# Model 118

1”x1” Stratum 3E OCXO

## FEATURES
- Frequency Stability to Stratum 3E of GR-1244
- Low Phase Jitter: <1pSec
- +3.3Vdc or +5.0Vdc Operation
- Precision Low Aging “SC” Cut Crystal
- Through-Hole or Surface Mount Configuration
- RoHS Compliant

## Electrical Characteristics

### Power Requirements

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Sym</th>
<th>Conditions</th>
<th>Min</th>
<th>Typical</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Supply</td>
<td>Vcc</td>
<td>± 5%</td>
<td>3.135</td>
<td>3.30</td>
<td>3.465</td>
<td>Vdc</td>
</tr>
<tr>
<td></td>
<td></td>
<td>± 5%</td>
<td>4.75</td>
<td>5.0</td>
<td>5.25</td>
<td>Vdc</td>
</tr>
<tr>
<td>Turn-On Power</td>
<td>Pmax</td>
<td>Vcc = Max., Std. Load</td>
<td>3.5</td>
<td>4.0</td>
<td>W</td>
<td></td>
</tr>
<tr>
<td>Steady State Power</td>
<td>Pss</td>
<td>Vcc = Max., Std. Load @ +25°C</td>
<td>1.5</td>
<td>W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warm-Up Time</td>
<td>Twu</td>
<td>To meet full spec @ +25°C</td>
<td>15 minutes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Frequency Stabilities

| Parameter                  | | Conditions                          | | | | |
|----------------------------| | | | | | |
| Center Frequency           | | $f_{nom}$                          | | | | |
| Initial Tolerance          | | $f_{cal}$, Ta = +25°C (At time of Shipment) | ± 0.2 | ± 0.5 | ppm |
| Frequency vs. Temperature  | | $\Delta f/\Delta Temp$, Over Operating Temperature | ± 6 | ± 8 | ppb |
| Frequency vs. Voltage      | | $\Delta f/\Delta Vcc$, Vcc ± 5% | ± 1 | | ppb |
| Frequency vs Time (Aging)  | | $\Delta f/\Delta Time$, per Day 20 years | ± 1 | ± 1.5 | ppb |
| 24 Hour Holdover Stability | | $\Delta f/24Hr$, Inclusive of Temperature, Supply Variation and 24 hours Aging | ± 8 | ± 10 | ppb |
| Total Free-Running Accuracy| | $\Delta f/Life$, All Conditions for 20 years (Reference to $f_{nom}$) | ± 2.1 | ppm |
| Electrical Freq Adjust Option | | $\Delta f/Vc$, Vc = 0 V to Vcc | ±0.75 | | ppm |

### Waveform: HCMOS Output

| Parameter                  | | Sym | | | | |
|----------------------------| | | | | | |
| Symmetry                   | | Sym | | @ 50% Level | 40 | 50 | 60 | % |
| Amplitude                  | | Vo  | | Logic “1” Logic “0” | 0.9Vcc | 0.1Vcc | V | V |
| Rise/Fall Times            | | tr, tf | | 20% to 80% | 4 | 7 | nSec |
| Load                       | | RL  | | Output to Ground | 10KΩ // 15pF | | | |
| Sub-Harmonics              | | Offset = 1 Hz | | -70 | -60 | dBC/Hz |
| Phase Noise                | | 10 Hz | | -105 | -95 | dBC/Hz |
|                           | | 100 Hz | | -130 | -125 | dBC/Hz |
|                           | | 1 KHz | | -140 | -130 | dBC/Hz |
|                           | | 10 KHz | | -142 | -135 | dBC/Hz |
Environmental and Mechanical Requirements

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage Temperature</td>
<td>-55°C to +125°C</td>
</tr>
<tr>
<td>Reflow Soldering</td>
<td>Will withstand 240°C for 20 seconds</td>
</tr>
<tr>
<td>Shock</td>
<td>50 G’s 11 ms, Pulse, 3 shocks per axis</td>
</tr>
<tr>
<td>Vibration</td>
<td>10G’s Peak, 20 to 2000 Hz</td>
</tr>
<tr>
<td>Case</td>
<td>Dual-in-Line</td>
</tr>
<tr>
<td>Seal</td>
<td>Resistance Weld</td>
</tr>
<tr>
<td>Surface Mount Base</td>
<td>High Temperature FR-4</td>
</tr>
<tr>
<td>MSL</td>
<td>1</td>
</tr>
<tr>
<td>6/6 RoHS Compliance</td>
<td>This product is fully compliant to RoHS Directive 2002/95/EC</td>
</tr>
</tbody>
</table>

Model 118 Standard Options

- **Model 118**
- **Frequency in MHz**
- **Example**: 118LBFT-20.000

- **Supply Voltage**
  - L = +3.3Vdc
  - S = +5.0 Vcc

  - A = 0°C to +70°C
  - B = -40°C to +85°C

- **Elect. Freq Control**
  - F = Fixed – No Adjust
  - V = Electrical Freq. Control

- **Package Style**
  - T = Through-Hole
  - S = Surface Mount
Figure 1

CTS
118XXXX
XX.XXX MHz
S/N XXXXX
YYWW
Made in China

Figure 2

CTS
118XXXX
XX.XXX MHz
S/N XXXXX
YYWW
Made in China

PIN 1 IDENTIFIER

The placement of this label is optional.

Lead terminal finish: solder coated, 96.5/3.5 Sn/Ag

Pad termination finish: gold plated, <10 microinch, over nickel plated copper

Pin numbers are for reference and not marked.

CTs part number
Frequency
Serial number
Date code

[15.57 MAX] .613 MAX
[19.05] .750
[9.53] .375
[26.04 MAX] 1.025 MAX
[2.54 TIP] .100 TIP

CTs part number
Frequency
Serial number
Date code

[13.46 MAX] .550 MAX
[19.05] .750
[9.53] .375
[26.04 MAX] 1.025 MAX
[2.54 TIP] .100 TIP

REVISION A

CTS • 171 Covington Dr. • Bloomingdale, IL 60108 • 800-757-6686 • www.ctscorp.com •

CTS
1" x 1" Stratum 3E OCXO

Package Specifications
Model 118
1"x1" Stratum 3E OCXO

<table>
<thead>
<tr>
<th>PIN</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RF OUTPUT</td>
</tr>
<tr>
<td>4</td>
<td>GROUND/CASE</td>
</tr>
<tr>
<td>7</td>
<td>N/C or EFC</td>
</tr>
<tr>
<td>8</td>
<td>N/C</td>
</tr>
<tr>
<td>14</td>
<td>Vcc</td>
</tr>
</tbody>
</table>

**KEY:** [MM] INCH

**TOLERANCES:** [±.13] ±.005

Recommended Land Pattern (Surface Mount Pkg.)

[Diagram showing recommended land pattern dimensions]