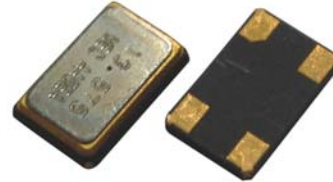


- Gold-plated ceramic base with metal lid seam welded package
- Extremely low aging. Specifically designed for hand-held communication equipment, PDAs, GPS and Bluetooth.
- High shock and vibration resistance.



**SPECIFICATIONS**

<b>Crystal Holder Prefix ①:</b>	<b>X42 series</b>		
<b>Frequency Range ②:</b>	12.0 ~50.0 MHz AT-cut Fundamental mode		
<b>Calibration Tolerance : ④</b>	±5 ppm (±0.0005 %), or ±10 ppm (±0.001 %), or ±30 ppm (±0.003 %) at 25°C		
<b>Frequency Stability : ⑤</b>	±5 ppm (±0.0005 %); or ±10 ppm (±0.001 %) ;or ±30 ppm (±0.003 %)		
<b>Operating Temperature Range ⑥</b>	-20°C to +70°C. or -30°C to +85°C		
<b>Shunt Capacitance (Co):</b>	2.0~4.0 pF typical, 5 pF maximum		
<b>Equivalent Series Resistance: (E.S.R.) ⑦</b>	<b>Frequency</b>	<b>Vibration Mode</b>	<b>E.S.R. max.</b>
	12.0~20.0	AT fundamental	80 Ω
	20.01~50.0	AT fundamental	60 Ω
<b>Load Capacitance (C<sub>L</sub>) ⑧ :</b>	Series (S)		
	Parallel: Please specify C <sub>L</sub> value, typical C <sub>L</sub> ranges from 10 to 32pF)		
<b>Drive Level:</b>	100 μW max.		
<b>Aging:</b>	Less than ±3 ppm per year at +25°C		
<b>Reflow Soldering:</b>	10 seconds maximum at +260°C two times or 180 seconds at 230°C one time		

**Note:** Tighter tolerance, tighter stability and lower ESR are available.

**MERCURY** [www.mercury-crystal.com](http://www.mercury-crystal.com)

Taiwan: TEL (886)-2-2406-2779, FAX (886)-2-2496-0769, e-mail: [sales-tw@mercury-crystal.com](mailto:sales-tw@mercury-crystal.com)

U.S.A.: TEL (1)-909-466-0427, FAX (1)-909-466-0762, e-mail: [sales-us@mercury-crystal.com](mailto:sales-us@mercury-crystal.com)



**STANDARD FREQUENCIES AND PART NUMBERS** (partial frequency list only. Frequency tolerance, frequency stability and ESR can be specified per your requirements).

MEC Part Number	MEC Specification Code	MEC Part Number	MEC Specification Code
X42-12.800-12P	20/20/-20+70/80R	X42-27.000-10P	20/20/-20+70/60R
X42-13.000-16P	20/20/-20+70/80R	X42-28.375-10P	20/20/-20+70/60R
X42-14.318-18P	20/20/-20+70/80R	X42-28.63636-10P	20/20/-20+70/60R
X42-16.000-16P	20/20/-20+70/80R	X42-29.4912-10P	20/20/-20+70/60R
X42-16.384-16P	20/20/-20+70/80R	X42-30.000-10P	20/20/-20+70/60R
X42-18.432-16P	20/20/-20+70/80R	X42-32.000-10P	20/20/-20+70/60R
X42-19.200-16P	20/20/-20+70/80R	X42-32.768-10P	20/20/-20+70/60R
X42-20.000-20P	20/20/-20+70/80R	X42-33.000-10P	20/20/-20+70/60R
X42-22.2184-10P	20/20/-20+70/60R	X42-35.2512-S	20/20/-20+70/60R
X42-24.000-10P	20/20/-20+70/60R	X42-40.000-10P	20/20/-20+70/60R
X42-24.576-10P	20/20/-20+70/60R	X42-44.000-S	20/20/-20+70/60R
X42-25.000-10P	20/20/-20+70/60R	X42-48.000-S	20/20/-20+70/60R

**ENVIRONMENTAL AND MECHANICAL SPECIFICATIONS**

<b>Green Requirement</b>	RoHS compliant and Pb (lead free)
<b>Storage Temperature</b>	-40°C to +85°C
<b>Gross Leak</b>	1 Kg Pressurized water immersion test per Mercury internal procedures
<b>Fine Leak</b>	< 5 x10 <sup>-8</sup> atm cc /sec by helium leak check
<b>Shock</b>	±5 ppm max. Free drop 3 times from 75 cm height onto a hard wooden board or half sine wave acceleration of 100G peak amplitude for 11 m. sec. duration, 3 cycles each plane.
<b>Vibration</b>	±5 ppm max. Frequency:10 to 55 Hz, amplitude: 1.5 mm or 10 Gs rms. Duration: 6 hours.
<b>Solderability</b>	MIL-STD-883, Method 2003
<b>Humidity</b>	After 48 hours at 85°C, 85% relative humidity non-condensing
<b>Thermal Shock</b>	Temperature cycling: Exposed at -40°C for 30 minutes then to +85°C for 30 minutes for duration of 5 days
<b>Marking Permanency</b>	MIL-STD-202, Method 215. Laser engraved.
<b>Insulation Resistance</b>	500 MΩ min. at 100 V±15 V DC

**HOW TO ORDER:**

**Complete Part Number** = Mercury part number + Mercury spec. code.  $\varnothing$  = Please specify

**Example:** X42-16.000-16P-20/20/-20+70/580R-option

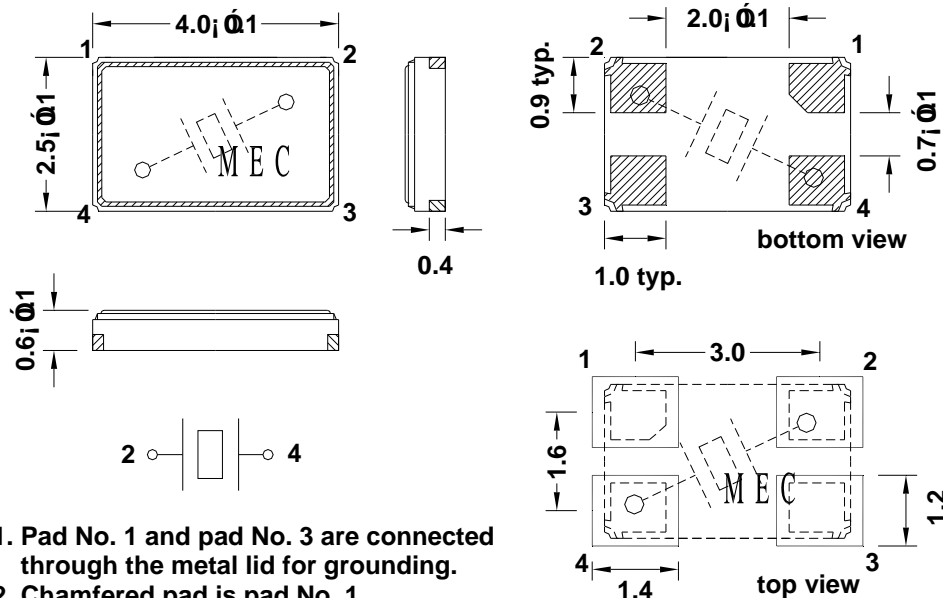
**Explanation:** X42 series crystal, 16.000 MHz, 16 pF load capacitance,  $\pm 20$  ppm frequency tolerance,  $\pm 20$  ppm frequency stability over -20 to +70°C, ESR is 80 ohms max.

	$\varnothing$	$\varnothing$	$\varnothing$		$\varnothing$		$\varnothing$		$\varnothing$		$\varnothing$
X42-	16.000	—	16P	—	20	/	20	/	-20+70	/	80R
<b>1</b>	<b>2</b>		<b>3</b>		<b>4</b>		<b>5</b>		<b>6</b>		<b>7</b>

- 1:** Crystal package prefix
- 2:** Frequency in MHz
- 3:** Load Capacitance (Use “S” for series; use “\_P” for parallel load capacitance)
- 4:** Frequency Tolerance at +25°C
- 5:** Frequency stability over operating temperature range
- 6:** Operating temperature range
- 7:** ESR (Equivalent Series Resistance in ohms) max.

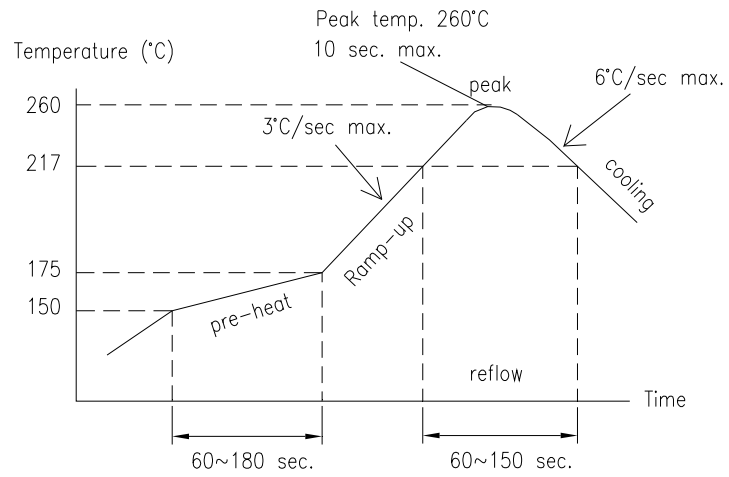
**PACKAGE DIMENSIONS AND SUGGESTED PAD LAYOUT**

Unit: mm [inches]



- 1. Pad No. 1 and pad No. 3 are connected through the metal lid for grounding.
- 2. Chamfered pad is pad No. 1.
- 3. Count clockwise when looking at top view.
- 4. Count counter-clockwise when looking at bottom view.

**RECOMMENDED REFLOW SOLDERING PROFILE:**



**TAPE AND REEL SPEC.:**

**1000 pcs per reel.**

**unit: mm**

