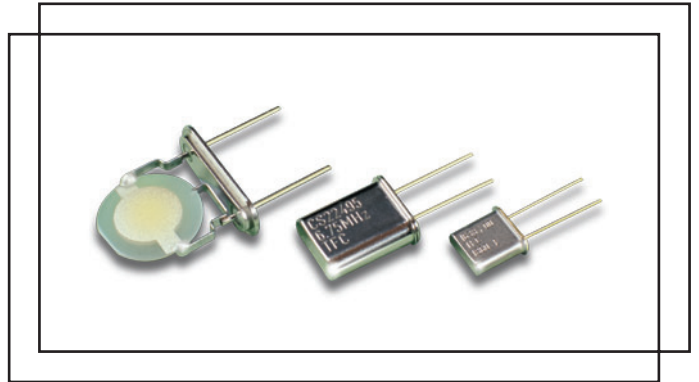


## LF crystal units

### Very low frequency

### 100kHz ~ 1.8432MHz

- # standard and custom frequencies
- # UM-1, HC-49, HC-51 packages
- # BT, CT, GT cuts



The production of low frequency quartz crystal units requires the use of specific cuts and blank designs to achieve a reasonably small unit size. These cuts may be BT, CT, GT etc and the blanks may be co-planar, contoured or photo-etched. Oscillation mode is always fundamental. These combinations produce ESR values significantly higher than the conventional AT cut.

### Electrical specification

Case style	UM-1	HC-49/U	HC-51/U
Frequency range	455kHz ~ 1.8432MHz	200kHz ~ 1.8432MHz	100kHz ~ 1.0MHz
Adjustment tolerance		±100ppm at +25°C	
Temperature tolerance		±100ppm	
Operating temperature		(-10 +60)°C	
Storage temperature		(-40 +85)°C	
Load		customer specified	
Shunt capacitance $C_0$		7.0pF max.	
Drive level		(0.5 ~ 10)mili.W	
Q factor		80,000 typical	
Ageing		±5ppm first year max.	
Insulation resistance		500Meg. ohm min. at+100Vd.c.	

### Ordering information

Low frequency quartz crystals are available to a limited range of adjustment and temperature tolerance and may be specified as follows ....

**Example .... LF crystal, 1.8432MHz, load 20pF, ±100ppm at +25°C, ±100ppm(-10 +60)°C**

**TFC PART NUMBER .... XLF 1.8432M H U**

'XLF' .... crystal series: LF

'1.8432M' .... frequency: 1.8432M = 1.8432MHz, frequency range from 100kHz ~ 1.8432MHz

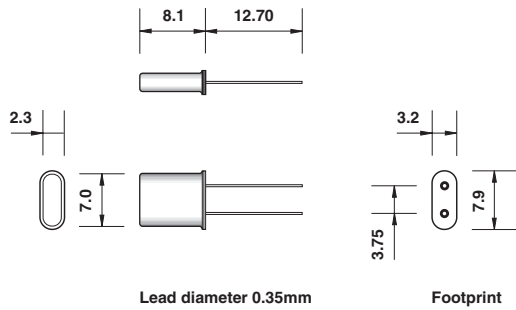
'H' .... load: H = 20pF

'U' .... case style: U = UM-1, 49 = HC-49/U, 51 = HC-51/U

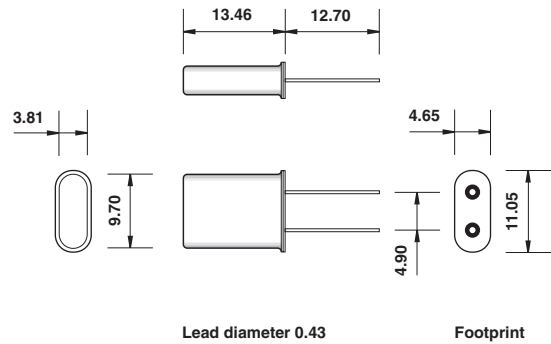
**Load capacitance .... C: 10pF, D: 12pF, E: 15pF, G: 18pF, H: 20pF, I: 30pF, J: 32pF, S: series**

## LF crystal units

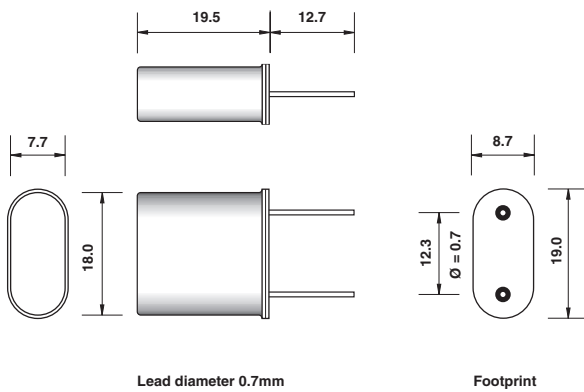
### UM-1 dimensions(mm)



### HC-49/U dimensions(mm)



### HC-51/U dimensions(mm)



### ESR - equivalent series resistance

	frequency range(MHz)	esr( $\Omega$ )
<b>UM-1</b>	(455 ~ 799)kHz	<4k
	800kHz ~ 1.27MHz	<3k
	1.8432MHz	<900
<b>HC-49/U</b>	(200 ~ 300)kHz	<5k
	(301 ~ 900)kHz	<3k
	901kHz ~ 1.8432MHz	<900
<b>HC-51/U</b>	(100 ~ 179)kHz	<5k
	(180 ~ 400)kHz	<3k
	(401 ~ 900)kHz	<2k
	900kHz ~ 1.0MHz	<900