

- Frequency range 16MHz to 60MHz, fundamental mode
- Ultra-miniature package 2.5 x 2.0 x 0.6mm
- Packaged in standard EIA tape and reel
- Ideal for PDAs, hand-held GPS, PCMCIA etc.



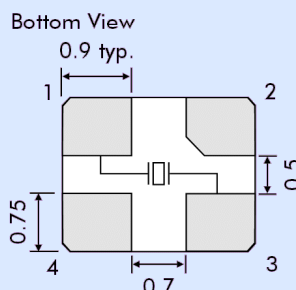
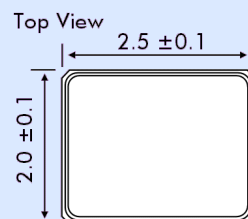
### DESCRIPTION

X22 crystals are ultra-miniature AT-cut crystals covering the frequency range 16MHz to 54MHz in fundamental mode. Their small size and low mass makes these crystals ideal for miniaturized hand-held equipment and similar high-density applications.

### SPECIFICATION

Frequency Range	
AT-Cut Fundamental:	16.0MHz to 60.0MHz
Calibration Tolerance at 25°C:	±10ppm, ±20ppm, ±30ppm
Frequency stability	
-10° to +60°C	from ±10ppm (±5ppm available)
-20° to +70°C	from ±10ppm
-40° to +85°C	from ±15ppm
Storage Temperature:	-50°~+105°C
Equivalent Series Resistance:	See table
Shunt Capacitance (C0):	2pF to 4pF typical, 5pF maximum
Load Capacitance (CL):	Series or from 9pF to 32pF
Ageing:	<±2ppm per year at +25°C
Drive level:	50 microWatt, 100 microW max.
Reflow Soldering:	10s maximum at 260°C twice or 180s at 230°C, once.
Packaging:	EIA tape and reel

### OUTLINE & DIMENSIONS

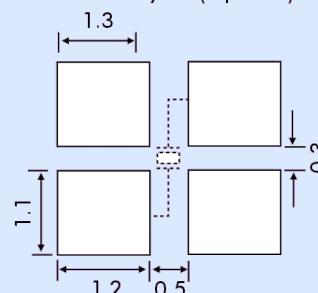


#### Pad Connections

Pad 1 & 3: Crystal  
Pad 2 & 4: Ground  
Connected to metal lid

Chamfered pad is Pad 2

#### PCB Layout (top view)



### EQUIVALENT SERIES RESISTANCE

Frequency Range MHz	ESR Ω Max.
16.0~21.0	120
21.0~26.0	80
26.1~60.0	60

### PART NUMBER GENERATION

Part numbers for X22 crystals are generated as follows:

Example: 20.000MHz X22/10/30/-10+60/12pF/80R

