kHz RANGE CRYSTAL UNIT
LOW PROFILE SMD

FC - 135 / FC - 255

- Frequency range: 32.768 kHz (32 kHz to 100 kHz)
- External dimensions: 3.2 × 1.5 × 0.80 mm ···FC-135
- 4.9 × 1.8 × 0.80 mm ···FC-255
- Overtone order: Fundamental
- Applications: Small communications devices

### Specifications (characteristics)

<table>
<thead>
<tr>
<th>Item</th>
<th>Symbol</th>
<th>Specifications</th>
<th>Conditions / Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal frequency range</td>
<td>f_nom</td>
<td>32.768 kHz</td>
<td>Please contact us for inquiries regarding available frequencies.</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>T_stg</td>
<td>-55 °C to +125 °C</td>
<td>Store as bare product.</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>T_use</td>
<td>-40 °C to +85 °C</td>
<td></td>
</tr>
<tr>
<td>Level of drive</td>
<td>DL</td>
<td>0.5 µW (1.0 µW Max.)</td>
<td>0.5 µW Max.</td>
</tr>
<tr>
<td>Frequency tolerance</td>
<td>f_tol</td>
<td>±20 × 10^4</td>
<td>+25 °C, DL=0.1 µW Please ask for tighter tolerance</td>
</tr>
<tr>
<td>Turnover temperature</td>
<td>Ti</td>
<td>+25 °C ±5 °C</td>
<td></td>
</tr>
<tr>
<td>Parabolic coefficient</td>
<td>B</td>
<td>-0.04 × 10^6 / °C^2 Max.</td>
<td></td>
</tr>
<tr>
<td>Load capacitance</td>
<td>CL</td>
<td>7 pF, 9 pF, 12.5 pF</td>
<td>7 pF, 12.5 pF Please specify</td>
</tr>
<tr>
<td>Motional resistance (ESR)</td>
<td>R1</td>
<td>70 kΩ Max.</td>
<td>70 kΩ to 45 kΩ</td>
</tr>
<tr>
<td>Motional capacitance</td>
<td>C1</td>
<td>3.4 fF Typ.</td>
<td>3.7 fF to 1.6 fF</td>
</tr>
<tr>
<td>Shunt capacitance</td>
<td>C0</td>
<td>1.0 pF Typ.</td>
<td>1.3 pF to 0.5 pF</td>
</tr>
<tr>
<td>Frequency aging</td>
<td>f_age</td>
<td>±3 × 10^4 / year Max.</td>
<td>+25 °C, First year</td>
</tr>
</tbody>
</table>

### External dimensions (Unit:mm)

#### FC-135

- 3.2 ± 0.1
- 1.5 ± 0.1
- 0.8 ± 0.1
- 0.75
- 1.7

#### FC-255

- 4.9 ± 0.1
- 1.8 ± 0.1
- 0.8 ± 0.1
- 0.85
- 3.2

### Footprint (Recommended) (Unit:mm)

#### FC-135

- 1.0
- 1.8
- 2.5

#### FC-255

- 1.3
- 2.2
- 4.2

*Do not design any patterns on shaded area.*
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► Explanation of the mark that are using it for the catalog

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► Complies with EU RoHS directive.
  * About the products without the Pb-free mark.
  * Contains Pb in products exempted by EU RoHS directive.
  (Contains Pb in sealing glass, high melting temperature type solder or other.)
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