

**“MJ” series 5 x 3.2 x 1.0 mm Surface Mount Crystals**



**MERCURY**  
Since 1973

- 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



**SPECIFICATIONS**

<b>Crystal Holder Prefix ①</b>	<b>MJ series</b>		
<b>Frequency Range ②</b>	12 ~ 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 ( $\pm 0.003\%$ )		
<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.
	12.0 ~ 16.0	AT fundamental mode	80 $\Omega$
	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		

胜特力材料 886-3-5753170  
 胜特力电子(上海) 86-21-54151736  
 胜特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

**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).

<u>MEC Part Number</u>	<u>MEC Spec. Code</u>	<u>MEC Part Number</u>	<u>MEC Spec. Code</u>
MJ-16.000-16P	30/30/-20+70/80R	MJ-20.000-20P	30/30/-20+70/50R
MJ-16.384-16P	30/30/-20+70/50R	MJ-20.945-16P	30/30/-20+70/50R
MJ-18.432-16P	30/30/-20+70/50R	MJ-29.4912-32P	30/30/-20+70/50R
MJ-19.200-16P	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



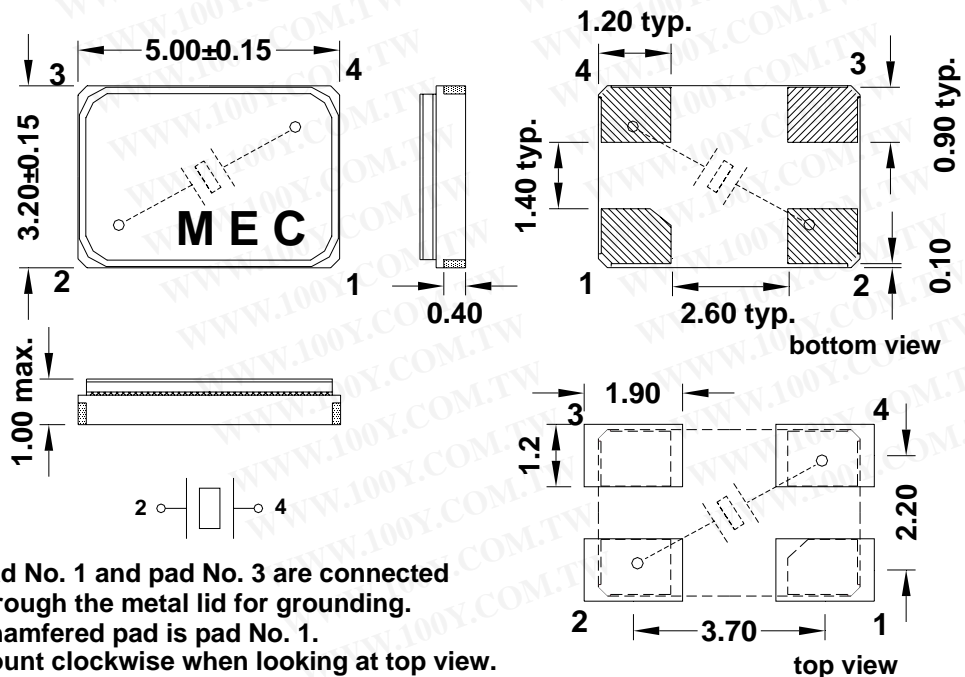
**ENVIRONMENTAL AND MECHANICAL SPECIFICATIONS**

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<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 MW min. at 100 V±15 V DC

**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.

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**HOW TO ORDER:**

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

= Please specify

**Example:** MJ-16.000-16P-10/30/-20+70/80R-option

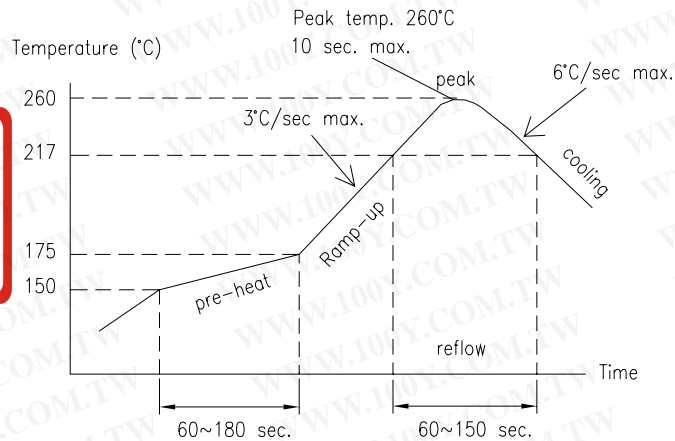
**Explanation:** MJ series crystal, 16.000 MHz, 16 pF load capacitance,  $\pm 10$  ppm frequency tolerance,  $\pm 30$  ppm frequency stability over -20 to +70°C, ESR is 80 ohms max.

MJ-	16.000	—	30P	—	10	/	30	/	-20+70	/	80R
①	②		③		④		⑤		⑥		⑦

- 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:**

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

