



## HGXO

The HGXO crystal oscillator is a surface-mount oscillator that can survive extremely high shocks - up to 100,000G. The design consists of a hermetically-sealed high-shock crystal and a CMOS compatible integrated circuit housed in a 7.5 x 5mm SMD ceramic package.

Model Name	Description
HGXO 3.3V	A 3.3V Version
HGXO 5.0V	A 5.0V Version

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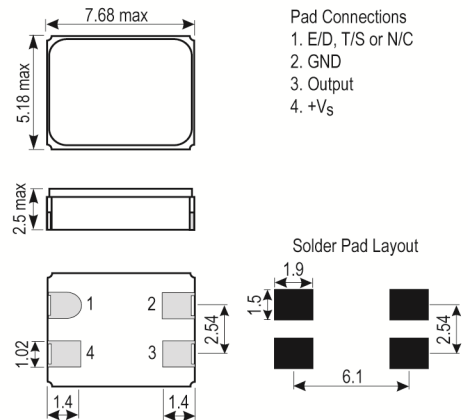
### Description



- The HGXO crystal oscillator is a surface-mount oscillator that can survive extremely high shocks - up to 100,000G. The design consists of a hermetically-sealed high-shock crystal and a CMOS compatible integrated circuit housed in a 7.5 x 5mm SMD ceramic package.
- A-SM1 5000G, Gold Plated (RoHS)
- A-SM3 5000G, Solder Dipped (non RoHS)
- A-SM5 5000G, Solder Dipped (RoHS)
- B-SM1 10000G, Gold Plated (RoHS)
- B-SM3 10000G, Solder Dipped (non RoHS)
- B-SM5 10000G, Solder Dipped (RoHS)
- C-SM1 20000G, Gold Plated (RoHS)
- C-SM3 20000G, Solder Dipped (non RoHS)
- C-SM5 20000G, Solder Dipped (RoHS)
- D-SM1 30000G, Gold Plated (RoHS)
- D-SM3 30000G, Solder Dipped (non RoHS)
- D-SM5 30000G, Solder Dipped (RoHS)
- F-SM1 50000G, Gold Plated (RoHS)
- F-SM3 50000G, Solder Dipped (non RoHS)
- F-SM5 50000G, Solder Dipped (RoHS)
- G-SM1 75000G, Gold Plated (RoHS)
- G-SM3 75000G, Solder Dipped (non RoHS)
- G-SM5 75000G, Solder Dipped (RoHS)
- H-SM1 100000G, Gold Plated (RoHS)
- H-SM3 100000G, Solder Dipped (non RoHS)
- H-SM5 100000G, Solder Dipped (RoHS)
- FEATURES:
  - Mechanical shock survivability up to 100000G
  - CMOS output, TTL on request
  - Optional Output Enable/Disable with Tri-State
  - Low EMI emission
  - Low acceleration sensitivity available
- Please note that all data is only valid at 25°C unless otherwise stated.



Outline (mm) A-SM1 = 5000G, Gold Plated (RoHS)



### Frequency Parameters

- Frequency 460.0kHz to 50.0MHz
- Frequency Tolerance ±10.00ppm to ±100.00ppm
- Tolerance Condition @ 25°C
- Frequency Stability ±10.00ppm to ±40.00ppm
- Ageing ±5ppm typ in the 1st year
- Note: Frequency Stability does not include Frequency Tolerance @ 25°C

### Electrical Parameters

- Supply Voltage 3.3V ±10%
- Absolute Maximum Supply Voltage: -0.5V to 7.0V

### Operating Temperature Ranges

- -10 to 70°C
- -40 to 85°C
- -55 to 125°C

### Output Details

- Output Compatibility CMOS
- Drive Capability 15pF
- Note: TTL loads and higher CMOS loads are available - please contact an IQD Sales Office

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### Output Control

- Start-Up Time: 5ms max
- Enable/Disable (EN option):  
Logic '1' to pad 1 enables oscillator output  
Logic '0' to pad 1 disables the oscillator output, when disabled the output goes to the high impedance state (very low current, internal oscillator stops)  
No connection to pad 1 enables oscillator output  
When pad 1 changes from logic 0 to logic 1, output recovery is delayed
- Tri-State (TS option):  
Logic '1' to pad 1 enables oscillator output  
Logic '0' to pad 1 disables the oscillator output, when disabled the output goes to the high impedance state (low current)  
No connection to pad 1 enables oscillator output  
When pad 1 changes from logic 0 to logic 1, output recovery is immediate
- No Connection (NC option): Pad 1 not connected internally, no enable/disable or tri-state function

### Environmental Parameters

- Shock: 0.5 ms, 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
- Storage Temperature Range: -55 to 125°C

### Manufacturing Details

- Maximum Process Temperature: 260°C for 20sec

### Ordering Information

- Frequency\*
- Model\*
- Supply Voltage
- Shock Requirement\*
- Termination Variant\*
- Output Compatibility
- Frequency Tolerance (@ 25°C)\*
- Frequency Stability (over operating temperature range)\*
- Operating Temperature Range\*
- Pad 1 Function\*
- (\*minimum required)
- Shock Level Options:
  - Code A = 5000G
  - Code B = 10000G
  - Code C = 20000G
  - Code D = 30000G
  - Code F = 50000G
  - Code G = 75000G
  - Code H = 100000G
- Termination Variants:
  - SM1 = Gold Plated
  - SM5 = Solder Dipped
  - (Note: non-RoHS SM3 terminations are available - please contact an IQD Sales Office)
- Example  
50.0MHz HGXO 3.3V 5000G D-SM1  
CMOS ±10ppm ±100ppm -40 to 85C NC

### Compliance

- RoHS Status (2011/65/EU)      Optional
- REACH Status                      Compliant
- MSL Rating (JDEC-STD-033):    Not Applicable

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**Packaging Details**

- Pack Style: Reel      Tape & reel in accordance with EIA-481-D  
Pack Size: 1,000
- Pack Style: Tray      Supplied on a tray  
Pack Size: 1

**Electrical Specification - maximum limiting values 3.3V ±10%**

Frequency Min	Frequency Max	Temperature Range	Stability (Min)	Current Draw	Rise and Fall Time	Duty Cycle
		°C	ppm	mA	ns	%
460.0kHz	50.0MHz	-10 to 70	±10.0	-	6	40/60%
		-40 to 85	±20.0	-	6	40/60%
		-55 to 125	±40.0	-	6	40/60%

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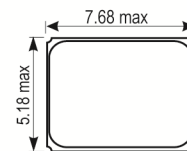
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### Description

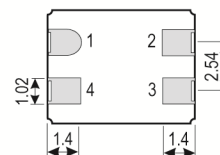
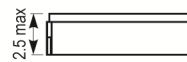
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- A-SM5 5000G, Solder Dipped (RoHS)
- B-SM1 10000G, Gold Plated (RoHS)
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- C-SM1 20000G, Gold Plated (RoHS)
- C-SM5 20000G, Solder Dipped (RoHS)
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- F-SM1 50000G, Gold Plated (RoHS)
- F-SM5 50000G, Solder Dipped (RoHS)
- G-SM1 75000G, Gold Plated (RoHS)
- G-SM5 75000G, Solder Dipped (RoHS)
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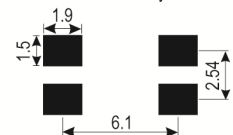
Outline (mm) A-SM1 = 5000G, Gold Plated (RoHS)



- Pad Connections
1. E/D, T/S or N/C
  2. GND
  3. Output
  4. +V<sub>S</sub>



Solder Pad Layout



### Frequency Parameters

- Frequency: 460.0kHz to 50.0MHz
- Frequency Tolerance: ±10.00ppm to ±100.00ppm
- Tolerance Condition: @ 25°C
- Frequency Stability: ±10.00ppm to ±100.00ppm
- Ageing: ±5ppm typ in the 1st year
- Note: Frequency Stability does not include the Frequency Tolerance @ 25°C

### Electrical Parameters

- Supply Voltage: 5.0V ±10%
- Absolute Maximum Supply Voltage: -0.5V to 7.0V

### Operating Temperature Ranges

- -10 to 70°C
- -40 to 85°C
- -55 to 125°C

### Output Details

- Output Compatibility: CMOS
- Drive Capability: 15pF
- Note: TTL loads and higher CMOS loads are available - please contact an IQD Sales Office

### Output Control

- Enable/Disable or Tri-State Options (EN/TS):  
 Logic '1' to pad 1, output enabled  
 Logic '0' to pad 1, output disabled, output goes to high impedance state  
 (EN version, internal oscillator stops, low current)  
 (TS version, internal oscillator operates, fast output recovery)

Option NC:

No internal connection to pad 1 (no EN or TS function)

- Start-Up Time: 5ms max

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### Environmental Parameters

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- Note: Random vibration testing also available - please contact an IQD Sales Office
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Model\*  
Supply Voltage  
Shock Requirement\*  
Termination Variant\*  
Output Compatibility  
Frequency Tolerance (@25°C)\*  
Frequency Stability (over operating temperature range)\*  
Operating Temperature Range\*  
Pad 1 Function\*  
(\*minimum required)
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Code B = 10000G  
Code C = 20000G  
Code D = 30000G  
Code F = 50000G  
Code G = 75000G  
Code H = 100000G
- Termination Variants:  
SM1 = Gold Plated  
SM5 = Solder Dipped  
(Note: non-RoHS compliant terminations are available - please contact an IQD Sales Office)
- Example  
32.0MHz HGXO 5.0V D-SM1  
CMOS ±100ppm ±100ppm -40 to 80C NC

### Compliance

- RoHS Status (2011/65/EU)      Optional
- REACH Status                      Compliant
- MSL Rating (JDEC-STD-033):    Not Applicable

### Packaging Details

- Pack Style: Tray      Supplied on a tray  
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Crystal Clock Oscillator Specification  
**HGXO 5.0V**

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UK: +44 (0)1460 270200  
Germany: 0800 1808 443

France: 0800 901 383  
USA: +1.760.318.2824

Email: [info@iqdfrequencyproducts.com](mailto:info@iqdfrequencyproducts.com)  
Web: [www.iqdfrequencyproducts.com](http://www.iqdfrequencyproducts.com)

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