FEATURES
- COMPACT DESIGN
- HIGH ACCURACY
- EXCELLENT FOR HIGH DENSITY SURFACE MOUNTING

SPECIFICATIONS

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>FREQUENCY RANGE</td>
<td>8.000 MHz to 156.250 MHz</td>
</tr>
<tr>
<td>MODE OF OSCILLATION</td>
<td></td>
</tr>
<tr>
<td>FUNDAMENTAL</td>
<td>8.000 MHz to 80.000 MHz</td>
</tr>
<tr>
<td>THIRD OVERTONE</td>
<td>60.000 MHz to 156.250 MHz</td>
</tr>
<tr>
<td>FREQUENCY TOLERANCE AT 25°C</td>
<td>±100 ppm max</td>
</tr>
<tr>
<td>(±10 ppm, ±20 ppm and ±50 ppm available)</td>
<td></td>
</tr>
<tr>
<td>FREQUENCY STABILITY OVER TEMPERATURE</td>
<td>±100 ppm max</td>
</tr>
<tr>
<td>(±10 ppm, ±20 ppm and ±50 ppm available)</td>
<td></td>
</tr>
<tr>
<td>OPERATING TEMPERATURE RANGE</td>
<td>-20°C to +70°C Standard</td>
</tr>
<tr>
<td>-40°C to +85°C Extended</td>
<td></td>
</tr>
<tr>
<td>STORAGE TEMPERATURE RANGE</td>
<td>-40°C to +85°C</td>
</tr>
<tr>
<td>AGING</td>
<td>±2 ppm 1st year max</td>
</tr>
<tr>
<td>LOAD CAPACITANCE</td>
<td>6 pF to 32 pF or Series</td>
</tr>
<tr>
<td>EQUIVALENT SERIES RESISTANCE</td>
<td>See Table 1</td>
</tr>
<tr>
<td>SHUNT CAPACITANCE</td>
<td>3.5 pF max</td>
</tr>
<tr>
<td>DRIVE LEVEL</td>
<td>200 µW max</td>
</tr>
<tr>
<td>SHOCK RESISTANCE</td>
<td>±5 ppm max 75 cm drop test in 3 axes onto a hard wood surface</td>
</tr>
<tr>
<td>REFLOW CONDITIONS</td>
<td>260°C ±5°C for 10s max</td>
</tr>
</tbody>
</table>

TABLE 1

<table>
<thead>
<tr>
<th>FREQUENCY (MHz)</th>
<th>MODE</th>
<th>MAXIMUM ESR (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.000 to 9.999</td>
<td>FUND</td>
<td>500</td>
</tr>
<tr>
<td>10.000 to 10.999</td>
<td>FUND</td>
<td>250</td>
</tr>
<tr>
<td>11.000 to 11.999</td>
<td>FUND</td>
<td>150</td>
</tr>
<tr>
<td>12.000 to 12.999</td>
<td>FUND</td>
<td>100</td>
</tr>
<tr>
<td>13.000 to 15.999</td>
<td>FUND</td>
<td>80</td>
</tr>
<tr>
<td>16.000 to 20.999</td>
<td>FUND</td>
<td>70</td>
</tr>
<tr>
<td>21.000 to 29.999</td>
<td>FUND</td>
<td>50</td>
</tr>
<tr>
<td>30.000 to 80.000</td>
<td>FUND</td>
<td>50</td>
</tr>
<tr>
<td>60.000 to 156.250</td>
<td>3OT</td>
<td>100</td>
</tr>
</tbody>
</table>

PART NUMBERING SYSTEM

<table>
<thead>
<tr>
<th>TYPE</th>
<th>FREQUENCY</th>
<th>LOAD CAPACITANCE</th>
<th>MODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>RH100</td>
<td>IN MHz</td>
<td>6 TO 32 pF FOR PARALLEL S FOR SERIES</td>
<td>Blank FOR &lt; 24.576 MHz F FOR ≥ 24.576 MHz 3OT THIRD OVERTONE</td>
</tr>
</tbody>
</table>

TOLERANCE/STABILITY (PPM/PPM)

<table>
<thead>
<tr>
<th>TOLERANCE/STABILITY (PPM/PPM)</th>
<th>OPERATING TEMPERATURE</th>
<th>TAPE &amp; REEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blank FOR MAXIMUM PPM/PPM</td>
<td>Blank FOR STANDARD EXT FOR EXTENDED</td>
<td>TR</td>
</tr>
<tr>
<td>Example: 1020, 2050</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

EXAMPLE: RH100-24.000-18-TR
Surface Mount Microprocessor Crystal, 3.2 x 2.5 mm, 24.000 MHz, Fundamental mode, 18 pF load, ±100 ppm Tolerance, ±100 ppm Stability, from -20°C to +70°C, Tape and reel packaging
**MECHANICAL SPECIFICATION**

### TOP VIEW

- Pin 1
- Pin 2
- Pin 3
- Pin 4
- MARKING AREA

### SIDE VIEW

- Pin 1
- Pin 2
- Pin 3
- Pin 4

### BOTTOM VIEW

- Pin 1
- Pin 2
- Pin 3
- Pin 4

### SOLDERING PATTERN

- 4x1.4

**CARRIER TAPE DIMENSIONS**

- **TOP VIEW PIN CONNECTION**
  - GND 4
  - Pin 3
  - Pin 1
  - Pin 2

- **PACKAGING**
  - **MECHANICAL SPECIFICATION**
    - Pins 2 and 4 are connected together and to the metal cover for Case GND.
    - According to ceramic base availability the Chamfer location could be on a different pin. However, the Chamfer’s location does not influence the electrical performance of the crystal.

- **CARRIER TAPE DIMENSIONS**
  - **180 mm REEL DIAMETER**
  - **8 mm TAPE WIDTH, 4 mm PITCH**
  - **QUANTITY: 3000 PIECES PER REEL**

**Note:** Refer to EIA-481 for non-specified dimensions.
**REFLOW PROFILE**

![Reflow profile diagram]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Min Preheat</td>
<td>( T_{\text{SMIN}} ) 150°C</td>
</tr>
<tr>
<td>Temperature Max Preheat</td>
<td>( T_{\text{SMAX}} ) 200°C</td>
</tr>
<tr>
<td>Time (( T_{\text{SMIN}} ) to ( T_{\text{SMAX}} ))</td>
<td>( t_{\text{S}} ) 60-180 sec.</td>
</tr>
<tr>
<td>Temperature Peak</td>
<td>( T_{\text{P}} ) 217°C</td>
</tr>
<tr>
<td>Peak Temperature</td>
<td>( T_{\text{P}} ) 260°C</td>
</tr>
<tr>
<td>Ramp-up rate</td>
<td>( R_{\text{UP}} ) 3°C/sec max.</td>
</tr>
<tr>
<td>Ramp-down rate</td>
<td>( R_{\text{DOWN}} ) 6°C/sec max.</td>
</tr>
<tr>
<td>Time within 5°C of Peak Temperature</td>
<td>( t_{\text{P}} ) 10 sec.</td>
</tr>
<tr>
<td>Time (( T_{25°C} ) to Peak Temperature)</td>
<td>(( T_{25°C} ) to Peak) 480 sec.</td>
</tr>
<tr>
<td>Time</td>
<td>(( T_{25°C} ) to Peak) 60-150 sec.</td>
</tr>
</tbody>
</table>

**ENVIRONMENTAL**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOISTURE SENSITIVITY LEVEL</td>
<td>1</td>
</tr>
<tr>
<td>RoHS</td>
<td>COMPLIANT</td>
</tr>
<tr>
<td>REACH SVHC</td>
<td>COMPLIANT</td>
</tr>
<tr>
<td>HALOGEN-FREE</td>
<td>COMPLIANT</td>
</tr>
<tr>
<td>ESD CLASSIFICATION LEVEL</td>
<td>N/A</td>
</tr>
<tr>
<td>TERMINATION FINISH</td>
<td>Au</td>
</tr>
<tr>
<td>UNIT WEIGHT (GRAMS)</td>
<td>0.01945</td>
</tr>
</tbody>
</table>

August 2021