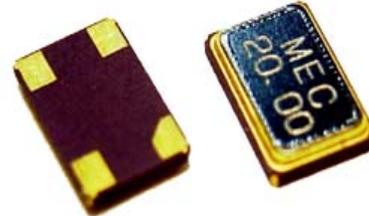




- Ultra-miniature 5x3.2 mm; ultra thin 1.0 mm height
- Gold plated ceramic base with metal lid seam welded package
- Extremely low aging. Specifically designed for hand-held communication equipment, MP3, PDAs, GPS and W-LAN.
- High shock resistance and vibration resistance
- RoHS compliant and lead free product



RoHS Compliant Product  
by Mercury



**SPECIFICATIONS**

<b>Crystal Holder Prefix ①</b>	<b>MJ series</b>		
<b>Frequency Range ②</b>	10 ~ 48.0 MHz AT-cut Fundamental mode		
<b>Calibration Tolerance ④</b>	Available from $\pm 5$ ppm ( $\pm 0.0005\%$ ) to $\pm 30$ ppm ( $\pm 0.003\%$ ) at 25°C		
<b>Frequency Stability ⑤</b>	Available from $\pm 5$ ppm ( $\pm 0.0005\%$ ) to $\pm 30$ ppm ( $\pm 0.003\%$ ) over operating temperature range shown below		
<b>Operating Temperature Range ⑥</b>	-20°C to +70°C. or -30°C to +85°C.		
<b>Equivalent Series Resistance (E.S.R.) ⑦</b>	Frequency	Oscillation Mode	E.S.R. max.
	10.0 ~ 12.0	AT fundamental mode	80 $\Omega$
	12.0 ~ 16.0	AT fundamental mode	60 $\Omega$
	16.01 ~ 48.0	AT fundamental mode	50 $\Omega$
<b>Load Capacitance (C<sub>L</sub>) ③</b>	Series: spec. code is “S”		
	Parallel: Please specify C <sub>L</sub> value, typical C <sub>L</sub> ranges from 10 to 32pF		
<b>Shunt Capacitance (C<sub>0</sub>)</b>	2.0 ~ 4.0 pF typical, 5 pF maximum		
<b>Drive Level</b>	100 $\mu$ W max.		
<b>Aging</b>	Less than $\pm 3$ ppm per year at +25°C		

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

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

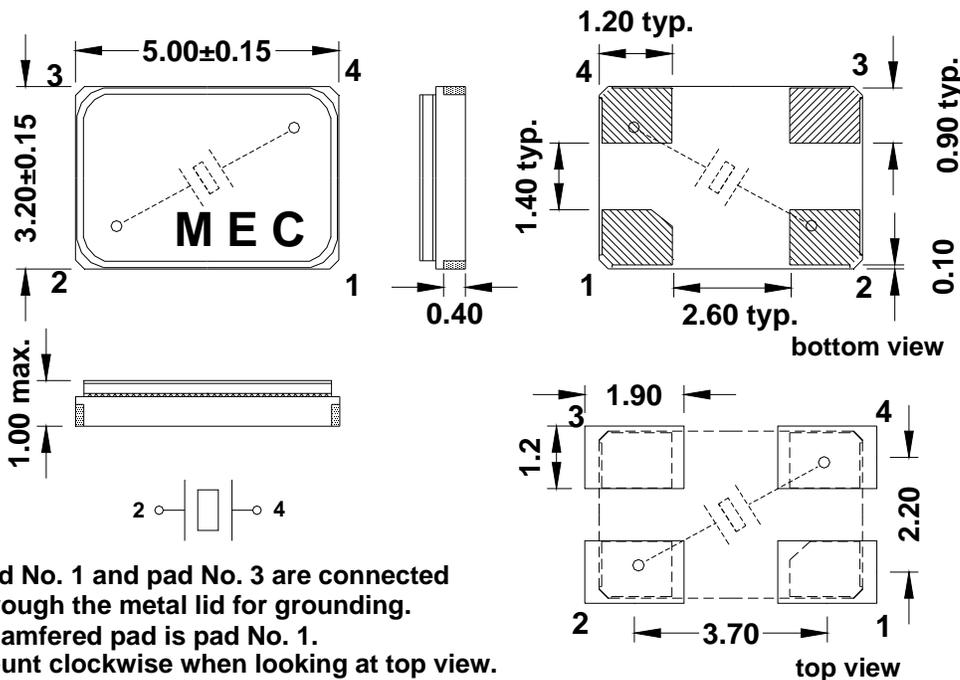
<b>MEC Part Number</b>	<b>MEC Spec. Code</b>	<b>MEC Part Number</b>	<b>MEC Spec. Code</b>
MJ-10.000-16P	30/30/-20+70/80R	MJ-20.000-20P	30/30/-20+70/50R
MJ-12.000-16P	30/30/-20+70/80R	MJ-20.945-16P	30/30/-20+70/50R
MJ-16.000-16P	30/30/-20+70/60R	MJ-29.4912-32P	30/30/-20+70/50R
MJ-18.432-16P	30/30/-20+70/50R	MJ-32.000-S	30/30/-20+70/50R
MJ-19.6608-16P	30/30/-20+70/50R	MJ-32.768-S	30/30/-20+70/50R

**ENVIRONMENTAL AND MECHANICAL SPECIFICATIONS**

<b>Green Requirement</b>	RoHS compliant and Pb (lead) free
<b>Storage Temperature</b>	-40°C to +105°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

**PACKAGE DIMENSIONS AND SUGGESTED PAD LAYOUT**

Unit: mm



**HOW TO ORDER:**

**Complete Part Number** = Mercury part number + Mercury spec. code.

*☞* = Please specify

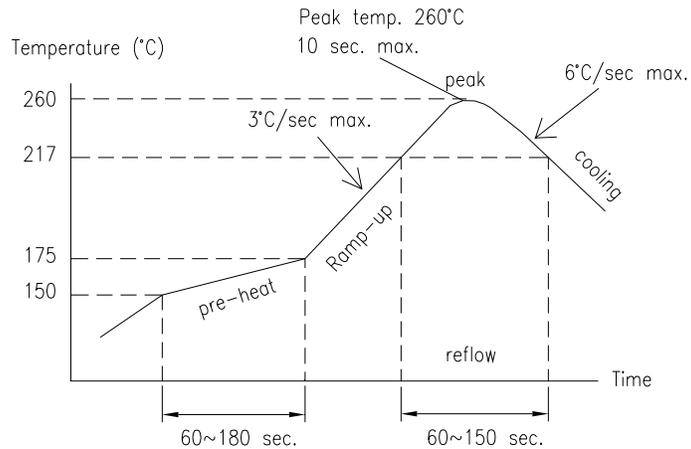
**Example:** MJ-16.000-16P-10/30/-20+70/60R-option

**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 60 ohms max.

	<i>☞</i>		<i>☞</i>		<i>☞</i>		<i>☞</i>		<i>☞</i>		<i>☞</i>
MJ-	16.000	—	30P	—	10	/	30	/	-20+70	/	60R
<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 in ppm at +25°C    **⑤:** Frequency stability in ppm
- ⑥:** Operating temperature range in °C    **⑦:** ESR (Equivalent Series Resistance) ohms max.

**RECOMMENDED REFLOW SOLDERING PROFILE:**



**TAPE AND REEL SPEC.:**

**1K pcs per reel,**

**unit: mm**

