



# SMA3101

## MMIC

### Amplifier, 5V, 10mA, 0.1 to 3GHz, MCPH6

ON Semiconductor®

<http://onsemi.com>

#### Features

- High Gain : Gp=25dB typ. @1GHz
- Wideband response : fu=3.0GHz
- Low current : ICC=10mA typ.
- Port impedance : input/output 50Ω

#### Specifications

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

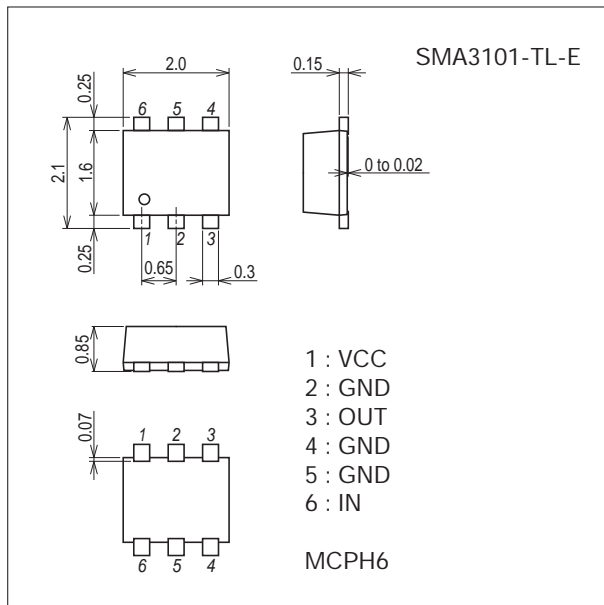
Parameter	Symbol	Conditions	Ratings	Unit
Supply Voltage	VCC		6	V
Circuit Current	ICC		25	mA
Allowable Power Dissipation	PD		280	mW
Operating Temperature	Topr		-40 to +85	°C
Storage Temperature	Tstg		-55 to +150	°C

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)

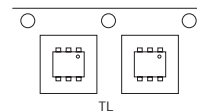
7022A-018



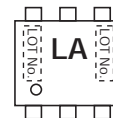
#### Product & Package Information

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

#### Packing Type : TL



#### Marking



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## Recommended Operating Condition at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Supply Voltage	VCC		4.5	5	5.5	V
Operating Ambient Temperature	Topr		-40	+25	+85	°C

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

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

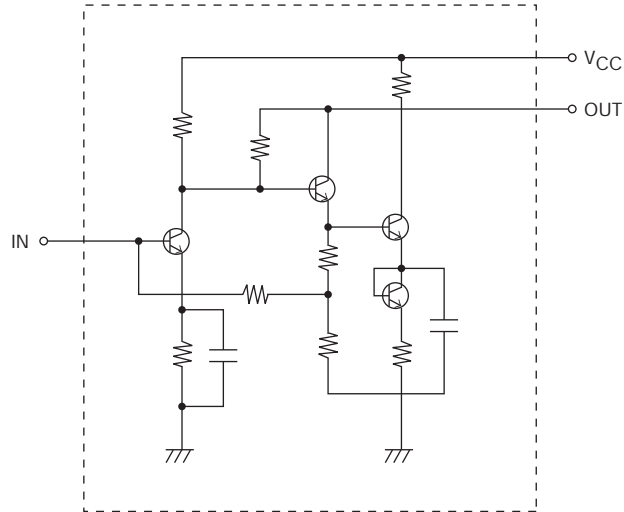
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Circuit Current	ICC		7.1	10.0	12.6	mA
Power Gain	Gp	f=1GHz	21.5	25.0	28.5	dB
		f=2.2GHz	21.5	25.5	28.5	
Isolation	ISL	f=1GHz	33.0	38.0		dB
		f=2.2GHz	31.0	36.0		
Input Return Loss	RLin	f=1GHz	11.0	16.0		dB
		f=2.2GHz	12.0	21.0		
Output Return Loss	RLout	f=1GHz	10.0	18.5		dB
		f=2.2GHz	8.0	12.0		
Noise Figure	NF	f=1GHz		4.0	5.3	dB
		f=2.2GHz		4.0	5.3	
Gain 1dB Compression Output Power	Po(1dB)	f=1GHz	-5.0	-2.0		dBm
		f=2.2GHz	-7.0	-4.0		
Upper Limit Operating Frequency	fu	3dB down below flat gain at f =1GHz		3.0		GHz

## Ordering Information

Device	Package	Shipping	memo
SMA3101-TL-E	MCPH6	3,000pcs./reel	Pb Free

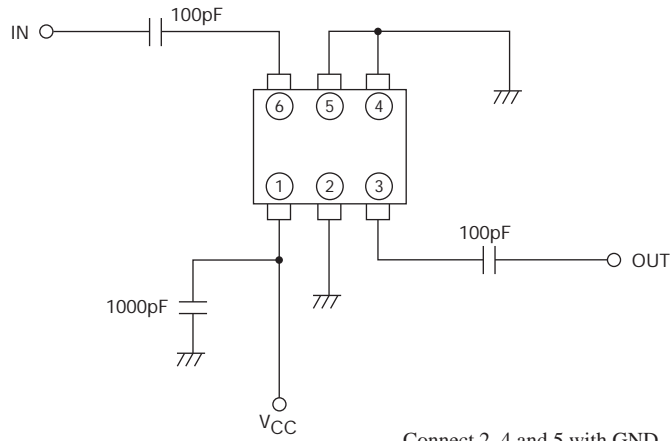
# SMA3101

## Equivalent Circuit



IT14496

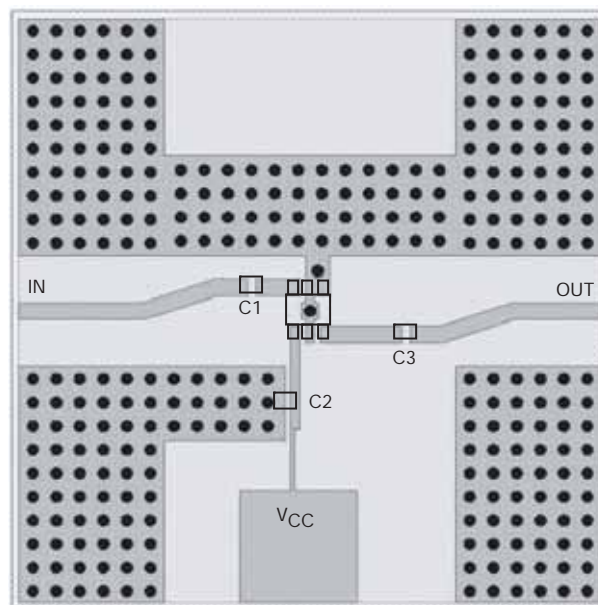
## Test Circuit



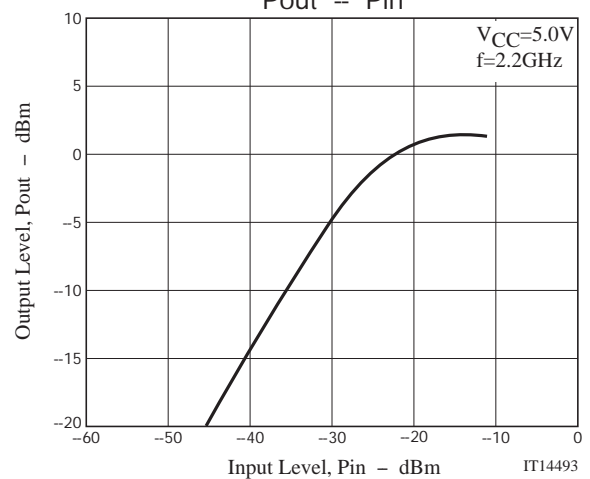
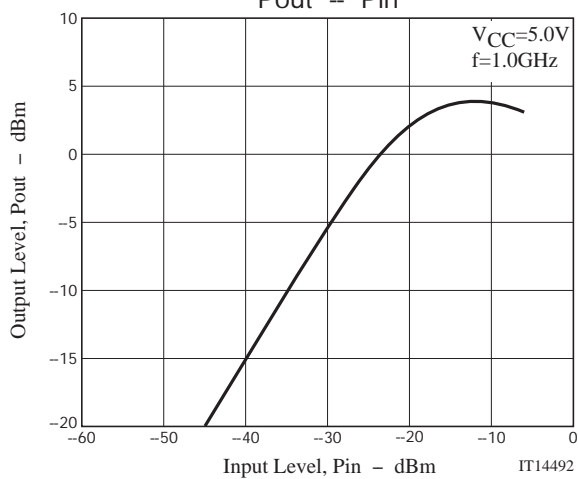
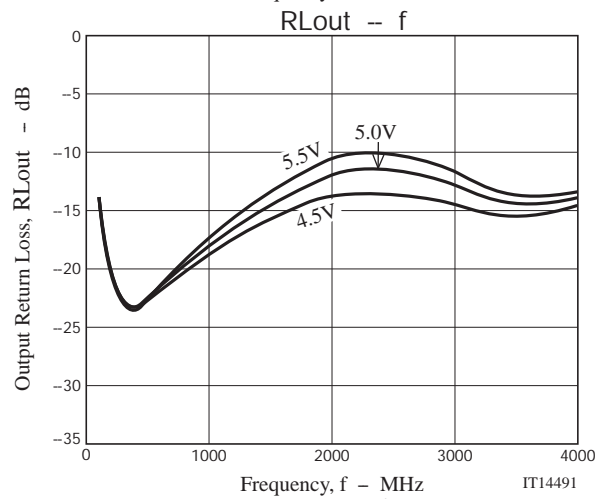
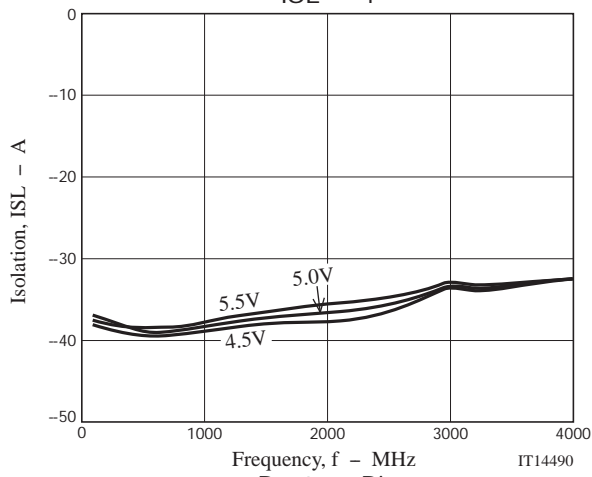
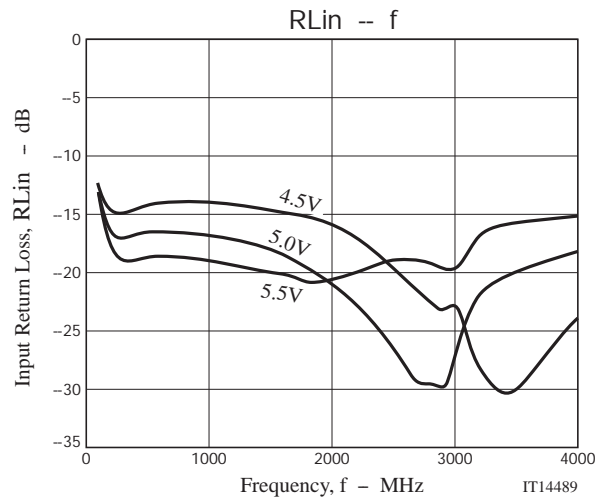
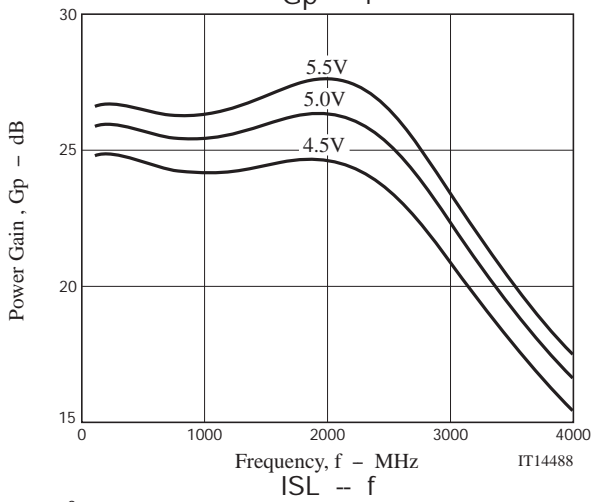
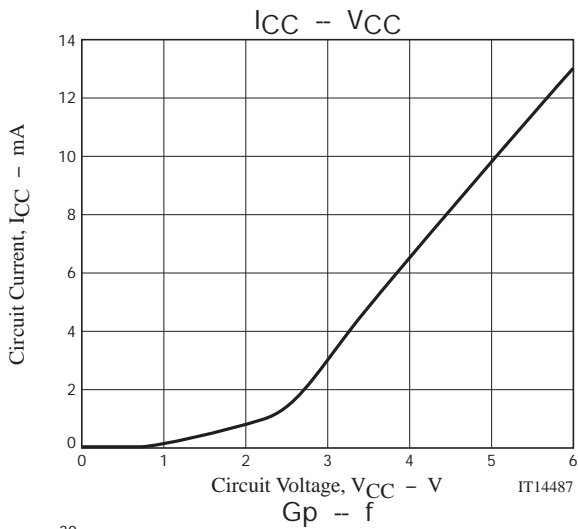
Connect 2, 4 and 5 with GND.

IT14497

## Design of the Evaluation Board

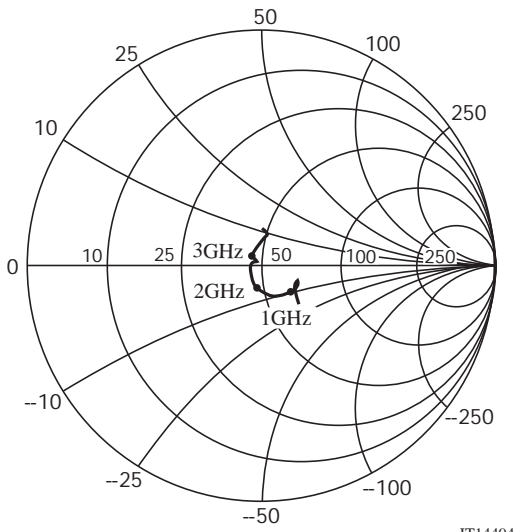


Symbol	Value
C1, C3	100pF
C2	1000pF

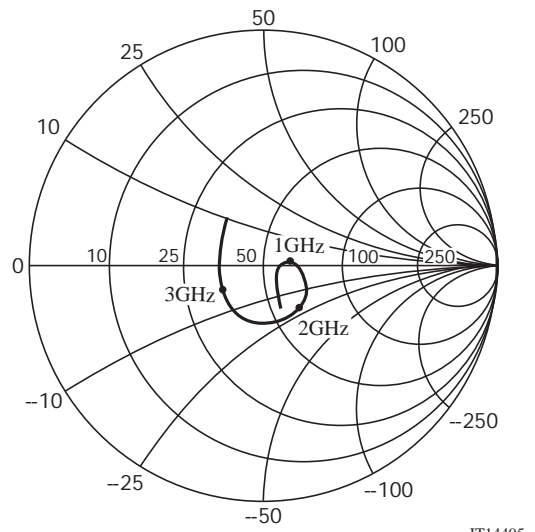


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S Parameter  
S11



S22



# SMA3101

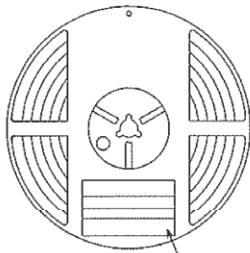
## Embossed Taping Specification

SMA3101-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

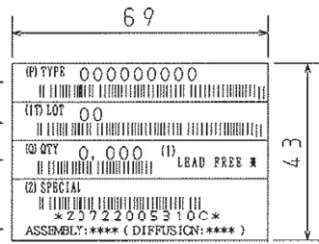
#### Packing method



Type No.  
LOT No.  
Quantity  
Origin

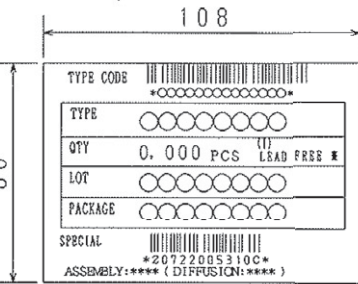
Reel label

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.



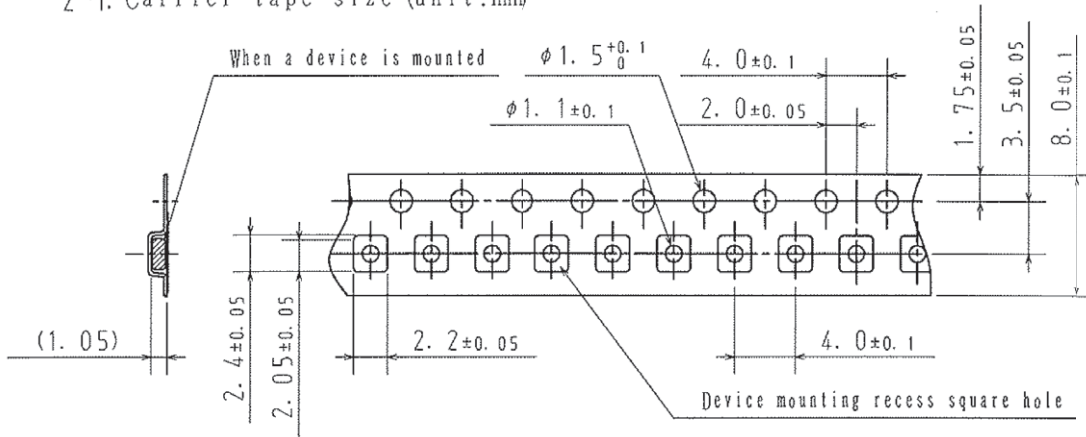
NOTE (1)

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

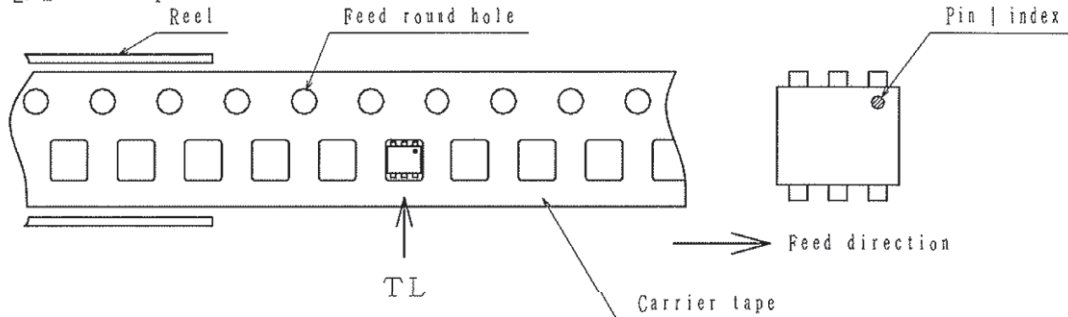
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

### 2. Taping configuration

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



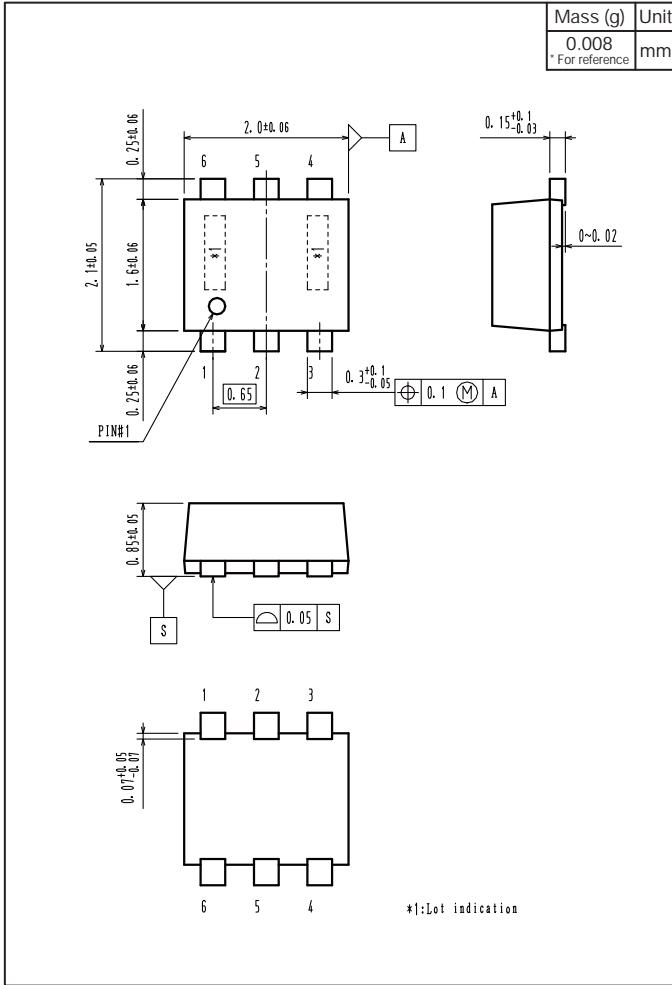
#### 2-2. Device placement direction



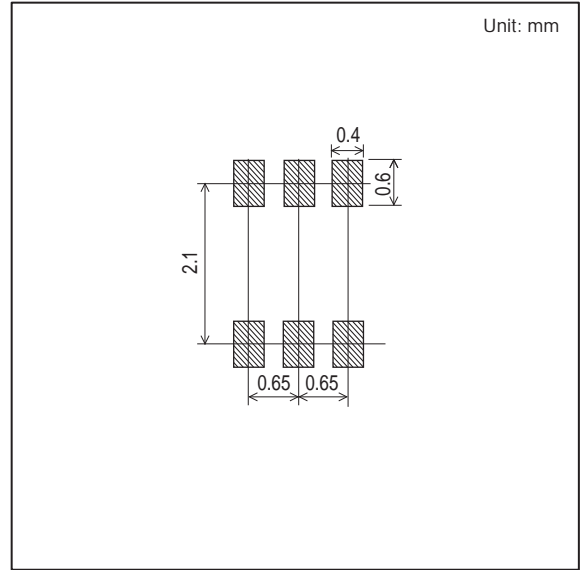
Those with pin | index on the feed hole side.....TL

# SMA3101

## Outline Drawing SMA3101-TL-E



## Land Pattern Example



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