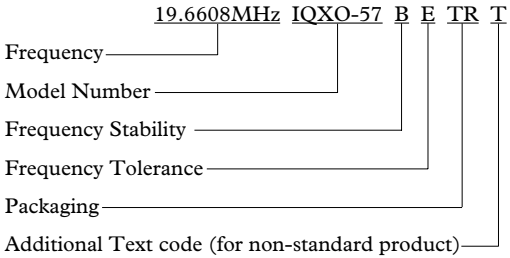
SM SPXOs - Section Contents

SPECIFYING SURFACE MOUNT SIMPLE PACKAGED CRYSTAL OSCILLATORS (SM SPXOs)

A typical surface mount SPXO specification reads like this:



The following notes define each element of the specification.

Frequency

Frequency is normally specified in kilohertz (kHz) up to 999.999 kHz and in megahertz (MHz) from 1.0MHz. All our computer-generated transaction documents follow this standard convention automatically.

The frequency should be described to seven significant figures. If seven significant figures are not used, we assume that any figure that might follow those given may be taken as zero. Thus a frequency given as 16.6MHz will be taken as 16.60, not 16.6667.

Please contact the sales office for details of developed frequencies.

Model Number

The model number incorporates information which describes output compatibility and holder style.

Frequency Stability

The frequency stability of a surface mount oscillator includes the initial adjustment tolerance at room temperature, the tolerance over operating temperature range and the effect of supply voltage variation. This value is specified as 'parts per million' (ppm) and is available in four ranges; ±15ppm, ±25ppm, ±50ppm & ±100ppm.

The following codes apply:

- A = ±25ppm
- B = ±50ppm
- C = ±100ppm
- N = ±15ppm

Non-Standard Frequency Tolerances

During manufacture, it is possible to adjust some surface mount SPXO's to a specific tolerance at room temperature. The frequency tolerance forms part of the frequency stability. These oscillators have a second letter code to indicate the frequency tolerance.

- E = ±10ppm
- F= ±25ppm

Operating Temperature Range

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

Although in general oscillators will continue to operate outside their normal temperature range with a degradation in frequency stability, damage can result if the temperatures reached are excessive.

Packaging

Tape and Reel packaging is available as an option on many of the products outlined in the SM SPXO chapter.

Unless individual datasheets state Tape and Reel packaging, items will be bulk packed. Please note: only complete Reels are sold.

- BU = Bulk packed
- TR = Tape & Reel packed

Addtional Text Code

If the product is non-standard, the letter 'T' will appear at the end of the product specification. This refers to additional text on the sales order/quotation to identify the non-standard requirements.

Outline Drawings

Dimensions on the oscillator outline drawings are shown only as a guide. Precise dimensions of oscillator holders are available from our factory upon request. All dimensions are shown in mm (& inches) and are nominal unless otherwise stated. All outlines are at a scale of 1:1 unless otherwise specified.

Delivery Options

The following Express delivery options are available for certain oscillators; timescales refer to despatch from our factories.

- 5 working days (Express service)
- 7 working days (Express service)
- 10 working days (Express service)

Prices for larger quantities and longer delivery times are generally lower due to substantially reduced manufacturing costs.

Marking

Product will be indelibly marked as detailed in the individual data sheets. Where space is limited some or all of the information will be omitted/truncated at CFP's discretion. Full product description will be found on the individual batch packaging.

Ordering Information

- See individual data sheets

STOCK SM SPXOs

Minimum Order Information Required

- Stock Number

IQS-221

Description	Accessory for	Stock No.
SMT 8-pin Socket	IQX0-50 Series	M157A

IQXO-53

Frequency	Type	Frequency Stability	Stock No.
4.0MHz	HCMOS/LS TTL	±100ppm	X351L
10.0MHz	HCMOS/LS TTL	±100ppm	X353L
14.31818MHz	HCMOS/LS TTL	±100ppm	X373L
16.0MHz	HCMOS/LS TTL	±100ppm	X355L
18.4320MHz	HCMOS/LS TTL	±100ppm	X367L
20.0MHz	HCMOS/LS TTL	±100ppm	X356L
24.5760MHz	HCMOS/LS TTL	±100ppm	X386L
32.0MHz	HCMOS/LS TTL	±100ppm	X360L
33.333MHz	HCMOS/LS TTL	±100ppm	X387L
40.0MHz	HCMOS/LS TTL	±100ppm	X357L
50.0MHz	HCMOS/LS TTL	±100ppm	X358L

IQXO-57 Tri-state

Frequency	Type	Frequency Stability	Stock No.
2.4576MHz	HCMOS/LS TTL	±100ppm	X393M
3.6864MHz	HCMOS/LS TTL	±100ppm	X363M
4.0MHz	HCMOS/LS TTL	±100ppm	X351M
4.91520MHz	HCMOS/LS TTL	±100ppm	X385M
6.1440MHz	HCMOS/LS TTL	±100ppm	X383M
7.680MHz	HCMOS/LS TTL	±100ppm	X394M
8.0MHz	HCMOS/LS TTL	±100ppm	X352M
10.0MHz	HCMOS/LS TTL	±100ppm	X353M
12.0MHz	HCMOS/LS TTL	±100ppm	X354M
14.318180MHz	HCMOS/LS TTL	±100ppm	X373M
16.0MHz	HCMOS/LS TTL	±100ppm	X355M
16.3840MHz	HCMOS/LS TTL	±100ppm	X370M
18.4320MHz	HCMOS/LS TTL	±100ppm	X367M
20.0MHz	HCMOS/LS TTL	±100ppm	X356M
24.0MHz	HCMOS/LS TTL	±100ppm	X371M
24.5760MHz	HCMOS/LS TTL	±100ppm	X386M
25.0MHz	HCMOS/LS TTL	±100ppm	X390M
32.0MHz	HCMOS/LS TTL	±100ppm	X360M
33.3330MHz	HCMOS/LS TTL	±100ppm	X387M
40.0MHz	HCMOS/LS TTL	±100ppm	X357M
50.0MHz	HCMOS/LS TTL	±100ppm	X358M

IQXO-70 Tri-state

Frequency	Type	Frequency Stability	Stock No.
3.6864MHz	HCMOS/TTL	±100ppm	X363T
3.6864MHz	HCMOS/TTL	±100ppm	X362S
4.0MHz	HCMOS/TTL	±100ppm	X351T
8.0MHz	HCMOS/TTL	±100ppm	X352T
10.0MHz	HCMOS/TTL	±100ppm	X353T
12.0MHz	HCMOS/TTL	±100ppm	X354T
14.31818MHz	HCMOS/TTL	±100ppm	X373T
16.0MHz	HCMOS/TTL	±100ppm	X355T
16.384MHz	HCMOS/TTL	±100ppm	X370T
16.384MHz	HCMOS/TTL	±100ppm	X370S
20.0MHz	HCMOS/TTL	±100ppm	X356T
24.0MHz	HCMOS/TTL	±100ppm	X371T
25.0MHz	HCMOS/TTL	±100ppm	X390T
32.0MHz	HCMOS/TTL	±100ppm	X360T
40.0MHz	HCMOS/TTL	±100ppm	X357T
50.0MHz	HCMOS/TTL	±100ppm	X358T
80.0MHz	HCMOS/TTL	±100ppm	X392T

IQS-221

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Delivery Options

- Available from stock. Please see p203 for details

Description

- Replacement socket for IQXO-50 series oscillator, to replace with 8-pin leaded oscillator on the same foot-print. Terminal/Contact plating-Tin-Lead/Gold

Material

- Insulator: High Temperature Grey Nylon 46, UL94V-O listed
- Terminal: Brass per ASTM-B16
- Contact: BeCu per ASTM-B194

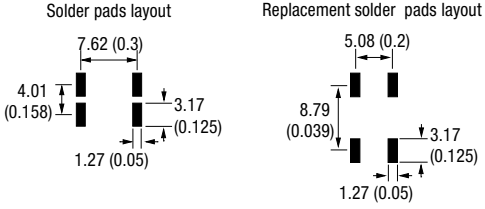
Contact Forces

- Insertion : Standard 255 grams (average)
- Withdrawal: Standard 57 grams (average)

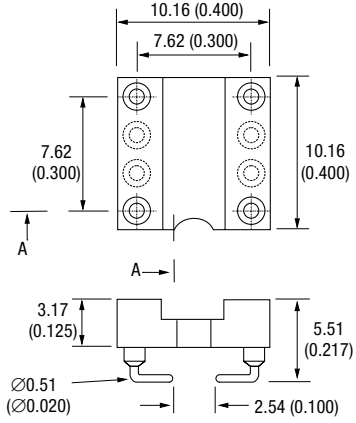
Minimum Order Information Required

- Model Number

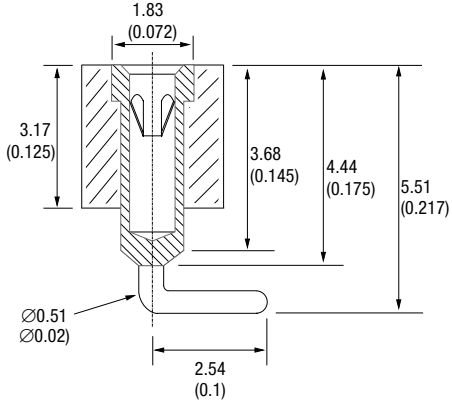
Outline in mm (inches) - Solder Pads Layout



Outline in mm (inches) - (scale 2:1)



Section View at A-A (mm & inches) - (scale 6:1)



SURFACE MOUNT SPXOs

IQXO-52, -52I, -56, -56I

ISSUE 6; 28 AUGUST 1996

Delivery Options

- Please contact our sales office for current leadtimes

Output Compatibility

- TTL
- Tri-state (IQXO-56, -56I)
- Non tri-state (IQXO-52, -52I)

Package Outline

- SMD (surface mount device) plastic encapsulated. Available over 0 to 70°C (IQXO-52, -56) or –40 to 85°C (IQXO-52I, -56I)

Standard Frequency Stabilities

- ±50ppm, ±100ppm (inclusive of supply voltage variations over the operating temperature range)

Operating Temperature Range

- 0 to 70°C (IQXO-52, -56)
- –40 to 85°C (IQXO-52I, -56I)

Storage Temperature Range

- –50 to 125°C

Non-Standard Duty Cycle

- Tighter duty cycles are available on request

Tri-state Operation (IQXO-56,-56I)

- Logic '1' to pin 1 enables oscillator output, 2.0V min
- Logic '0' to pin 1 disables oscillator output; when disabled the oscillator output goes to the high impedance state, 0.8V max
- No connection to pin 1 enables oscillator output
- When oscillator is enabled, maximum transition time = 100ns

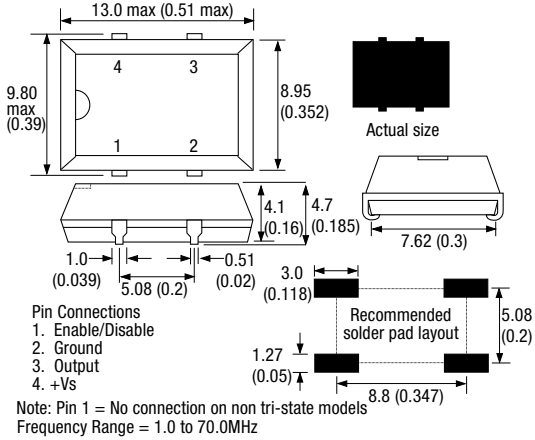
Marking

- Model number (+ Operating Temperature Code; if applicable)
- Frequency Stability Code
- Frequency
- Date Code

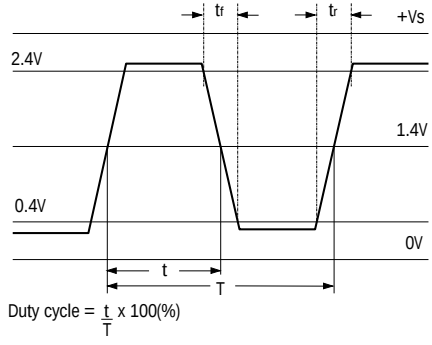
Minimum Order Information Required

- Frequency + Model Number + Operating Temperature Code (if applicable) + Frequency Stability

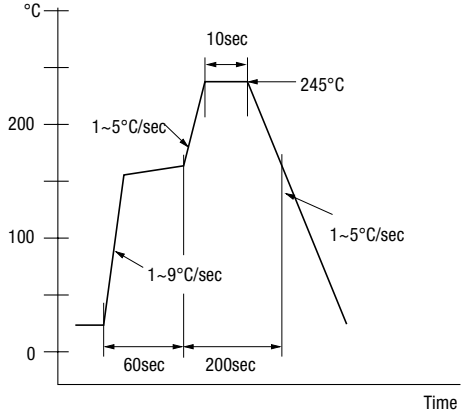
Outline in mm (inches) - (scale 2:1)



Output Waveform



Typical Solder Condition - Infrared Reflow



SURFACE MOUNT SPXOs

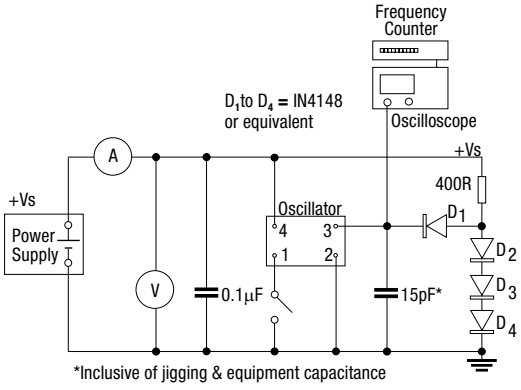
Electrical Specification – maximum limiting values when measured in test circuit

Frequency Range	Frequency Stability	Supply Voltage	Supply Current	Rise Time (t_r)	Fall Time (t_f)	Duty Cycle	Model Number
1.0 to < 26.0MHz	±50ppm, ±100ppm	5V±0.5V	15mA	8ns	8ns	40/60%	IQXO-52, -52I, 56, 56I
26.0 to < 40.0MHz	±50ppm, ±100ppm	5V±0.5V	30mA	8ns	8ns	40/60%	IQXO-52, -52I, 56, 56I
40.0 to < 50.0MHz	±50ppm, ±100ppm	5V±0.5V	30mA	6ns	6ns	40/60%	IQXO-52, -52I, 56, 56I
50.0 to 70.0MHz	±50ppm, ±100ppm	5V±0.5V	38mA	6ns	6ns	40/60%	IQXO-52, -52I, 56, 56I

Ordering Example 24.0MHz IQXO-52I C

Frequency
Model No: 56, 56I = Tri-state 52, 52I = Non Tri-state
Operating Temperature Code: I= –40 to 85°C Not applicable for 0 to 70°C
Frequency Stability: B = ±50ppm; C= ±100ppm

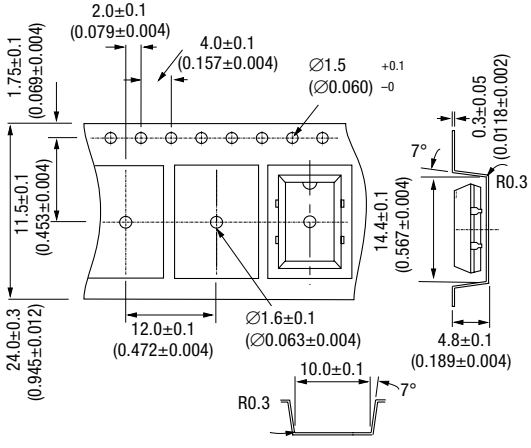
Test Circuit



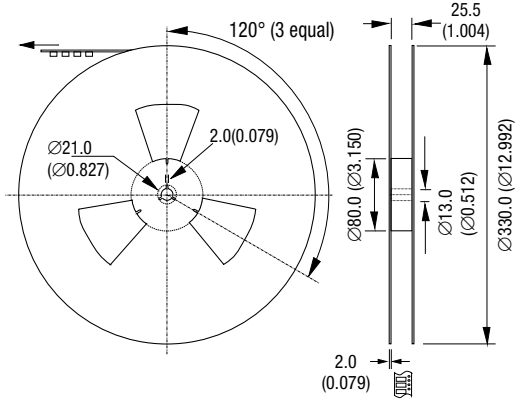
*Inclusive of jigging & equipment capacitance

Note: Pin 1 = No connection on non tri-state models

Outline in mm (inches) - Tape



Outline in mm (inches) - Reel (scale 1:8)



IQXO-53, -53I, -57, -57I

ISSUE 10; 17 JULY 1998

Delivery Options

- Common frequencies are available from stock. Please see p203 for details

Output Compatibility

- HCMOS/LS TTL
- Tri-state (IQXO-57, -57I)
- Non tri-state (IQXO-53, -53I)

Package Outline

- SMD (surface mount device) plastic encapsulated. Available over 0 to 70°C (IQXO-53, -57) or –40 to 85°C (IQXO-53I, -57I)

Standard Frequency Stabilities

- ±50ppm, ±100ppm (inclusive of supply voltage variations over the operating temperature range)

Operating Temperature Range

- 0 to 70°C (IQXO-53,-57)
- –40 to 85°C (IQXO-53I, -57I)

Storage Temperature Range

- –50 to 125°C

Non-Standard Duty Cycle

- Tighter duty cycles are available on request

Tri-state Operation (IQXO-57, -57I)

- Logic '1' to pin 1 enables oscillator output, 2.0V min
- Logic '0' to pin 1 disables oscillator output; when disabled the oscillator output goes to the high impedance state, 0.8V max
- No connection to pin 1 enables oscillator output
- When oscillator is enabled, maximum transition time = 100ns

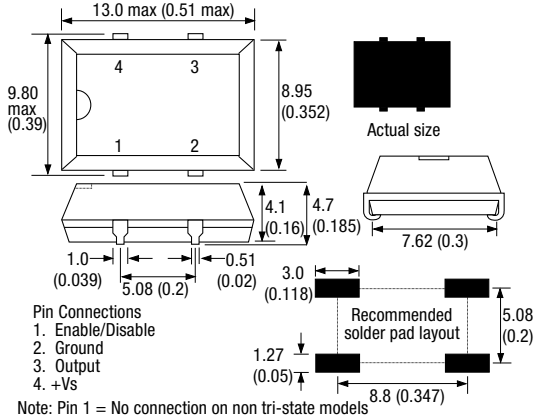
Marking

- Model number (+ Operating Temperature Code; if applicable)
- Frequency Stability Code
- Frequency
- Date Code

Minimum Order Information Required

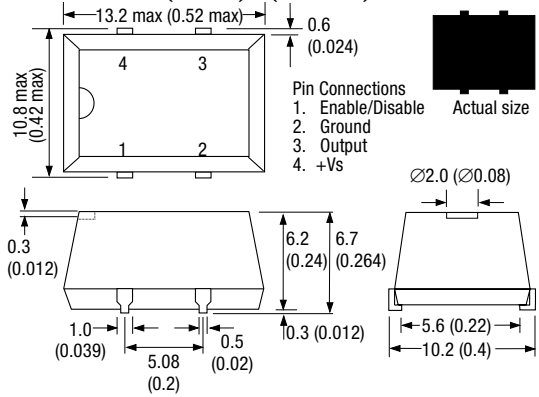
- Frequency + Model Number + Operating Temperature Code (if applicable) + Frequency Stability

Outline in mm (inches) - (scale 2:1)



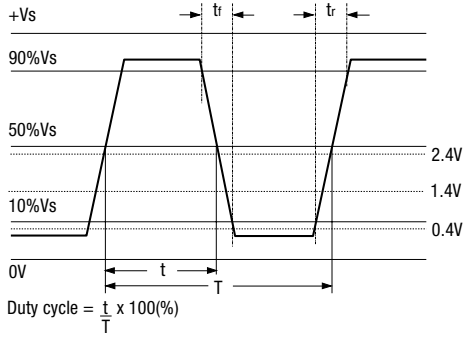
Note: Pin 1 = No connection on non tri-state models
Frequency Range = 1.0 to 70.0MHz

Outline in mm (inches) - (scale 2:1)



Note: Pin 1 = No connection on non tri-state models
Frequency Range = > 70.0 to 130.0MHz

Output Waveform - HCMOS/LS TTL



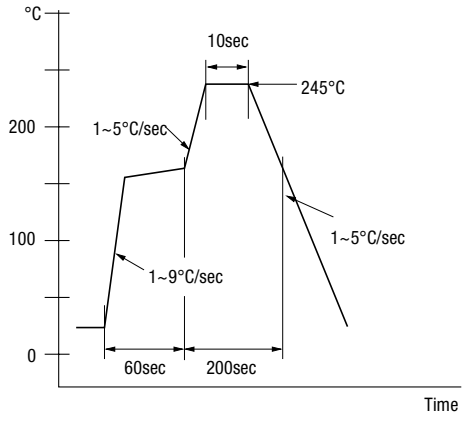
Electrical Specification – maximum limiting values when measured in HCMOS test circuit

Frequency Range	Frequency Stability	Supply Voltage	Supply Current	Rise Time (t_r)	Fall Time (t_f)	Duty Cycle	Model Number
1.0 to < 26.0MHz	±50ppm, ±100ppm	5V±0.5V	15mA	8ns	8ns	40/60%	IQXO-53, 53I, 57, 57I
26.0 to < 40.0MHz	±50ppm, ±100ppm	5V±0.5V	30mA	8ns	8ns	40/60%	IQXO-53, 53I, 57, 57I
40.0 to < 50.0MHz	±50ppm, ±100ppm	5V±0.5V	30mA	6ns	6ns	40/60%	IQXO-53, 53I, 57, 57I
50.0 to 70.0MHz	±50ppm, ±100ppm	5V±0.5V	38mA	6ns	6ns	40/60%	IQXO-53, 53I, 57, 57I
> 70.0 to 130.0MHz	±50ppm, ±100ppm	5V±0.5V	65mA	3ns	3ns	40/60%	IQXO-53, 53I, 57, 57I

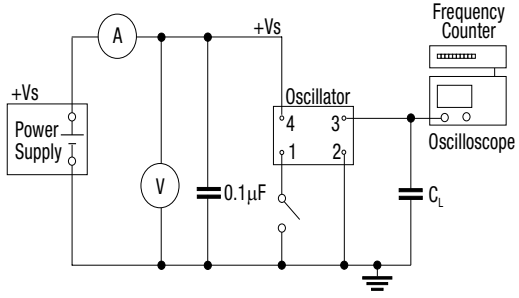
Ordering Example 24.0MHz IQXO-57I C

Frequency
Model No: 57, 57I = Tri-state 53, 53I = Non Tri-state
Operating Temperature Code: I = –40 to 85°C Not applicable for 0 to 70°C
Frequency Stability: B = ±50ppm; C = ±100ppm

Typical Solder Condition - Infrared Reflow



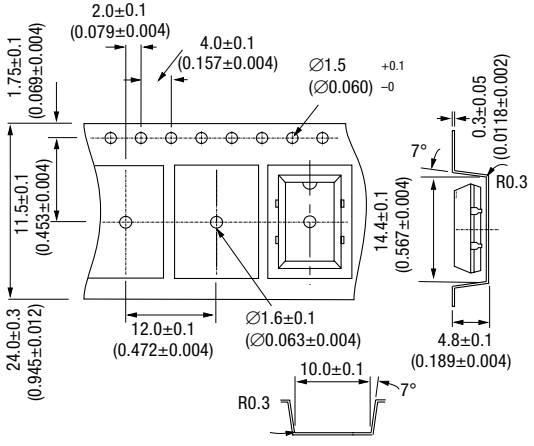
Test Circuit - HCMOS



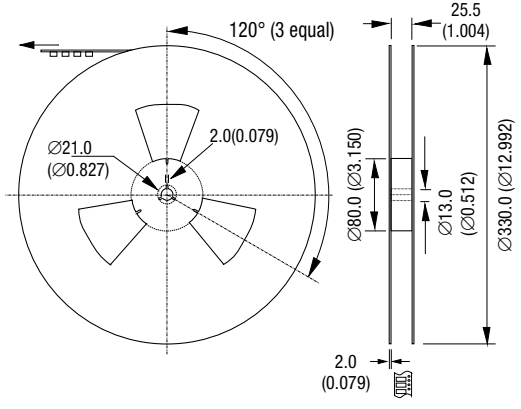
Load Capacitance (C_L) - Inclusive of jigging & equipment
C_L = 15pF (1.0 to 70.0MHz)

Note: Pin 1 = No connection on non tri-state models

Outline in mm (inches) - Tape



Outline in mm (inches) - Reel (scale 1:8)



IQXO-62

ISSUE 2; 19 JUNE 1997

Delivery Options

- Please contact our sales office for current leadtimes

Output Compatibility

- Tri-state HCMOS/TTL
- Drive Capability: 50pF or 10 TTL

Package Outline

- SMD (surface mount device) ceramic package with high drive capability

Standard Frequency Stabilities

- ±50ppm, ±100ppm (inclusive of supply voltage & output load variations over the operating temperature range)

Operating Temperature Range

- –10 to 70°C

Storage Temperature Range

- –30 to 85°C

Tri-state Operation

- Logic '1' to pin 1 enables oscillator output, 2.2V min
- Logic '0' to pin 1 disables oscillator output; when disabled the oscillator output goes to the high impedance state, 0.8V max
- No connection to pin 1 enables oscillator ouput

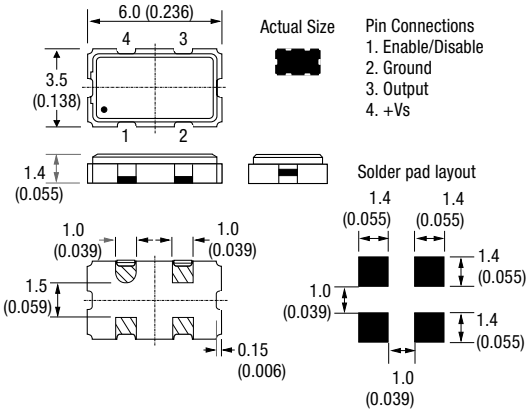
Marking

- Model number
- Frequency Stability Code
- Frequency

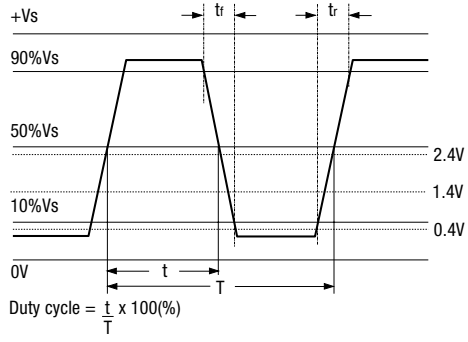
Minimum Order Information Required

- Frequency + Model Number + Frequency Stability

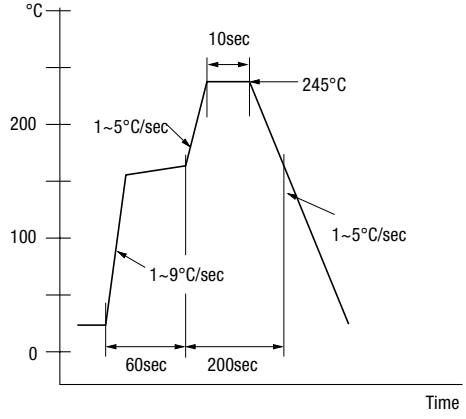
Outline in mm (inches) - (scale 3:1)



Output Waveform - HCMOS/TTL



Typical Solder Condition - Infrared Reflow



SURFACE MOUNT SPXOs

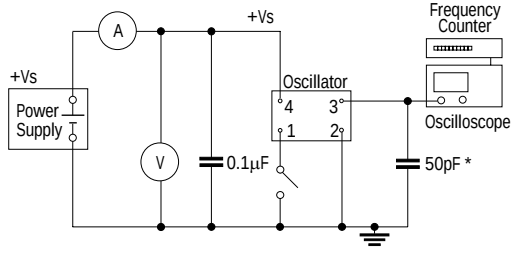
Electrical Specification - maxmum limiting values when measured in HCMOS test circuit

Frequency Range	Frequency Stability	Supply Voltage	Supply Current	Rise Time (t_r)	Fall Time (t_f)	Duty Cycle	Model Number
1.80 to 25.0MHz	±50ppm, ±100ppm	5.0V±0.5V	27mA	5ns	5ns	40/60%	IQXO-62
> 25.0 to 50.0MHz	±50ppm, ±100ppm	5.0V±0.5V	40mA	5ns	5ns	40/60%	IQXO-62

Ordering Example 24.0MHz IQXO-62 B

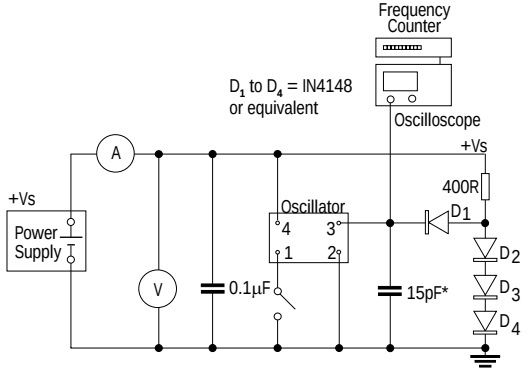
Frequency
Model No
Frequency Stability: B = ±50ppm; C= ±100ppm

Test Circuit - HCMOS



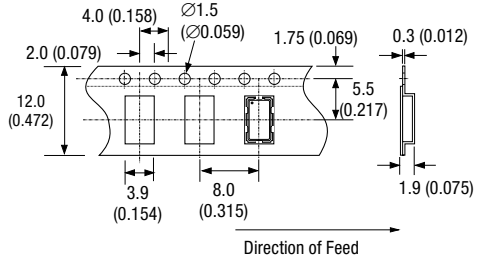
* Inclusive of jigging & equipment capacitance

Test Circuit - TTL

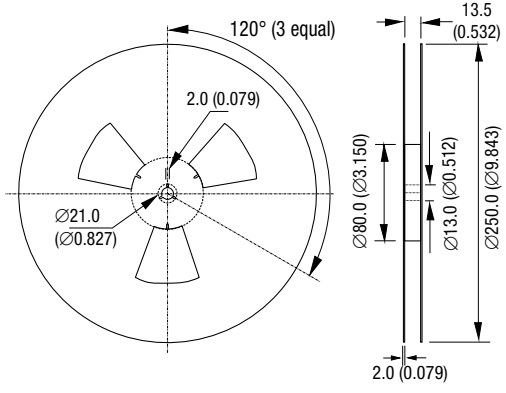


*Inclusive of jigging & equipment capacitance

Outline in mm (inches) - Tape



Outline in mm (inches) - Reel



IQXO-63

ISSUE 2; 19 JUNE 1997

Delivery Options

- Please contact our sales office for current leadtimes

Output Compatibility

- Tri-state HCMOS (3.3V)

Package Outline

- SMD (surface mount device) ceramic package

Standard Frequency Stabilities

- ±50ppm, ±100ppm (inclusive of supply voltage & output load variations over the operating temperature range)

Operating Temperature Range

- –10 to 70°C

Storage Temperature Range

- –30 to 85°C

Tri-state Operation

- Logic '1' to pin 1 enables oscillator output, 2.2V min
- Logic '0' to pin 1 disables oscillator output; when disabled the oscillator output goes to the high impedance state, 0.8V max
- No connection to pin 1 enables oscillator ouput

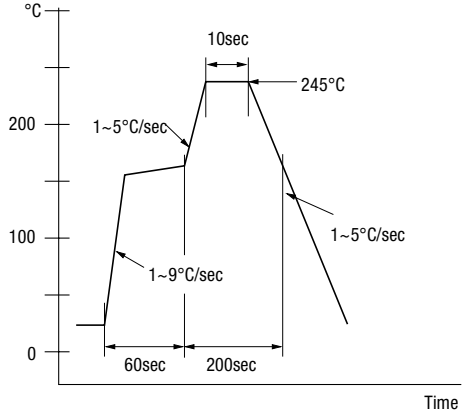
Marking

- Model number
- Frequency Stability Code
- Frequency

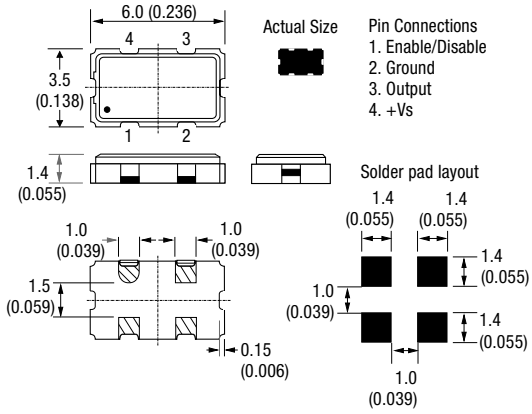
Minimum Order Information Required

- Frequency + Model Number + Frequency Stability

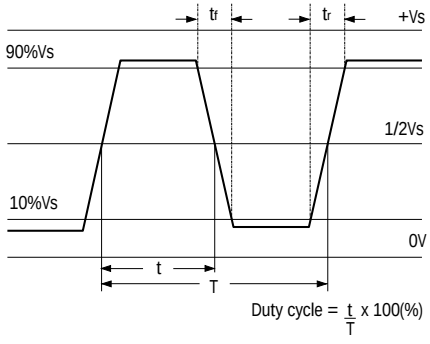
Typical Solder Condition - Infrared Reflow



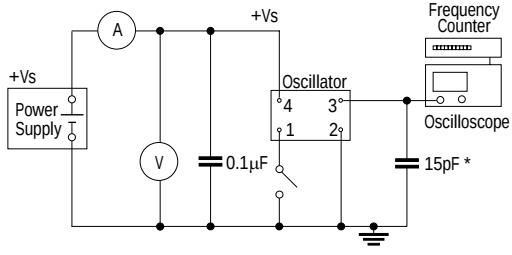
Outline in mm (inches) - (scale 3:1)



Output Waveform - HCMOS



Test Circuit - HCMOS



* Inclusive of jigging & equipment capacitance

Electrical Specification - maxmum limiting values when mesaured in HCMOS test circuit

Frequency Range	Frequency Stability	Supply Voltage	Supply Current	Rise Time (t_r)	Fall Time (t_f)	Duty Cycle	Model Number
1.80 to 25.0MHz	±50ppm, ±100ppm	3.3±0.3V	15mA	7ns	7ns	40/60%	IQXO-63
> 25.0 to 50.0MHz	±50ppm, ±100ppm	3.3±0.3V	15mA	7ns	7ns	40/60%	

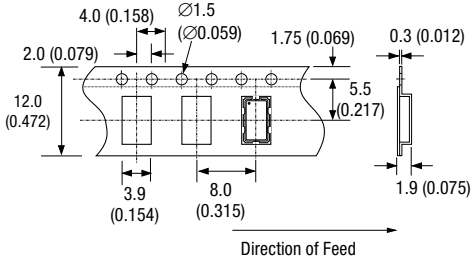
Ordering Example 24.0MHz IQXO-63 B

Frequency

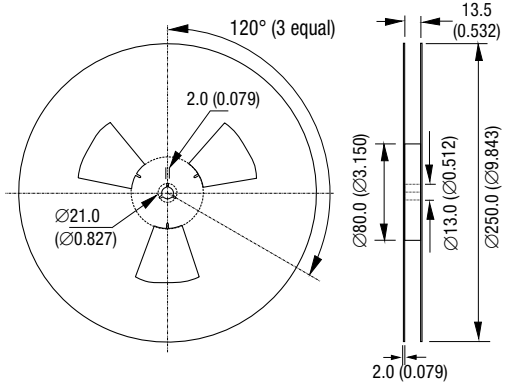
Model No

Frequency Stability: B = ±50ppm; C= ±100ppm

Outline in mm (inches) - Tape



Outline in mm (inches) - Reel



IQXO-70, -70I

ISSUE 6; 1 MAY 1998

Delivery Options

- Common frequencies are available from stock. Please see p203 for details

Output Compatibility

- Tri-state HCMOS/TTL
- Drive Capability: 50pF or 10 TTL

Package Outline

- SMD (surface mount device) ceramic package. Available over –10 to 70°C (IQXO-70) or –40 to 85°C (IQXO-70I)

Standard Frequency Stabilities

- ±25ppm (not available over –40 to 85°C), ±50ppm, ±100ppm (inclusive of supply voltage & output load variations over the operating temperature range)

Operating Temperature Range

- –10 to 70°C (IQXO-70)
- –40 to 85°C (IQXO-70I)

Storage Temperature Range

- –55 to 125°C

Environmental Specification

- Terminal Strength: MIL-STD-202F, Method 211A
- Solderability: MIL-STD-202F, Method 208E
- Vibration: MIL-STD-202F, Method 204D. Test Condition D sine wave
- Heat Cycle Test: MIL-STD-202F, Method 102A
- Shock: MIL-STD-202F, Method 213B. 1000G 0.35ms half sine
- Thermal Shock: MIL-STD-202F, Method 210A Solder Heat Resistance. 270°C±5°C for 10±1s

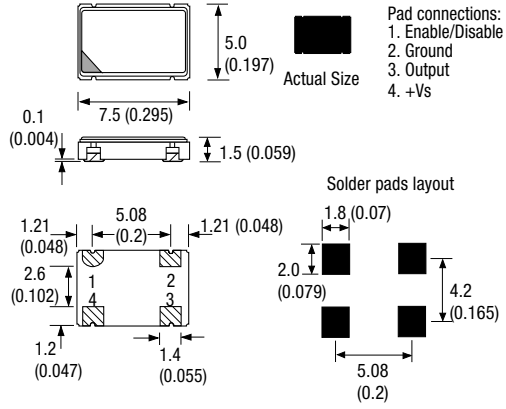
Tri-state Operation

- Logic '1' to pin 1 enables oscillator output, 2.2V min
- Logic '0' to pin 1 disables oscillator output; when disabled the oscillator output goes to the high impedance state, 0.8V max
- No connection to pin 1 enables oscillator output

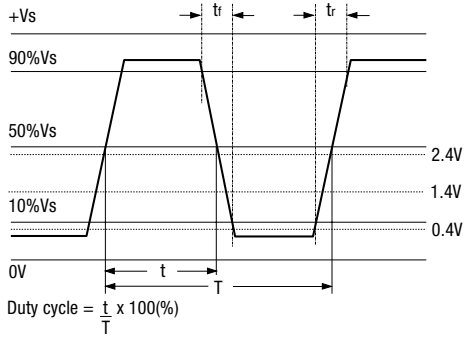
Marking

- Model number (+ Operating Temperature Code; if applicable)
- Frequency Stability Code
- Frequency

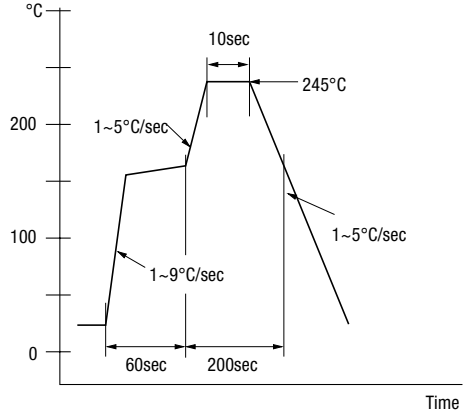
Outline in mm (inches) - (scale 2:1)



Output Waveform - HCMOS/TTL



Typical Solder Condition - Infrared Reflow



SURFACE MOUNT SPXOs

Minimum Order Information Required

- Frequency + Model Number + Operating Temperature Code (if applicable) + Frequency Stability

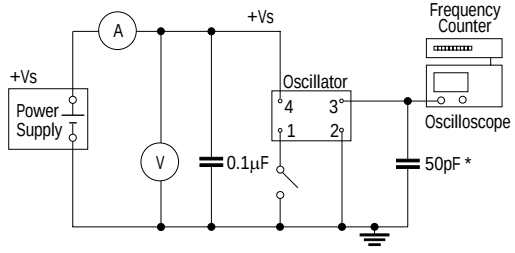
Electrical Specification – maximum limiting values when measured in HCMOS test circuit

Frequency Range	Frequency Stability	Supply Voltage	Supply Current	Rise Time (t_r)	Fall Time (t_f)	Duty Cycle	Model Number
1.8 to < 25.0MHz	±25ppm, ±50ppm, ±100ppm	5.0V±0.5V	25mA	7ns	7ns	45/55%	IQXO-70, -70I
25.0 to < 50.0MHz	±25ppm, ±50ppm, ±100ppm	5.0V±0.5V	40mA	7ns	7ns	45/55%	IQXO-70, -70I
50.0 to 80.0MHz	±50ppm, ±100ppm	5.0V±0.5V	73mA	7ns	7ns	45/55%	IQXO-70, -70I

Ordering Example 24.0MHz IQXO-70I B

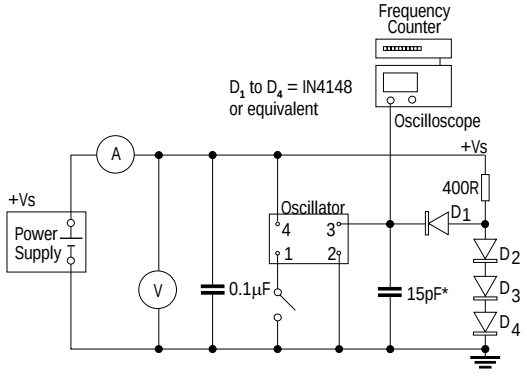
Frequency
Model No
Operating Temperature Code: I= –40 to 85°C Not applicable for –10 to 70°C
Frequency Stability: A = ±25ppm (not available over –40 to 85°C); B = ±50ppm; C= ±100ppm

Test Circuit - HCMOS



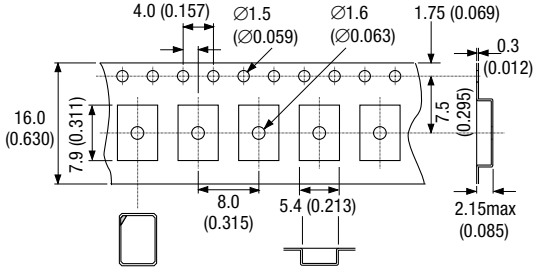
* Inclusive of jigging & equipment capacitance

Test Circuit - TTL

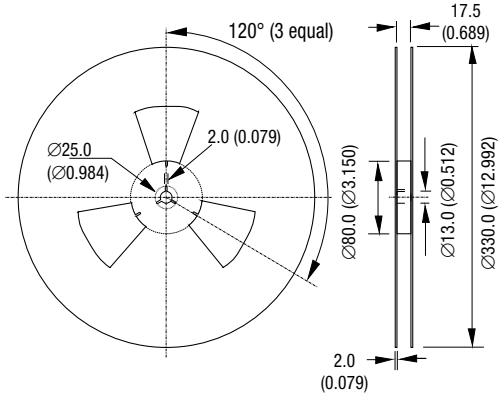


*Inclusive of jigging & equipment capacitance

Outline in mm (inches) - Tape



Outline in mm (inches) - Reel (scale 1:8)



IQXO-71, -71I

ISSUE 6; 17 JUNE 1998

Delivery Options

- Please contact our sales office for current leadtimes

Output Compatibility

- Tri-state HCMOS (3.3V)

Package Outline

- SMD (surface mount device) ceramic package. Available over –10 to 70°C (IQXO-71) or –40 to 85°C (IQXO-71I)

Standard Frequency Stabilities

- ±25ppm, ±50ppm (not available over –40 to 85°C), ±100ppm (inclusive of supply voltage & output load variations over the operating temperature range)

Operating Temperature Range

- –10 to 70°C (IQXO-71)
- –40 to 85°C (IQXO-71I)

Storage Temperature Range

- –55 to 125°C

Tri-state Operation

- Logic '1' to pin 1 enables oscillator output, 2.2V min
- Logic '0' to pin 1 disables oscillator output; when disabled the oscillator output goes to the high impedance state, 0.8V max
- No connection to pin 1 enables oscillator output

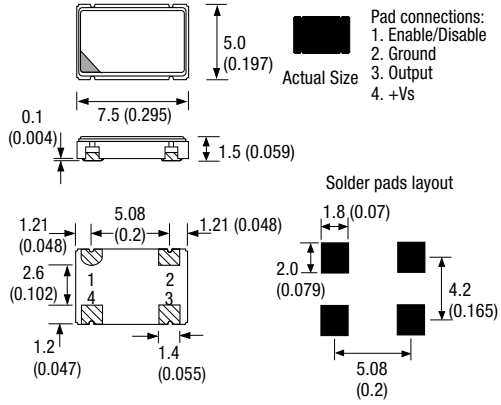
Marking

- Model number (+ Operating Temperature Code; if applicable)
- Frequency Stability Code
- Frequency

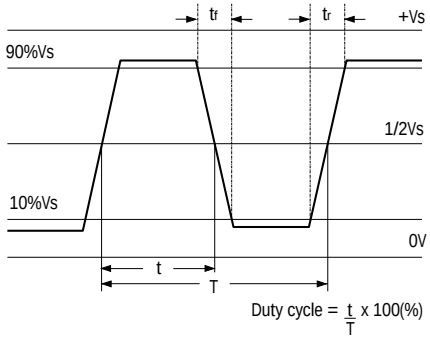
Minimum Order Information Required

- Frequency + Model Number + Operating Temperature Code (if applicable)+ Frequency Stability

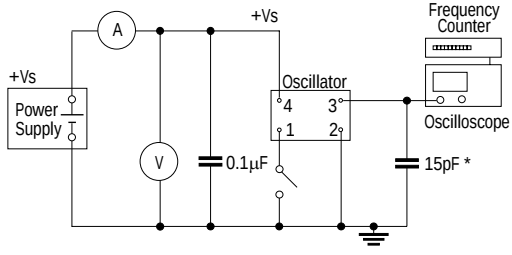
Outline in mm (inches) - (scale 2:1)



Output Waveform



Test Circuit



* Inclusive of jigging & equipment capacitance

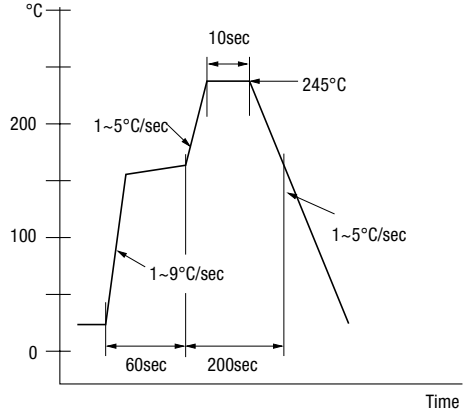
Electrical Specification – maximum limiting values when measured in test circuit

Frequency Range	Frequency Stability	Supply Voltage	Supply Current	Rise Time (t_r)	Fall Time (t_f)	Duty Cycle	Model Number
1.8 to < 32.0MHz	±25ppm, ±50ppm, ±100ppm	3.3V±0.3V	10mA	7ns	7ns	45/55%	IQXO-71, -71I
32.0 to < 50.0MHz	±25ppm, ±50ppm, ±100ppm	3.3V±0.3V	15mA	7ns	7ns	45/55%	IQXO-71, -71I
50.0 to 67.0MHz	±50ppm, ±100ppm	3.3V±0.3V	18mA	7ns	7ns	40/60%	IQXO-71, -71I
> 67.0 to 80.0MHz	±50ppm, ±100ppm	3.3V±0.3V	30mA	6ns	6ns	40/60%	IQXO-71, -71I
> 67.0 to 106.25MHz	±100ppm	3.3V±0.3V	30mA	6ns	6ns	40/60%	IQXO-71

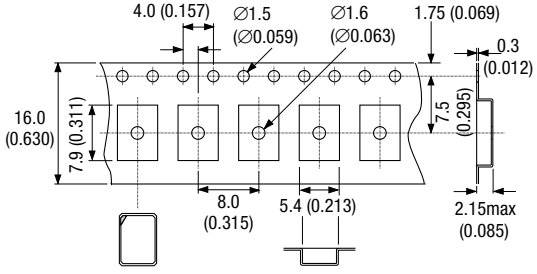
Ordering Example 24.0MHz IQXO-71I C

Frequency
Model No
Operating Temperature Code: I= –40 to 85°C Not applicable for –10 to 70°C
Frequency Stability: A = ±25ppm (not available over –40 to 85°C) ;
B = ±50ppm (not available over –40 to 85°C);
C = ±100ppm

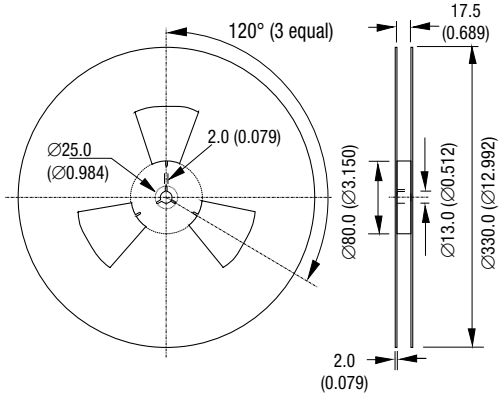
Typical Solder Condition - Infrared Reflow



Outline in mm (inches) - Tape



Outline in mm (inches) - Reel (scale 1:8)



IQXO-80

ISSUE 1; 19 JUNE 1997

Delivery Options

- Please contact our sales office for current leadtimes

Output Compatibility

- PECL 10kH

Package Outline

- 14.0 × 9.8 × 3.35mm SMD (surface mount device)

Standard Frequency Stabilities

- ±100ppm (inclusive of supply voltage variations over the operating temperature range)

Operating Temperature Range

- –10 to 70°C

Storage Temperature Range

- –55 to 125°C

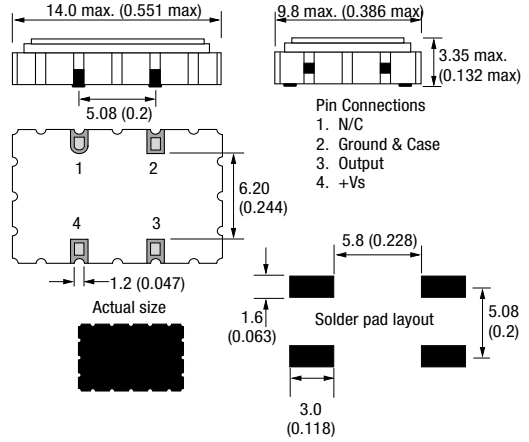
Marking

- Model number
- Frequency Stability Code
- Frequency
- Date code (Year/Week)

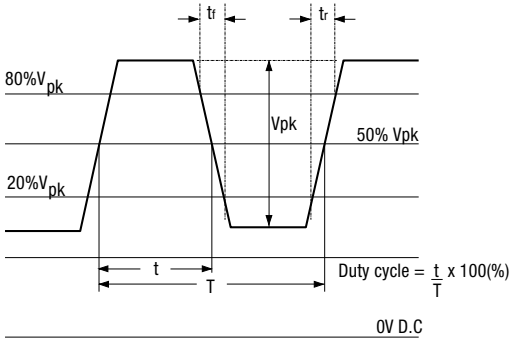
Minimum Order Information Required

- Frequency + Model Number + Frequency Stability

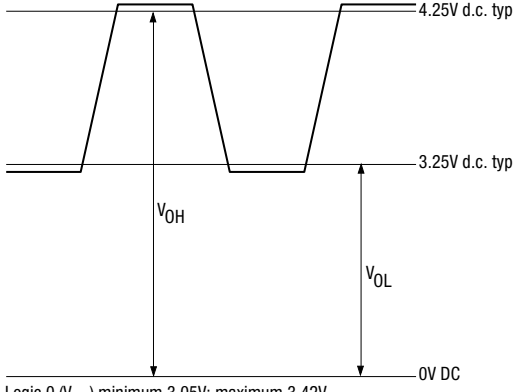
Outline in mm (inches) - (scale 2:1)



Output Waveform



Logic Levels



Logic 0 (V_{OL}) minimum 3.05V; maximum 3.42V
Logic 1 (V_{OH}) minimum 4.0V; maximum 4.45V

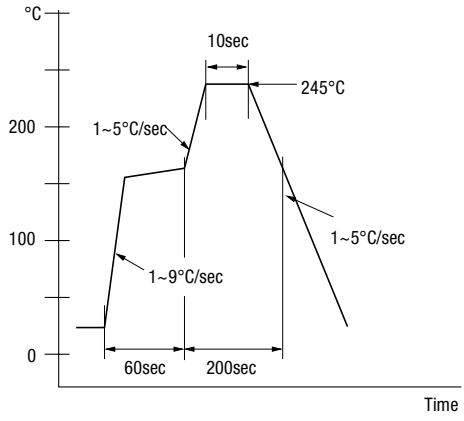
Electrical Specification – maximum limiting values when measured in test circuit

Frequency Range	Frequency Stability	Supply Voltage	Supply Current	Rise Time (t_r)	Fall Time (t_f)	Duty Cycle	Model Number
30.0 to 170.0MHz	±100ppm	5.0V±0.25V	60mA	2ns	2ns	40/60%	IQXO-80

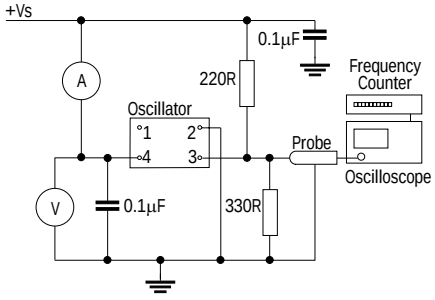
Ordering Example 125.0MHz IQXO-80 C

Frequency
Model No
Frequency Stability: C= ±100ppm

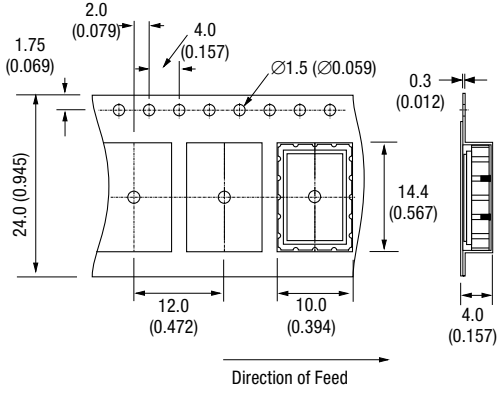
Typical Solder Condition - Infrared Reflow



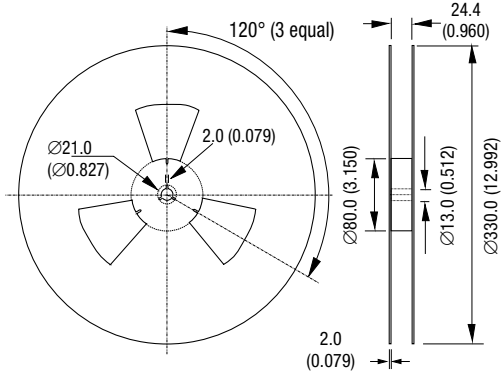
Test Circuit



Outline in mm (inches) - Tape



Outline in mm (inches) - Reel



IQXO-81

ISSUE 1; 19 JUNE 1997

Delivery Options

- Please contact our sales office for current leadtimes

Output Compatibility

- Dual Complimentary PECL 10kH

Package Outline

- 14.0 × 9.8 × 3.35mm SMD (surface mount device)

Standard Frequency Stabilities

- ±100ppm (inclusive of supply voltage variations over the operating temperature range)

Operating Temperature Range

- –10 to 70°C

Storage Temperature Range

- –55 to 125°C

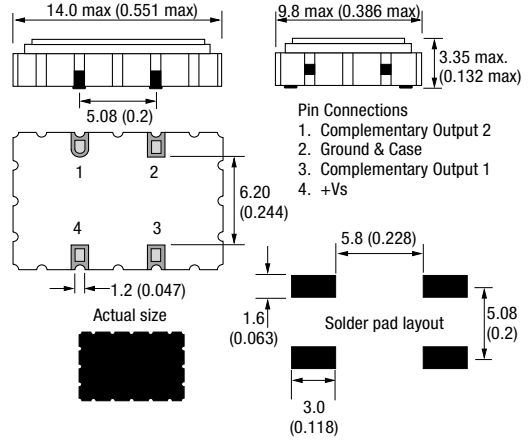
Marking

- Model number
- Frequency Stability Code
- Frequency
- Date code (Year/Week)

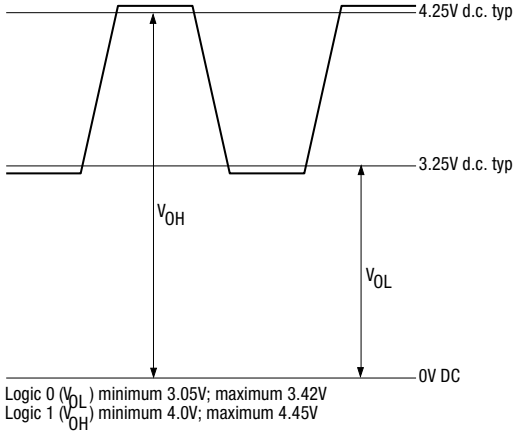
Minimum Order Information Required

- Frequency + Model Number + Frequency Stability

Outline in mm (inches) - (scale 2:1)

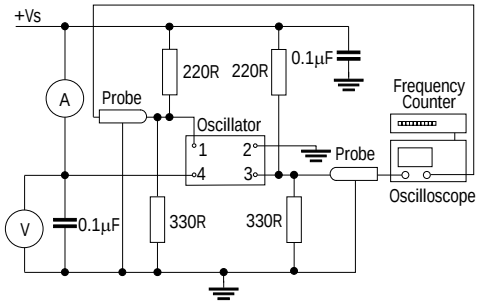


Logic Levels



Logic 0 (V_{OL}) minimum 3.05V; maximum 3.42V
Logic 1 (V_{OH}) minimum 4.0V; maximum 4.45V

Test Circuit



Electrical Specification – maximum limiting values when measured in test circuit

Frequency Range	Frequency Stability	Supply Voltage	Supply Current	Rise Time (t_r)	Fall Time (t_f)	Duty Cycle	Model Number
30.0 to 170.0MHz	±100ppm	5.0V±0.25V	60mA	2ns	2ns	40/60%	IQXO-81

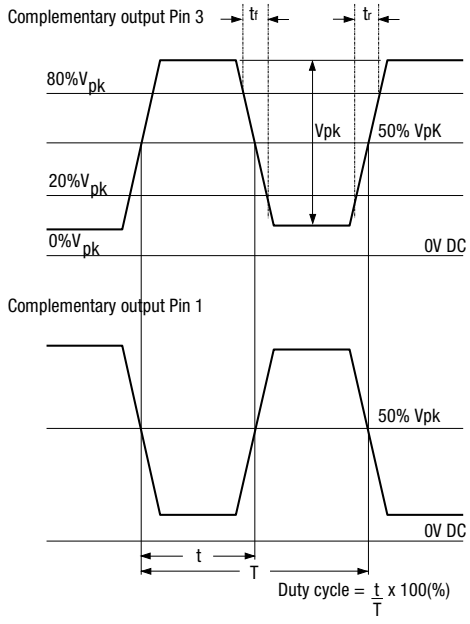
Ordering Example 125.0MHz IQXO-81 C

Frequency

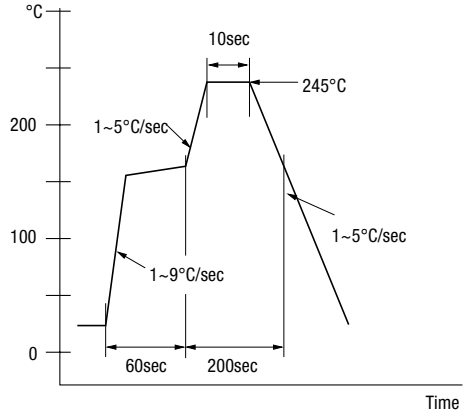
Model No

Frequency Stability: C= ±100ppm

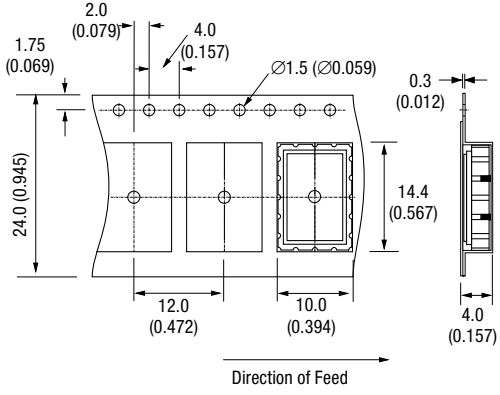
Output Waveform



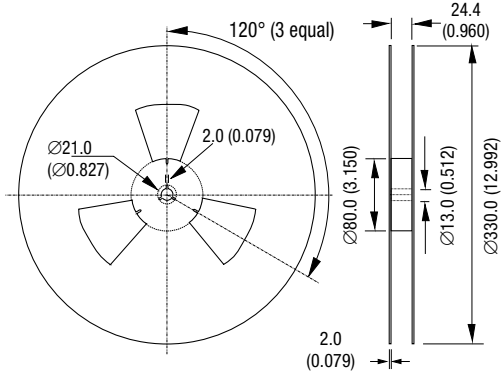
Typical Solder Condition - Infrared Reflow



Outline in mm (inches) - Tape



Outline in mm (inches) - Reel



IQXO-82

ISSUE 1; 19 JUNE 1997

Delivery Options

- Please contact our sales office for current leadtimes

Output Compatibility

- ECL 10kH

Package Outline

- 14.0 × 9.8 × 3.35mm SMD (surface mount device)

Standard Frequency Stabilities

- ±100ppm (inclusive of supply voltage variations over the operating temperature range)

Operating Temperature Range

- –10 to 70°C

Storage Temperature Range

- –55 to 125°C

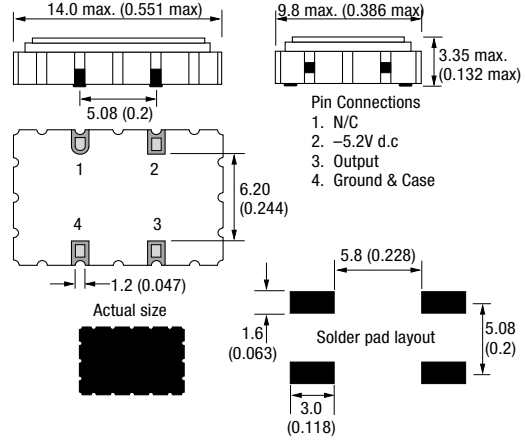
Marking

- Model number
- Frequency Stability Code
- Frequency
- Date code (Year/Week)

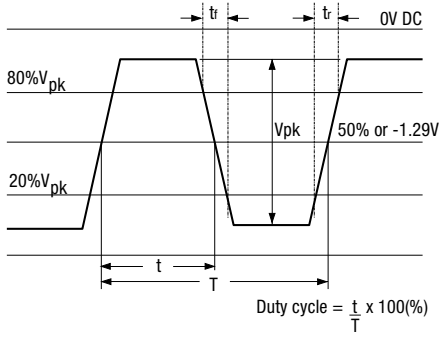
Minimum Order Information Required

- Frequency + Model Number + Frequency Stability

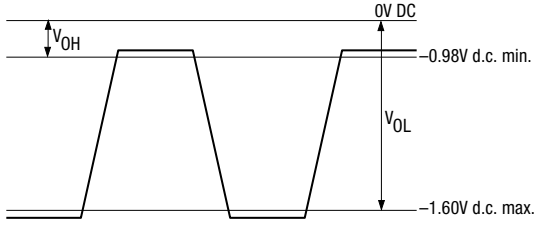
Outline in mm (inches) - (scale 2:1)



Output Waveform



Logic Levels



SURFACE MOUNT SPXOs

Electrical Specification – maximum limiting values when measured in test circuit

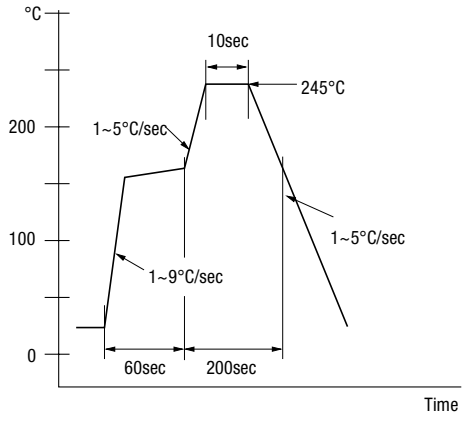
Frequency Range	Frequency Stability	Supply Voltage	Supply Current	Rise Time (t_r)	Fall Time (t_f)	Duty Cycle	Model Number
30.0 to 170.0MHz	±100ppm	–5.2V±0.25V	50mA	2ns	2ns	40/60%	IQXO-82

Note: Both Complimentary outputs require terminating to either 270Ω to ground or 50Ω to –2.0V d.c

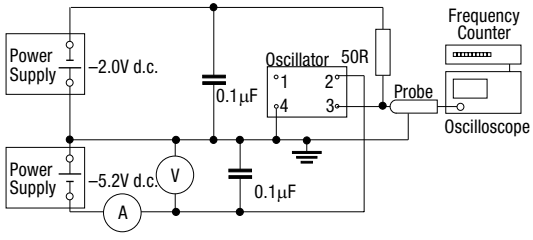
Ordering Example 125.0MHz IQXO-82 C

Frequency
Model No
Frequency Stability: C= ±100ppm

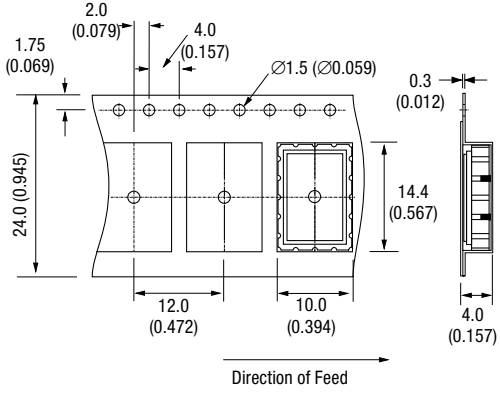
Typical Solder Condition - Infrared Reflow



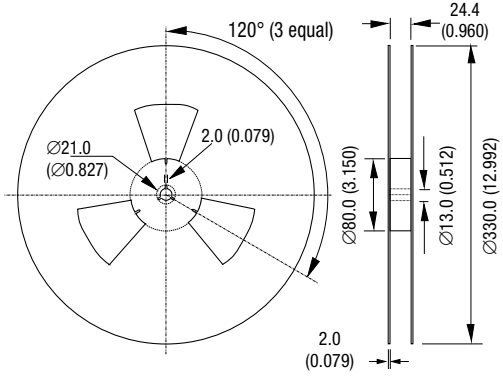
Test Circuit



Outline in mm (inches) - Tape



Outline in mm (inches) - Reel



IQXO-83

ISSUE 1; 19 JUNE 1997

Delivery Options

- Please contact our sales office for current leadtimes

Output Compatibility

- Dual Complimentary ECL 10kH

Package Outline

- 14.0 × 9.8 × 3.35mm SMD (surface mount device)

Standard Frequency Stabilities

- ±100ppm (inclusive of supply voltage variations over the operating temperature range)

Operating Temperature Range

- –10 to 70°C

Storage Temperature Range

- –55 to 125°C

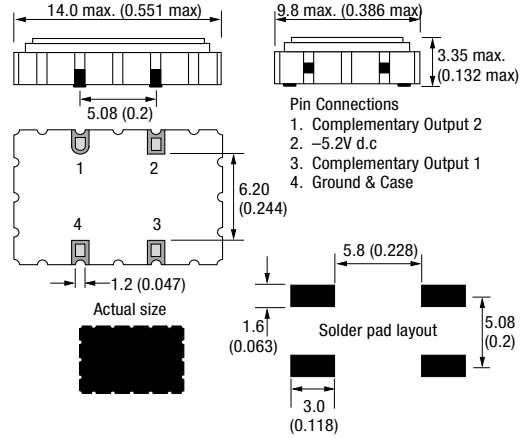
Marking

- Model number
- Frequency Stability Code
- Frequency
- Date code (Year/Week)

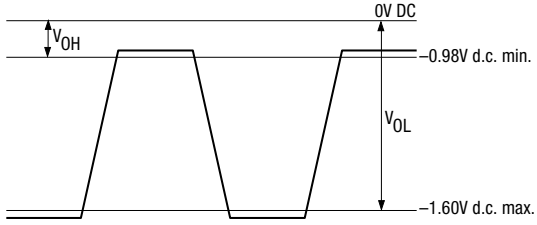
Minimum Order Information Required

- Frequency + Model Number + Frequency Stability

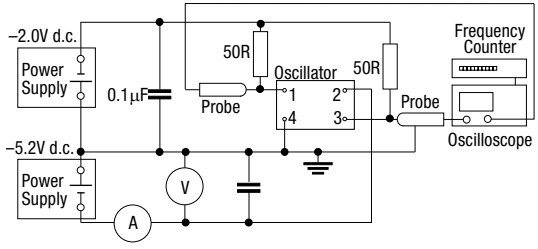
Outline in mm (inches) - (scale 2:1)



Logic Levels



Test Circuit



SURFACE MOUNT SPXOs

Electrical Specification – maximum limiting values when measured in test circuit

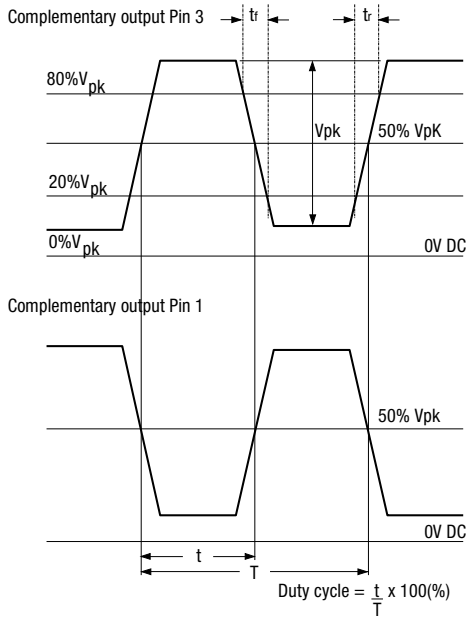
Frequency Range	Frequency Stability	Supply Voltage	Supply Current	Rise Time (t_r)	Fall Time (t_f)	Duty Cycle	Model Number
30.0 to 170.0MHz	±100ppm	–5.2V±0.25V	50mA	2ns	2ns	40/60%	IQXO-83

Note: Both Complimentary outputs require terminating to either 270Ω to ground or 50Ω to –2.0V d.c

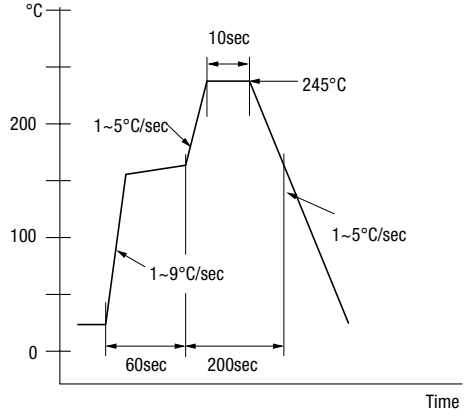
Ordering Example 125.0MHz IQXO-83 C

Frequency
Model No
Frequency Stability: C= ±100ppm

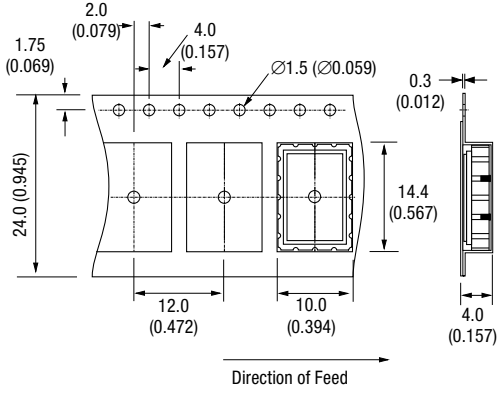
Output Waveform



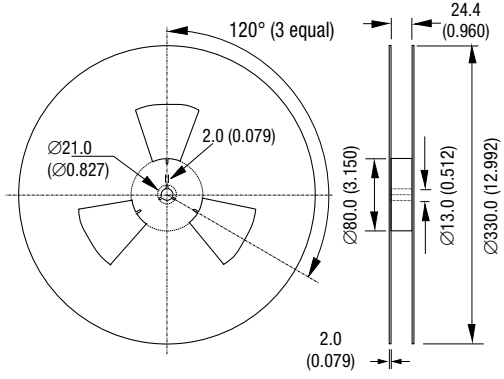
Typical Solder Condition - Infrared Reflow



Outline in mm (inches) - Tape



Outline in mm (inches) - Reel



CFPS-604, -605

ISSUE 1; 16 JULY 1998

Recommended for New Designs

Delivery Options

- Please contact our sales office for current leadtimes

Output Compatibility

- HCMOS/TTL
- Drive Capability: 50pF or 5 TTL
- Non tri-state (CFPS-604)
- Tri-state (CFPS-605)

Package Outline

- 14.0 × 9.2 × 6.5mm SMD (surface mount device)

Standard Frequency Stabilities

- ±25ppm, ±50ppm, ±100ppm
  (over operating temperature range)

Frequency Tolerance at 25°C (Optional)

- ±10ppm, ±25ppm

Operating Temperature Range

- 0 to 70°C

Storage Temperature Range

- –40 to 85°C

Environmental Specification

- Vibration: 10 to 55Hz 0.76mm displacement, sweep 60 seconds, duration 2 hours.
- Rapid Change of Temperature over Operating Temperature Range: 10 cycles
- Shock: 981m/s^2 for 6ms, three shocks in each direction along the three mutually perpendicular planes

Tri-state Operation (CFPS-605)

- Logic '0' to pin 1 disables oscillator output; when disabled the oscillator output goes to the high impedance state
- No connection or Logic '1' to pin 1 enables oscillator output
- Maximum 'pull-down' resistance required to disable output =20kΩ
- Disable current 50μA typical

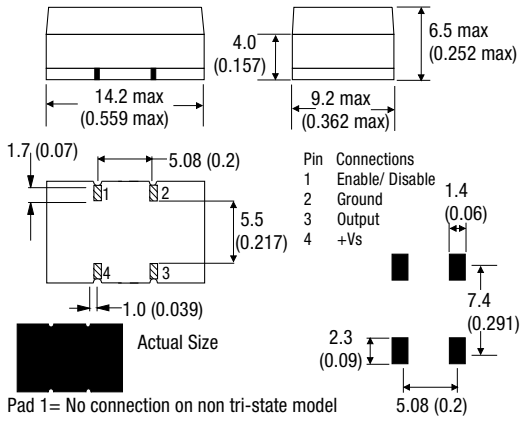
Marking

- Model number
- Frequency Stability Code
- Frequency Tolerance Code (Optional)
- Frequency
- Date code (Year/Week)

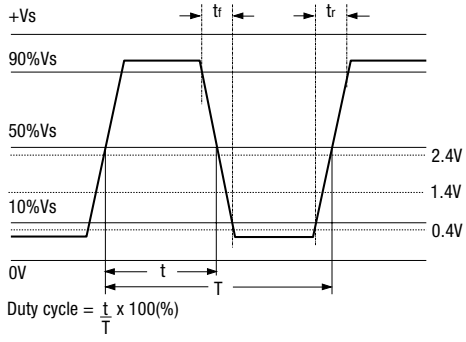
Minimum Order Information Required

- Frequency + Model Number + Operating Temperature Code (If applicable)+ Frequency Stability

Outline in mm (inches) - (scale 1.5:1)



Output Waveform - HCMOS/TTL



SURFACE MOUNT SPXOs

Electrical Specification – maximum limiting values when measured in HCMOS test circuit

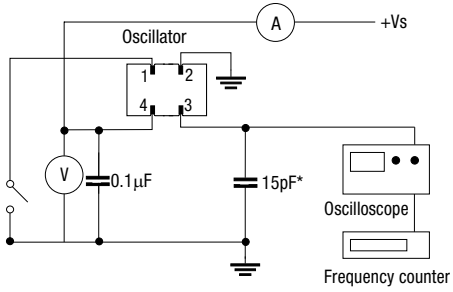
Frequency Range	Frequency Stability	Supply Voltage	Supply Current	Rise Time (t_r)	Fall Time (t_f)	Duty Cycle	Model Number
1.25 to < 5.0MHz	±25ppm, ±50ppm & ±100ppm	3.3V±0.17V	15mA	15ns	15ns	45/55%	CFPS-604,-605
5.0 to < 16.0MHz	±25ppm, ±50ppm & ±100ppm	3.3V±0.17V	10mA	10ns	10ns	45/55%	CFPS-604,-605
16.0 to < 30.0MHz	±25ppm, ±50ppm & ±100ppm	3.3V±0.17V	20mA	10ns	10ns	40/60%	CFPS-604,-605
30.0 to < 50.0MHz	±25ppm, ±50ppm & ±100ppm	3.3V±0.17V	20mA	8ns	8ns	40/60%	CFPS-604,-605
50.0 to 70.0MHz	±25ppm, ±50ppm & ±100ppm	3.3V±0.17V	30mA	8ns	8ns	40/60%	CFPS-604,-605

Ordering Example 22.0MHz CFPS-604 B F

Frequency
Model No
Frequency Stability: A= ±25ppm; B = ±50ppm; C= ±100ppm
Frequency Tolerance @ 25°C: E= ±10ppm; F = ±25ppm

Please note: Code combination A F is not available
A 5V version may be available. Please contact the Application Support Department for details

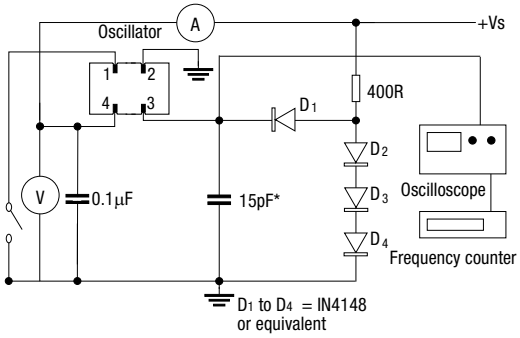
Test Circuit - HCMOS



*Inclusive of jigging & equipment capacitance

Pin1= No connection on non tri-state model

Test Circuit - TTL



*Inclusive of jigging & equipment capacitance

Pin1= No connection on non tri-state model

CFPS-611

ISSUE 1; 6 APRIL 1998

Delivery Options

- Please contact our sales office for current leadtimes

Output Compatibility

- Tri-state HCMOS/TTL
- Drive Capability: 50pF or 10 TTL

Package Outline

- 7 × 5 × 1.6mm SMD (surface mount device) housed in a hermetically glass sealed ceramic package

Standard Frequency Stabilities

- ±50ppm, ±100ppm (inclusive of supply voltage & output load variations over the operating temperature range)

Operating Temperature Range

- 0 to 70°C

Storage Temperature Range

- –55 to 125°C

Tri-state Operation

- Logic '1' to pin 1 enables oscillator output, 2.2V min
- Logic '0' to pin 1 disables oscillator output; when disabled the oscillator output goes to the high impedance state, 0.8V max

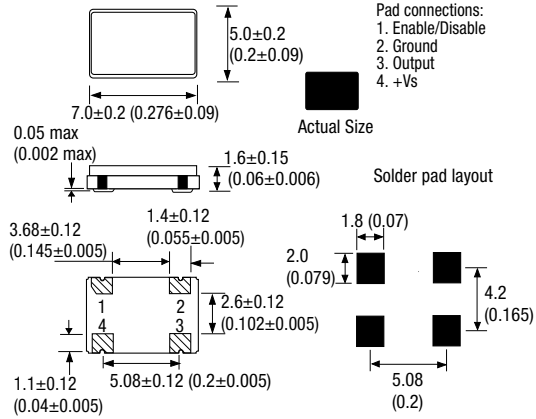
Marking

- Model number (+ Operating Temperature Code; if applicable)
- Frequency Stability Code
- Frequency

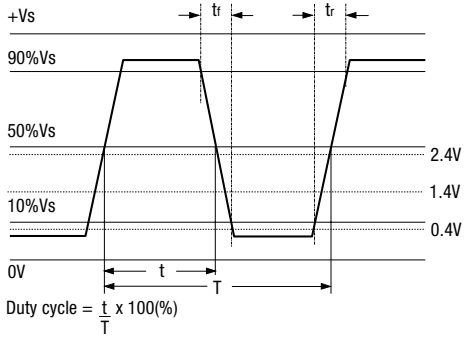
Minimum Order Information Required

- Frequency + Model Number + Operating Temperature Code (if applicable) + Frequency Stability

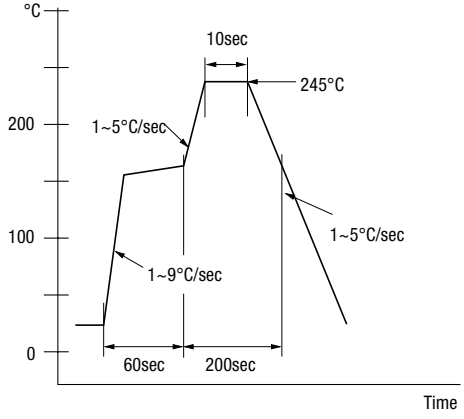
Outline in mm (inches) - (scale 2:1)



Output Waveform - HCMOS/TTL



Typical Solder Condition - Infrared Reflow



SURFACE MOUNT SPXOs

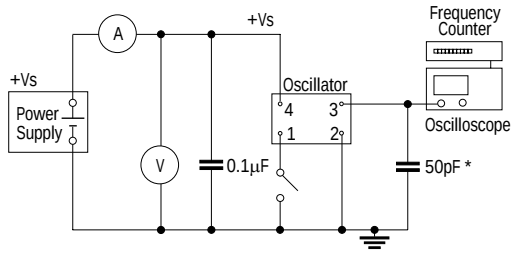
Electrical Specification – maximum limiting values when measured in HCMOS test circuit

Frequency Range	Frequency Stability	Supply Voltage	Supply Current	Rise Time (t_r)	Fall Time (t_f)	Duty Cycle	Model Number
1.5 to < 20.0MHz	±50ppm ±100ppm	5.0V±0.5V	20mA	10ns	10ns	40/60%	CFPS-611
20.0 to < 50.0MHz	±50ppm ±100ppm	5.0V±0.5V	35mA	10ns	10ns	40/60%	CFPS-611
50.0 to 66.666MHz	±50ppm ±100ppm	5.0V±0.5V	60mA	10ns	10ns	40/60%	CFPS-611

Ordering Example 24.0MHz CFPS-611 B

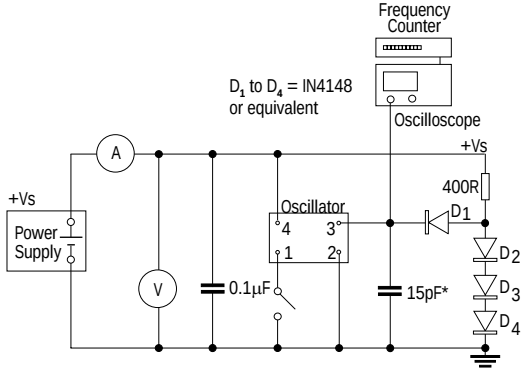
Frequency
Model No
Frequency Stability: B = ±50ppm; C= ±100ppm

Test Circuit - HCMOS



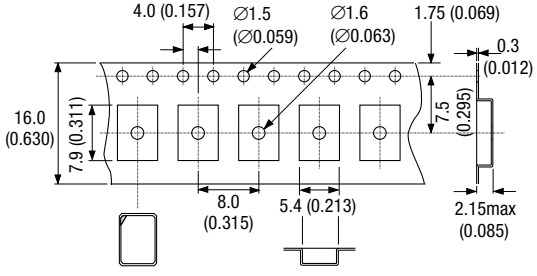
* Inclusive of jigging & equipment capacitance

Test Circuit - TTL

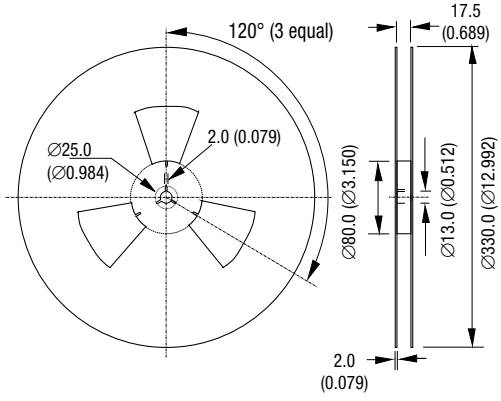


*Inclusive of jigging & equipment capacitance

Outline in mm (inches) - Tape



Outline in mm (inches) - Reel (scale 1:8)



CFPS-612

ISSUE 1; 6 APRIL 1998

Delivery Options

- Please contact our sales office for current leadtimes

Output Compatibility

- Tri-state HCMOS (3.3V and 5V compatible)
- Drive Capability: 30pF/10 LS TTL

Package Outline

- 7 × 5 × 1.6mm SMD (surface mount device) housed in a hermetically glass sealed ceramic package

Standard Frequency Stabilities

- ±50ppm, ±100ppm (inclusive of supply voltage & output load variations over the operating temperature range)

Operating Temperature Range

- 0 to 70°C

Storage Temperature Range

- –55 to 125°C

Tri-state Operation

- Logic '1' to pin 1 enables oscillator output, 2.2V min
- Logic '0' to pin 1 disables oscillator output; when disabled the oscillator output goes to the high impedance state, 0.8V max

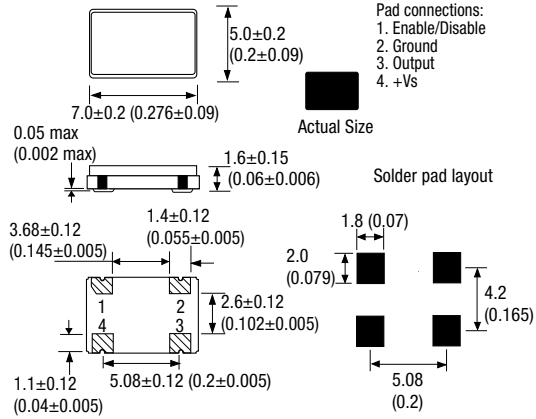
Marking

- Model number (+ Operating Temperature Code; if applicable)
- Frequency Stability Code
- Frequency

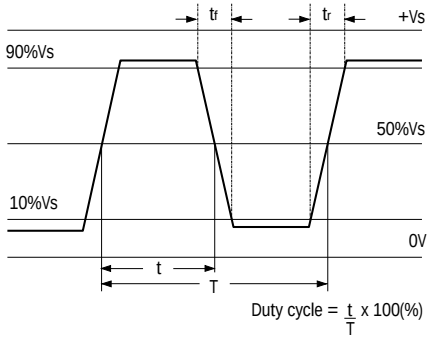
Minimum Order Information Required

- Frequency + Model Number + Operating Temperature Code (if applicable) + Frequency Stability

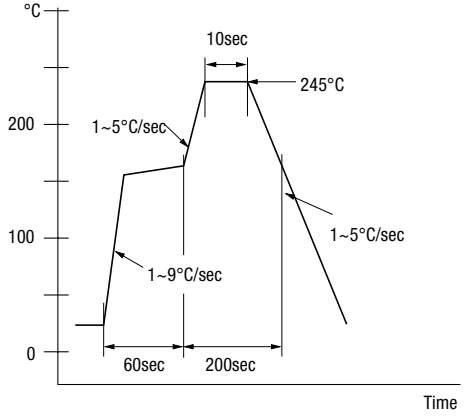
Outline in mm (inches) - (scale 2:1)



Output Waveform - HCMOS/TTL



Typical Solder Condition - Infrared Reflow



SURFACE MOUNT SPXOs

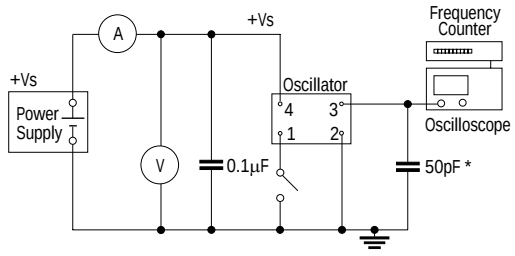
Electrical Specification – maximum limiting values when measured in HCMOS test circuit

Frequency Range	Frequency Stability	Supply Voltage	Supply Current	Rise Time (t_r)	Fall Time (t_f)	Duty Cycle	Model Number
1.5 to< 20.0MHz	±50ppm ±100ppm	3.3V±0.3V	10mA	10ns	10ns	40/60%	CFPS-612
		5.0V±0.5V	15mA				
20.0 to < 50.0MHz	±50ppm ±100ppm	3.3V±0.3V	20mA	10ns	10ns	40/60%	CFPS-612
		5.0V±0.5V	35mA				
50.0 to 66.666MHz	±50ppm ±100ppm	3.3V±0.3V	25mA	10ns	10ns	40/60%	CFPS-612
		5.0V±0.5V	45mA				

Ordering Example 24.0MHz CFPS-612 B

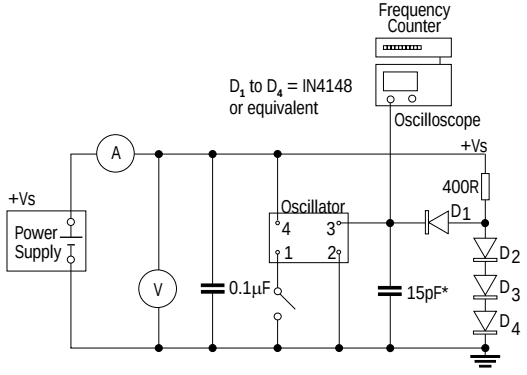
Frequency
Model No
Frequency Stability: B = ±50ppm; C= ±100ppm

Test Circuit - HCMOS



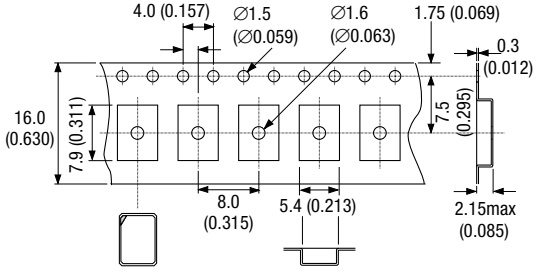
* Inclusive of jigging & equipment capacitance

Test Circuit - TTL

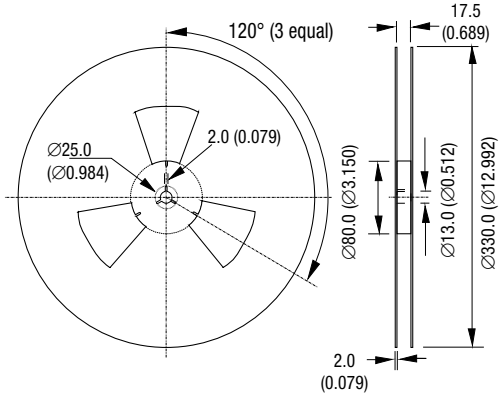


*Inclusive of jigging & equipment capacitance

Outline in mm (inches) - Tape



Outline in mm (inches) - Reel (scale 1:8)



CXO-M Military Oscillator 1.25 to 70.0MHz

ISSUE 1; 19 JUNE 1997

Delivery Options

- Please contact our sales office for current leadtimes

Output Compatibility

- HCMOS/TTL
- Tri-state HCMOS/TTL
- Drive Compability: 50pF or 10 TTL

Package Outline

- Statek's 6.5 × 5.0 × 1.6mm SMD (surface mount device). Available in 5V and 3.0V Non Tri-state or Tri-state versions.

Terminations

- SM1 - Gold over Nickel
- SM3 - Solder dipped

Standard Frequency Stabilities

- Please see Electrical Specification table overleaf

Operating Temperature Ranges

- C = –10 to 70°C
  I = –40 to 85°C
  M = –55 to 125°C

Storage Temperature Range

- –55 to 125°C

Environmental Specification

- Shock: 3000g peak, 0.3ms, ½ sine
- Vibration: 20g rms 10-2000Hz random

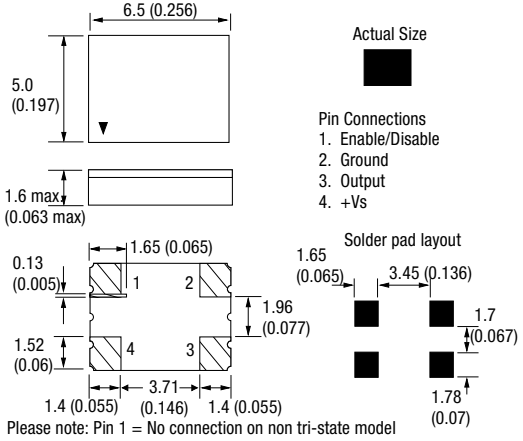
Tri-state Operation

- Pin1 normally high (internal pull-up resistor)
- Tri-state Type
  Pin 1 logic '0' or not connected, Pin 3 high impedance
  Pin 1 logic '1', Pin 3 Output
- Non Tri-state Type
  Pin 1 logic '1' or not connected, Pin3 Output

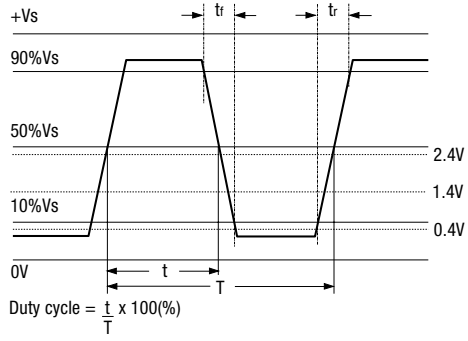
Marking

- Model number
- Frequency Stability Code
- Frequency
- Date code (Year/Week)

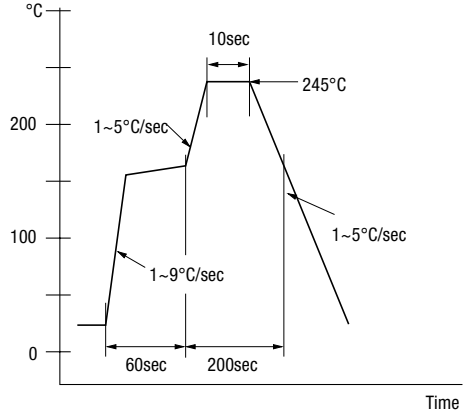
Outline in mm (inches) - (scale 3:1)



Output Waveform - HCMOS/TTL



Typical Solder Condition - Infrared Reflow



SURFACE MOUNT SPXOs

Minimum Order Information Required

- Frequency + Model Number + Load + Enable +Termination + Frequency Tolerance @ 25°C + Frequency Stability over Operating Temperture Range + Operating Range

Electrical Specification – maximum limiting values

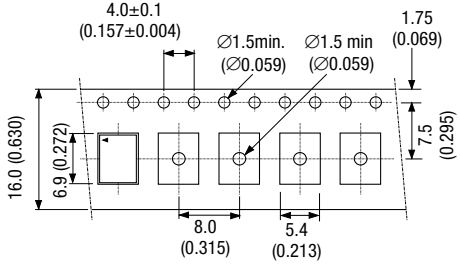
Frequency Range	*Frequency Tolerance @ 25°C ±2°C	Supply Current (Typical)	Supply Voltage	Operating Temperature Range	Frequency Stability Available Over Operating Temperature		Rise Time (t_r)	Fall Time (t_f)	Duty Cycle	Model Number
					Minimum	Maximum				
1.25 to 24.0MHz	A = ±100ppm B = ±1000ppm C = ±10000ppm	12mA	5.0V±0.5V	–10 to 70°C	±10ppm	±50ppm	6ns	6ns	40/60%	CXO-M
				–40 to 85°C	±20ppm	±100ppm				
				–55 to 125°C	±30ppm	±100ppm				
> 24.0 to 30.0MHz	A = ±100ppm B = ±1000ppm C = ±10000ppm	16mA	5.0V±0.5V	–10 to 70°C	±10ppm	±50ppm	6ns	6ns	40/60%	CXO-M
				–40 to 85°C	±20ppm	±100ppm				
				–55 to 125°C	±30ppm	±100ppm				
> 30.0 to 40.0MHz	A = ±100ppm B = ±1000ppm C = ±10000ppm	20mA	5.0V±0.5V	–10 to 70°C	±10ppm	±50ppm	6ns	6ns	40/60%	CXO-M
				–40 to 85°C	±20ppm	±100ppm				
				–55 to 125°C	±30ppm	±100ppm				
> 40.0 to 70.0MHz	A = ±100ppm B = ±1000ppm C = ±10000ppm	25mA	5.0V±0.5V	–10 to 70°C	±10ppm	±50ppm	6ns	6ns	40/60%	CXO-M
				–40 to 85°C	±20ppm	±100ppm				
				–55 to 125°C	±30ppm	±300ppm				

Ordering Example 50.0MHz CXO-M 10 T SM1 A 50 C

Frequency
Model
Load: 10= 10 TTL
Enable: T= Tri-State; N= Non tri-state
Termination
Frequency Tolerance @ 25°C
Frequency Stability over Operating Temperature Range
Operating Temperature Range: C = –10 to 70°C; I = –40 to 85°C; M = –55 to 125°C

Please note:
Above parameters are measured at @ 25°C with a 10MΩ and 10pF load at @ 5.0V
3.0V HCMOS version and other frequency tolerances are available on request. Please contact our Application Support Department.

Outline in mm (inches) - Tape



Outline in mm (inches) - Reel (scale 1:5)