

### Features

Frequency range : 10MHz to 114MHz  
 Ceramic SMD package  
 Seam sealing  
 External dimensions (mm)  
 L : 3.2 x W : 2.5 x H : 0.7  
 RoHS compliant & Pb free

### Applications

Bluetooth, Wireless LAN  
 Cellular phone, Pager, DSC  
 Display, TV  
 Computer peripherals  
 Consumer products

### Electrical Characteristics

| Item   |                | 7M   | Conditions    |
|--|----------------|--|---------------|
| Frequency Range  | $F_0$          | 10MHz ~ 114MHz   |               |
| Frequency Tolerance  | $F_{tol}$      | $\pm 30\text{ppm}$ , $\pm 20\text{ppm}$ , $\pm 10\text{ppm}$ | at 25°C       |
| Frequency Stability over Operating Temperature Range (refer to 25°C) | $F_{stab}$     | $\pm 30\text{ ppm}$  | -20°C ~ +70°C |
|  |                | $\pm 20\text{ ppm}$  |               |
|  |                | $\pm 10\text{ ppm}$  |               |
|  |                | $\pm 10\text{ ppm}$  | -40°C ~ +85°C |
|  |                | $\pm 30\text{ ppm}$  |               |
|  |                | $\pm 20\text{ ppm}$  |               |
|  |                | $\pm 15\text{ ppm}$  |               |
| $\pm 60\text{ ppm}$  | -40°C ~ +125°C |  |               |
| Operating Temperature Range  | $T_{OTR}$      | -20°C ~ +70°C  |               |
|  |                | -40°C ~ +85°C  |               |
|  |                | -40°C ~ +125°C   |               |
| Shunt Capacitance  | $C_0$          | 3pF Max.   |               |
| Drive Level  | $D_L$          | 1 ~ 200μW (100μW Typ.)                                       |               |
| Load Capacitance   | $C_L$          | 6pF, 8pF, 9pF, 10pF<br>12pF, 16pF, 18pF, 20pF                |               |
| Aging (at 25°C ± 3°C, first year)                                    | $F_{aging}$    | $\pm 3\text{ppm Max.}$                                       | Note [1]      |
| Storage Temperature Range  | $T_{STR}$      | -55°C ~ +125°C   |               |

#### Notes:

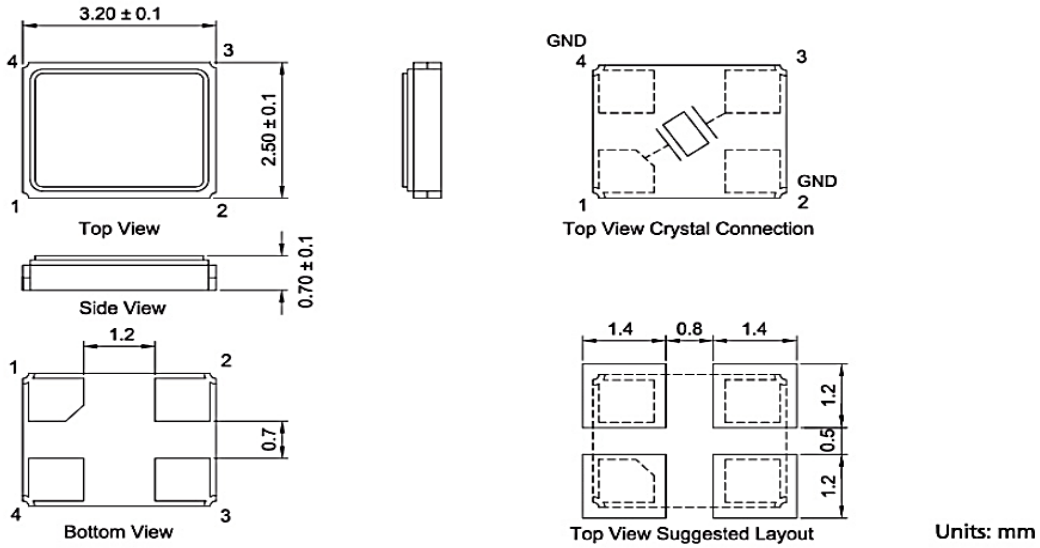
[1] Please contact us for low aging +/-1ppm grade crystals.

### Motional Resistance (ESR)

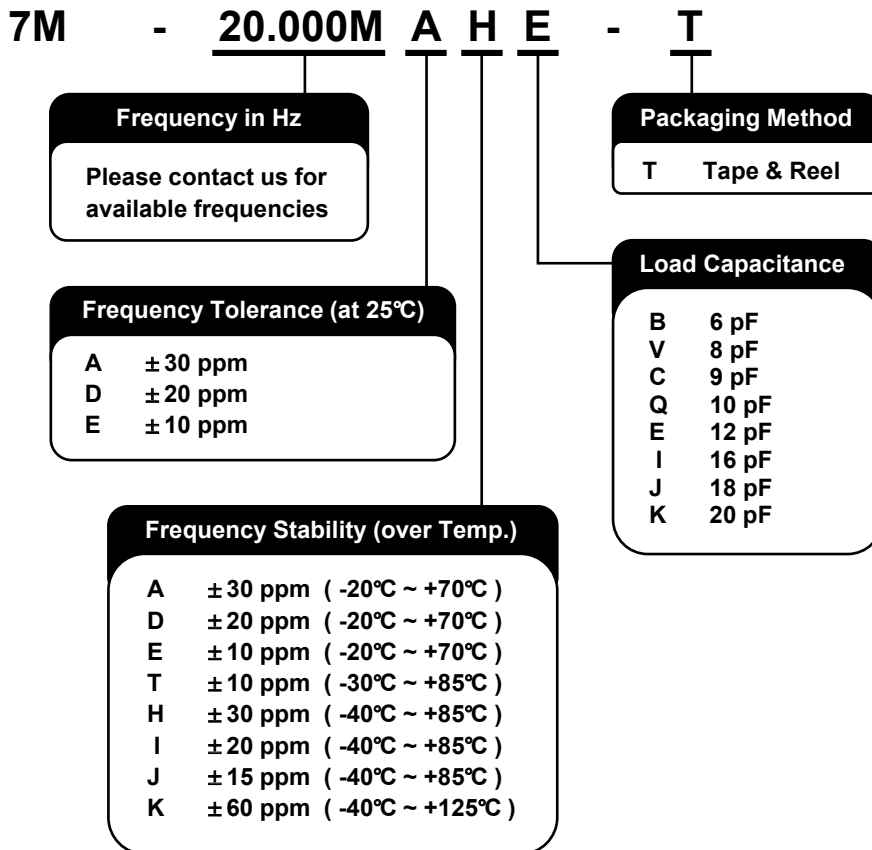
| Fundamental |           |
|-------------|-----------|
| 10 ~ 12 MHz | 150Ω Max. |
| 12 ~ 16 MHz | 80Ω Max.  |
| 16 ~ 20 MHz | 60Ω Max.  |
| 20 ~ 64 MHz | 50Ω Max.  |

| 3rd Overtone |          |
|--------------|----------|
| 60 ~ 80 MHz  | 80Ω Max. |
| 80 ~ 114 MHz | 60Ω Max. |

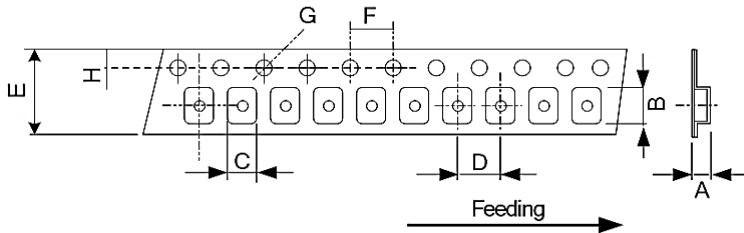
## Dimensions



## Ordering Information

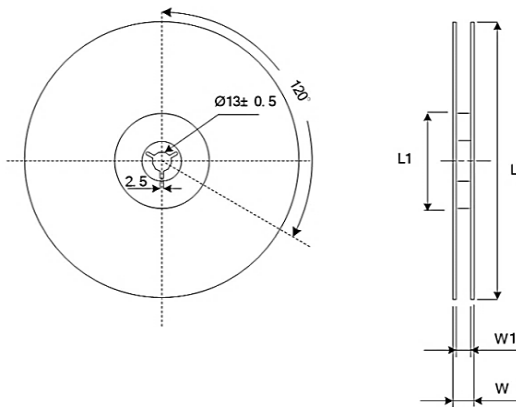


### Packing



| DIMENSIONS | A     | B     | C     | D     | E     | F     | G     | H     |
|------------|-------|-------|-------|-------|-------|-------|-------|-------|
|            | 1.65  | 3.40  | 2.70  | 4.00  | 8.00  | 4.00  | 1.55  | 1.75  |
|            | ±0.10 | ±0.10 | ±0.10 | ±0.10 | ±0.20 | ±0.10 | ±0.05 | ±0.10 |

(Unit: mm)



| DIMENSIONS | L     | L1    | W    | W1   |
|------------|-------|-------|------|------|
|            | 178   | 60.2  | 11.5 | 8    |
|            | ±1.00 | ±0.50 | ±0.2 | ±0.1 |

(Unit: mm)

### Reflow Profile

Solder melting point : 220°C ± 10°C, 60 sec. Min.

Peak temperature : 260°C ± 10°C, 10 sec. Min.

