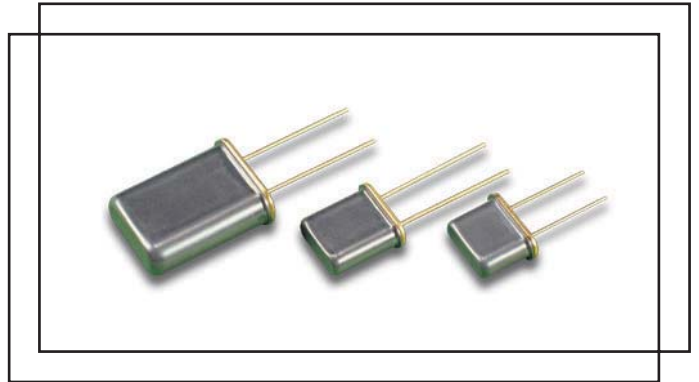


UM-1, UM-5, HC-49 precision crystals (1.80 ~ 250)MHz

- # fundamental to 160.0MHz
- # AT cut quartz
- # precision tolerances
- # standard and custom frequencies



Electrical specification

Case style	UM-1: height 8.0mm, UM-5: height 6.00mm, HC-49/U: height 13.50mm
Frequency range	UM-1: (4.0 ~ 250.0)MHz, fundamental to 160.0MHz UM-5: (10.0 ~ 250.0)MHz, fundamental to 52.0MHz HC-49/U: (1.80 ~ 250.0)MHz, fundamental to 52.0MHz
Adjustment tolerance	from ± 5 ppm at +25°C, frequency dependent
Temperature tolerance	from ± 3 ppm, frequency and temperature range dependent
Operating temperature	(-10 +60)°C ~ (-40 +105)°C
Storage temperature	(-40 +125)°C ~ (-55 + 125)°C (on request)
Load	(4 ~ 120)pF or series
Shunt capacitance C_0	5.0pF max.
Drive level	10 μ W ~ 2.0milli.W typical (frequency dependent)
Q factor	100,000 typical
Ageing	± 1 ppm first year max.
Insulation resistance	500Meg. ohm min. at+100Vd.c.

Ordering information

UM-1, UM-5 and HC-49 crystals may be specified within their available frequency range together with load capacitance, adjustment tolerance, temperature tolerance and temperature range with each parameter coded within the part number. These crystals can also be supplied to custom specifications including pre-ageing and for specialist applications in VCXO designs and with pre-formed leads for smd assembly.

Example UM-1 crystal, 24.00MHz, load 20pF, ± 5 ppm at +25°C, ± 5 ppm(-20 +70)°C

TFC PART NUMBER XH 24.00M H A A C

'XH' crystal series: XH = UM-1, XG = UM-5, XF = HC-49/U

'24.00M' frequency: 24.00M = 24.00MHz, frequency range from (1.80 ~ 250)MHz

'H' load capacitance: H = 20pF

'A' adjustment tolerance at +25°C: A = ± 5 ppm

'A' temperature tolerance: A = ± 5 ppm

'C' temperature range: C = (-20 +70)°C

Load capacitance C: 10pF, D: 12pF, E: 15pF, G: 18pF, H: 20pF, I: 30pF, J: 32pF, S: series

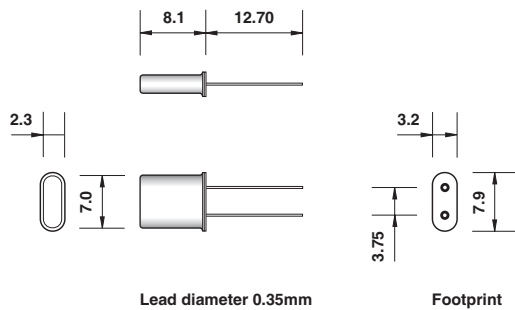
Adjustment tolerance A: ± 5 ppm, B: ± 10 ppm, C: ± 20 ppm, E: ± 30 ppm, G: ± 50 ppm, H: ± 100 ppm, P: ± 15 ppm

Temperature tolerance A: ± 5 ppm, B: ± 10 ppm, C: ± 20 ppm, E: ± 30 ppm, G: ± 50 ppm, H: ± 100 ppm, P: ± 15 ppm

Temperature range B: (0 +55)°C, I: (-10 +60)°C, C: (-20 +70)°C, L: (-40 +85)°C

UM-1, UM-5, HC-49 precision crystals

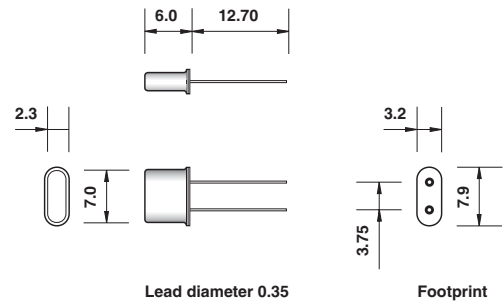
UM1 (HC-52/U) dimensions(mm)



UM-1 equivalent series resistance

frequency range(MHz)	cut/mode	esr(Ω)
4.00 ~ <7.00	AT1	<150
7.00 ~ <11.5	AT1	<90
11.5 ~ <50.0	AT1	<45
50.0 ~ 160	AT1	<30
20.0 ~ <48.0	AT3	<80
48.0 ~ 100	AT3	<70
50 ~ 160	AT5	<120
80 ~ 250	AT7	<190

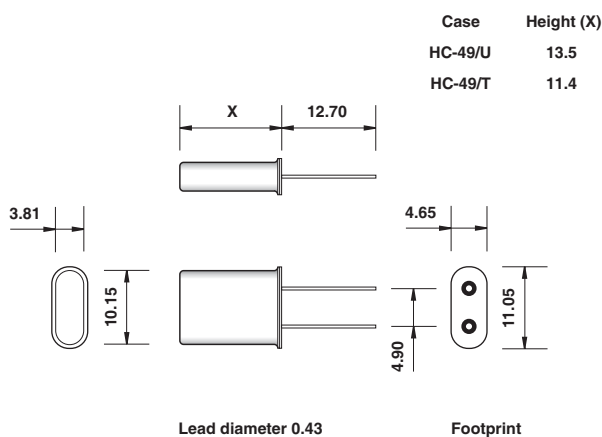
UM-5 dimensions(mm)



UM-5 equivalent series resistance

frequency range(MHz)	cut/mode	esr(Ω)
10.0 ~ <11.5	AT1	<60
11.5 ~ <13.0	AT1	<50
13.0 ~ <50.0	AT1	<45
25.0 ~ <48.0	AT3	<90
48.0 ~ 135	AT3	<80
60 ~ 200	AT5	<120
100 ~ 250	AT7	<200

HC-49/U & HC49/T dimensions(mm)



HC-49 equivalent series resistance

frequency range(MHz)	cut/mode	esr(Ω)
1.80 ~ <3.00	AT1	<650
3.00 ~ <3.50	AT1	<350
3.50 ~ <4.00	AT1	<150
4.0 ~ <5.0	AT1	<100
5.0 ~ <6.0	AT1	<60
6.0 ~ <7.0	AT1	<50
7.0 ~ 50.0	AT1	<45
18.0 ~ <25.0	AT3	<60
25.0 ~ <48.0	AT3	<50
48.0 ~ <100	AT3	<40
75 ~ 160	AT5	<100
80 ~ 200	AT7	<150
100 ~ 250	AT9	<200