QX2 Series

2.0x2.5 SMD HCMOS Clock Oscillator

RoHS Compliant

Pb lead-free

Features

- Ultra-miniature 2.0 x 2.5 x 0.9mm package
- Frequency Range 2MHz to 60MHz
- Tristate (Enable/Disable) function as standard
- Supply voltage 1.8, 2.5 or 3.3 Volts

Description

QX2 ultra-miniature oscillators consist of a TTL/ HCMOS-compatible hybrid circuit and a miniature quartz crystal packaged in a low-profile, industry-standard ceramic package.

General Specifications

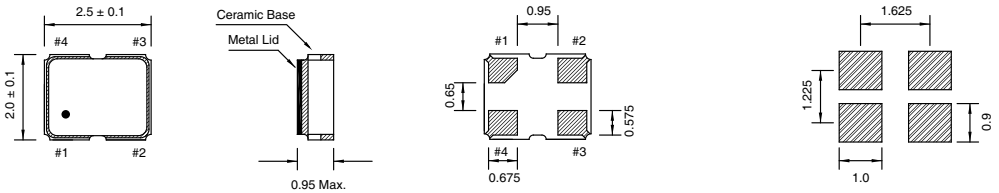
Frequency Range		2.000 to 60.000MHz
Output Logic		HCMOS
Temperature Stability*		±100ppm
		±50ppm
		±30ppm
		±25ppm
Phase Jitter RMS		<1ps typ.
Aging per year		±5ppm
Operating Temperature Range	Standard	-10 to +70°C
	Industrial	-40 to +85°C
	Extended	-40 to +105°C
	Automotive	-40 to +125°C
Storage Temperature Range		-55 to +125°C

* Frequency stability is inclusive of calibration tolerance at 25°C, frequency change due to shock & vibration, ±10% supply voltage variation and stability over temperature range.

Electrical Specifications

Supply Voltage		1.8Vdd ± 5%	2.5Vdd ± 5%	3.3Vdd ± 5%
Input Current	2.000 to 10.000MHz	3mA	6mA	7mA
	10.100 to 20.000MHz	5mA	8mA	7mA
	20.100 to 32.000MHz	5mA	8mA	12mA
	32.100 to 60.000MHz	10mA	20mA	20mA
Output Voltage	Logic High (Voh)	90% (80% at 1.8) Vdd min.		
	Logic Low (Vol)	10% (20% at 1.8) Vdd max.		
Output Symmetry	Standard	40 to 60%		
	Tight	45 to 55%		
Output Load		15pF max.		
Rise and Fall Time	1.000 to 10.000MHz	5ns max.	7ns max.	6ns max.
	10.100 to 20.000MHz	5ns max.	7ns max.	6ns max.
	20.100 to 32.000MHz	5ns max.	6ns max.	5ns max.
	32.100 to 60.000MHz	5ns max.	6ns max.	5ns max.
Enable-Disable Function		Tri-State		
Start Up Time		10 ms max.		

Mechanical Dimensions



Pin Connection: **#1** E/D, **#2** GND, **#3** Output, **#4** VDC *Enable/Disable Function:* **E/D (#1)** Output (#3), **High (Open)** Operating, **Low** High Impedance

Part Numbering Guide

Qantek Code	Package	Supply Voltage	Frequency Stability	Frequency	Operating Temperature Range	Automotive Indicator	Load Capacitance	Tight Symmetry Indicator	Packaging
Q = Qantek	X2 = 2.5x2.0	18 = 1.8V 25 = 2.5V 33 = 3.3V	A = ±25ppm **B = ±50ppm** C = ±100ppm D = ±20ppm	in MHz, always 8 digits including the decimal point (f.ie. 20.00000)	A = -20 to +70°C **B = -40 to +85°C** C = -40 to +105°C D = -40 to +125°C	A = AEC-Q200	15 = 15pF	T = 45/55	R = Tape&Reel M = Minireel (250pcs Tape&Reel)

Example: QX233B20.00000B15R bold letters = recommended standard specification

QANTEK

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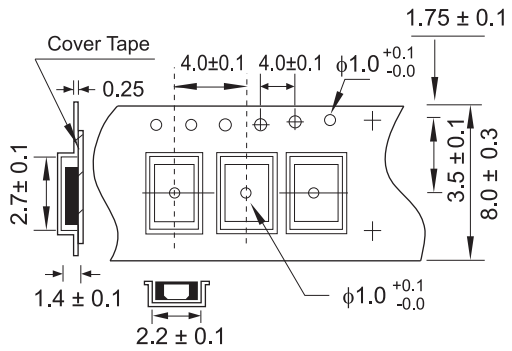
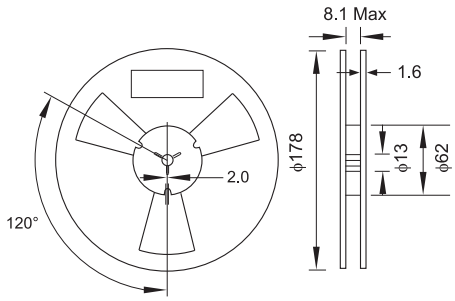
Tape and Reel Dimensions





Marking Code Guide

Contains frequency, Qantek manufacturing Code, production code (month and year), stability, temperature range and voltage indicator.

Month Codes

January	A	July	G
February	B	August	H
March	C	September	I
April	D	October	J
May	E	November	K
June	F	December	L

Year Codes

2010	0	2011	1	2012	2
2013	3	2014	4	2015	5

Stability / Temperature Range

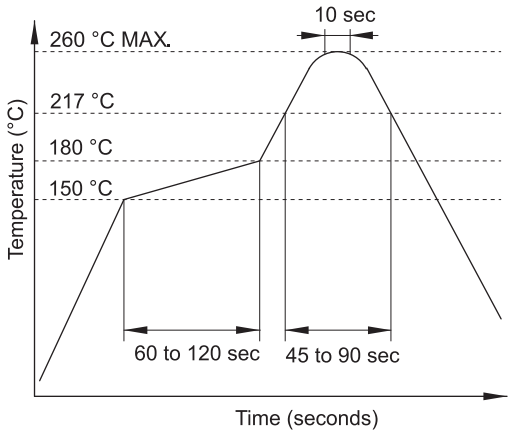
	20ppm	25ppm	50ppm	100ppm
-20 to +70°C	A	B	C	D
-40 to +85°C	E	F	G	H
-40 to +105°C	-	-	I	J
-40 to +125°C	-	-	-	K

Voltage

Volt	PN Code
1.8	1
2.5	2
3.3	3
custom	S

Example: First Line: QA1G3 *(Qantek – January – 2011 –* ±50ppm / -40 to +85°C – 3.3V*)* Second Line: 20.0 *(Frequency)*

Solder Reflow Profile



Environmental Specifications

Mechanical Shock	MIL-STD-202, Method 213, C
Vibration	MIL-STD-202, Method 201 & 204
Thermal Cycle	MIL-STD, Method 1010, B
Gross Leak	MIL-STD-202, Method 112
Fine Leak	MIL-STD-202, Method 112

All specifications are subject to change without notice.

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