

### Features

- High reliability and Low Cost
- Tight stability and extended temperature
- Proven resistance welded metal package

### Applications

- Computers, modems and communications
- Microprocessors

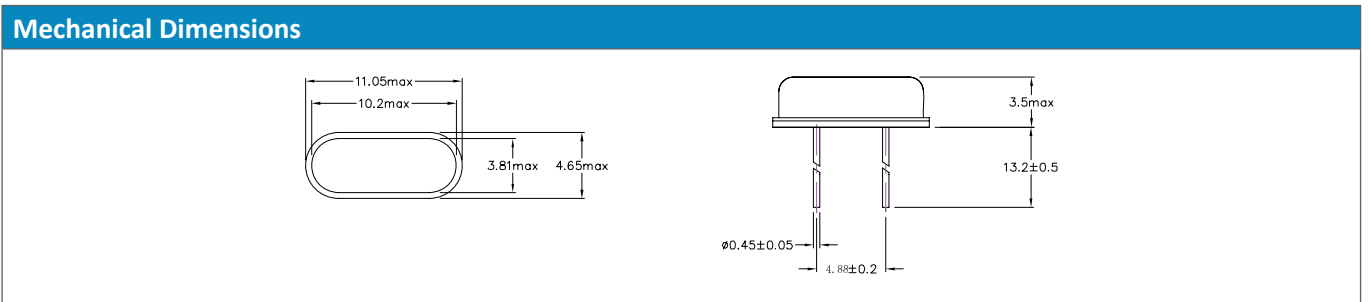
General Specifications	
Frequency Range	3.200 to 70.000MHz
Mode of Oscillation	Fundamental 3.200 to 32.768MHz
	Third Overtone 24.576 to 70.000MHz
Frequency Tolerance at 25°C	±10 to ±30ppm (±30ppm standard)
Frequency Stability over Temperature Range	See Stability vs. Temperature Table
Storage Temperature	-55 to +125°C
Aging per Year	±3ppm max.
Load Capacitance $C_L$	10 to 32pF and Series Resonance
Shunt Capacitance $C_0$	7.0pF
Equivalent Series Resistance (ESR)	See ESR Table
Drive Level	1.0mW max.
Insulation Resistance (MΩ)	500 at 100Vdc ±15Vdc

Equivalent Series Resistance (ESR)		
Frequency Range - MHz	Ω max.	Mode of Operation
3.200 to 3.500	300	Fundamental
3.510 to 3.999	200	
4.000 to 5.999	120	
6.000 to 7.999	80	
8.000 to 9.999	60	
10.000 to 15.999	50	
16.000 to 32.768	40	Fundamental - Third Overtone
24.576 to 70.000	80	

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									
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	CL = HC-49/U-S (Short)	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	10 = ±10ppm 15 = ±15ppm 20 = ±20ppm 30 = ±30ppm 50 = ±50ppm 00 = ±100ppm	not available	M = 250pcs Tape&Reel R = 1000pcs Tape&Reel B = Bulk

Example: QTCL12.0000FBT3I30R bold letters = recommended standard specification



Quarztechnik Daun GmbH

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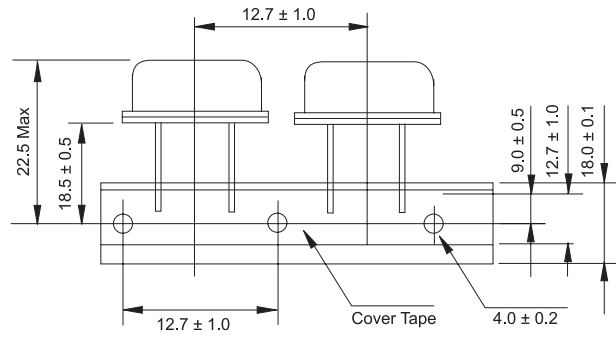
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Reg.-Nr. 4923



Tape Dimensions



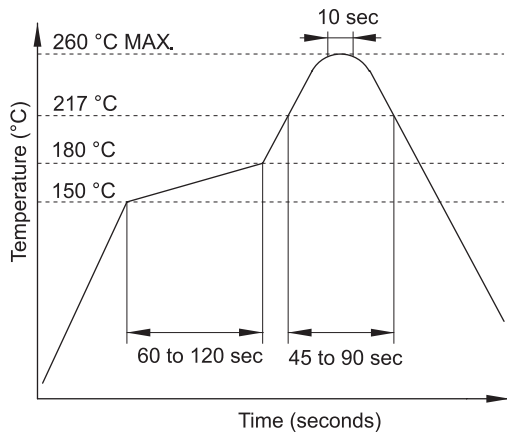
Marking Code Guide

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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