



SMA3107

ON Semiconductor®

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MMIC

Amplifier, 3V, 6mA, 0.1 to 2.8GHz, MCPH6

Features

- High Gain : $G_p=23.5\text{dB typ. @ 1GHz}$
- Wideband response : $f_u=2.8\text{GHz}$
- Low current : $I_{CC}=6\text{mA typ.}$
- Port impedance : input/output 50Ω

Specifications

Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

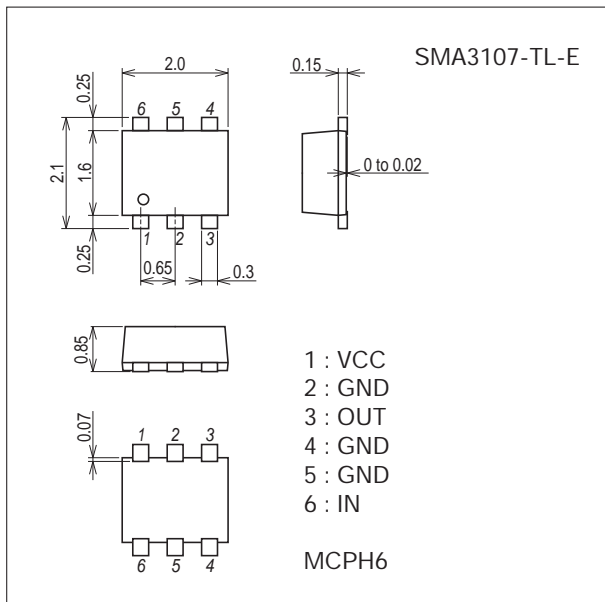
| Parameter | Symbol | Conditions | Ratings | Unit |
|-----------------------------|-----------|------------|-------------|------------------|
| Supply Voltage | V_{CC} | | 5 | V |
| Circuit Current | I_{CC} | | 15 | mA |
| Allowable Power Dissipation | P_D | | 280 | mW |
| Operating Temperature | T_{opr} | | -40 to +85 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | | -55 to +150 | $^\circ\text{C}$ |

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)

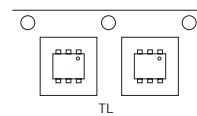
7022A-018



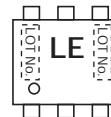
Product & Package Information

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

Packing Type : TL



Marking



SMA3107

Recommended Operating Condition at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|-------------------------------|--------|------------|---------|-----|-----|------|
| | | | min | typ | max | |
| Supply Voltage | VCC | | 2.7 | 3 | 3.3 | V |
| Operating Ambient Temperature | Topr | | -40 | +25 | +85 | °C |

Electrical Characteristics at Ta=25°C, VCC=3V, Zs=ZL=50Ω

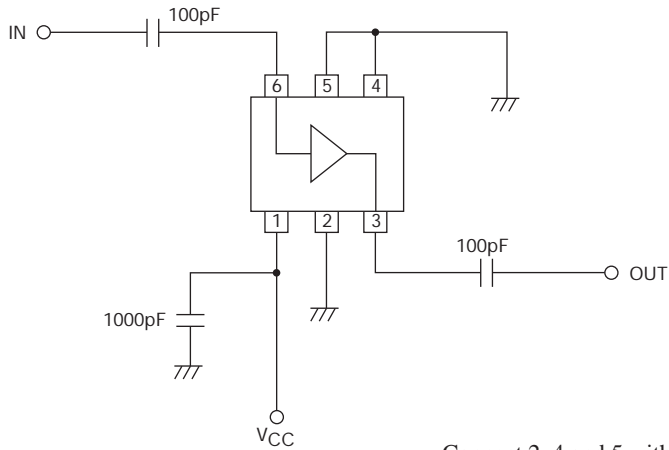
| Parameter | Symbol | Conditions | Ratings | | | Unit |
|-----------------------------------|---------|-------------------------------------|---------|------|------|------|
| | | | min | typ | max | |
| Circuit Current | ICC | | 4.3 | 6.0 | 7.7 | mA |
| Power Gain | Gp | f=1GHz | 21.0 | 23.5 | 26.0 | dB |
| | | f=2.2GHz | 22.0 | 24.5 | 27.0 | |
| Isolation | ISL | f=1GHz | 33.0 | 38.0 | | dB |
| | | f=2.2GHz | 40.0 | 45.0 | | |
| Input Return Loss | RLin | f=1GHz | 18.0 | 23.0 | | dB |
| | | f=2.2GHz | 10.0 | 13.0 | | |
| Output Return Loss | RLout | f=1GHz | 27.0 | 32.0 | | dB |
| | | f=2.2GHz | 10.0 | 13.0 | | |
| Noise Figure | NF | f=1GHz | | 3.1 | 4.3 | dB |
| | | f=2.2GHz | | 3.6 | 4.3 | |
| Gain 1dB Compression Output Power | Po(1dB) | f=1GHz | -10 | -8 | | dBm |
| | | f=2.2GHz | -11.5 | -9.5 | | |
| Upper Limit Operating Frequency | fu | 3dB down below flat gain at f =1GHz | | 2.8 | | GHz |

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

Ordering Information

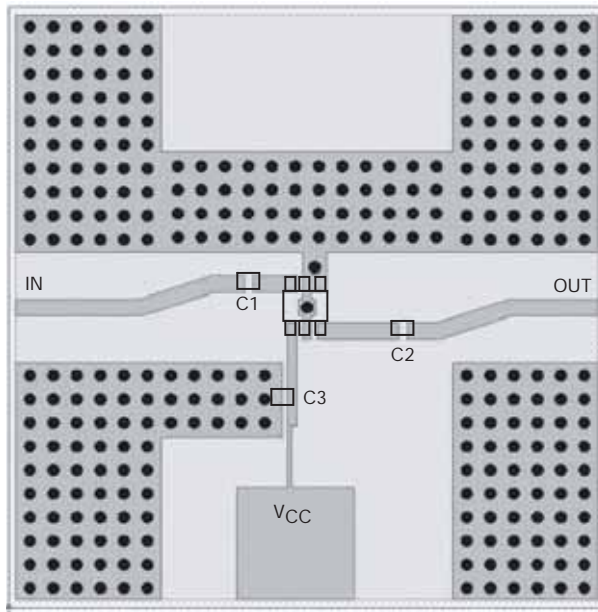
| Device | Package | Shipping | memo |
|--------------|---------|----------------|---------|
| SMA3107-TL-E | MCPH6 | 3,000pcs./reel | Pb Free |

Test Circuit

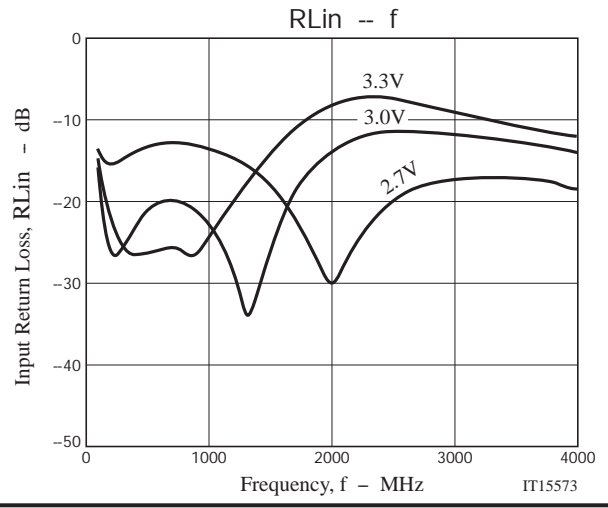
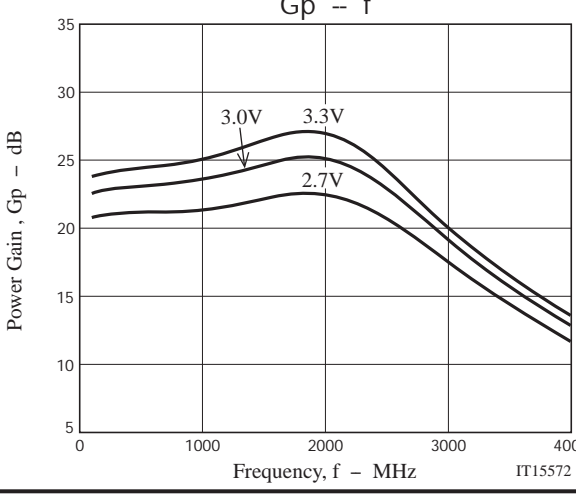
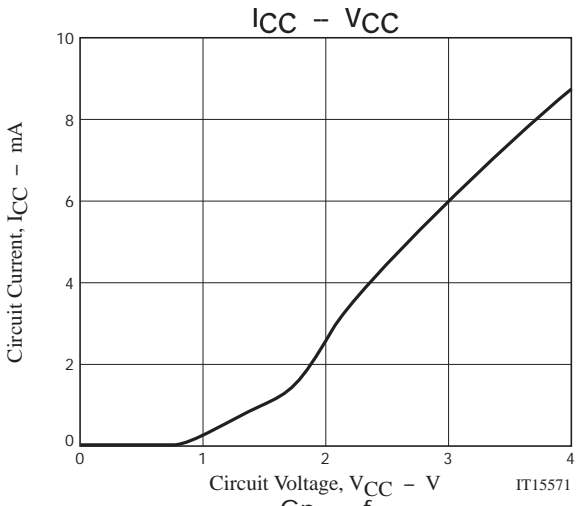


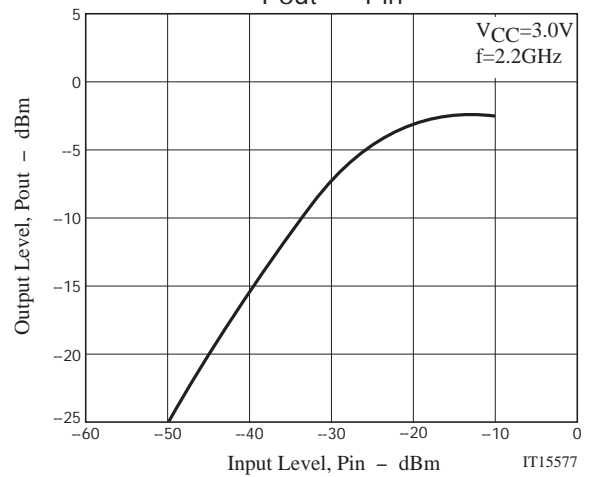
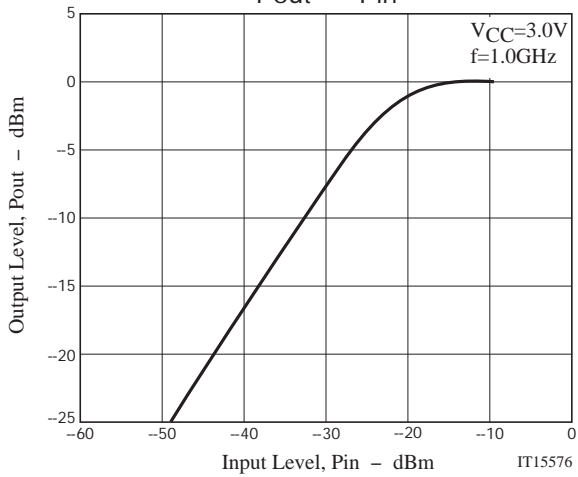
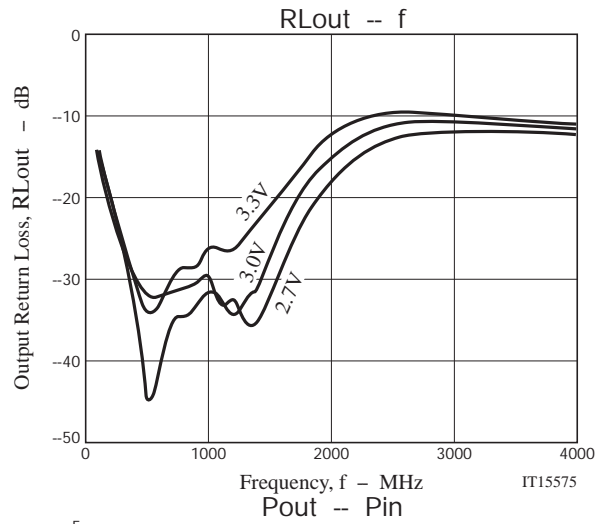
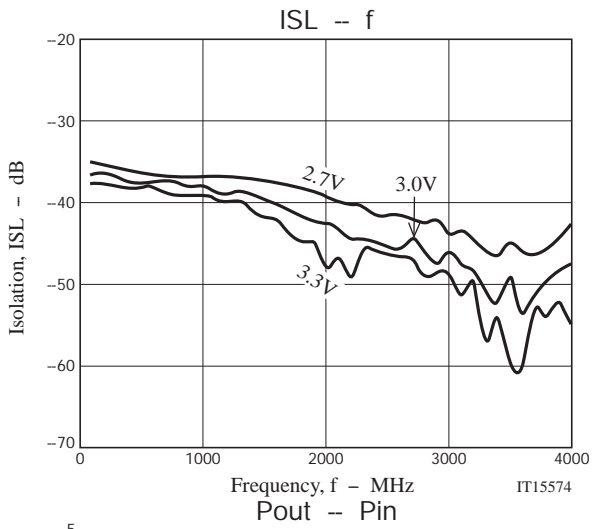
IT15570

Evaluation Board

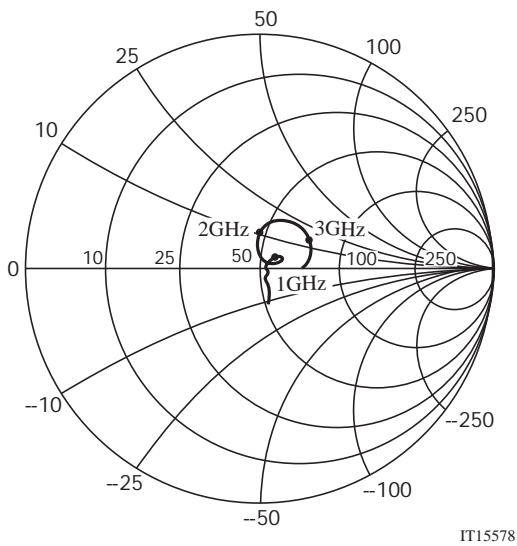


| Symbol | Value |
|--------|--------|
| C1, C2 | 100pF |
| C3 | 1000pF |

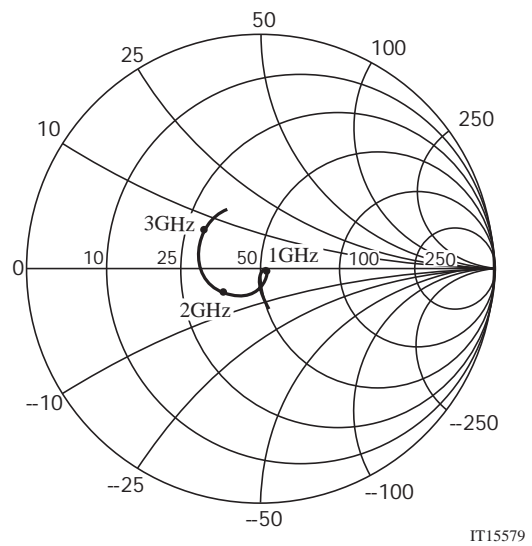




S Parameter
S11



S22



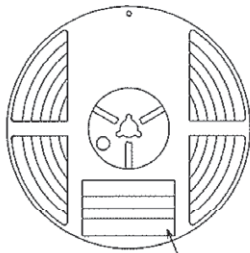
Embossed Taping Specification

SMA3107-TL-E

1. Packing Format

| Package Name | Carrier Tape Type | Maximum Number of devices contained (pcs) | | | Packing format | |
|--------------|-------------------|---|-----------|-----------|---|--|
| | | Reel | Inner box | Outer box | Inner BOX (C-1) | Outer BOX (A-7) |
| MCPH6 | MCP4 | 3,000 | 15,000 | 90,000 | 5 reels contained Dimensions:mm (external) 183×72×185 | 6 inner boxes contained Dimensions:mm (external) 440×195×210 |

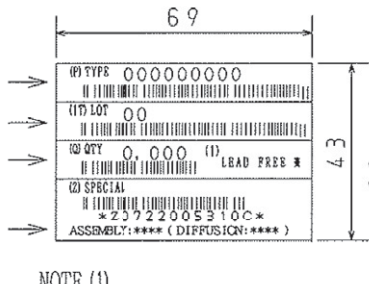
Packing method



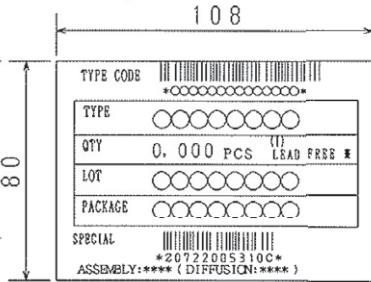
Type No.
LOT No.
Quantity
Origin

Reel label

Reel label, Inner box label
(unit :mm)



Outer box label
It is a label at the time of factory shipments.
The form of a label may change in physical distribution process.



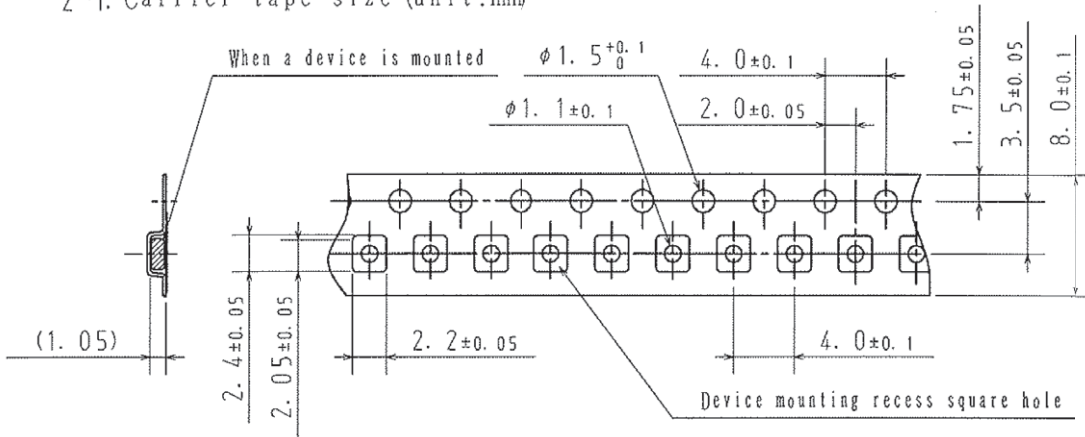
NOTE (1)

The LEAD FREE * description shows that the surface treatment of the terminal is lead free.

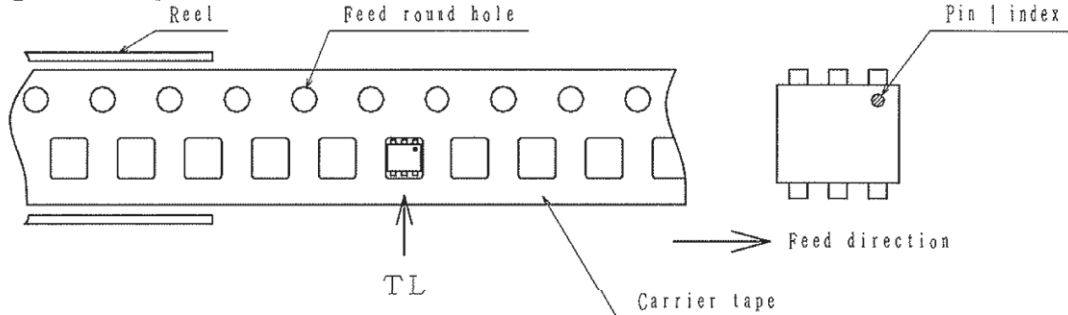
| Label | JEITA Phase |
|-------------|----------------|
| LEAD FREE 3 | JEITA Phase 3A |
| LEAD FREE 4 | JEITA Phase 3 |

2. Taping configuration

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



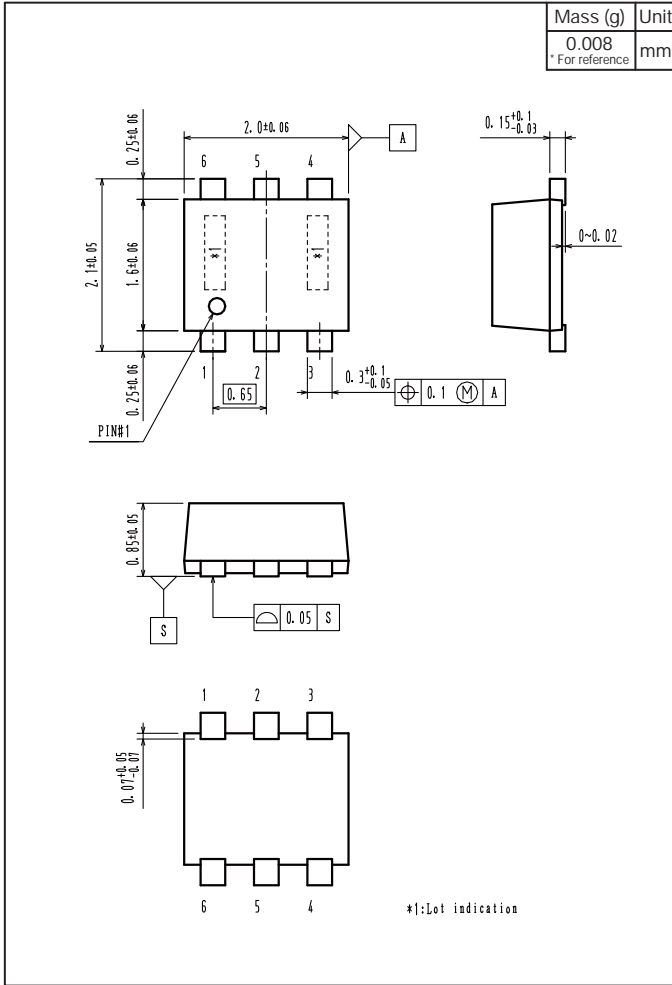
2-2. Device placement direction



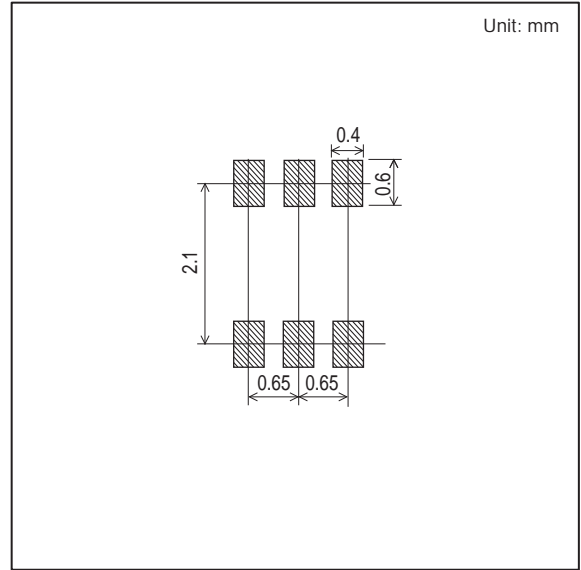
Those with pin | index on the feed hole side.....TL

SMA3107

Outline Drawing SMA3107-TL-E



Land Pattern Example



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