**NLTL Comb Generator**

**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**

<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.</td>
</tr>
<tr>
<td></td>
<td></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 Limits**

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

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

**Absolute Maximum Ratings**

<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.

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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
MLPNC-7102S1

NLTL Comb Generator

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
MLPNC-7102S1

NLTL Comb Generator

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 showing harmonic output for 300 MHz input frequency with different power levels.]

**Harmonic Output, 500 MHz Input Frequency**

![Graph showing harmonic output for 500 MHz input frequency with different power levels.]

**Harmonic Output, 700 MHz Input Frequency**

![Graph showing harmonic output for 700 MHz input frequency with different power levels.]

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Typical Performance Curves @ 300 MHz over temperature using SMA800 package:

**Harmonic Output, 18 dBm Input Power**

![Graph](image1)

**Harmonic Output, 20 dBm Input Power**

![Graph](image2)

**Harmonic Output, 22 dBm Input Power**

![Graph](image3)

**Harmonic Output, 24 dBm Input Power**

![Graph](image4)
Typical Performance Curves @ 500 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 @ 700 MHz over temperature using SMA800 package:

- **Harmonic Output, 18 dBm Input Power**
  - Frequency, GHz vs. Power, dBm
  - Temperature: 45 °C, 85 °C, 22 °C

- **Harmonic Output, 20 dBm Input Power**
  - Frequency, GHz vs. Power, dBm
  - Temperature: 45 °C, 85 °C, 22 °C

- **Harmonic Output, 22 dBm Input Power**
  - Frequency, GHz vs. Power, dBm
  - Temperature: 45 °C, 85 °C, 22 °C

- **Harmonic Output, 24 dBm Input Power**
  - Frequency, GHz vs. Power, dBm
  - Temperature: 45 °C, 85 °C, 22 °C
Outline: SMT580

Top View

Side View

Bottom View

Dimensions in inches [mm]

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Outline: SMA800, hermetic

Dimensions in inches [mm]
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