MQ & MQ2 CRYSTALS

7 x 5mm SMD, 4 pad or 2 pad

FEATURES

- **Miniature size: 7.0mm x 5mm x 1.2mm height**
- **Gold-plated ceramic base with metal seam-welded lid**
- **To minimize EMI the whole crystal may be grounded**
- **Tight tolerance of ±10pppm for telecommunications use**
- **High shock and vibration resistance**
- **Ideal for PDAs, GPS, PCMCIA and hand-held equipment**

RoHS COMPLIANT 2002 / 95 /EC

DESCRIPTION

Miniature surface-mount MQ crystals are produced using a ceramic substrate and fitted with a hermetically-sealed metal lid. The crystals are competitively priced, well-suited to mass-market electronic applications and may also be produced to close tolerances making this crystal a good choice for applications requiring low mass and tight tolerances. There are two package variants, 4 pad and two pad.

SPECIFICATION

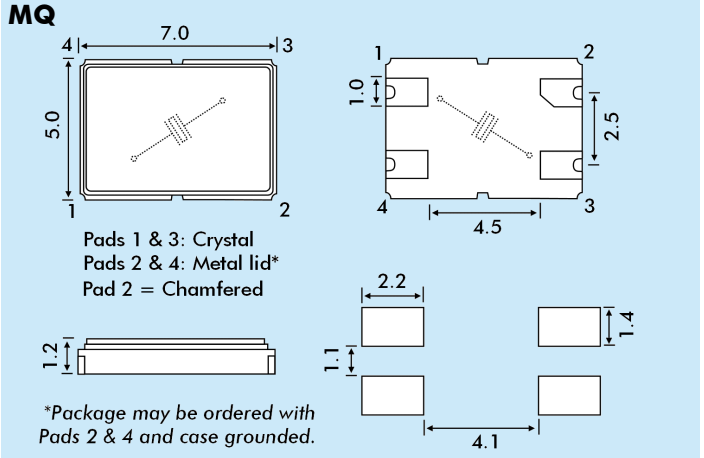
Frequency Range	
AT-Cut Fundamental:	6.0MHz to 45.0MHz
AT-Cut 3rd Overtone:	30.0MHz to 125.0MHz
Calibration Tolerance at 25°C*:	from ±5ppm (±10, ±20 or ±30ppm standard)
Frequency stability	
-10° to +60°C	from ±5ppm
-20° to +70°C	from ±10ppm
-40° to +90°C	from ±15ppm
-55 to +125°C	from ±20ppm
Storage Temperature:	-55°~+105°C
Effective Series Resistance:	*See table*
Shunt Capacitance (C0):	2pF to 4pF typical, 7pF 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, 260°C twice or 180s at 230°C, once.
Package:	Ceramic base, metal lid, Hermetic seal
Packaging:	16mm EIA tape and reel 1000 pieces per reel

EFFECTIVE SERIES RESISTANCE

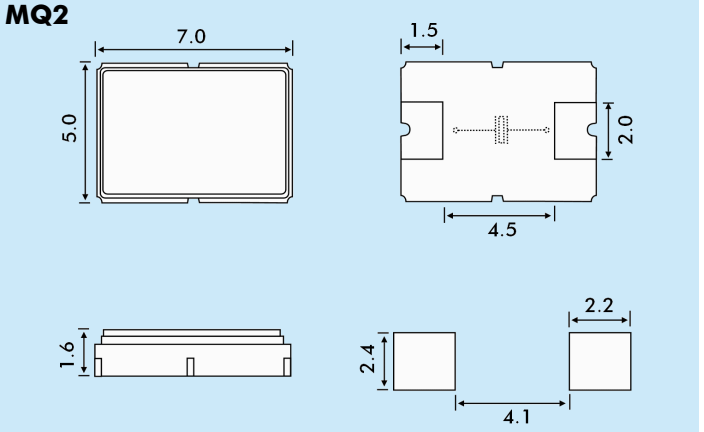
Frequency Range MHz	Crystal Cut/ Mode	ESR Ohms Max.
6.0 ~ 11.0	AT Fund.	60
11.1 ~ 14.0	AT Fund.	50
14.1 ~ 45.0	AT Fund.	40
30.0 ~ 40.0	AT 3rd OT	100
40.1 ~ 50.0	AT 3rd OT	80
50.1 ~ 125	AT 3rd OT	90

OUTLINE & DIMENSIONS

MQ



MQ2



PART NUMBER GENERATION

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

- Nominal Frequency
- Package (MQ = 4 pad, MQ2 = 2 pad
- 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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