MJ CRYSTALS

5 x 3.2 x 1.0mm SMD

FEATURES

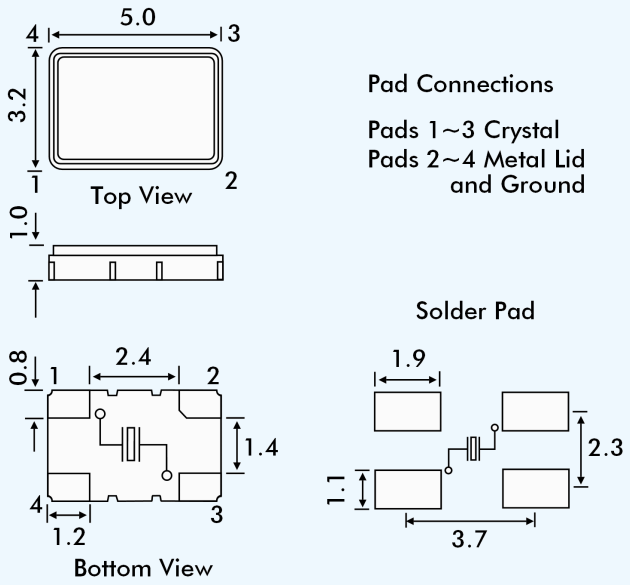
- **Miniature size: 5.0mm x 3.2mm x 1.0mm height**
- **Gold-plated ceramic base with metal seam-welded lid**
- **To minimize EMI the whole crystal may be grounded**
- **High shock and vibration resistance**
- **Ideal for PDAs, GPS, PCMCIA, Wirles LAN etc.**

RoHS COMPLIANT 2002 / 95 /EC

DESCRIPTION

MJ crystals are miniature surface-mount crystals produced with a ceramic substrate and seam-welded metal lid. Their compact size and low mass make hem an ideal crystal for high-density applications.

OUTLINE & DIMENSIONS



SPECIFICATION

Frequency Range:	10.0MHz to 48.0MHz
Mode:	AT-Cut Fundamental
Calibration Tolerance at 25°C:	from ±5ppm (±10, ±20 or ±30ppm standard)
Frequency stability	
-10° to +60°C	from ±5ppm
-20° to +70°C	from ±10ppm
-40° to +90°C	from ±15ppm
Storage Temperature:	-40°~+105°C
Effective Series Resistance:	*See table*
Shunt Capacitance (C0):	2pF to 4pF typical, 5pF maximum
Load Capacitance (CL):	Series or from 10pF to 32pF (*Customer specified CL*)
Ageing:	<±3ppm per year at +25°C
Drive level:	100 µW maximum
Reflow Soldering:	10s maximum at 260°C twice or 180s at 230°C, once.
Package:	Ceramic base, metal (Kovar) lid, Hermetic seal
Packaging:	12mm EIA tape and reel 1000 pieces per reel

EQUIVALENT SERIES RESISTANCE (ESR)

Frequency Range MHz	Crystal Cut/ Mode	ESR Ohms Max.
10.0 ~ 12.0	AT Fund.	80
12.0 ~ 16.0	AT Fund.	60
16.01~48.0	AT Fund.	50

ENVIRONMENTAL SPECIFICATION

RoHS Status:	Compliant
Gross Leak:	1kg pressurized water immersion test as per Euroquartz procedures.
Fine Leak:	<5x10^{-8} atm cc/s -helium leak test
Shock:	±5ppm max. Free drop 3 times from 75cm height onto a hard wooden board or half sine wave acceleration of 100g peak amplitude for 11 ms duration, 3 cycles each plane.
Vibration:	±5ppm max., frequency 10 to 55Hz, amplitude 1.5mm or 10g rms. Duration 6 hours.
Solderability:	MIL-STD-883, Method 2003
Humidity:	48 hours at 85°C, relative humidity, non-condensing
Thermal Shock:	Temperature cycling: Exposed to -40°C for 30 minutes then to +85°C for 30 minutes, - duration 5 days.

PART NUMBER GENERATION

Part numbers for MJ crystals are generated as follows:

Example: 12.000MHz MJ/20/30/-10+60/18pF/60R

- Nominal Frequency
- Package
- Calibration tolerance at 25°C (±ppm)
- Temperature Stability over temp. range (±ppm)
- Operating Temp. Range (°C) *(Lower and upper limits)*
- Load Capacitance *(Either SR for series or CL in pF)*
- Equivalent Series Resistance *(Optional - use when special value is required)*

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