



Features

- Ultra-miniature 5.2 x 3.4 x 1.3mm package
- Frequency Range 1MHz to 155.520MHz
- Tristate (Enable/Disable) function as standard
- Supply voltage 1.8, 2.5 or 3.3 Volts

Description

QX5 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

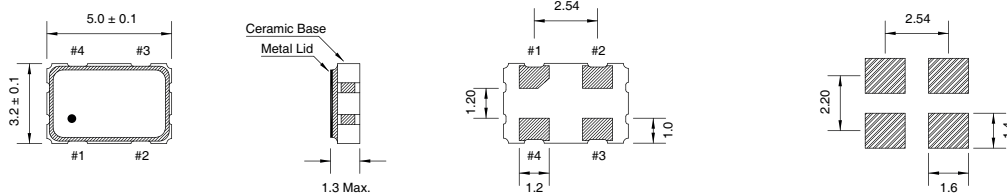
Frequency Range	1.000 to 155.520MHz	
Output Logic	HCMOS	
Temperature Stability*		±100ppm
		±50ppm
		±25ppm
		±20ppm
Phase Jitter RMS	<1ps typ.	
Aging per year	±5ppm	
Operating Temperature Range	Standard	-20 to +70°C
	Industrial	-40 to +85°C
	Extended	-40 to +105°C
	Automotive	-40 to +125°C
Storage Temperature 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	1.000 to 32.000MHz	7mA	10mA	15mA
	32.100 to 50.000MHz	15mA	12mA	20mA
	50.100 to 67.000MHz	-	-	25mA
	67.100 to 80.000MHz	-	-	25mA
	80.100 to 155.520MHz	-	-	40mA
Output Voltage	Logic High (Voh)	90% (80% at 1.8) Vdd min.		
	Logic Low (Vol)	10% (20% at 1.8) Vdd max.		
	Standard	40 to 60%		
	Tight	45 to 55%		
Output Current	Lol/Loh	±2mA min.		
Output Load		15pF max.		
Rise and Fall Time	1.000 to 32.000MHz	5ns max.	5ns max.	7ns max.
	32.100 to 50.000MHz	3.5ns max.	5ns max.	7ns max.
	50.100 to 67.000MHz	-	-	7ns max.
	67.100 to 80.000MHz	-	-	7ns max.
	80.100 to 155.520MHz	-	-	7ns max.
Standby Current		10µA max.		
Enable-Disable Function		Tri-State		
Output Disable Time		300ns max.	150ns max.	
Output Enable Time		10ms max.	10ms max.	
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

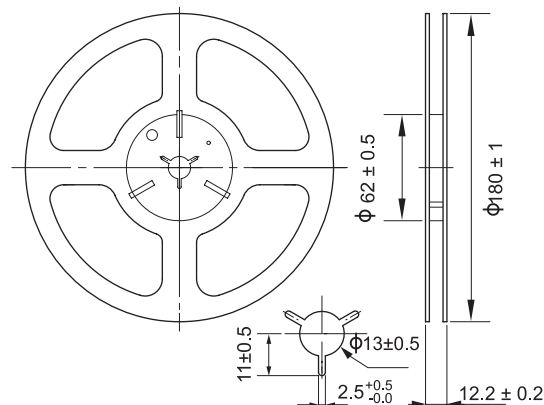
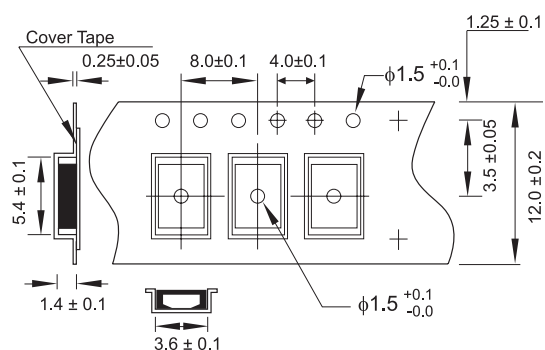
Part Numbering Guide

QT Code	Package	Supply Voltage	Frequency Stability	Frequency	Operating Temperature Range	Automotive Indicator	Load Capacitance	Tight Symmetry Indicator	Packaging
QT = Quartz-technik	X5 = 3.2x5.0	18 = 1.8V 25 = 2.5V 33 = 3.3V	A = ±25ppm B = ±50ppm C = ±100ppm D = ±20ppm	in MHz, always 7 digits including the decimal point (f.e. 20.0000)	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 30 = 30pF 50 = 50pF	T = 45/55	R = Tape&Reel M = Minireel (250pcs Tape&Reel) B = Bulk

Example: QTX533B20.0000B15R

bold letters = recommended standard specification

Tape and Reel Dimensions



Marking Code Guide

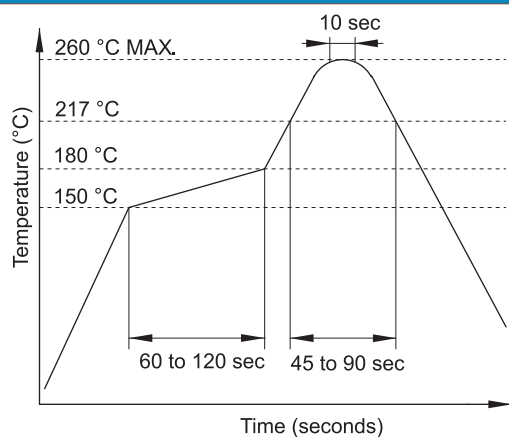
Contains frequency, Quarztechnik manufacturing Code, production code (month and year), stability, temperature range and voltage indicator.

Month Codes				Year Codes						Stability		Temperature Range		Voltage	
January	A	July	G	2010	0	2011	1	2012	2	ppm	PN Code	°C	PN Code	Volt	PN Code
February	B	August	H	2013	3	2014	4	2015	5	20	D	-20 to +70°C	A	1.8	1
March	C	September	I	2016	6	2017	7	2018	8	25	A	-40 to +85°C	B	2.5	2
April	D	October	J	2019	9	2020	0	2021	1	50	B	-40 to +105°C	C	3.3	3
May	E	November	K							100	C	-40 to +125°C	D	5.0	5
June	F	December	L							custom	S	custom	S	custom	S

Example: First Line: 20.000 (Frequency)

Second Line: QA4BB3 (Quarztechnik – January – 2014 – ±50ppm – -40 to +85°C – 3.3V)

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