



### 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

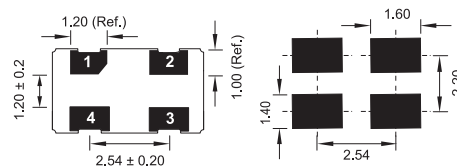
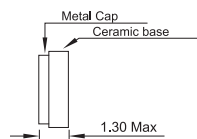
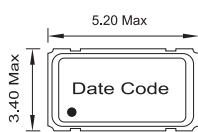
Frequency Range	1.000 to 155.520MHz	
Output Logic	HCMOS	
Temperature Stability*	±100ppm	
	±50ppm	
	±25ppm	
	±20ppm	
Phase Jitter RMS	<1ps typ.	
Aging per year	±5ppm	
Operating Temperature Range	Standard	-20°C - +70°C
	Industrial	-40°C - +85°C
	Extended	-40°C - +105°C
	Automotive	-40°C - +125°C
Storage Temperature Range	-55°C - +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		1.8 Vdd ± 5%	2.5 Vdd ± 5%	3.3 Vdd ± 5%
Input Current	1.000 to 32.000MHz	7mA	10mA	15mA
	32.100 to 50.000MHz	15mA	12mA	20mA
	50.100 to 67.000 MHz	-	-	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.		
Output Symmetry	Standard	40 to 60%		
	Tight	45 to 55%		
Output Current	Lol/Loh	±2 mA min.		
Output Load	15 pF 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 67.000 MHz	-	-	7ns max.
	67.100 to 80.000MHz	-	-	7ns max.
	80.100 to 155.520MHz	-	-	7ns max.
Standby Current	10 µA max.			
Enable-Disable Function	Tri-State			
Output Disable Time	300ns max.	150ns max.		
Output Enable Time	10ms max.	5ms max.		
Start Up Time	10 msm max.			

### Mechanical Dimensions



Pad 1 : E/D Pad 2 : GND  
Pad 4 : VDC Pad 3 : OUTPUT

Recommended Solder Pattern

### Part Numbering Guide

Quartz-technik Code	Package	Supply Voltage	Frequency Stability	Frequency	Operating Temperature Range	Automotive Indicator	Load Capacitance	Tight Symmetry Indicator	Packaging
QT = Quartz-technik	X5 = 3.2x5	18 = 1.8V 25 = 2.5V 33 = 3.3V	A = ±25ppm <b>B = ±50ppm</b> C = ±100ppm D = ±20ppm	in MHz, always 7 digits including the decimal point (f.i.e. 20.0000)	A = -20 - +70°C <b>B = -40 - +85°C</b> C = -40 - +105°C D = -40 - +125°C	A = AEC-Q200	<b>15 = 15pF</b> 30 = 30pF 50 = 50pF	T = 45/55	R = Tape&Reel M = Minireel (250 pcs Tape&Reel) B = Bulk

Example: QTX533B20.0000B15R

bold letters = recommended standard specification



QT Quartztechnik GmbH

Quartz Crystals • Oscillators • Sensor Technology

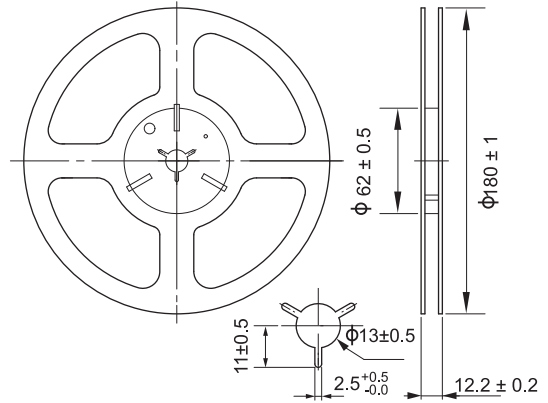
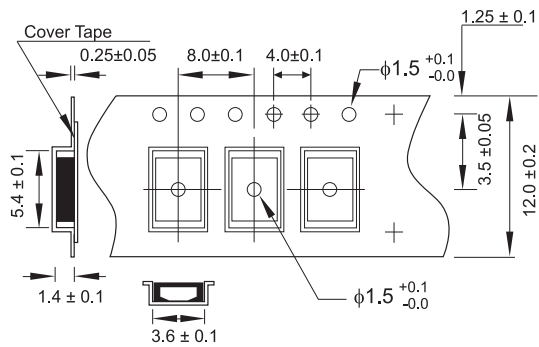
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### Tape and Reel Dimensions



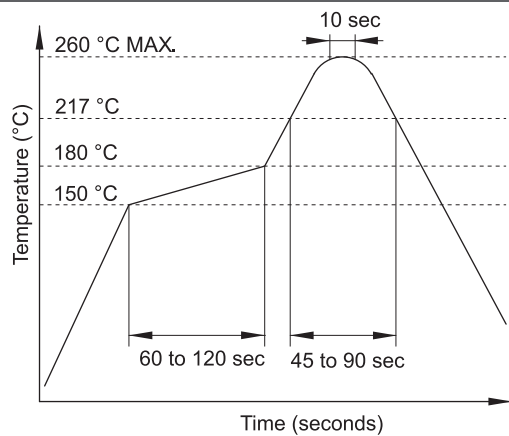
### Marking Code Guide

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

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

Example: First Line: 20.000 (Frequency) Second Line: QA1BB3 (Quartztechnik - January - 2011 - ±50PPM - -40°C - +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



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