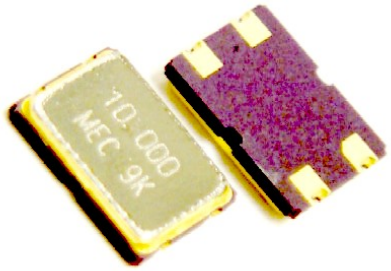
RoHS Compliant Product by Mercury

- 1.2 mm height. Best suited for space constraint applications such as PCMCIA.
- Fine product due to our expertise in miniaturization.
- To minimize the EMI the whole package can be groundec through the kovar lid and the two non-crystal pads.
- ±10ppm tight tolerance is available for telecommunicatior applications.
- RoHS compliant, lead free product



ELECTRICAL SPECIFICATIONS

Crystal Holder Prefix❶		**MQ** series				
Mode of Vibration ❷❸		8.0 ~50.0 MHz: AT-cut Fundamental mode 40.0~100.0 MHz: AT-cut 3rd Overtone mode				
Calibration Tolerance❺		From ±10 ppm (±0.001 %) to ±30 ppm (±0.003 %) at 25°C				
Frequency Stability❻❼		From ±5 ppm (±0.0005 %) to ±30 ppm (±0.003 %) over –10 to +60°C				
Equivalent Series Resistance (E.S.R.)❽	**Frequency**	**Vibration Mode**	**E.S.R. max.**	**Frequency**	**Vibration Mode**	**E.S.R. max.**
	8.0 ~ 11.0	AT funda.	60 Ω	40.0 ~ 50.0	AT 3rd	80 Ω
	11.01 ~ 14.0	AT funda.	50 Ω	50.1 ~ 100.0	AT 3rd	80 Ω
	14.01 ~ 50.0	AT funda.	40 Ω			
Load Capacitance (C_L)❹		Series: (**S**)				
		Parallel: Please specify C_L value, typical C_L ranges from 10 to 32 pF)				
Shunt Capacitance (Co)		2.0 ~ 4.0 pF typical, 7pF maximum				
Drive Level		100 µW maximum				
Aging		Less than ±5ppm per year at +25°C				

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

ENVIRONMENTAL AND MECHANICAL SPECIFICATIONS

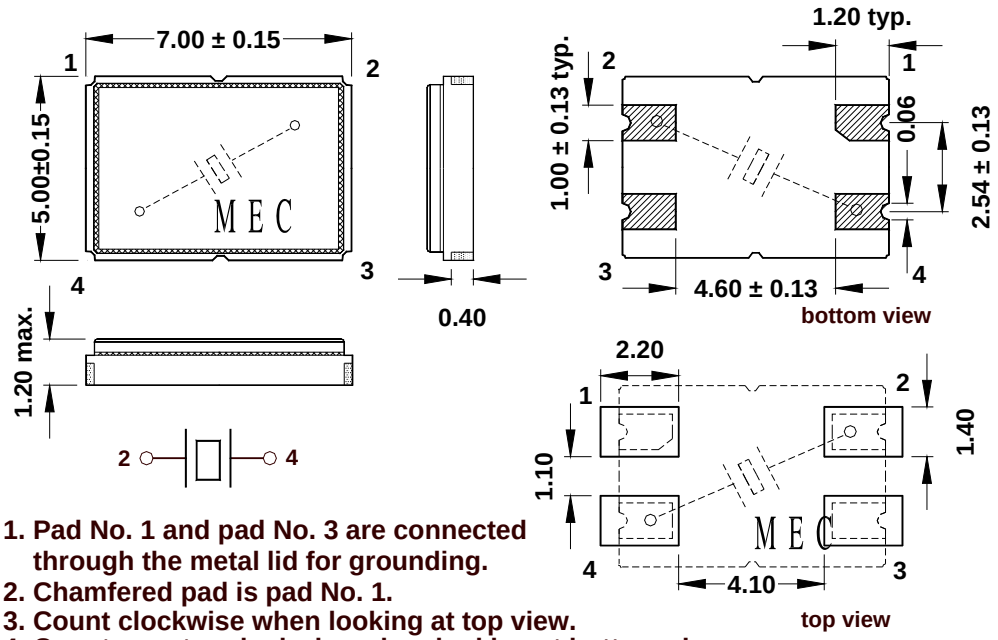
Green Requirement	RoHS compliant and Pb (lead free)
Storage Temperature	-40°C to +85°C
Gross Leak	1 Kg Pressurized water immersion test per Mercury internal procedures
Fine Leak	< 5 x10^{-8} atm cc /sec by helium leak check
Shock	±5 ppm max. Free drop 3 times from 75 cm height onto a hard wooden board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

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
MQ-10.000-16P	30/50/-10+60/60R	MQ-20.2752-16P	30/50/-10+60/40R
MQ-11.0592-16P	30/50/-10+60/50R	MQ-24.000-16P	30/50/-10+60/40R
MQ-12.000-16P	30/50/-10+60/50R	MQ-24.00014-16P	30/50/-10+60/40R
MQ-14.31818-16P	30/50/-10+60/40R	MQ-29.4912-16P	30/50/-10+60/40R
MQ-14.7456-16P	30/50/-10+60/40R	MQ-30.000-16P	30/50/-10+60/40R
MQ-16.000-16P	30/50/-10+60/40R	MQ-32.000-16P	30/50/-10+60/40R
MQ-16.000312-16P	30/50/-10+60/40R	MQ-36.000-16P	30/50/-10+60/40R
MQ-18.432-16P	30/50/-10+60/40R	MQ-40.000AF-16P	30/50/-10+60/40R
MQ-19.6608-16P	30/50/-10+60/40R	MQ-40.000A3-S	30/50/-10+60/80R (AT 3rd O/T)
MQ-20.000-16P	30/50/-10+60/40R	MQ-40.320A3-S	30/50/-10+60/80R (AT 3rd O/T)

PACKAGE DIMENSIONS AND SUGGESTED PAD LAYOUT

Unit: mm



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.**

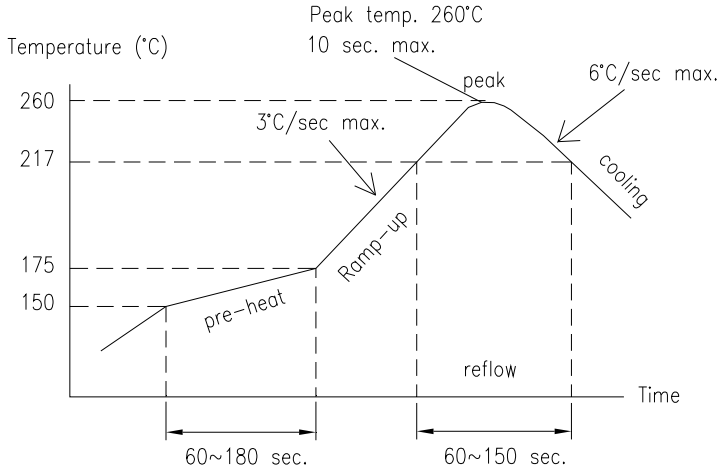
HOW TO ORDER:

Complete Part Number = Mercury part number + Mercury spec. code. ✍= Please specify
Example: MJ-16.000-16P-10/30/-20+70/50R-option
Explanation: MJ series crystal, 16.000 MHz, 16 pF load capacitance, ±10 ppm frequency tolerance, ±30 ppm frequency stability over -20 to +70°C, ESR is 50 ohms max.

	✍			✍		✍		✍		✍		✍
MQ−	16.000		—	30P	—	10	/	30	/	-20+70	/	50R
❶	❷	❸		❹		❺		❻		❼		❽

❶: Crystal package prefix
❷: Frequency in MHz
❸: Frequency between 40 MHz and 50 MHz can be either fundament mode or 3rd overtone mode. Use "**AF**" for AT-cut fundamental mode and use "**A3**" AT-cut 3rd overtone mode.
For example: MQ-50.000A3 represents 50 MHz 3rd overtone
❹: Load Capacitance (Use "**S**" for series; use "**_ _P**" for parallel load capacitance)
❺: Frequency Tolerance at +25°C
❻: Frequency stability over operating temperature range
❼: Operating temperature range
❽: ESR (Equivalent Series Resistance in ohms) max.

RECOMMENDED REFLOW SOLDERING PROFILE:



TAPE AND REEL SPEC.: 1K pcs per reel, unit: mm