Features
- Ultra-Low Phase Noise
- Variable Input Frequency 300 - 700 MHz
- Variable Input Power from 18 - 24 dBm
- Output Harmonics to 12 GHz
- SMT580 Surface Mount & SMA800 Packages
- No Bias or Tuning Required
- RoHS* Compliant

Description
The MLPNC-7102S1 is a monolithic non-linear-transmission-line (NLTL) comb generator which offers outstanding phase noise performance. This high performance comb generator operates over specified ranges of input frequency/power.

Operating Parameters\(^1\)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Units</th>
<th>Recommended Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>MHz</td>
<td>Min.  Typ.  Max.</td>
</tr>
<tr>
<td>Power</td>
<td>dBm</td>
<td>18      22      24</td>
</tr>
</tbody>
</table>

1. The model 7102S does not abruptly stop working at the recommended min and max Frequencies and Powers. The conversion efficiency drops outside recommended limits.

Production Test Limits\(^2\)

<table>
<thead>
<tr>
<th>Input</th>
<th>Units</th>
<th>Output Harmonics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>dBm</td>
<td>0 - 4 GHz</td>
</tr>
<tr>
<td>300 MHz, 22 dBm</td>
<td>&gt; -10</td>
<td>&gt; -15</td>
</tr>
<tr>
<td>500 MHz, 22 dBm</td>
<td>&gt; -2</td>
<td>&gt; -5</td>
</tr>
<tr>
<td>700 MHz, 22 dBm</td>
<td>&gt; 0</td>
<td>&gt; -6</td>
</tr>
</tbody>
</table>

2. These are the harmonic output test limits used for production screening.

Absolute Maximum Ratings\(^3,4\)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Absolute Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Power</td>
<td>27 dBm</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-45°C to +85°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-55°C to +125°C</td>
</tr>
<tr>
<td>Temperature Cycling</td>
<td>-55°C to +125°C</td>
</tr>
</tbody>
</table>

3. Exceeding any one or combination of these limits may cause permanent damage to this device.
4. MACOM does not recommend sustained operation near these survivability limits.

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLPNC-7102S1SMA800</td>
<td>ESD Box with Foam</td>
</tr>
<tr>
<td>MLPNC-7102S1SMT580</td>
<td>ESD Box with Foam</td>
</tr>
</tbody>
</table>

* Restrictions on Hazardous Substances, compliant to current RoHS EU directive.

Visit www.macom.com for additional data sheets and product information.
Typical Performance Curves @ +25°C using SMT580 package:

**Harmonic Output, 300 MHz Input Frequency**

**Harmonic Output, 500 MHz Input Frequency**

**Harmonic Output, 700 MHz Input Frequency**

**Phase Noise, 500 MHz Input Frequency, SMT580 Package**
Typical Performance Curves @ 300 MHz over temperature using SMT580 package:

**Harmonic Output, 18 dBm Input Power**

![Graph showing harmonic output with 18 dBm input power across different temperatures.]

**Harmonic Output, 20 dBm Input Power**

![Graph showing harmonic output with 20 dBm input power across different temperatures.]

**Harmonic Output, 22 dBm Input Power**

![Graph showing harmonic output with 22 dBm input power across different temperatures.]

**Harmonic Output, 24 dBm Input Power**

![Graph showing harmonic output with 24 dBm input power across different temperatures.]

For further information and support please visit: [https://www.macom.com/support](https://www.macom.com/support)
Typical Performance Curves @ 500 MHz over temperature using SMT580 package:

- **Harmonic Output, 18 dBm Input Power**
- **Harmonic Output, 20 dBm Input Power**
- **Harmonic Output, 22 dBm Input Power**
- **Harmonic Output, 24 dBm Input Power**
Typical Performance Curves @ 700 MHz over temperature using SMT580 package:

**Harmonic Output, 18 dBm Input Power**

**Harmonic Output, 20 dBm Input Power**

**Harmonic Output, 22 dBm Input Power**

**Harmonic Output, 24 dBm Input Power**
Typical Performance Curves @ +25°C using SMA800 package:

**Harmonic Output, 300 MHz Input Frequency**

![Graph of Harmonic Output, 300 MHz Input Frequency](image1)

**Harmonic Output, 500 MHz Input Frequency**

![Graph of Harmonic Output, 500 MHz Input Frequency](image2)

**Harmonic Output, 700 MHz Input Frequency**

![Graph of Harmonic Output, 700 MHz Input Frequency](image3)
Typical Performance Curves @ 300 MHz over temperature using SMA800 package:

- Harmonic Output, 18 dBm Input Power
- Harmonic Output, 20 dBm Input Power
- Harmonic Output, 22 dBm Input Power
- Harmonic Output, 24 dBm Input Power
Typical Performance Curves @ 500 MHz over temperature using SMA800 package:
Typical Performance Curves @ 700 MHz over temperature using SMA800 package:

- Harmonic Output, 18 dBm Input Power
- Harmonic Output, 20 dBm Input Power
- Harmonic Output, 22 dBm Input Power
- Harmonic Output, 24 dBm Input Power
Outline: SMT580

Top View

Side View

Bottom View

Dimensions in inches [mm]

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For further information and support please visit: https://www.macom.com/support
Outline: SMA800, hermetic

Dimensions in inches [mm]
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