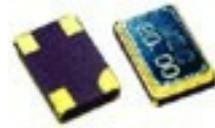


### FEATURES

- **Miniature size: 6.0mm x 3.5mm height**
- **Tight tolerances available**
- **High shock and vibration resistance**
- **Ideal for PDAs, GPS, PCMCIA and hand-held equipment**



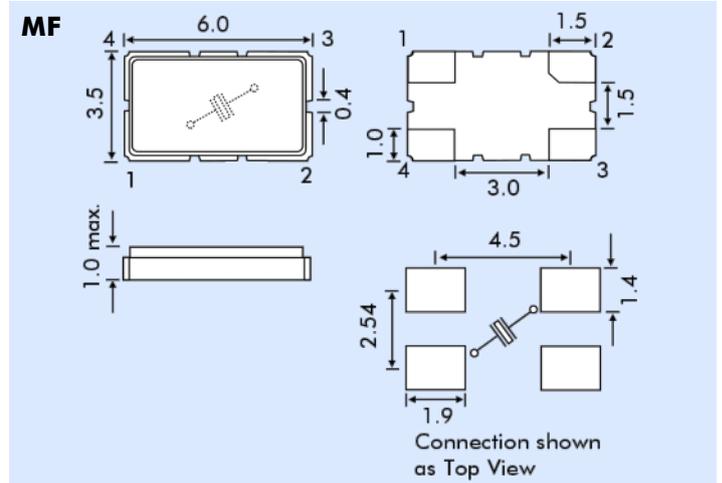
### DESCRIPTION

Miniature surface mount MF crystals incorporate a ceramic substrate and hermetically-sealed metal lid. The combination of compact size and low mass with a high-specification crystal make MF crystals ideal for high density applications as well as hand-held and communications equipment.

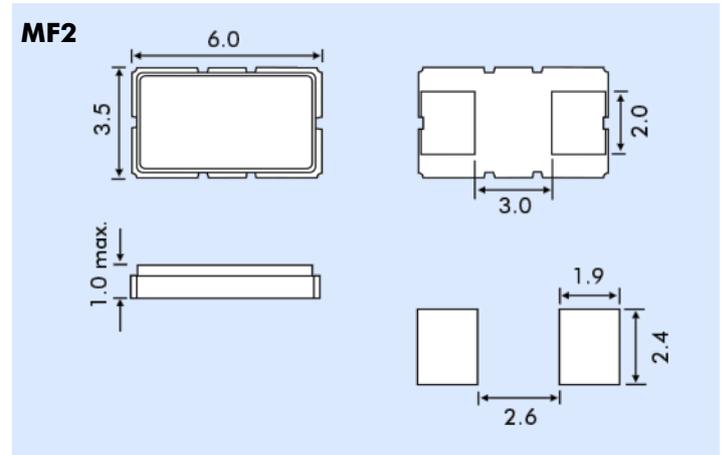
### SPECIFICATION

Frequency Range	
AT-Cut Fundamental:	8.0MHz to 50.0MHz
AT-Cut 3rd Overtone:	40.0MHz 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 (±5ppm ask)
-40° to +85°C	from ±15ppm
Storage Temperature:	-50°~+105°C
Equivalent Series Resistance:	See table
Load Capacitance (CL):	Series or from 8pF to 32pF (Customer specified CL)
Ageing:	<±3ppm per year at +25°C
Drive level:	10µW typ. 100 µW max.
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

### OUTLINE & DIMENSIONS

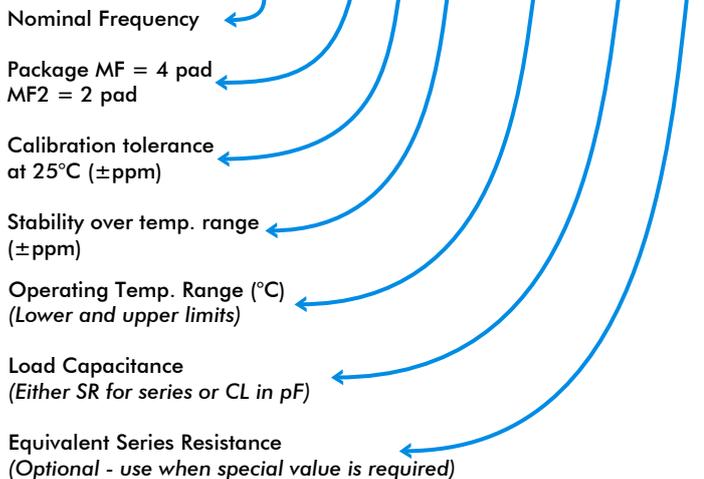


\* Note: These parts may be supplied with the chamfered pad in different positions. However, the crystal connection is always as shown above.



### PART NUMBER GENERATION

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



### EQUIVALENT SERIES RESISTANCE

Frequency Range MHz	Crystal Cut/ Mode	ESR Ohms Max.
10.0 ~ 12.0	AT Fund.	80
12.1 ~ 16.0	AT Fund.	60
16.1 ~ 50.0	AT Fund.	40