



Features

- Low in height, suitable for thin equipment
- Ceramic package and metal lid assures high reliability
- Tight tolerance and stability available

Applications

- High density applications
- Modem, communication and test equipment
- PCMCIA, wireless applications
- Automotive applications

General Specifications	
Frequency Range	8.000 to 160.000MHz
Mode of Oscillation	Fundamental
	Third Overtone
Frequency Tolerance at 25°C	±10 to ±30ppm (±30ppm standard)
Frequency Stability over Temperature Range	See Stability vs. Temperature Table
Storage Temperature	-55 to +125°C
Aging per Year	±3ppm
Load Capacitance C_L	10 to 32pF and Series Resonance
Shunt Capacitance C_0	7.0pF max.
Equivalent Series Resistance (ESR)	See ESR Table
Drive Level	100µW typ.
Insulation Resistance (MΩ)	500 at 100Vdc ±15Vdc

Equivalent Series Resistance (ESR)		
Frequency Range - MHz	Ω max.	Mode of Operation
8.000 to 10.000	100	Fundamental
10.001 to 12.000	80	
12.001 to 16.000	70	
16.001 to 20.000	50	
20.001 to 60.000	40	Third Overtone
40.001 to 60.000	30	
40.000 to 80.000	100	
80.001 to 160.000	80	

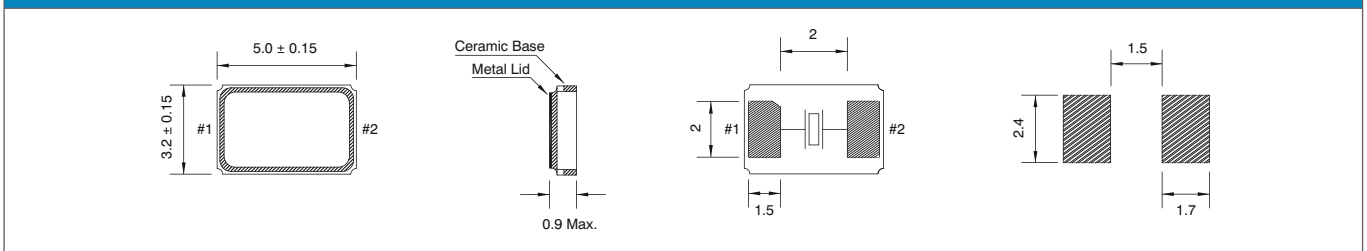
Frequency Stability vs. Temperature

Operating Temperature	±10ppm	±20ppm	±30ppm	±50ppm	±100ppm
-20°C - +70°C	○	○	○	○	○
-40°C - +85°C	○*	○	●	○	○
-40°C - +105°C	-	-	-	○	○
-40°C - +125°C	-	-	-	-	○

*Operating Temperature -30 to +85°C

● standard ○ available

Mechanical Dimensions



Part Numbering Guide

Quartz-technik Code	Package	Nominal Frequency (in MHz)	Vibration Mode	Load Capacitance	Frequency Tolerance	Operating Temperature Range	Frequency Stability	Automotive Indicator	Packaging
QT = Quartz-technik	CSB = 3.2x5 2-Pad SMD	7 digits including the decimal point (f.i.e. 12.0000)	F = AT-Fund	S = Series A = 8pF B = 12pF C = 16pF D = 18pF E = 20 pF	T1 = ±10ppm T2 = ±20ppm T3 = ±30ppm T5 = ±50ppm T0 = ±100ppm	C = -20 - +70°C I = -40 - +85°C E = -20 - +105°C A = -40 - +125°C	10 = ±10ppm 15 = ±15ppm 20 = ±20ppm 30 = ±30ppm 50 = ±50ppm 00 = ±100ppm	A = AEC-Q200	M = 250pcs Tape&Reel R = 1000pcs Tape&Reel B = Bulk

Example: QTC5B12.0000FBT3I30R

bold letters = recommended standard specification



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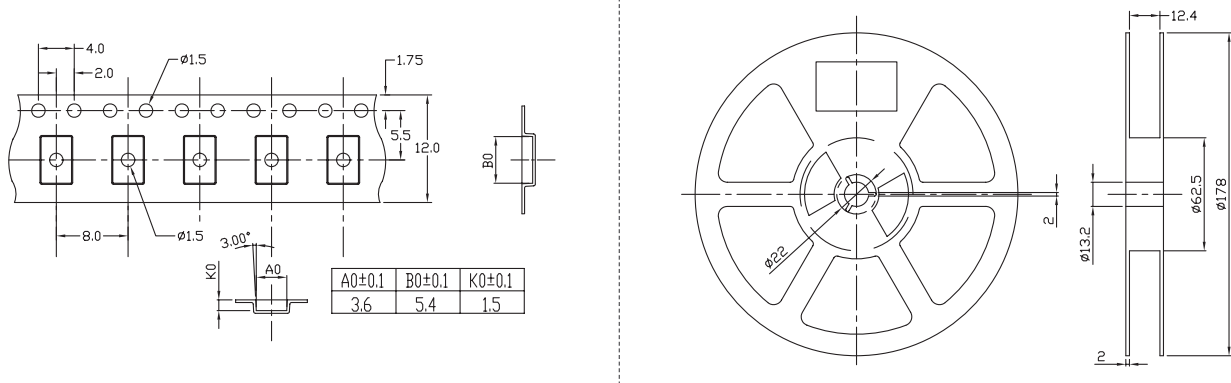
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Tape and Reel Dimensions



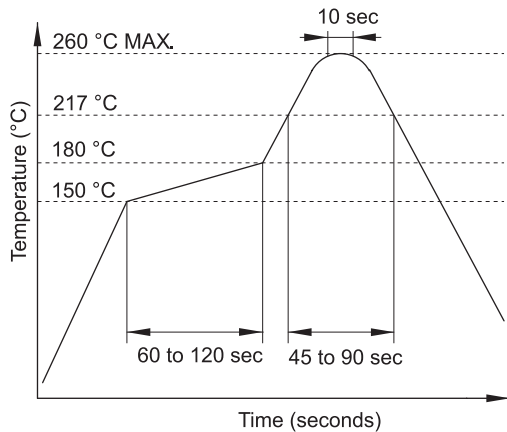
Marking Code Guide

Contains frequency, Quarztechnik manufacturing code, production code (month and year) and load capacitance.

Month Codes				Year Codes						Load Capacitance Code in pF			
January	A	July	G	2017	7	2018	8	2019	9	pF	PN Code	pF	PN Code
February	B	August	H	2020	0	2021	1	2022	2	12	A	20	F
March	C	September	I	2023	3	2024	4	2025	5	18	B	22	G
April	D	October	J							8	C	30	H
May	E	November	K							10	D	32	I
June	F	December	L							16	E	S	S

Example: First Line: 12.000 (Frequency) Second Line: QA4A (Quarztechnik - January - 2014 - 12 pF)

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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