



## HTXO

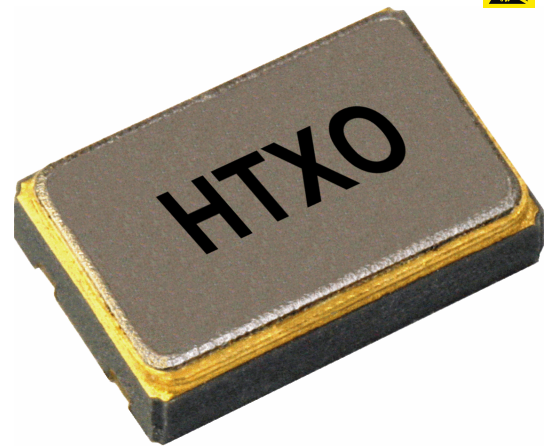
The HTXO crystal oscillator is a 225°C/250°C high temperature, rugged surface-mount oscillator. The design consists of a high-shock crystal and a high temperature CMOS integrated circuit housed in a 7.5 x 5.0mm surface-mount hermetically sealed ceramic package.

Model Name	Description
HTXO 1.8V	1.8V version
HTXO 3.3V	3.3V version
HTXO 5.0V	5.0V version

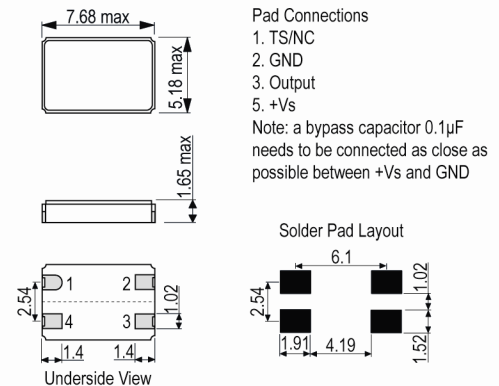
ISSUE 1; June 2019

### Description

- The HTXO crystal oscillator is a 225°C high temperature, rugged surface-mount oscillator. The design consists of a high-shock crystal and a high temperature CMOS integrated circuit housed in a 7.5 x 5.0mm surface-mount hermetically sealed ceramic package.
- A-SM1 5000G Gold Plated (RoHS)
- A-SM5 5000G Solder Dipped (RoHS)
- B-SM1 10000G Gold Plated (RoHS)
- B-SM5 10000G Solder Dipped (RoHS)
- C-SM1 20000G Gold Plated (RoHS)
- C-SM5 20000G Solder Dipped (RoHS)
- D-SM1 30000G Gold Plated (RoHS)
- D-SM5 30000G Solder Dipped (RoHS)
- FEATURES:
  - High temperature operation up to 225°C
  - Excellent stability over temperature
  - Fast start-up
  - High shock and vibration resistance
  - Optional output Enable/Disable
  - Low EMI emission
- APPLICATIONS:
  - Industrial -
    - Oil & gas downhole instrumentation
    - Rotary shaft sensors
    - Underground boring tools
    - Avionics applications
- Please note that all data is only valid at 25°C unless otherwise stated.



Outline (mm) D-SM5 = 30000G Solder Dipped (RoHS)



### Frequency Parameters

- Frequency 1.5MHz to 30.0MHz
- Frequency Stability ±500.00ppm
- Frequency Stability: Frequency over temperature relative to nominal frequency

### Electrical Parameters

- Supply Voltage 1.8V ±5%

### Operating Temperature Ranges

- 25 to 225°C

### Output Details

- Output Compatibility CMOS
- Drive Capability 15pF
- Note: 45/55% Duty Cycle also available - please contact an IQD Sales Office

### Output Control

- Start-Up Time: 5ms max
- No Connection (NC): Pad 1 not connected internally
- Tri State (TS):
  - Logic 1 to pad 1, output disabled, output goes to high impedance state, current consumption lower than normal, but internal oscillator continues to function hence fast start-up time.
  - Logic 0 to pad 1, output enabled.

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### Environmental Parameters

- Shock (@ 25°C): Shock Requirement, 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
- Operational Temperature Range: -55 to 250°C
- Expected life at 250°C is a minimum of 1000hrs
- Storage Temperature Range: -55 to 125°C

### Ordering Information

- Frequency\*
- Model\*
- Supply Voltage
- Shock Requirement\*
- Termination Variant\*
- Output Compatibility
- 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
- Termination Variants:  
SM1 = Gold Plated  
SM5 = Solder Dipped
- Pad 1 Function Options:  
TS = Tri State  
NC = No Connection
- Example  
10.0MHz HTXO 1.8V A-SM1  
CMOS ±500ppm 25 to 225C TS

### Compliance

- RoHS Status (2015/863/EU)      Optional
- REACH Status                      Compliant
- MSL Rating (JDEC-STD-033):    Not Applicable

### 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 1.8V ±5%

Frequency Min	Frequency Max	Temperature Range	Stability (Min)	Current Draw	Rise and Fall Time	Duty Cycle
		°C	ppm	mA	ns	%
1.5MHz	30.0MHz	25 to 225	±500.0	6	10	40/60%

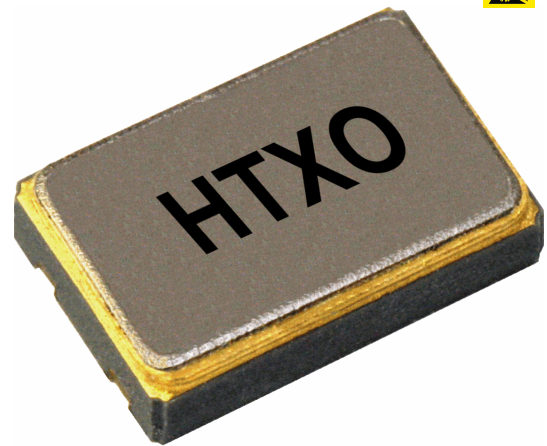
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ISSUE 1; December 2020

### Description

- HTXO crystal oscillator is a 275°C high temperature, rugged surface-mount oscillator. The design consists of a high-shock crystal and a high temperature CMOS integrated circuit housed in a 7.5 x 5.0mm surface-mount hermetically sealed ceramic package.
- A-SM1 5000G Gold Plated (RoHS)
- A-SM5 5000G Solder Dipped (RoHS)
- B-SM1 10000G Gold Plated (RoHS)
- B-SM5 10000G Solder Dipped (RoHS)
- C-SM1 20000G Gold Plated (RoHS)
- C-SM5 20000G Solder Dipped (RoHS)
- D-SM1 30000G Gold Plated (RoHS)
- D-SM5 30000G Solder Dipped (RoHS)
- Please note that all data is only valid at 25°C unless otherwise stated.



Outline (mm) D-SM5 = 30000G Solder Dipped (RoHS)

### Frequency Parameters

- Frequency: 1.5MHz to 30.0MHz
- Frequency Stability:  $\pm 500.00\text{ppm}$  to  $\pm 750.00\text{ppm}$
- Frequency Stability: Frequency over temperature relative to nominal frequency

### Electrical Parameters

- Supply Voltage: 3.3V  $\pm 5\%$
- Supply Voltage (absolute maximum rating): -0.5V to 6.0V (5V Vs only)

### Operating Temperature Ranges

- 25 to 225°C
- 25 to 250°C
- 25 to 275°C

### Output Details

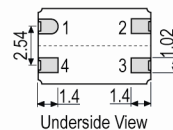
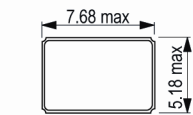
- Output Compatibility: CMOS
- Drive Capability: 15pF
- Note: 45/55% Duty Cycle also available - please contact an IQD Sales Office

### Output Control

- Start-Up Time: 5ms max
- No Connection (NC): Pad 1 not connected internally
- Tri State (TS):  
Logic 1 to pad 1, output disabled, output goes to high impedance state, current consumption low. Internal oscillator continues to function.  
Logic 0 to pad 1, output enabled.

### Environmental Parameters

- Shock (@ 25°C): Shock Requirement, 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
- Operational Temperature Range: 25 to 275°C
- Expected life at 250°C is a minimum of 1000 hours.
- Storage Temperature Range: -55 to 125°C

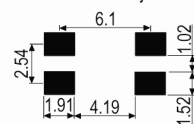


#### Pad Connections

1. TS/NC
2. GND
3. Output
5. +Vs

Note: a bypass capacitor 0.1 $\mu$ F needs to be connected as close as possible between +Vs and GND

#### Solder Pad Layout



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### Manufacturing Details

- FEATURES:
  - High temperature operation up to 250°C
  - Excellent stability over temperature
  - Fast start-up
  - High shock and vibration resistance
  - Optional output Enable/Disable
  - Low EMI emission
- APPLICATIONS:
  - Oil & gas downhole instrumentation
  - Rotary shaft sensors
  - Underground boring tools
  - Avionics applications

### Ordering Information

- Frequency\*
  - Model\*
  - Supply Voltage
  - Shock Requirement\*
  - Termination Variant\*
  - Output Compatibility
  - 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
- Termination Variants:
  - SM1 = Gold Plated
  - SM5 = Solder Dipped
- Pad 1 Function Options:
  - TS = Tri State
  - NC = No Connection
- Example:
  - 10.0MHz HTXO 3.3V A-SM1
  - CMOS ±500ppm 25 to 250C TS

### Compliance

- RoHS Status (2015/863/EU)      Optional
- REACH Status                      Compliant
- MSL Rating (JDEC-STD-033):    Not Applicable

### 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 ±5%

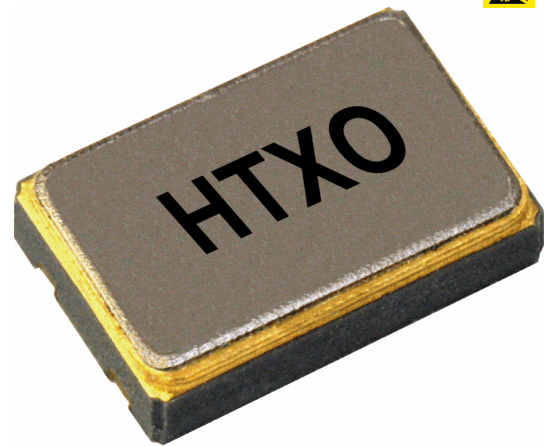
Frequency Min	Frequency Max	Temperature Range	Stability (Min)	Current Draw	Rise and Fall Time	Duty Cycle
		°C	ppm	mA	ns	%
1.5MHz	30.0MHz	25 to 250	±500.0	6	10	40/60%

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- C-SM5 20000G Solder Dipped (RoHS)
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- Please note that all data is only valid at 25°C unless otherwise stated.



Outline (mm) D-SM5 = 30000G Solder Dipped (RoHS)

### Frequency Parameters

- Frequency 1.5MHz to 50.0MHz
- Frequency Stability  $\pm 500.00\text{ppm}$  to  $\pm 750.00\text{ppm}$
- Frequency Stability: Frequency over temperature relative to nominal frequency

### Electrical Parameters

- Supply Voltage 5.0V  $\pm 10\%$
- Supply Voltage (absolute maximum rating): -0.5V to 6.0V

### Operating Temperature Ranges

- 25 to 225°C
- 25 to 250°C
- 25 to 275°C

### Output Details

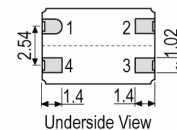
- Output Compatibility CMOS
- Drive Capability 15pF
- Note: 45/55% Duty Cycle also available - please contact an IQD Sales Office

### Output Control

- Start-Up Time: 5ms max
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Logic 1 to pad 1, output disabled, output goes to high impedance state, current consumption low. Internal oscillator continues to function.  
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- 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
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- Expected life at 250°C is a minimum of 1000 hours.
- Storage Temperature Range: -55 to 125°C

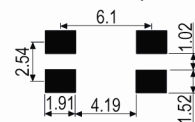


#### Pad Connections

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  - Termination Variant\*
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- Termination Variants:
  - SM1 = Gold Plated
  - SM5 = Solder Dipped
- Pad 1 Function Options:
  - TS = Tri State
  - NC = No Connection
- Example:
  - 10.0MHz HTXO 5.0V A-SM1
  - CMOS ±500ppm 25 to 250C TS

### Compliance

- RoHS Status (2015/863/EU)      Optional
- REACH Status                      Compliant
- MSL Rating (JDEC-STD-033):    Not Applicable

### 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 5.0V ±10%

Frequency Min	Frequency Max	Temperature Range	Stability (Min)	Current Draw	Rise and Fall Time	Duty Cycle
		°C	ppm	mA	ns	%
1.5MHz	50.0MHz	25 to 225	±500.0	6	10	40/60%

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Crystal Clock Oscillator Specification  
**HTXO 5.0V**

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Printed on 4 Jan 21 10:07 using Combined Model Data Sheet V1.2646

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