
- 55 to 125°C

### Output Details

- Output Compatibility: CMOS
- Drive Capability: 15pF
- Output Voltage Levels:
  - Output Low (VoL): 0.4V max
  - Output High (VoH): Vs-0.4V min
- Start Up Time: 5ms max

### Sales Office Contact Details:

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USA: +1.760.318.2824

Email: [info@iqdfrequencyproducts.com](mailto:info@iqdfrequencyproducts.com)

Web: [www.iqdfrequencyproducts.com](http://www.iqdfrequencyproducts.com)

#### Output Control

- Enable/Disable (EN):  
Logic '0' to pad 1 disables oscillator output, output goes to high impedance state, current consumption very low, internal oscillator stops, output recovery delayed.  
Logic '1' or no connection (internal pull-up resistor) to pad 1 enables oscillator output.
- No Connection (NC): Pad 1 No Connection

#### Noise Parameters

- Phase Noise (F=20MHz, typ):
  - 69dBc/Hz @ 10Hz
  - 105dBc/Hz @ 100Hz
  - 138dBc/Hz @ 1kHz
  - 154dBc/Hz @ 10kHz
  - 158dBc/Hz @ 100kHz
  - 159dBc/Hz @ 1MHz
  - 163dBc/Hz @ 5MHz
- Phase Noise (F=40MHz, typ):
  - 61dBc/Hz @ 10Hz
  - 98dBc/Hz @ 100Hz
  - 131dBc/Hz @ 1kHz
  - 151dBc/Hz @ 10kHz
  - 160dBc/Hz @ 100kHz
  - 161dBc/Hz @ 1MHz
  - 161dBc/Hz @ 5MHz
- RMS Phase Jitter (12kHz to 20MHz):
  - F=20MHz: 256fs typ
  - F=40MHz: 232fs typ
- RMS Period Jitter over 1000 cycles (F=20MHz or 40MHz):  
1.4ps typ

#### Environmental Parameters

- Storage Temperature Range: -55 to 125°C
- Shock:
  - Standard: 5000G, 0.5ms, 1/2 sine
  - HGD: 30000G, 0.5ms, 1/2 sine
  - HGF: 50000G, 0.5ms, 1/2 sine
- Vibration: MIL-STD-202G, Method 204D, Condition D: 20G, 10-2000Hz, swept sine.
- Note: Random vibration testing also available - please contact an IQD Sales Office.

#### Manufacturing Details

- Maximum Process Temperature: 260°C for 20secs max
- RoHS Terminations                      Various
- RoHS Reflow                                      260°C max for 20secs max

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Electrical Specification - maximum limiting values 2.5V  $\pm$ 10%

Frequency Min	Frequency Max	Temperature Range	Stability (Min)	Current Draw	Rise and Fall Time	Duty Cycle
		°C	ppm	mA	ns	%
10.0MHz	55.0MHz	-40 to 85	$\pm$ 5.0	-	5	45/55%
		-40 to 105	$\pm$ 10.0	-	5	45/55%
		-55 to 125	$\pm$ 15.0	-	5	45/55%

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

[Click to view latest version on our website.](#)

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