



Specification: QTC-HC49U

Crystal unit: HC-49/U

TABLE 1

ENCLOSURE	H [mm]	CODE	
HC 49/U	13,2	20	
	10,6	21	starting with 4 MHz
	9,2	22	starting with 10 MHz



Metal housing: Resistance weld  
Inert gas N<sub>2</sub>/He  
Laser engraving

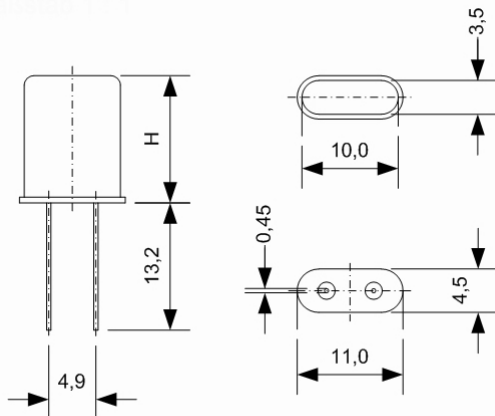


TABLE 2

	1,8 ... 250 MHz	UNIT	CONDITION
Frequency range	1,8 - 250	MHz	
Crystal cut	AT		
Enclosure	HC-49/U		
Mode	1. 1,8 - 40 3. 15 - 100 5. 45 - 160 7. 100 - 210 9. 140 - 250	MHz MHz MHz MHz MHz	Fundamental mode 3 <sup>rd</sup> overtone 5 <sup>th</sup> overtone 7 <sup>th</sup> overtone 9 <sup>th</sup> overtone
Load capacitance	10 - 60 pF or Series	pF	
Shunt capacitance	1,8 - 4,0 MHz: < 3,0 pF 4,0 - 10 MHz: < 5,0 pF 10 - 250 MHz: < 7,0pF	pF	
Motional capacitance			
Resistance R <sub>R</sub>			see table 5
Frequency adjustment			see table 3
Nominal temperature and temp. tolerance			see table 4
Aging 1 <sup>st</sup> year	< 2,0 - 3,0	ppm	
Shock	100g / 6ms		
Vibration	10g <sub>ss</sub> / 1,5mm <sub>ss</sub> 50 - 500 Hz		
Δf / f	< 5	ppm	
ΔR / R	< 20 %		



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**TABLE 3**

FREQUENCY ADJUSTMENT AT +25 ± 2°C	FREQUENCY [MHz]					
	1,8 ... 40	15 ... 100	45 ... 160	100 ... 210	140 ... 250	CODE
Mode	1	3	5	7	9	
Frequency adjustment / ppm	± 3	± 3	± 3			C1
	± 5	± 5	± 5	± 5	± 5	E1
	± 10	± 10	± 10	± 10	± 10	J1
	± 20	± 20	± 20	± 20	± 20	B2
	± 50	± 50	± 50	± 50	± 50	H2

**TABLE 4**

FREQUENCY STABILITY OVER TEMPERATURE RELATED TO +25°C		FREQUENCY DEVIATION / ppm							
1,8 ... 4,0 MHz: +		± 3	± 5	± 7	± 10	± 20	± 25	± 30	± 50
4,0 ... 6,0 MHz: x									
6,0 ... 250 MHz: o									
Temperature range	Code	03	05	07	10	12	13	14	20
0 ... + 50°C	B	o	xo	+xo	+xo	+xo	+xo	+xo	+xo
- 10 ... + 60°C	H	o	xo	xo	+xo	+xo	+xo	+xo	+xo
- 20 ... + 70°C	M		o	xo	xo	+xo	+xo	+xo	+xo
- 30 ... + 80°C	R			o	xo	xo	xo	+xo	+xo
- 40 ... + 90°C	U				o	xo	xo	+xo	+xo
- 55 ... + 105°C	W						o	xo	+xo
- 55 ... + 125°C	X							o	xo

**TABLE 5**

MAX. RESISTANCE R <sub>R</sub>	MODE	FREQUENCY [MHz]	R <sub>RMAX</sub> [Ω]
	1	1,8 - 2,0	500
		2,0 - 3,0	300
		3,0 - 5,0	120
		5,0 - 12	40
		12 - 40	15
	3	10 - 20	30
		20 - 100	22
	5	45 - 55	70
		55 - 160	50
	7	100 - 210	100
		140 - 250	180

**TABLE 6**

ORDERING CODE <sup>(1)</sup>	FREQUENCY [MHz]	ENCLOSURE CODE: TABLE 1	MODE: 1: FUND. 3,5,7,9: OT TABLE 2	LOAD CAP.: 00: SERIES 32:32 pF TABLE 2	ADJ. TOLERANCE CODE: TABLE 3	TEMP. RANGE CODE: TABLE 4	FREQ: STAB. OVER TEMP. CODE: TABLE 4	SHUNT CAPACITANCE 25: 2,5pF TABLE 2
	12,8	20	1	32	J1	M	10	25

<sup>(1)</sup> Other specifications on request