



### 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

General Specifications	
Frequency Range	12.000 to 52.000MHz
Mode of Oscillation	Fundamental
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 max.
Load Capacitance $C_L$	10 to 32pF and Series Resonance
Shunt Capacitance $C_0$	5.0pF max.
Equivalent Series Resistance (ESR)	See ESR Table
Drive Level	100µW max.
Insulation Resistance ( $M\Omega$ )	500 at 100Vdc ±15Vdc

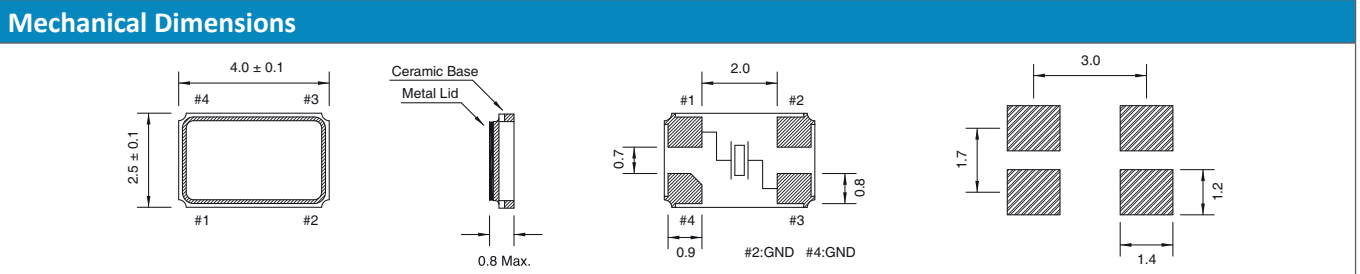
Equivalent Series Resistance (ESR)		
Frequency Range - MHz	$\Omega$ max.	Mode of Operation
12.000 to 15.000	80	Fundamental
15.100 to 20.000	60	
20.100 to 30.000	40	
30.100 to 52.000	30	

custom values available upon request

Frequency Stability vs. Temperature					
Operating Temperature	±10ppm	±20ppm	±30ppm	±50ppm	±100ppm
-20 to +70°C	○	○	○	○	○
-40 to +85°C	○*	○	●	○	○

\*Operating Temperature -30 to +85°C

● standard ○ available



### Part Numbering Guide

Quarz-technik Code	Package	Nominal Frequency (in MHz)	Vibration Mode	Load Capacitance	Frequency Tolerance	Operating Temperature Range	Frequency Stability	Automotive Indicator	Packaging
QT = Quarz-technik	C4A = 2.5x4 4-Pad SMD	7 digits including the decimal point (f.i.e. 12.0000)	F = AT-Fund	S = Series A = 8pF <b>B = 12pF</b> C = 16pF D = 18pF E = 20 pF	T1 = ±10ppm T2 = ±20ppm <b>T3 = ±30ppm</b> T5 = ±50ppm T0 = ±100ppm	C = -20 - +70°C I = -40 - +85°C	10 = ±10ppm 15 = ±15ppm 20 = ±20ppm <b>30 = ±30ppm</b> 50 = ±50ppm 00 = ±100ppm	not available	M = 250pcs Tape&Reel R = 1000pcs Tape&Reel B = Bulk

Example: QTC4A12.0000FBT3I30R

bold letters = recommended standard specification



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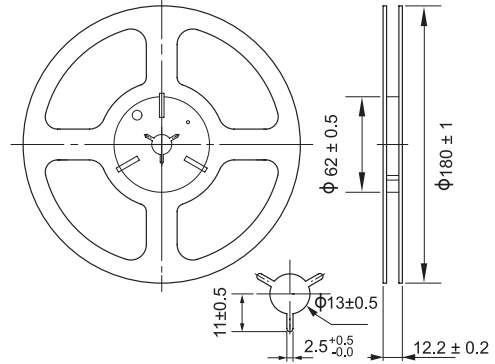
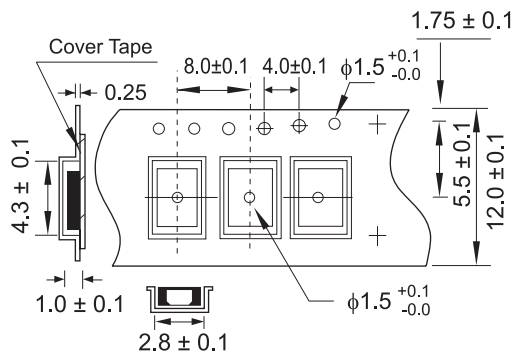
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### Tape and Reel Dimensions



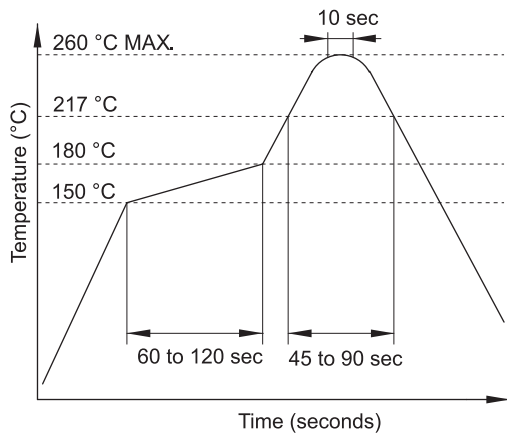
### Marking Code Guide

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	2010	0	2011	1	2012	2	pF	PN Code	pF	PN Code
February	B	August	H	2013	3	2014	4	2015	5	12	A	20	F
March	C	September	I	2016	6	2017	7	2018	8	18	B	22	G
April	D	October	J	2019	9	2020	0	2021	1	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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