

QX5 Series

3.2x5.0 SMD HCMOS Clock Oscillator

Features

- Ultra-miniature 3.2 x 5.0 x 1.3mm package
- Frequency Range 1.000 to 155.520MHz
- Tristate (Enable/Disable) function as standard
- Supply voltage 1.8, 2.5 or 3.3 Volts

Description

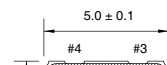
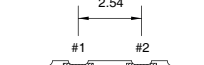
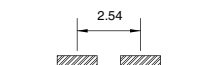
QX5 ultra-miniature oscillators consist of a TTL/HCMOS-compatible hybrid circuit and a miniature quartz crystal packaged in a low-profile, industry-standard ceramic package.



General Specifications		
Frequency Range		0.500 to 156.000MHz
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	0.500 to 20.000MHz	5mA	8mA	7mA
	20.100 to 32.000MHz	6mA	8mA	12mA
	32.100 to 50.000MHz	15mA	20mA	20mA
	50.100 to 80.000MHz	15mA	20mA	25mA
	80.100 to 156.000MHz	25mA	30mA	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	0.500 to 32.000MHz	5ns max.	5ns max.	10ns max.
	32.100 to 50.000MHz	5ns max.	5ns max.	10ns max.
	50.100 to 80.000MHz	4ns max.	4ns max.	8ns max.
	80.100 to 100.000MHz	3ns max.	3ns max.	5ns max.
	100.100 to 156.000MHz	3ns max.	3ns max.	4ns 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

Qantek Code	Package	Supply Voltage	Frequency Stability	Frequency	Operating Temperature Range	Automotive Indicator	Load Capacitance	Tight Symmetry Indicator	Packaging
Q = Qantek	X5 = 3.2x5.0	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: QX533B20.00000B15R

bold letters = recommended standard specification



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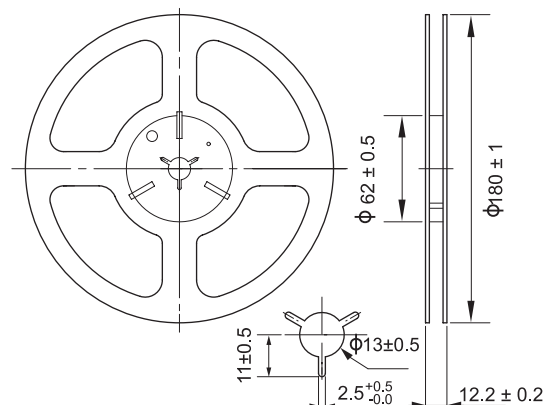
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Tape and Reel Dimensions



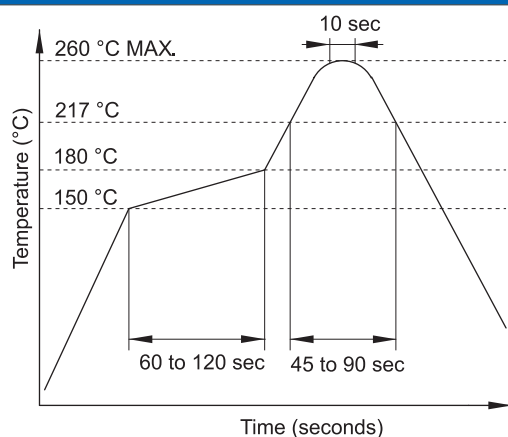
Marking Code Guide

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

Month Codes				Year Codes						Stability		Temperature Range		Voltage	
January	A	July	G	2019	9	2020	0	2021	1	ppm	PN Code	°C	PN Code	Volt	PN Code
February	B	August	H	2022	2	2023	3	2024	4	20	D	-20 to +70°C	A	1.8	1
March	C	September	I	2025	5	2026	6	2027	2	25	A	-40 to +85°C	B	2.5	2
April	D	October	J							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: QA9BB3 (Qantek – January – 2019 – $\pm 50\text{ppm}$ – -40 to $+85^{\circ}\text{C}$ – 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

All specifications are subject to change without notice.