

## 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  $\pm 10$  ppm for telecommunications use**
- **High shock and vibration resistance**
- **Ideal for PDAs, GPS, PCMCIA and hand-held equipment**

## 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.

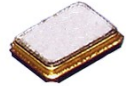
## SPECIFICATION

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 $\pm 5$ ppm $\pm 10$ , $\pm 20$ ppm	( $\pm 30$ ppm standard)
Frequency stability		
-10° to +60°C	from $\pm 5$ ppm	
-20° to +70°C	from $\pm 10$ ppm	
-40° to +90°C	from $\pm 15$ ppm	
-55 to +125°C	from $\pm 20$ ppm	
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:	< $\pm 3$ ppm per year at +25°C	
Drive level:	100 $\mu$ W 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
RoHS Status:	RoHS compliant and lead free	

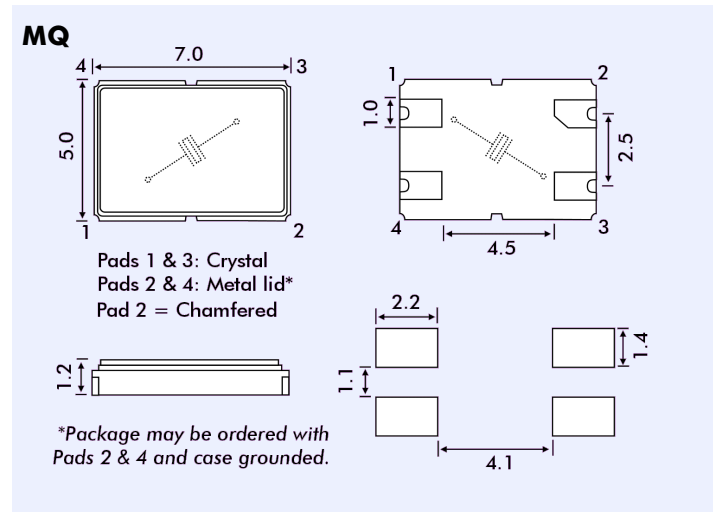
## EQUIVALENT SERIES RESISTANCE

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

## 7 x 5mm SMD, 4 pad



## OUTLINE & DIMENSIONS



## PART NUMBER FORMAT

Example: **MQ - 16.000 - 12 - 15/20/-20+70/100R**

