



SMA5101 — Silicon Monolithic Linear IC RF Double Balanced Mixer IC

Features

- Wide band : up to Ku band
- Low distortion : IIP3=20dBm (@ICC > 11mA)
- SMT, Ultra small package : 2.0×2.1×0.85mm
- High conversion gain : -0.5dB (@450MHz)
- Low voltage available : 1.2V and above
- Halogen free compliance

Specifications

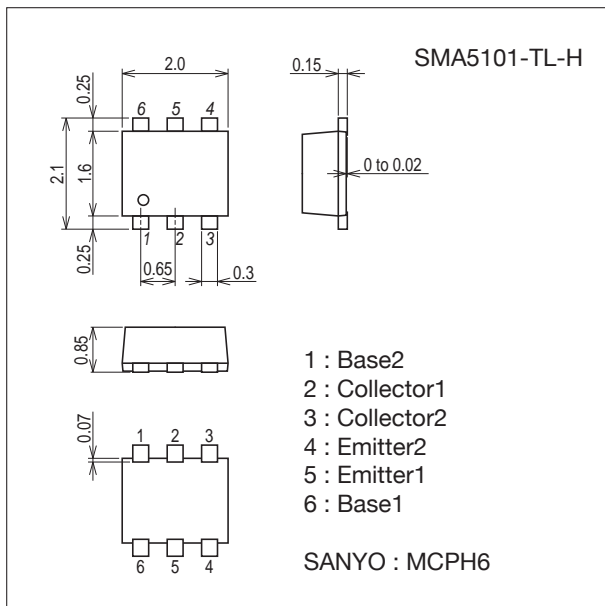
Absolute Maximum Ratings at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------|--------|------------|-------------|------|
| Collector-to-Base Voltage | VCBO | | 8 | V |
| Collector-to-Emitter Voltage | VCEO | | 6 | V |
| Emitter-to-Base Voltage | VEBO | | 2 | V |
| Collector Current | ICC | | 50 | mA |
| Max Power Dissipation | PC | | 280 | mW |
| Operating Temperature | Topr | | -40 to +85 | °C |
| Storage Temperature | Tstg | | -55 to +150 | °C |

Package Dimensions

unit : mm (typ)

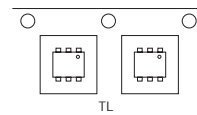
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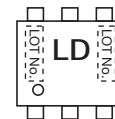
Product & Package Information

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

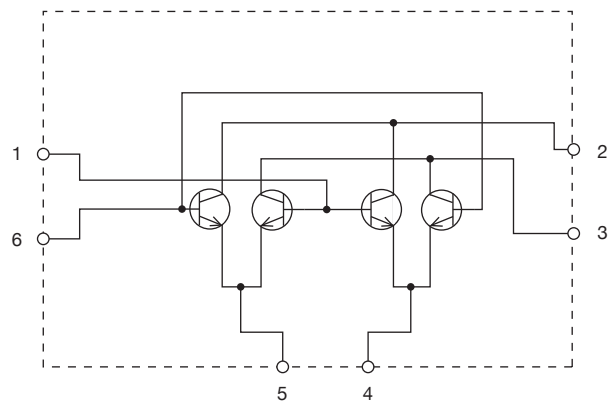
Packing Type : TL



Marking



Equivalent Circuit



IT15506

SMA5101

Recommended Operating Condition at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|----------------|--------|------------|---------|-----|-----|------|
| | | | min | typ | max | |
| Supply Voltage | VC1E1 | | 1.2 | 3 | 6 | V |
| | VC2E1 | | 1.2 | 3 | 6 | V |
| | VC1E2 | | 1.2 | 3 | 6 | V |
| | VC2E2 | | 1.2 | 3 | 6 | V |

Electrical Characteristics at Ta=25°C

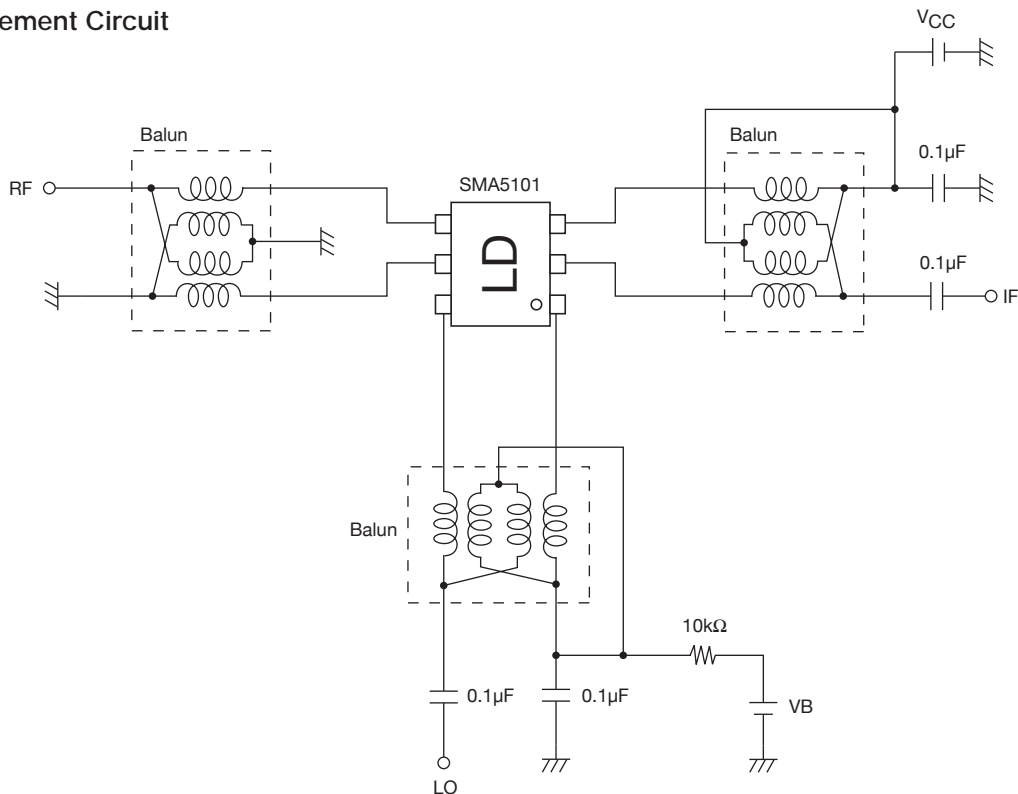
| Parameter | Symbol | Conditions | Ratings | | | Unit |
|--------------------------|--------|---|---------|------|-----|------|
| | | | min | typ | max | |
| Collector Cutoff Current | IC1B1O | VC1B1=5V | | | 1 | μA |
| | IC2B1O | VC2B1=5V | | | 1 | μA |
| | IC1B2O | VC1B2=5V | | | 1 | μA |
| | IC2B2O | VC2B2=5V | | | 1 | μA |
| Emitter Cutoff Current | IE1B1O | VE1B1=1V | | | 1 | μA |
| | IE2B1O | VE2B1=1V | | | 1 | μA |
| | IE1B2O | VE1B2=1V | | | 1 | μA |
| | IE2B2O | VE2B2=1V | | | 1 | μA |
| DC Current Gain | hFE1 | VC1E1=1V, IC1E1=3mA | 20 | | 120 | |
| | hFE2 | VC2E1=1V, IC2E1=3mA | 20 | | 120 | |
| | hFE3 | VC1E2=1V, IC1E2=3mA | 20 | | 120 | |
| | hFE4 | VC2E2=1V, IC2E2=3mA | 20 | | 120 | |
| Conversion Gain *1 | Gc | VCC=5V, ICC=6mA, f(RF)=450MHz, f(LO)=500MHz, P(RF)=-15dBm, P(LO)=-6dBm | | -0.5 | | dB |
| Input Intercept Point *1 | IIP3 | VCC=5V, ICC=6mA, f(RF1)=450MHz, f(RF2)=451MHz, f(LO)=500MHz, P(RF1)=P(RF2)=-15dBm, P(LO)=-6dBm | | 15 | | dBm |

*1 : On evaluation board

Ordering Information

| Device | Package | Shipping | memo |
|--------------|---------|----------------|--------------------------|
| SMA5101-TL-H | MCPH6 | 3,000pcs./reel | Pb Free and Halogen Free |

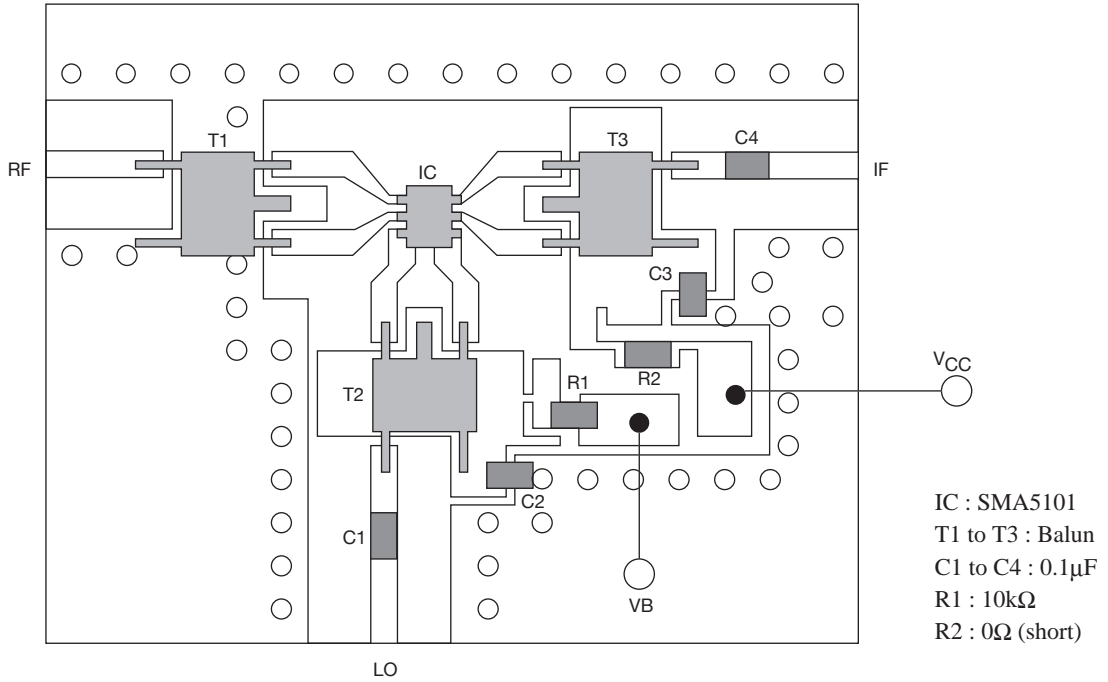
Measurement Circuit



IT15507

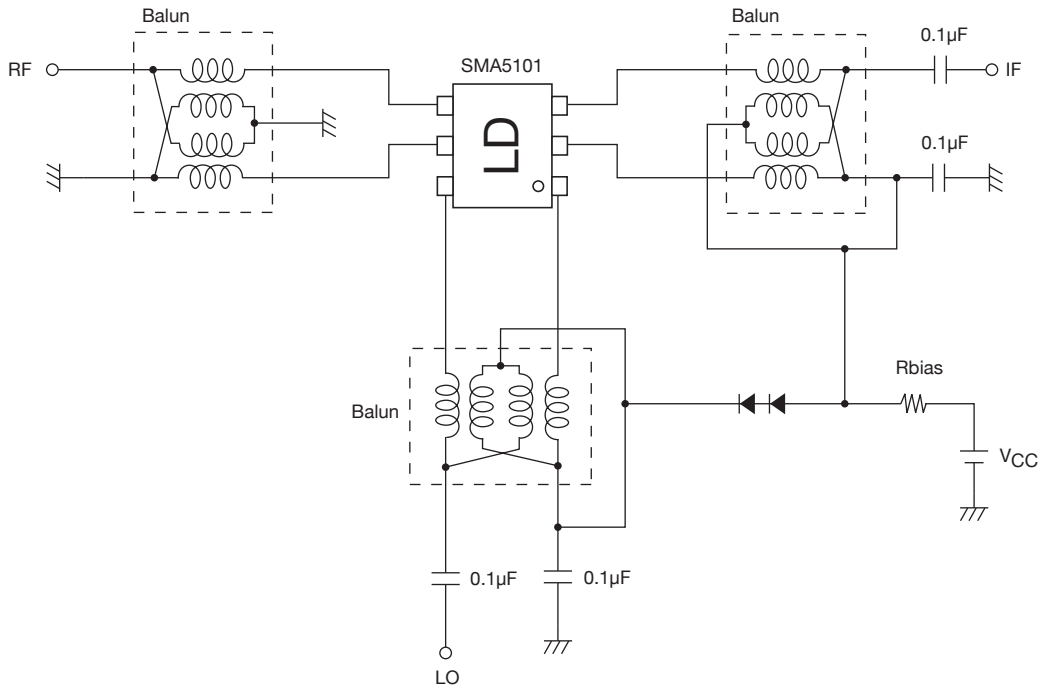
SMA5101

Evaluation Board



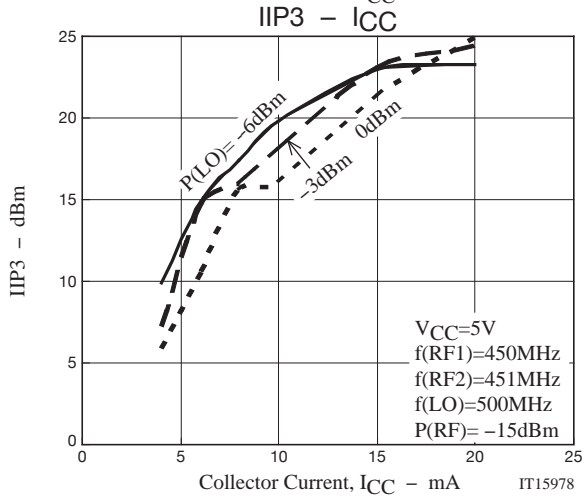
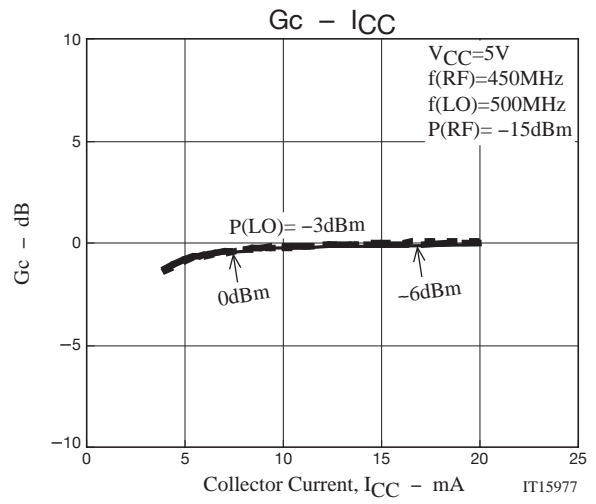
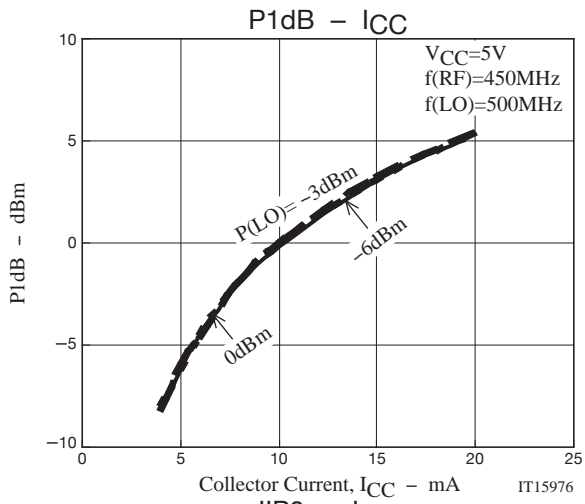
IT15508

Circuit Example (Self Bias)



IT15509

SMA5101



SMA5101

Embossed Taping Specification

SMA5101-TL-H

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 |

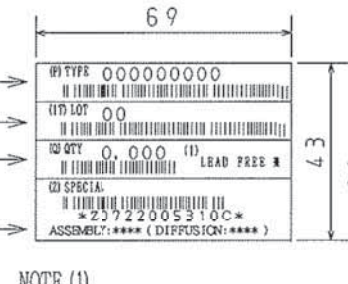
Packing method



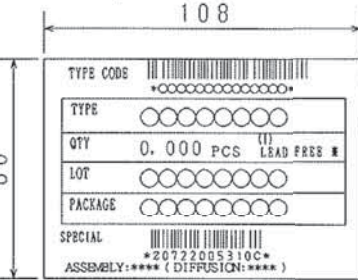
Reel label

Type No.
LOT No.
Quantity
Origin

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.)



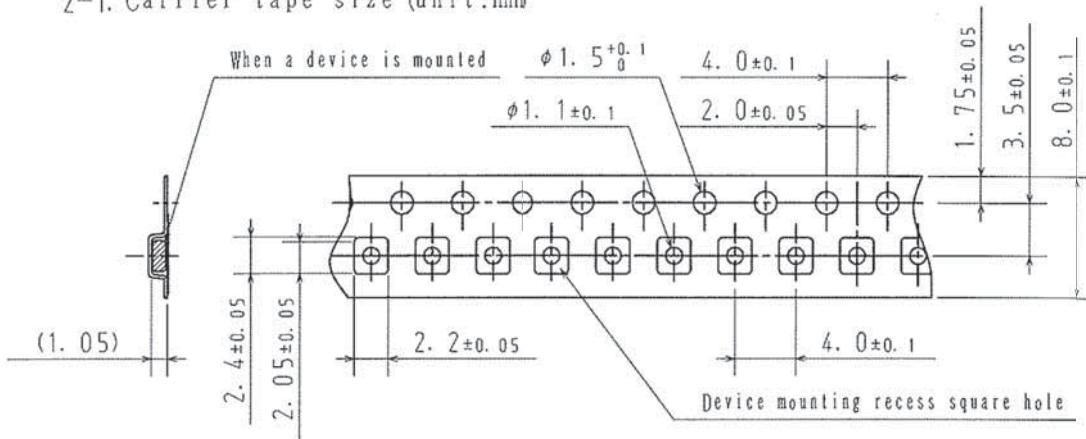
NOTE (1)

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

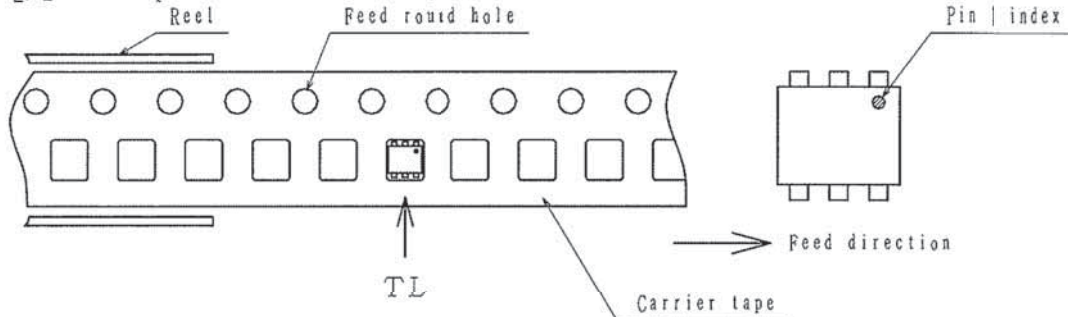
| Label | JEITA Phase |
|-------------|----------------|
| LEAD FREE 3 | JEITA Phase 3A |
| LEAD FREE 4 | JEITA Phase 3 |

2. Taping configuration

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



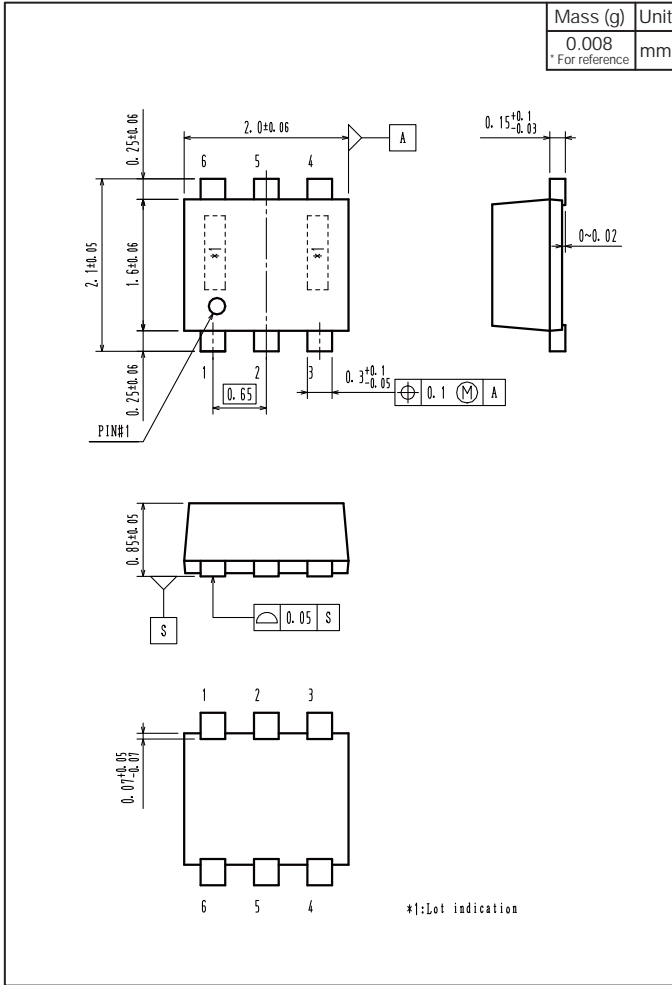
2-2. Device placement direction



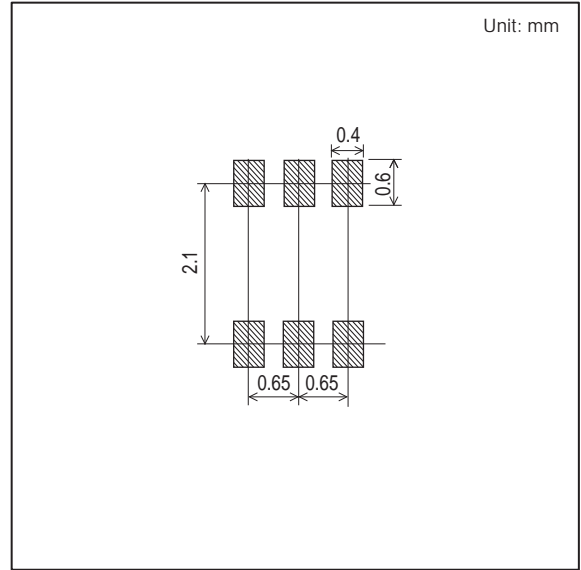
Those with pin | index on the feed hole side.....TL

SMA5101

Outline Drawing SMA5101-TL-H



Land Pattern Example



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