SMA3117

MMIC Amplifier, 5V, 22.7mA, 0.1 to 3GHz, MCPH6

Features

- High Gain : Gp=33.5dB typ. @2.2GHz
- Wideband response : fu=3.0GHz
- Low current : ICC=22.7mA typ.
- High output power : Po(1dB)=5.7dBm
- Port impedance : input/output 50Ω
- Halogen free compliance

Specifications

Absolute Maximum Ratings at Ta=25°C

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Conditions</th>
<th>Ratings</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Voltage</td>
<td>VCC</td>
<td></td>
<td>6</td>
<td>V</td>
</tr>
<tr>
<td>Circuit Current</td>
<td>ICC</td>
<td></td>
<td>40</td>
<td>mA</td>
</tr>
<tr>
<td>Allowable Power Dissipation</td>
<td>PD</td>
<td></td>
<td>280</td>
<td>mW</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>Topr</td>
<td></td>
<td>-40 to +85</td>
<td>°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>Tstg</td>
<td></td>
<td>-55 to +150</td>
<td>°C</td>
</tr>
</tbody>
</table>

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Package Dimensions

unit : mm (typ)
7022A-018

Product & Package Information

- Package : MCPH6
- JEITA, JEDEC : SC-88, SC-70-6, SOT-363
- Minimum Packing Quantity : 3,000 pcs./reel

Packing Type : TL

Marking

LG

TL
**Recommended Operating Conditions** at Ta=25°C

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Conditions</th>
<th>Ratings</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Voltage</td>
<td>VCC</td>
<td></td>
<td>min typ max</td>
<td>V</td>
</tr>
<tr>
<td>Operating Ambient Temperature</td>
<td>Topr</td>
<td></td>
<td>-40 +25 +85</td>
<td>°C</td>
</tr>
</tbody>
</table>

**Electrical Characteristics** at Ta=25°C, VCC=5V, Zs=ZL=50Ω

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Conditions</th>
<th>Ratings</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circuit Current</td>
<td>ICC</td>
<td>f=1GHz f=2.2GHz</td>
<td>18.5 22.7 28.0</td>
<td>mA</td>
</tr>
<tr>
<td>Power Gain</td>
<td>Gp</td>
<td>f=1GHz f=2.2GHz</td>
<td>29.5 31.2 32.5</td>
<td>dB</td>
</tr>
<tr>
<td>Isolation</td>
<td>ISL</td>
<td>f=1GHz f=2.2GHz</td>
<td>35.0 37.6 35.5</td>
<td>dB</td>
</tr>
<tr>
<td>Input Return Loss</td>
<td>RLin</td>
<td>f=1GHz f=2.2GHz</td>
<td>4.5 6.0 6.0</td>
<td>dB</td>
</tr>
<tr>
<td>Output Return Loss</td>
<td>RLout</td>
<td>f=1GHz f=2.2GHz</td>
<td>4.5 6.0 6.0</td>
<td>dB</td>
</tr>
<tr>
<td>Noise Figure</td>
<td>NF</td>
<td>f=1GHz f=2.2GHz</td>
<td>4.1 5.0 4.1</td>
<td>dB</td>
</tr>
<tr>
<td>Gain 1dB Compression Output</td>
<td>Po(1dB)</td>
<td>f=1GHz f=2.2GHz</td>
<td>7.5 9.8 7.5</td>
<td>dBm</td>
</tr>
<tr>
<td>Upper Limit Operating Frequency</td>
<td>fu</td>
<td>3dB down below flat gain at f=1GHz</td>
<td>3.0</td>
<td>GHz</td>
</tr>
</tbody>
</table>

*1 : On evaluation board

Note) Pay attention to handling since it is liable to be affected by static electricity due to the high frequency process adopted.

**Ordering Information**

<table>
<thead>
<tr>
<th>Device</th>
<th>Package</th>
<th>Shipping</th>
<th>memo</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMA3117-TL-H</td>
<td>MCPH6</td>
<td>3,000pcs./reel</td>
<td>Pb Free and Halogen Free</td>
</tr>
</tbody>
</table>

**Test Circuit**

Connect 2, 4 and 5 with GND.
**Evaluation Board**

Symbol | Value
--- | ---
C1, C2 | 100pF
C3 | 1000pF
L1 | 100nH

## Graphs

1. **ICC - VCC**
   - Circuit Current, ICC: mA vs. Circuit Voltage, VCC: V
   - Data points for 5.5V, 5.0V, 4.5V

2. **Gp - f**
   - Power Gain, Gp: dB vs. Frequency, f: GHz
   - Curves for 4.5V, 5.0V, 5.5V

3. **RLin - f**
   - Input Return Loss, RLin: dB vs. Frequency, f: GHz
   - Curves for 4.5V, 5.0V, 5.5V
Embossed Taping Specification
SMA3117-TL-H

1. Packing Format

<table>
<thead>
<tr>
<th>Package Name</th>
<th>Carrier Tape Type</th>
<th>Maximum Number of Devices contained (Real)</th>
<th>Packing Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCPH6</td>
<td>MCP4</td>
<td>3,000 15,000 90,000</td>
<td>Inner BOX (C-1) 6 inner boxes contained</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Dimensions: mm (external) 183x72x185</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Outer BOX (A-7) 440x195x710</td>
</tr>
</tbody>
</table>

Reel label, Inner box label (unit:mm)

Type No. LOT No. Quantity Origin

Reel label

NOTE (1)
The LEAD FREE description shows that the surface treatment of the terminal is lead free.

Label JEITA Phase
LEAD FREE 3 JEITA Phase 3A
LEAD FREE 4 JEITA Phase 3

2. Taping configuration

2-1. Carrier tape size (unit:mm)

When a device is mounted

When a device is mounted

Device mounting recess square hole

2-2. Device placement direction

Reel Feed road hole

Pin index

Feed direction

Those with pin 1 index on the feed hole side... TL

No.8936-5/7