MHz Range Crystal unit  FA-20H

Product name  FA-20H  32.000000 MHz  8.0  +10.0-10.0
Product Number / Ordering code  Q24FA20H00196xx

Pb free / Complies with EU RoHS directive
Reference weight Typ. 11 mg

1. Absolute maximum ratings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
<th>Conditions / Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage temperature</td>
<td>T_stg</td>
<td>-40</td>
<td>-</td>
<td>+125</td>
<td>°C</td>
<td>Storage as single product</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>T_use</td>
<td>-40</td>
<td>-</td>
<td>+105</td>
<td>°C</td>
<td></td>
</tr>
</tbody>
</table>

2. Specifications (characteristics)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
<th>Conditions / Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal frequency</td>
<td>f_nom</td>
<td>-</td>
<td>32.000000</td>
<td>-</td>
<td>MHz</td>
<td>Fundamental</td>
</tr>
<tr>
<td>Frequency tolerance</td>
<td>f_tol</td>
<td>-10</td>
<td>-</td>
<td>+10</td>
<td>x 10^-6</td>
<td>@+25°C</td>
</tr>
<tr>
<td>Frequency Stability over temperature</td>
<td>f_tem</td>
<td>-10</td>
<td>-</td>
<td>+10</td>
<td>x 10^-6</td>
<td>-20°C to +75°C</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>T_use</td>
<td>-20</td>
<td>-</td>
<td>+75</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>Level of drive</td>
<td>DL</td>
<td>10</td>
<td>-</td>
<td>+100</td>
<td>µW</td>
<td></td>
</tr>
<tr>
<td>Load capacitance</td>
<td>CL</td>
<td>-</td>
<td>8</td>
<td>-</td>
<td>pF</td>
<td></td>
</tr>
<tr>
<td>Motional resistance (ESR)</td>
<td>R1</td>
<td>-</td>
<td>-</td>
<td>50</td>
<td>Ω</td>
<td></td>
</tr>
<tr>
<td>Motional capacitance</td>
<td>C1</td>
<td>-</td>
<td>3.54</td>
<td>-</td>
<td>fF</td>
<td></td>
</tr>
<tr>
<td>Motional inductance</td>
<td>L1</td>
<td>-</td>
<td>6.99</td>
<td>-</td>
<td>mH</td>
<td></td>
</tr>
<tr>
<td>Shunt capacitance</td>
<td>C0</td>
<td>-</td>
<td>1.18</td>
<td>-</td>
<td>pF</td>
<td></td>
</tr>
<tr>
<td>Frequency aging</td>
<td>f_age</td>
<td>-1</td>
<td>-</td>
<td>+1</td>
<td>x10^-6</td>
<td>@+25°C, First year</td>
</tr>
</tbody>
</table>

3. External dimensions (Unit: mm)

4. Footprint (Recommended) (Unit: mm)

5. Packing information

[ 1 ]Product number last 2 digits code (xx) description
The recommended code is "18"

<table>
<thead>
<tr>
<th>Code</th>
<th>Condition</th>
<th>Code</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Any Q'ty vinyl bag (Tape cut)</td>
<td>00</td>
<td>3000pcs / Reel</td>
</tr>
<tr>
<td>11</td>
<td>Any Q'ty / Reel</td>
<td>18</td>
<td>5000pcs / Reel</td>
</tr>
<tr>
<td>12</td>
<td>250pcs / Reel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>1000pcs / Reel</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
(1) Tape dimensions
Material of the Carrier Tape: PS
Material of the Top Tape: PET+PE

(2) Reel dimensions
Center material: PS
Material of the Reel: PS
6. Reflow profile

Reflow condition (Follow of JEDEC STD-020D.01)

Temperature [°C]

- TP: +260 °C
- TL: +217 °C
- Ts max: +200 °C
- Ts min: +150 °C

Time +25 °C to Peak

60 s to 180 s

(60 s to 150 s)

(60 s to 150 s over)

Ts: 60 s to 180 s

(150 °C to 200 °C)

Avg. Ramp-up 3 °C/s Max.

Ramp-down 6 °C/s Max.

tp: 20 s to 40 s

Time [s]

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