**Features**
- Ultra-Low Phase Noise
- Variable Input Frequency 100 - 400 MHz
- Variable Input Power from 18 - 24 dBm
- Output Harmonics to 20 GHz
- SMT680 Surface Mount Package
- SMA850 Hermetically Package
- No Bias or Tuning Required
- RoHS* Compliant

**Description**
The MLPNC-7100 is a low phase noise comb generator (LPNC) with a flexible range of input frequency and power. It is based on monolithic non-linear-transmission-line (NLTL) circuit technology and it’s banner spec is its ultra-low phase noise. The phase noise shown is at the 120th harmonic (12 GHz) and at any other harmonic it can be calculated using the analytical equation PNN = PN120 - 20 LOG (120 – N) N<120. It is available in both coaxial and surface mount packages.

**Operating Parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Units</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>MHz</td>
<td>100</td>
<td>250</td>
<td>400</td>
</tr>
<tr>
<td>Power</td>
<td>dBm</td>
<td>18</td>
<td>22</td>
<td>24</td>
</tr>
</tbody>
</table>

1. The model MLPNC-7100 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 / Power</th>
<th>Units</th>
<th>Output Harmonics</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 GHz</td>
<td>8 GHz</td>
<td>12 GHz</td>
</tr>
<tr>
<td>100 MHz, 22 dBm</td>
<td>dBm</td>
<td>&gt; -23</td>
</tr>
<tr>
<td>250 MHz, 20 dBm</td>
<td>dBm</td>
<td>&gt; -11</td>
</tr>
<tr>
<td>400 MHz, 20 dBm</td>
<td>dBm</td>
<td>&gt; -8</td>
</tr>
</tbody>
</table>

**Ordering Information**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLPNC-7100-SMA850</td>
<td>ESD Box with Foam</td>
</tr>
<tr>
<td>MLPNC-7100-SMT680</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 using SMA package @ 100 MHz Input:

**Harmonic Output, @ P\text{IN} = 18 dBm**

- Frequency (GHz) vs. Output Power (dBm)
- Lines represent different temperatures

**Harmonic Output, @ P\text{IN} = 20 dBm**

- Frequency (GHz) vs. Output Power (dBm)
- Lines represent different temperatures

**Harmonic Output, @ P\text{IN} = 22 dBm**

- Frequency (GHz) vs. Output Power (dBm)
- Lines represent different temperatures

**Harmonic Output, @ P\text{IN} = 24 dBm**

- Frequency (GHz) vs. Output Power (dBm)
- Lines represent different temperatures

**Phase Noise, 22 dBm P\text{IN} 12 GHz Output**

- Frequency (Hz) vs. Phase Noise (dBc/Hz)

**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>

2. Exceeding any one or combination of these limits may cause permanent damage to this device.
3. MACOM does not recommend sustained operation near these survivability limits.
Typical Performance Curves using SMA package @ 250 MHz Input:

**Harmonic Output, @ $P_{IN} = 18$ dBm**

-25°C
-45°C
+85°C

**Harmonic Output, @ $P_{IN} = 20$ dBm**

-25°C
-45°C
+85°C

**Harmonic Output, @ $P_{IN} = 22$ dBm**

-25°C
-45°C
+85°C

**Harmonic Output, @ $P_{IN} = 24$ dBm**

-25°C
-45°C
+85°C
Typical Performance Curves using SMA package @ 400 MHz Input:

**Harmonic Output, @ P\text{IN} = 18 dBm**

![Graph showing harmonic output at P\text{IN} = 18 dBm](image)

**Harmonic Output, @ P\text{IN} = 20 dBm**

![Graph showing harmonic output at P\text{IN} = 20 dBm](image)

**Harmonic Output, @ P\text{IN} = 22 dBm**

![Graph showing harmonic output at P\text{IN} = 22 dBm](image)

**Harmonic Output, @ P\text{IN} = 24 dBm**

![Graph showing harmonic output at P\text{IN} = 24 dBm](image)
Outline: SMT680

Top View

Side View

Bottom View

Dimensions in inches [mm]
Outline: SMA850, hermetic

Dimensions in inches [mm]