Features

- Ultra-Low Phase Noise
- Variable Input Frequency 75 - 250 MHz
- Variable Input Power from 18 - 24 dBm
- Output Harmonics to 6 GHz
- SMT580 Surface Mount & SMA800 Packages
- No Bias or Tuning Required
- RoHS* Compliant

Description

The MLPNC-7100S1 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></td>
<td></td>
<td>Min.</td>
</tr>
<tr>
<td>Frequency</td>
<td>MHz</td>
<td>75</td>
</tr>
<tr>
<td>Power</td>
<td>dBm</td>
<td>18</td>
</tr>
</tbody>
</table>

1. The model 7100S 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>Up to 1 GHz</td>
</tr>
<tr>
<td>75 MHz, 22 dBm</td>
<td>dBm</td>
<td>&gt; -30</td>
</tr>
<tr>
<td>100 MHz, 22 dBm</td>
<td>dBm</td>
<td>&gt; -15</td>
</tr>
<tr>
<td>250 MHz, 22 dBm</td>
<td>dBm</td>
<td>&gt; -3</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-7100S1SMA800</td>
<td>ESD Box with Foam</td>
</tr>
<tr>
<td>MLPNC-7100S1SMT580</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 SMA package:

**Harmonic Output, 75 MHz Input Frequency**

![Harmonic Output, 75 MHz Input Frequency Graph](Image)

**Harmonic Output, 100 MHz Input Frequency**

![Harmonic Output, 100 MHz Input Frequency Graph](Image)

**Harmonic Output, 250 MHz Input Frequency**

![Harmonic Output, 250 MHz Input Frequency Graph](Image)

**Phase Noise @ 22 dBm, 100 MHz Input Frequency, 4 GHz Output Frequency**

![Phase Noise Graph](Image)
Typical Performance Curves @ +25°C using SMT580 package:

Harmonic Output, 75 MHz Input Frequency

Harmonic Output, 100 MHz Input Frequency

Harmonic Output, 250 MHz Input Frequency
Typical Performance Curves over temperature @ 75 MHz Input Frequency using SMT580 package:

**Harmonic Output, 18 dBm Input Power**

-45 °C
-25 °C
-85 °C

**Harmonic Output, 22 dBm Input Power**

-45 °C
-25 °C
-85 °C

**Harmonic Output, 24 dBm Input Power**

-45 °C
-25 °C
-85 °C
MLPNC-7100S1

NLTL Comb Generator

Typical Performance Curves over temperature @ 100 MHz Input Frequency using SMT580 package:

Harmonic Output, 18 dBm Input Power

![Graph showing Harmonic Output, 18 dBm Input Power](image)

Harmonic Output, 22 dBm Input Power

![Graph showing Harmonic Output, 22 dBm Input Power](image)

Harmonic Output, 24 dBm Input Power

![Graph showing Harmonic Output, 24 dBm Input Power](image)
Typical Performance Curves over temperature @ 250 MHz Input Frequency using SMT580 package:

Harmonic Output, 18 dBm Input Power

Harmonic Output, 22 dBm Input Power

Harmonic Output, 24 dBm Input Power
Outline: SMA800, hermetic

Dimensions in inches [mm]
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