Ordering number : EN8936A

# SMA3117

## MMIC
## Amplifiler, 5V, 22.7mA, 0.1 to 3GHz, MCPH6

ON Semiconductor®
http://onsemi.com

### Features

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

### Specifications

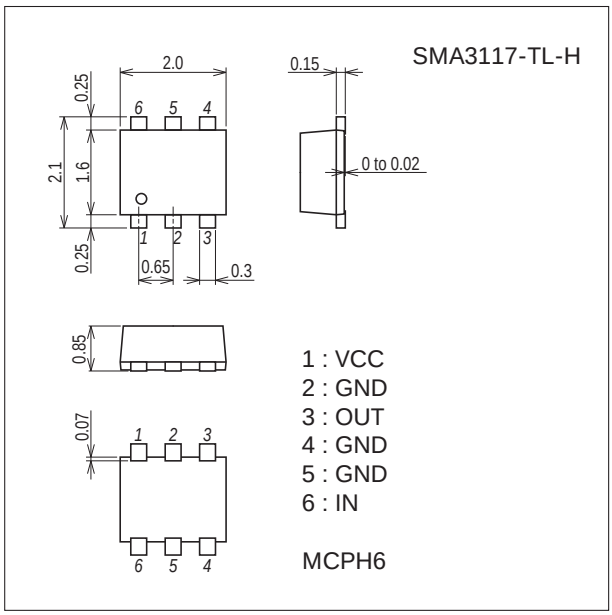
**Absolute Maximum Ratings** at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|---|---|---|---|---|
| Supply Voltage | $V_{CC}$ | | 6 | V |
| Circuit Current | $I_{CC}$ | | 40 | mA |
| Allowable Power Dissipation | $P_D$ | | 280 | mW |
| Operating Temperature | Topr | | −40 to +85 | °C |
| Storage Temperature | Tstg | | −55 to +150 | °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

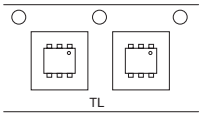
unit : mm (typ)
7022A-018



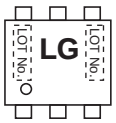

### Product & Package Information

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

### Packing Type : TL




### Marking



## Recommended Operating Conditions at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Supply Voltage | $V_{CC}$ | | 4.5 | 5 | 5.5 | V |
| Operating Ambient Temperature | Topr | | −40 | +25 | +85 | °C |

## Electrical Characteristics at Ta=25°C, $V_{CC}$=5V, Zs=$Z_L$=50Ω

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Circuit Current | $I_{CC}$ | | 18.5 | 22.7 | 28.0 | mA |
| Power Gain | Gp | f=1GHz | 29.5 | 31.2 | 32.5 | dB |
| | | f=2.2GHz | 30.5 | 33.5 | 35.5 | |
| Isolation | ISL | f=1GHz | 35.0 | 37.6 | | dB |
| | | f=2.2GHz | 34.0 | 36.5 | | |
| Input Return Loss | RLin | f=1GHz | 9.0 | 11.2 | | dB |
| | | f=2.2GHz | 4.5 | 6.0 | | |
| Output Return Loss | RLout | f=1GHz | 11.0 | 14.3 | | dB |
| | | f=2.2GHz | 12.0 | 16.3 | | |
| Noise Figure | NF | f=1GHz | | 4.1 | 5.0 | dB |
| | | f=2.2GHz | | 3.9 | 5.0 | |
| Gain 1dB Compression Output Power *1 | Po(1dB) | f=1GHz | 7.5 | 9.8 | | dBm |
| | | f=2.2GHz | 3.7 | 5.7 | | |
| Upper Limit Operating Frequency *1 | fu | 3dB down below flat gain at f=1GHz | | 3.0 | | GHz |

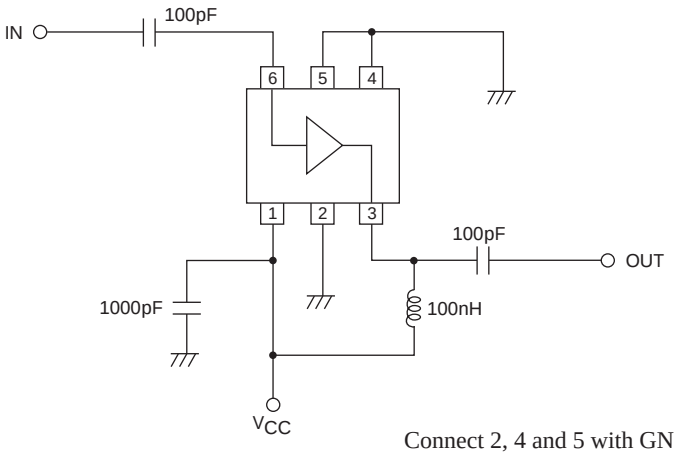
*1 : On evaluation board

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

## Ordering Information

| Device | Package | Shipping | memo |
|---|---|---|---|
| SMA3117-TL-H | MCPH6 | 3,000pcs./reel | Pb Free and Halogen Free |

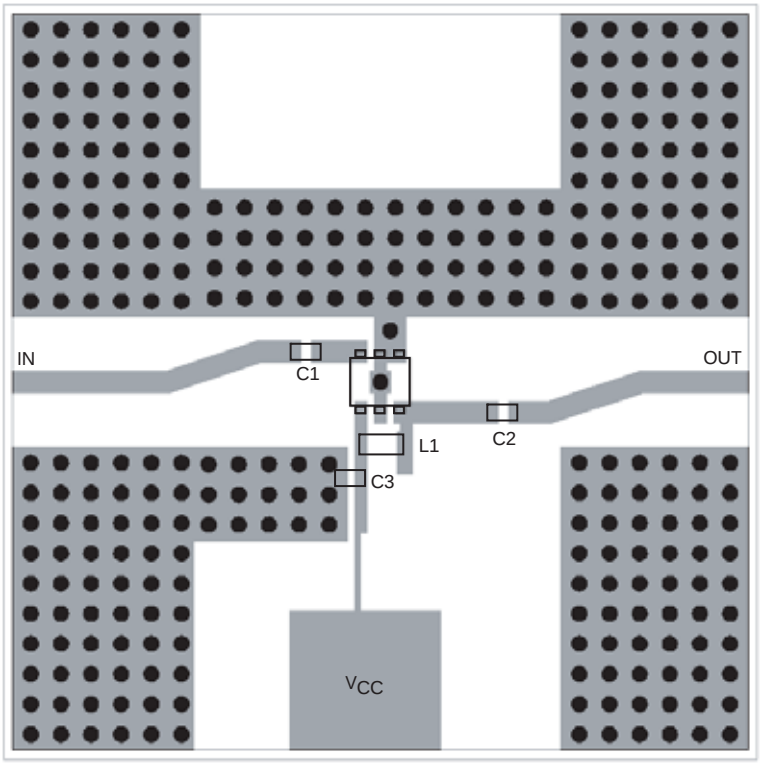
## Test Circuit



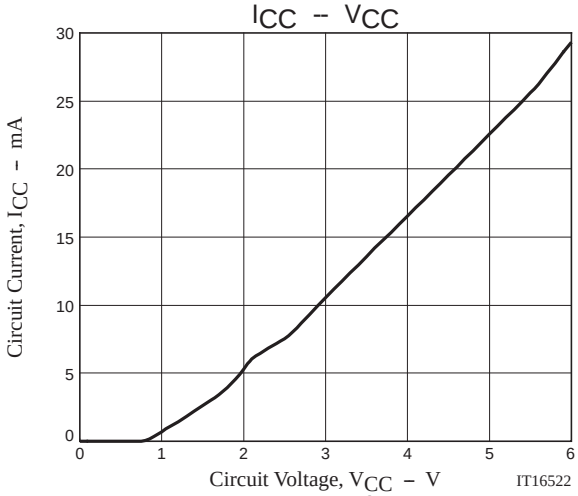

Connect 2, 4 and 5 with GND.

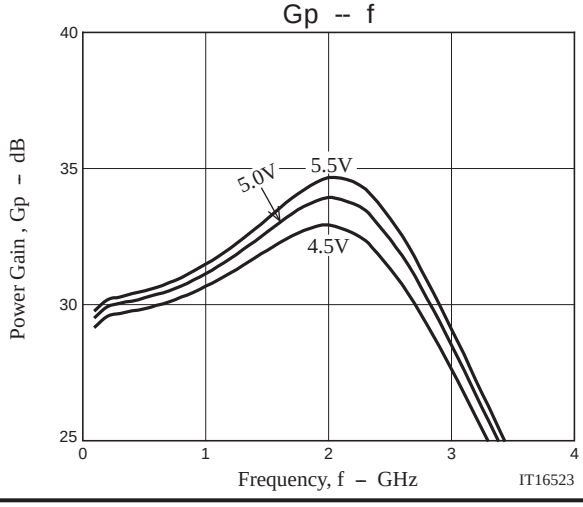
IT15580

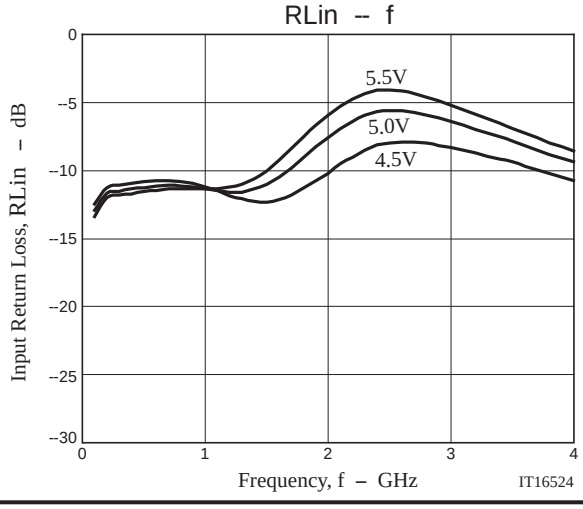
## Evaluation Board

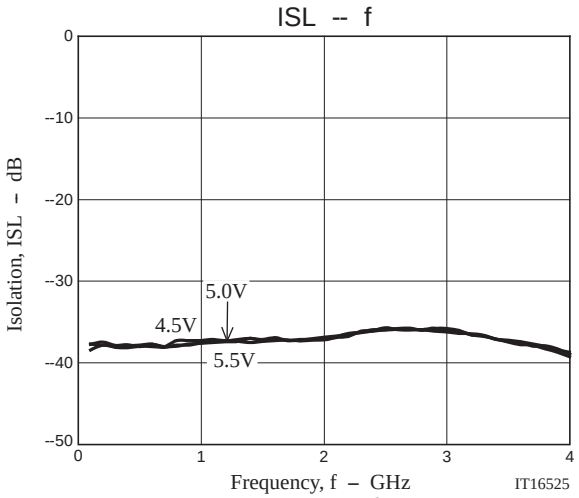


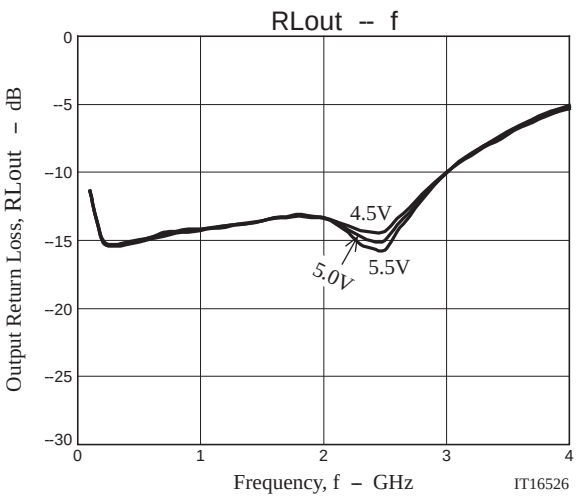

| Symbol | Value |
|---|---|
| C1, C2 | 100pF |
| C3 | 1000pF |
| L1 | 100nH |

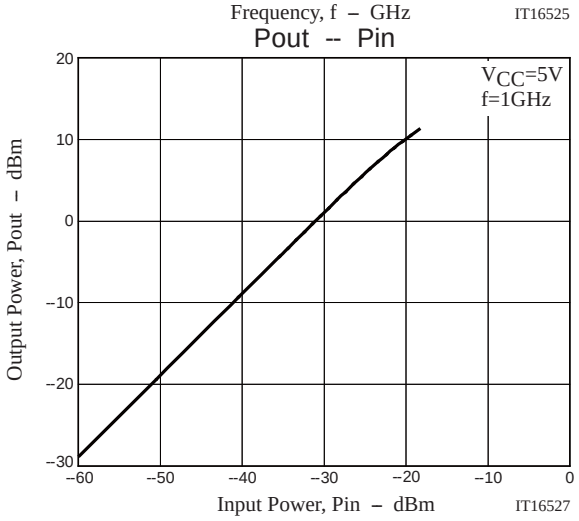


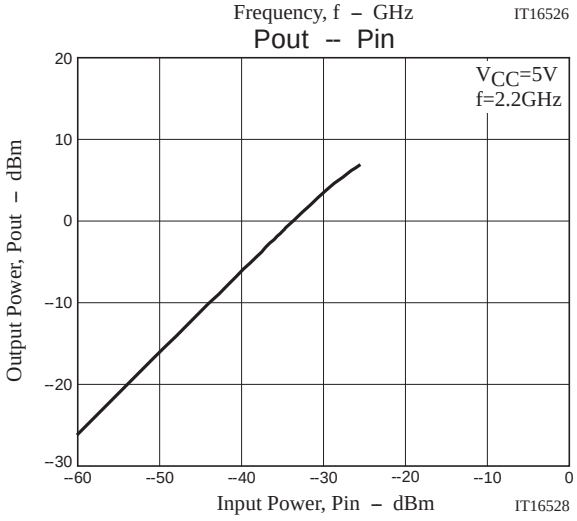





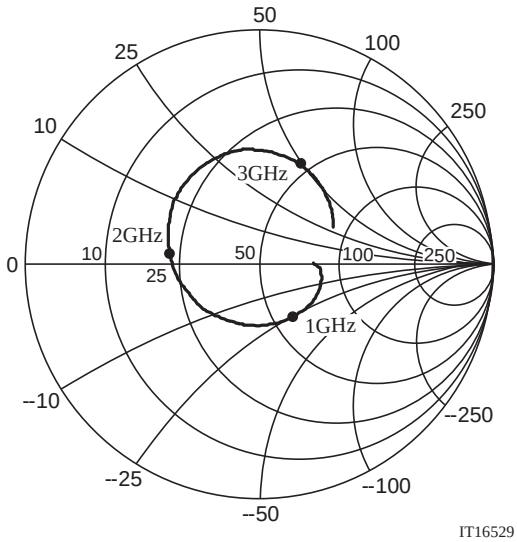



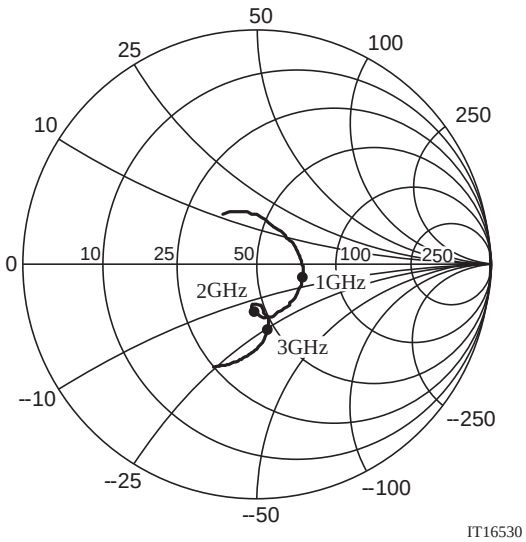




S Parameter ($V_{CC}$=5V)

S11




S22



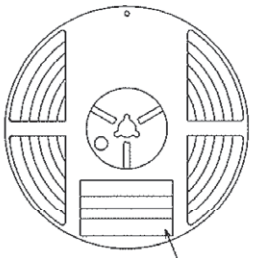
**Embossed Taping Specification**

SMA3117-TL-H

## 1. Packing Format

| Package Name | Carrier Tape Type | Maximun 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<br>Dimensions:mm (external)<br>183×72×185 | 6 inner boxes contained<br>Dimensions:mm (external)<br>440×195×210 |

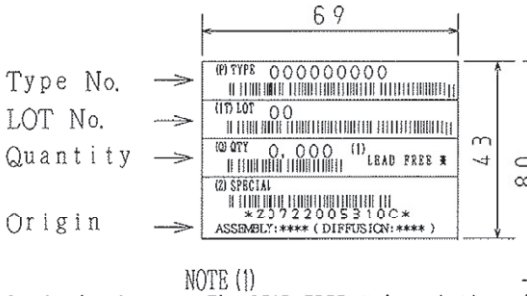
Packing method



Reel label

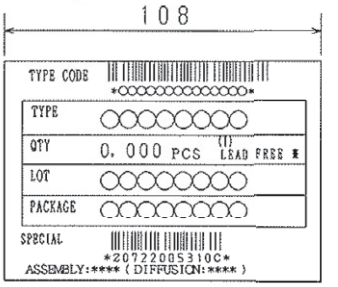
Reel label, Inner box label

(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.

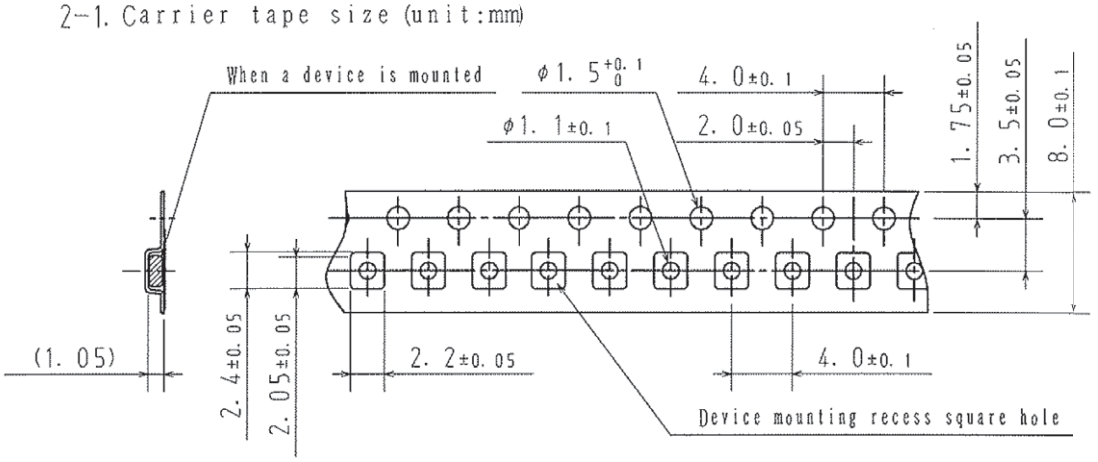



NOTE (1)
The LEAD FREE ※ description shows that the surface treatment of the terminal is lead free.

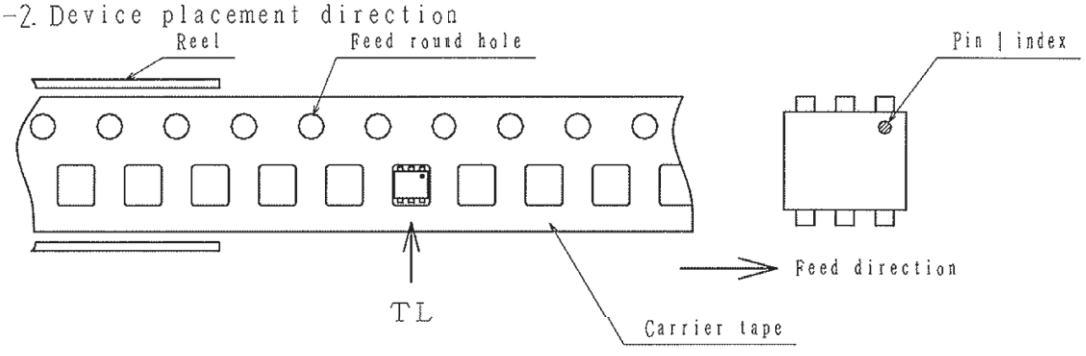
| Label | JEITA Phase |
|---|---|
| LEAD FREE 3 | JEITA Phase 3A |
| LEAD FREE 4 | JEITA Phase 3 |

## 2. Taping configuration

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



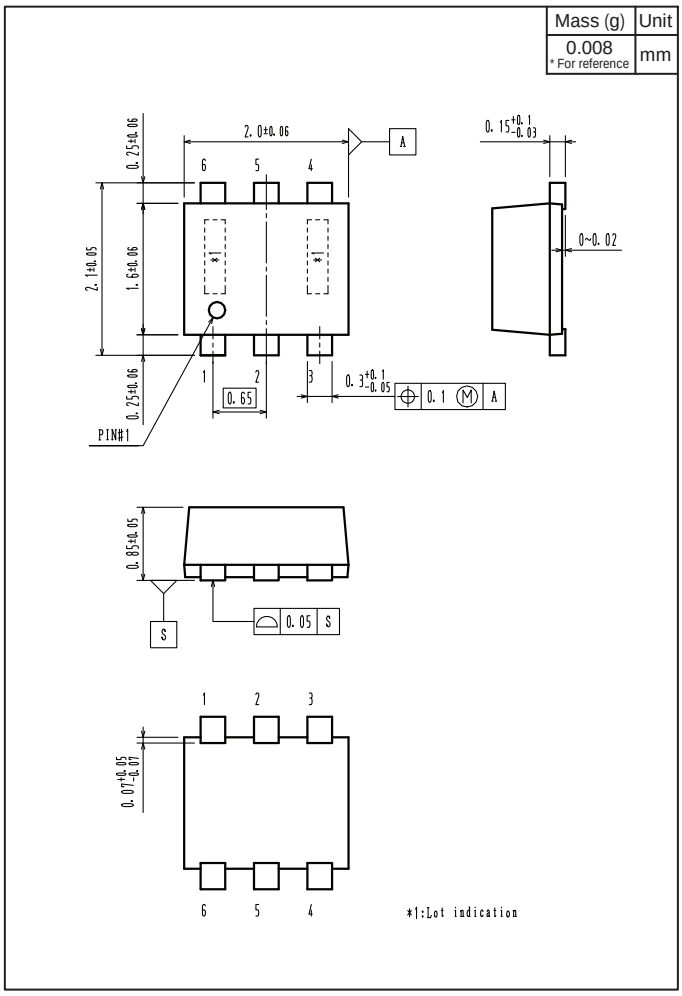

### 2-2. Device placement direction



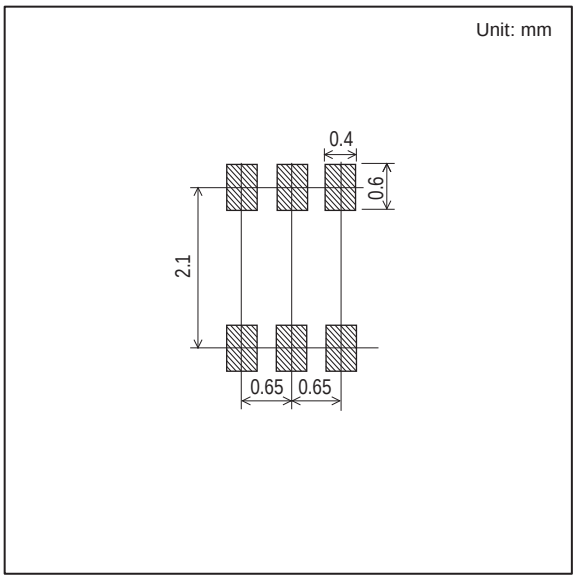

Those with pin 1 index on the feed hole side·····TL

## Outline Drawing

SMA3117-TL-H




## Land Pattern Example



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