### FEATURES

- Ultra miniature 4 pad SMD Crystal package
- Very low aging
- Excellent heat resistance and shock resistance
- Frequency range 24 MHz - 60 MHz (fundamental mode)
- Options for initial stability and temperature tolerance

### Parameter | min. | typ. | max. | Unit | Condition
--- | --- | --- | --- | --- | ---
Frequency range | 24 | 60 | MHz | | |
Vibration mode | | AT cut, fundamental | | | |
Frequency stability

| Condition | ppm | |
--- | --- | ---
Initial tolerance @25°C | ±30 | See options |
vs. operating temperature range | ±30 | See options |
operating temperature range | -10 | +60 °C | See options |
Equivalent Series Resistance (ESR) | | See table 1 |
Load Capacitance (CL) | Series or 8pF to 32pF (see options) | | |
Shunt Capacitance (Co) | 3.5 | pF | |
Drive Level | 50 | μW | |
Aging | ±2 ppm | At 25°C, first year | |
Insulation Resistance | 500 | MΩ | @ 100Vdc |
Enclosure (see drawing) (LxWxH) | 1.6 x 1.2 x 0.40 mm | | |
Soldering Condition | 260°C, 10 sec x 2 max. | | |
Packing | 3,000 pcs./reel | | |

### Table 1 : Standard ESR

| Frequency | Mode | ESR |
--- | --- | ---
24.0—40.0MHz | Fundamental | 150Ω max. |
41.0—60.0MHz | Fundamental | 100Ω max. |

### Ordering Code:

| Freq. Tolerance @ 25°C | Freq. Stability | Operating Temp. range | Load Capacitance | Mode | Frequency in MHz | ESR if other than STD |
--- | --- | --- | --- | --- | --- | ---
10 = ± 10ppm | 10 = ± 10ppm | D = -10 / +60°C | Please specify CL | F = Fundamental | Specify the frequency in MHz | Specify a value in Ω |
15 = ± 15ppm | 15 = ± 15ppm | E = 0° / +70°C | in pF or S for series | frequency in MHz | in Ω |
20 = ± 20ppm | 20 = ± 20ppm | F = -20° / +70°C | | |
25 = ± 25ppm | 25 = ± 25ppm | G = -30° / +75°C | | |
30 = ± 30ppm | 30 = ± 30ppm | H = -30° / +85°C | | |
50 = ± 50ppm | 50 = ± 50ppm | K = -40° / +85°C | | |

Example: F1612A-20-20-D-30-F-27.000MHz
Environmental conditions

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