MLPNC-7102S1

NLTL Comb Generator

Rev. V2

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 Parameters¹

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Units</th>
<th>Recommended Input</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Min.</td>
</tr>
<tr>
<td>Frequency</td>
<td>MHz</td>
<td>300</td>
</tr>
<tr>
<td>Power</td>
<td>dBm</td>
<td>18</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 Limits²

| Input                  | Units | Output Harmonics |
|                       |       | 0 - 4 GHz | 4 - 8 GHz | 8 - 12 GHz |
| 300 MHz, 22 dBm       | dBm   | > -10      | > -15      | > -22      |
| 500 MHz, 22 dBm       | dBm   | > -2       | > -5       | > -15      |
| 700 MHz, 22 dBm       | dBm   | > 0        | > -6       | > -15      |

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

Absolute Maximum Ratings³,⁴

<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.
Typical Performance Curves @ +25°C using SMT580 package:

**Harmonic Output, 300 MHz Input Frequency**

![Graph showing harmonic output at 300 MHz input frequency.](image)

**Harmonic Output, 500 MHz Input Frequency**

![Graph showing harmonic output at 500 MHz input frequency.](image)

**Harmonic Output, 700 MHz Input Frequency**

![Graph showing harmonic output at 700 MHz input frequency.](image)

**Phase Noise, 500 MHz Input Frequency, SMT580 Package**

![Graph showing phase noise at 500 MHz input frequency.](image)
Typical Performance Curves @ 300 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 @ 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**

**Harmonic Output, 500 MHz Input Frequency**

**Harmonic Output, 700 MHz Input Frequency**
Typical Performance Curves @ 300 MHz over temperature using SMA800 package:

**Harmonic Output, 18 dBm Input Power**

-45 °C
-85 °C
-22 °C

**Harmonic Output, 20 dBm Input Power**

-45 °C
-85 °C
-22 °C

**Harmonic Output, 22 dBm Input Power**

-45 °C
-85 °C
-22 °C

**Harmonic Output, 24 dBm Input Power**

-45 °C
-85 °C
-22 °C
Typical Performance Curves @ 500 MHz over temperature using SMA800 package:

**Harmonic Output, 18 dBm Input Power**

- 45 °C
- 85 °C
- 22 °C

**Harmonic Output, 20 dBm Input Power**

- 45 °C
- 85 °C
- 22 °C

**Harmonic Output, 22 dBm Input Power**

- 45 °C
- 85 °C
- 22 °C

**Harmonic Output, 24 dBm Input Power**

- 45 °C
- 85 °C
- 22 °C
Typical Performance Curves @ 700 MHz over temperature using SMA800 package:

**Harmonic Output, 18 dBm Input Power**

![Graph showing harmonic output at 18 dBm input power with temperature variations.]

**Harmonic Output, 20 dBm Input Power**

![Graph showing harmonic output at 20 dBm input power with temperature variations.]

**Harmonic Output, 22 dBm Input Power**

![Graph showing harmonic output at 22 dBm input power with temperature variations.]

**Harmonic Output, 24 dBm Input Power**

![Graph showing harmonic output at 24 dBm input power with temperature variations.]

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Visit [www.macom.com](http://www.macom.com) for additional data sheets and product information.

For further information and support please visit: [https://www.macom.com/support](https://www.macom.com/support)
Outline: SMT580

Dimensions in inches [mm]

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

Dimensions in inches [mm]
NLTL Comb Generator

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