



SMA3101 Silicon MMIC Wideband Amplifier

Features

- High Gain : $G_p=25\text{dB typ. @1GHz}$
- Wideband response : $f_u=3.0\text{GHz}$
- Low current : $I_{CC}=10\text{mA typ.}$
- Port impedance : input/output 50Ω

Specifications

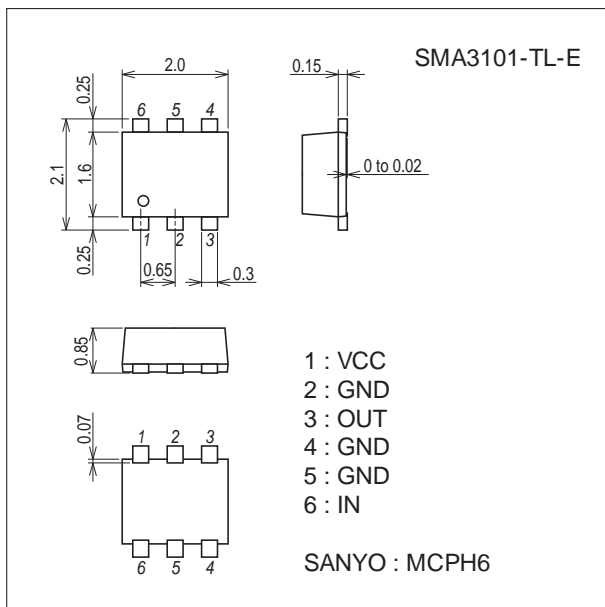
Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Supply Voltage	V_{CC}		6	V
Circuit Current	I_{CC}		25	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	$^\circ\text{C}$

Package Dimensions

unit : mm (typ)

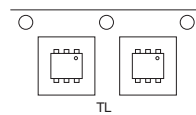
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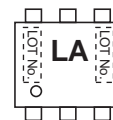
Product & Package Information

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

Packing Type : TL



Marking



SMA3101

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

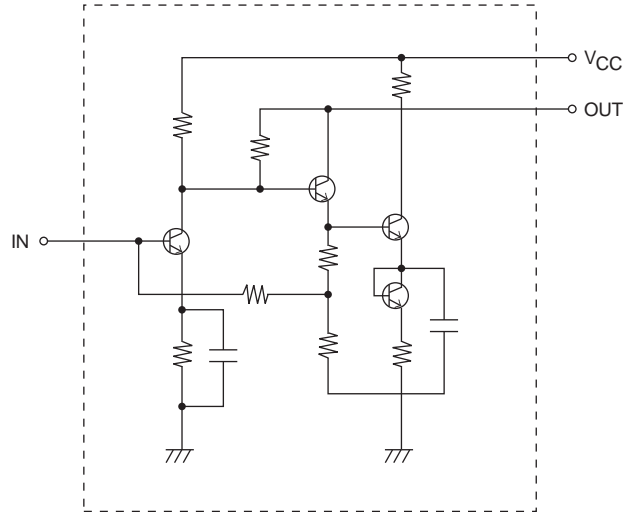
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Circuit Current	ICC		7.1	10.0	12.6	mA
Power Gain	Gp	f=1GHz	21.5	25.0	28.5	dB
		f=2.2GHz	21.5	25.5	28.5	
Isolation	ISL	f=1GHz	33.0	38.0		dB
		f=2.2GHz	31.0	36.0		
Input Return Loss	RLin	f=1GHz	11.0	16.0		dB
		f=2.2GHz	12.0	21.0		
Output Return 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

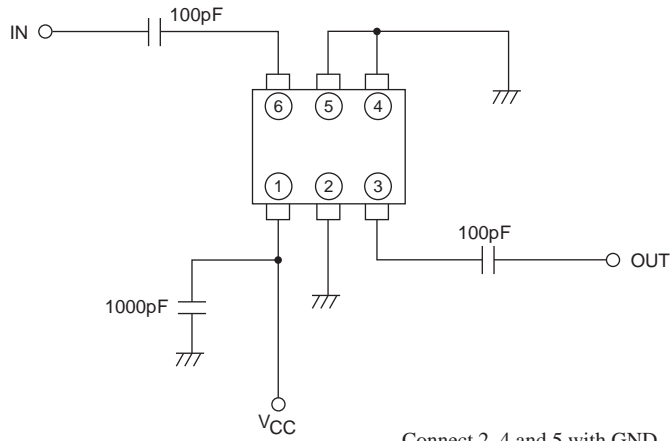
SMA3101

Equivalent Circuit



IT14496

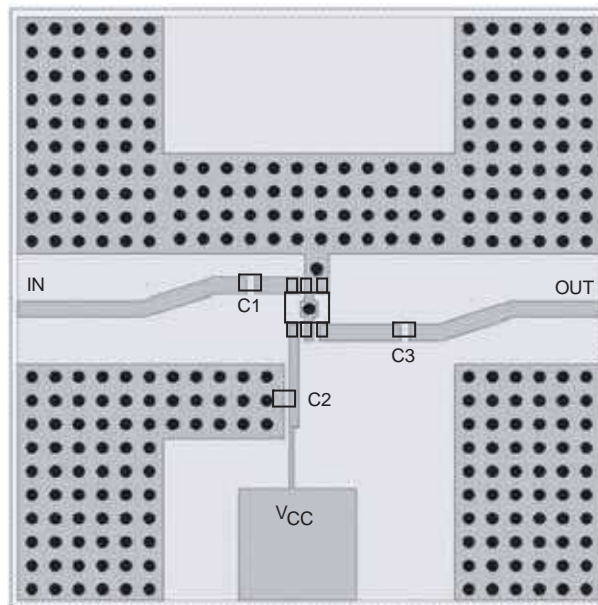
Test Circuit



Connect 2, 4 and 5 with GND.

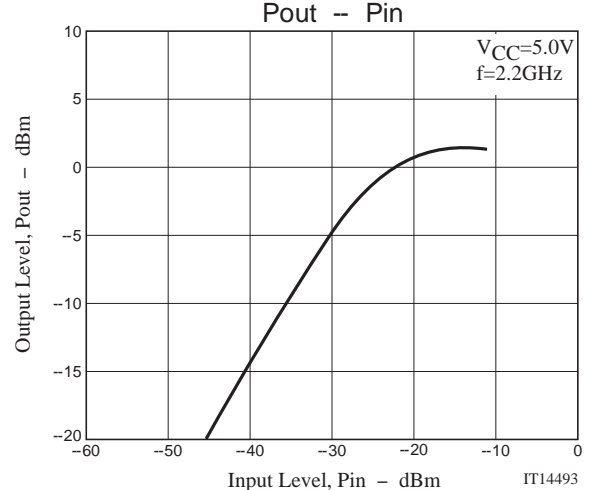
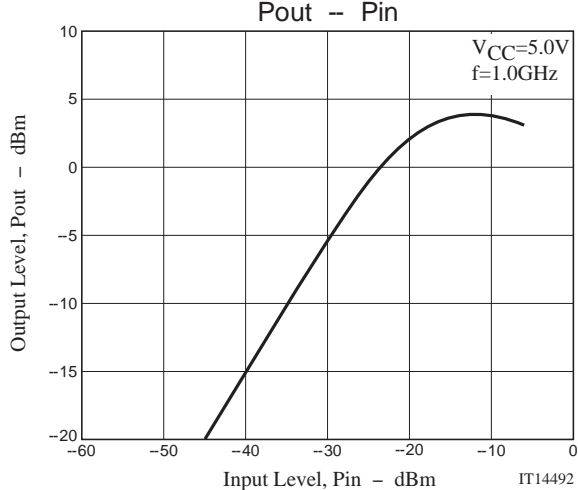
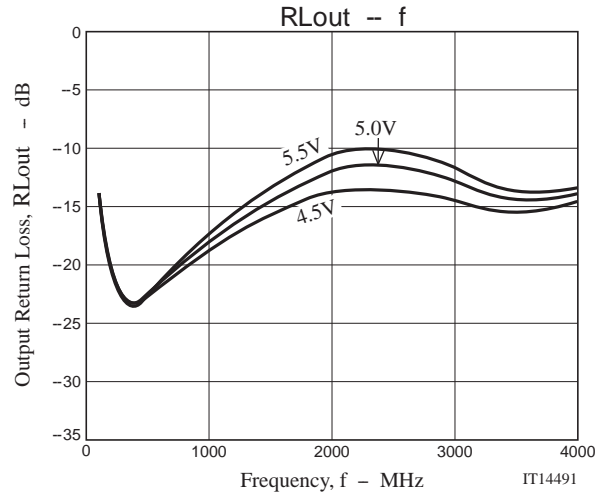
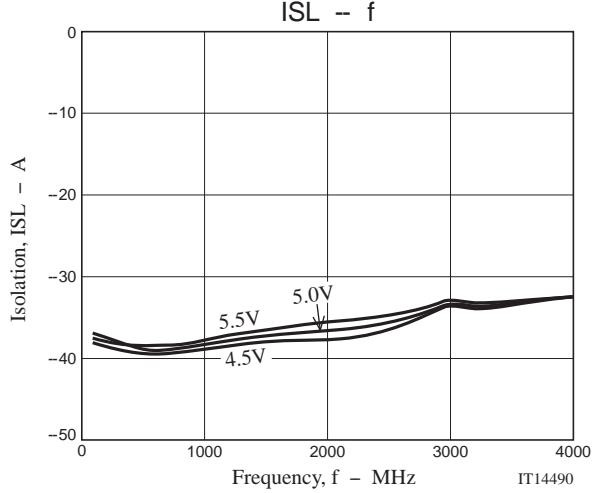
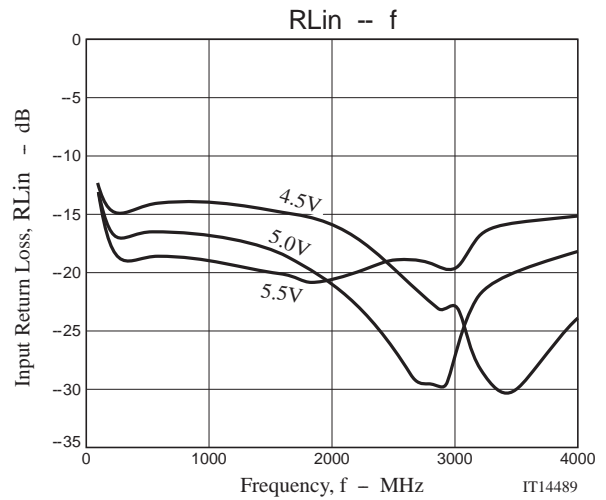
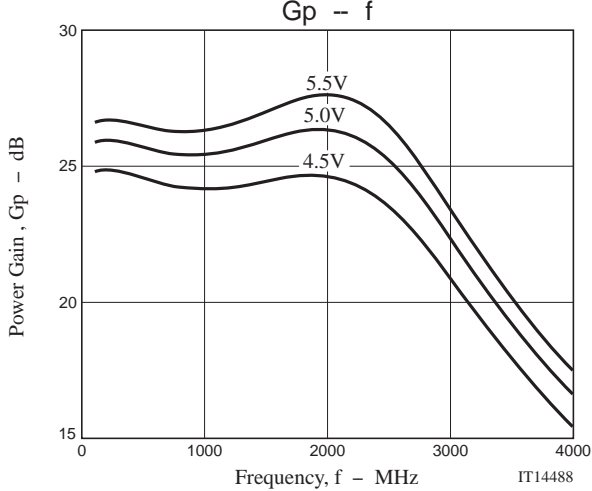
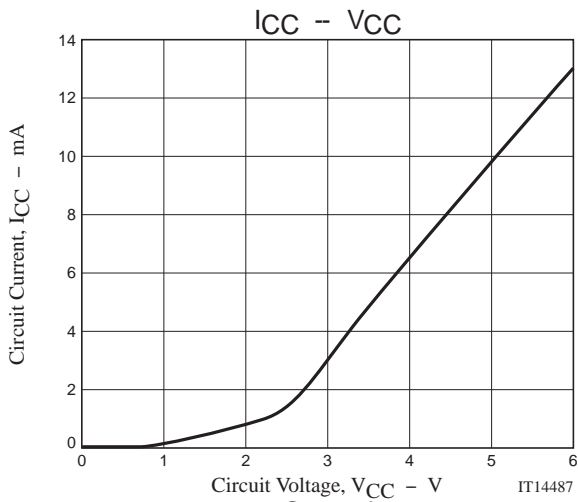
IT14497

Design of the Evaluation Board



Symbol	Value
C1, C3	100pF
C2	1000pF

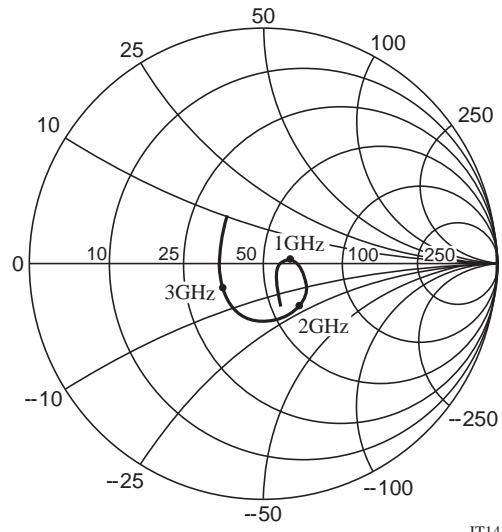
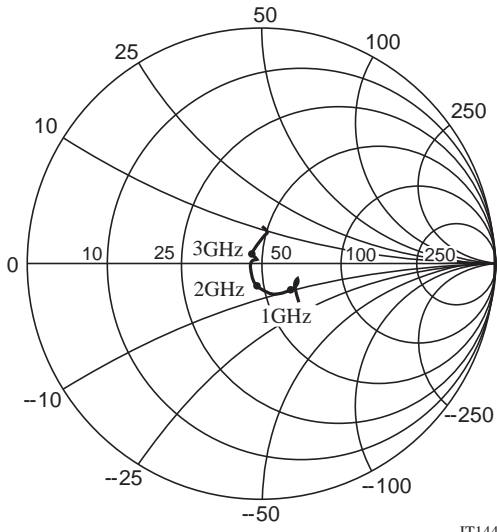
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S Parameter
S11

S22



SMA3101

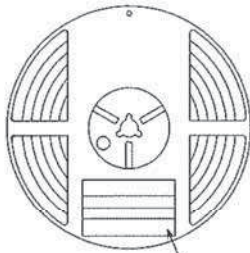
Embossed Taping Specification

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

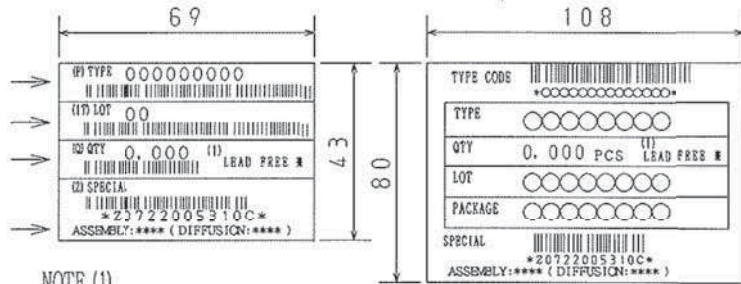
Packing method



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.)

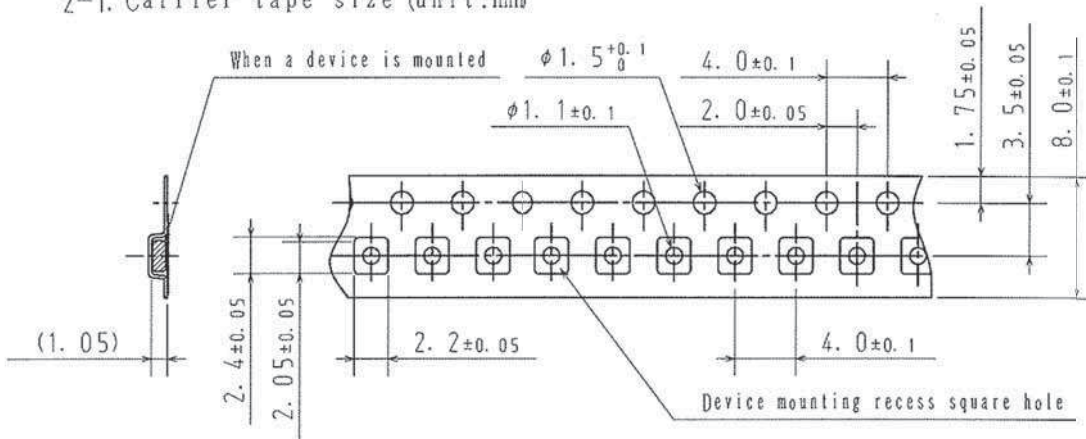
NOTE (1)

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

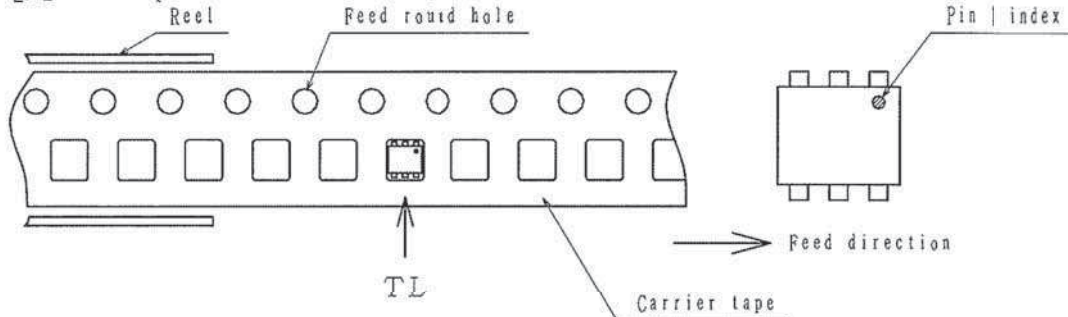
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



2-2. Device placement direction

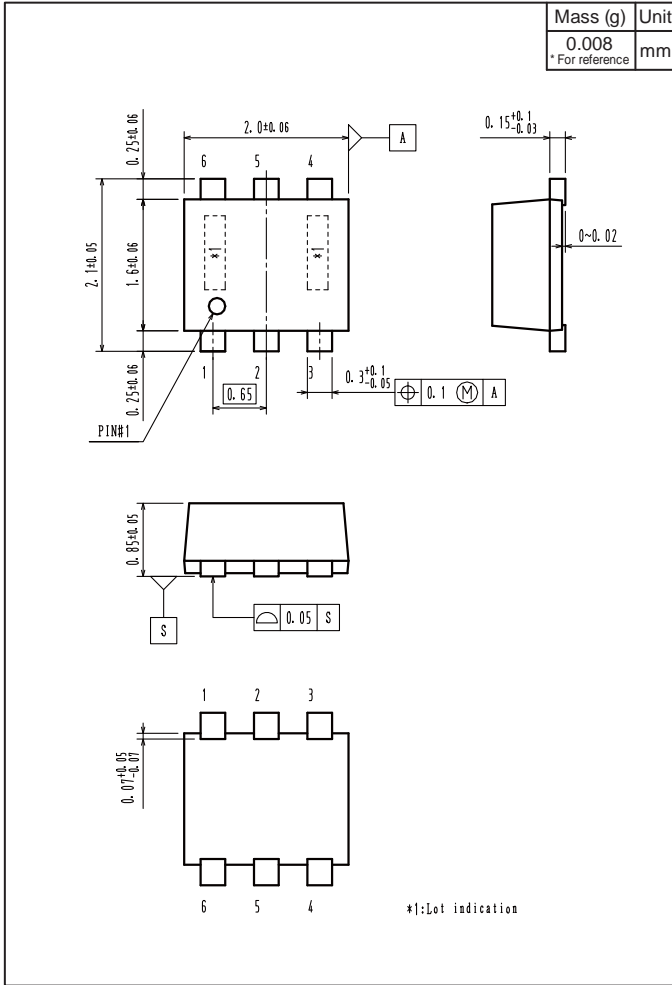


Those with pin | index on the feed hole side.....TL

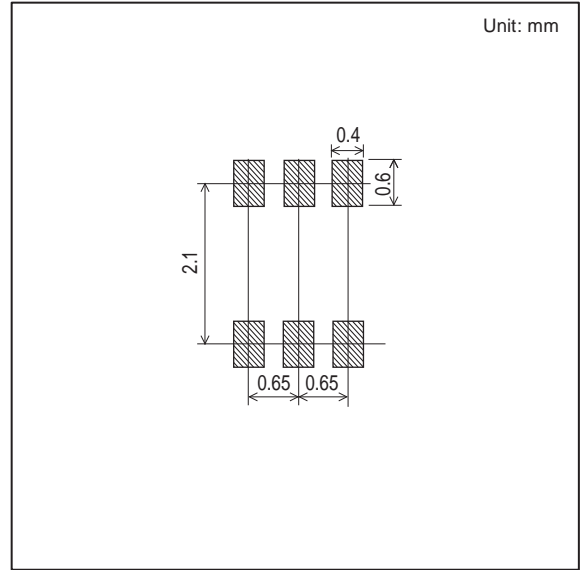
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Outline Drawing

SMA3101-TL-E



Land Pattern Example



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