



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

SMA3103 — Silicon MMIC Wideband Amplifier

Features

- High Gain : $G_p=26.5\text{dB typ. @1GHz}$
- Wideband response : $f_u=3.3\text{GHz}$
- Low current : $I_{CC}=19\text{mA typ}$
- High output power : $P_o(1\text{dB})=5\text{dBm}$
- Port impedance : input/output 50Ω

Specifications

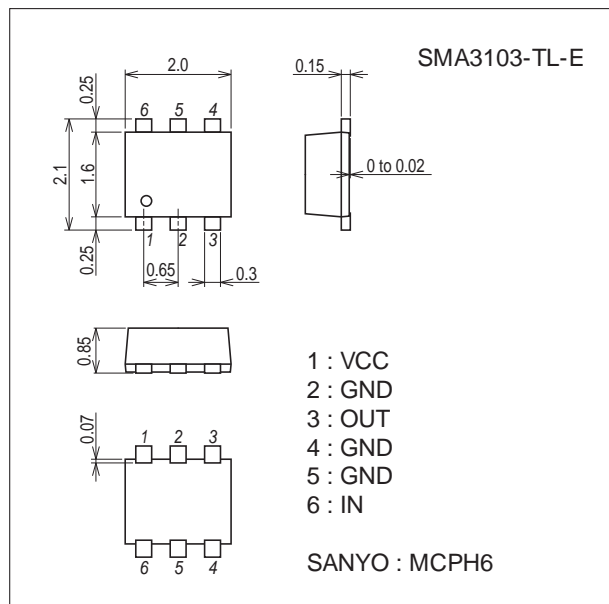
Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Supply Voltage	V_{CC}		6	V
Circuit Current	I_{CC}		40	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)

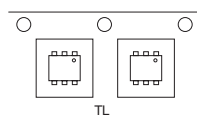
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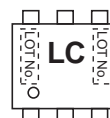
Product & Package Information

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

Packing Type : TL



Marking



SMA3103

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.

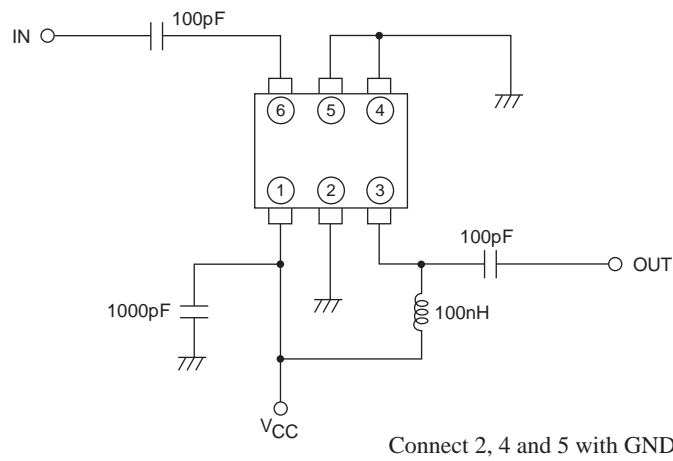
Electrical Characteristics at Ta=25°C, VCC=5V, Zs=ZL=50Ω

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Circuit Current	ICC		14.0	19.0	25.0	mA
Power Gain	Gp	f=1GHz	24.0	26.5	29.0	dB
		f=2.2GHz	24.0	27.0	30.0	
Isolation	ISL	f=1GHz	31.0	33.0		dB
		f=2.2GHz	31.0	33.0		
Input Return Loss	RLin	f=1GHz	12.0	20.0		dB
		f=2.2GHz	10.0	14.0		
Output Return Loss	RLout	f=1GHz	12.0	20.0		dB
		f=2.2GHz	10.0	16.0		
Noise Figure	NF	f=1GHz		4.7	5.3	dB
		f=2.2GHz		4.7	5.3	
Gain 1dB Compression Output Power	Po(1dB)	f=1GHz	6.0	8.2		dBm
		f=2.2GHz	4.0	5.7		
Upper Limit Operating Frequency	fu	3dB down below flat gain at f =1GHz		3.3		GHz

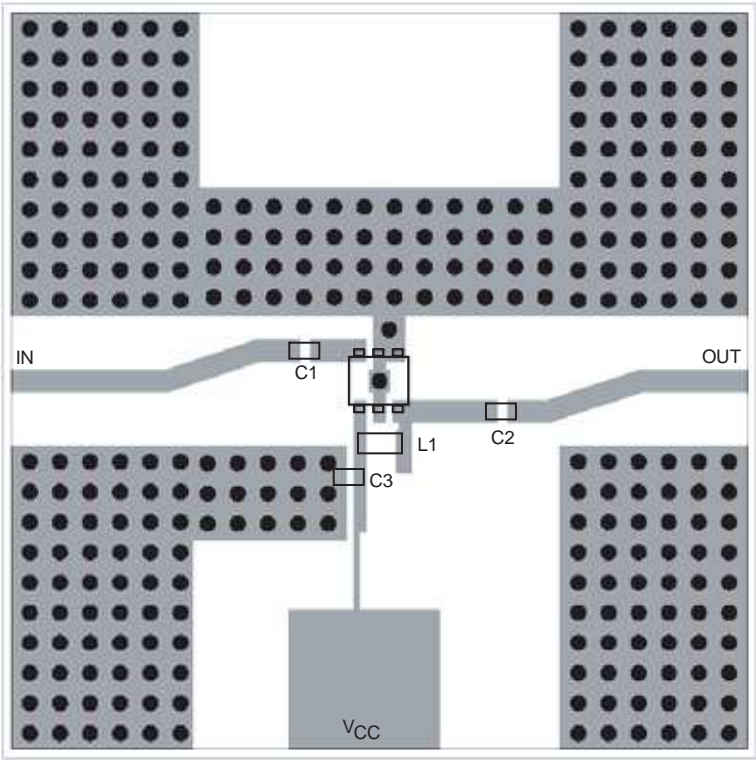
Ordering Information

Device	Package	Shipping	memo
SMA3103-TL-E	MCPH6	3,000pcs./reel	Pb Free

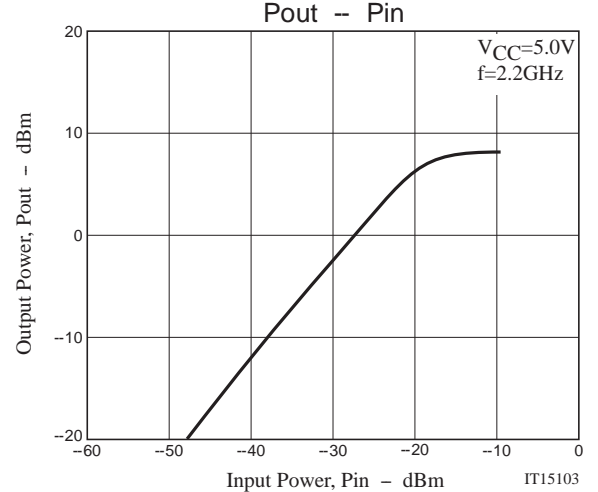
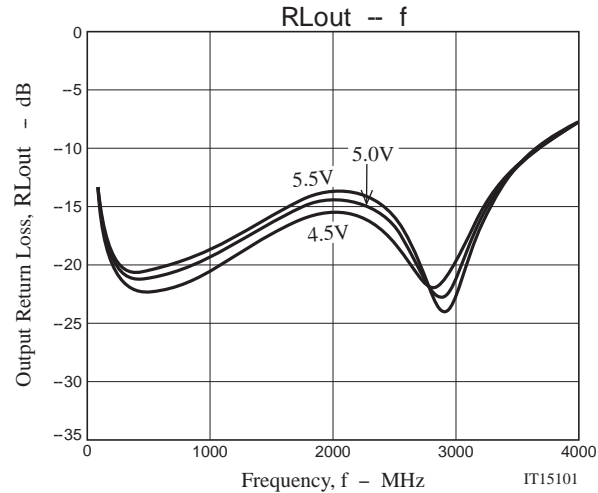
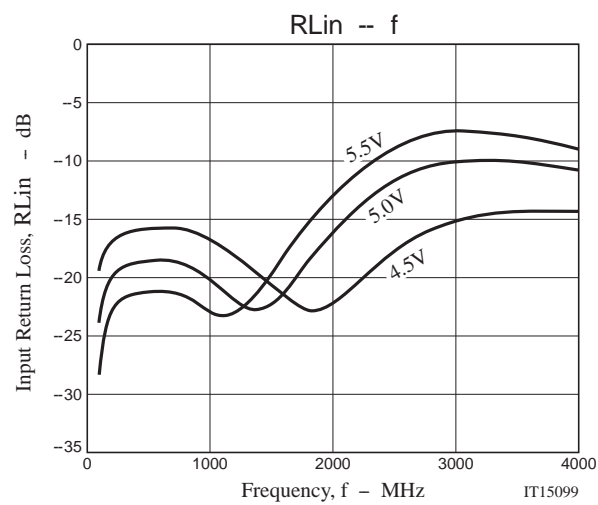
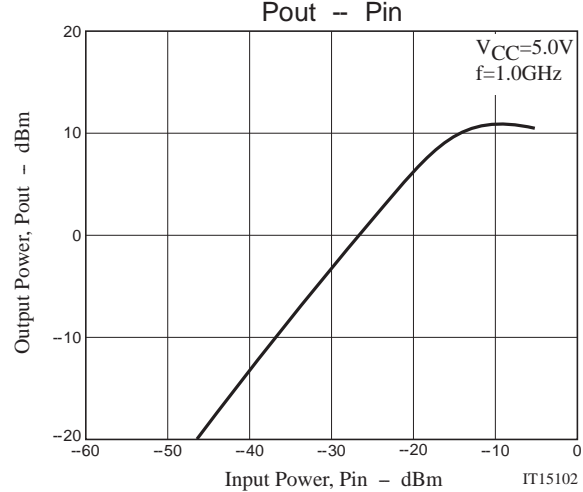
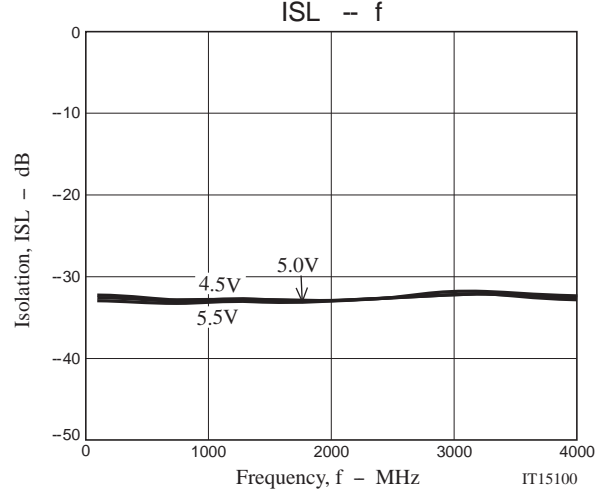
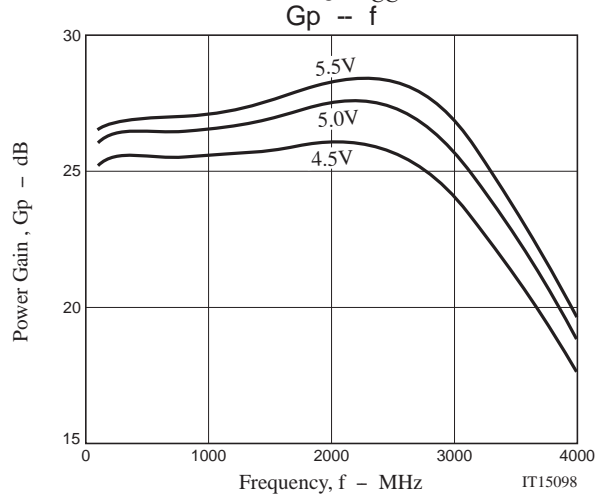
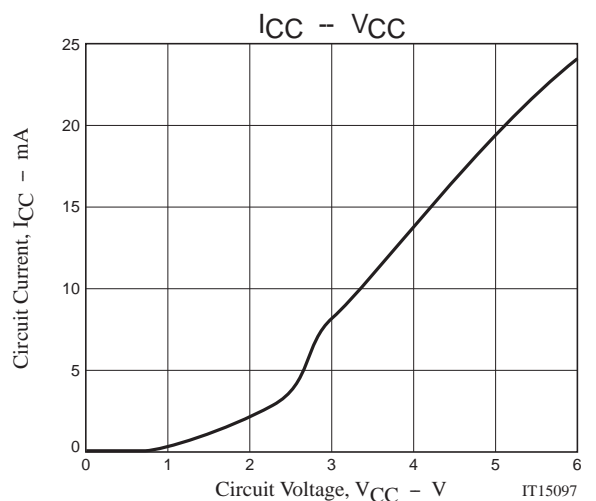
Test Circuit



Design of the Evaluation Board

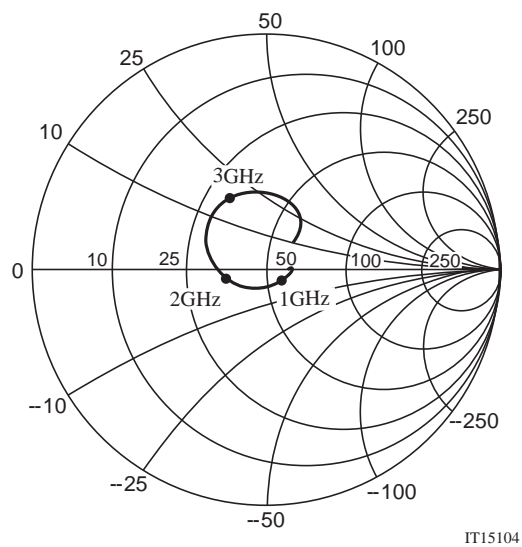


Symbol	Value
C1, C2	100pF
C3	1000pF
L1	100nH

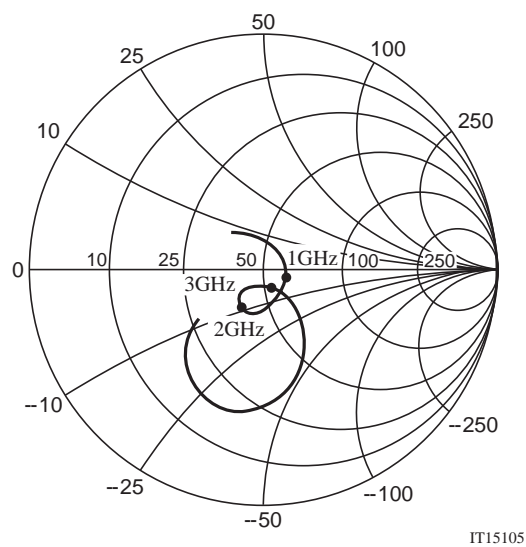


SMA3103

S Parameter
S11



S22



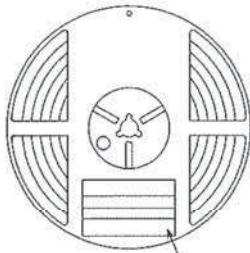
Embossed Taping Specification

SMA3103-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

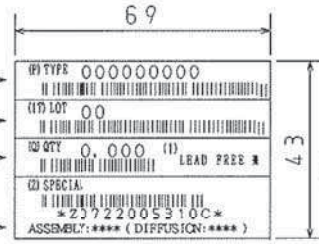
Packing method



Type No.
LOT No.
Quantity
Origin

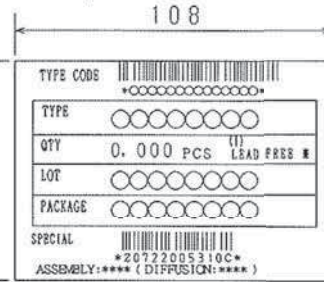
Reel label

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.)



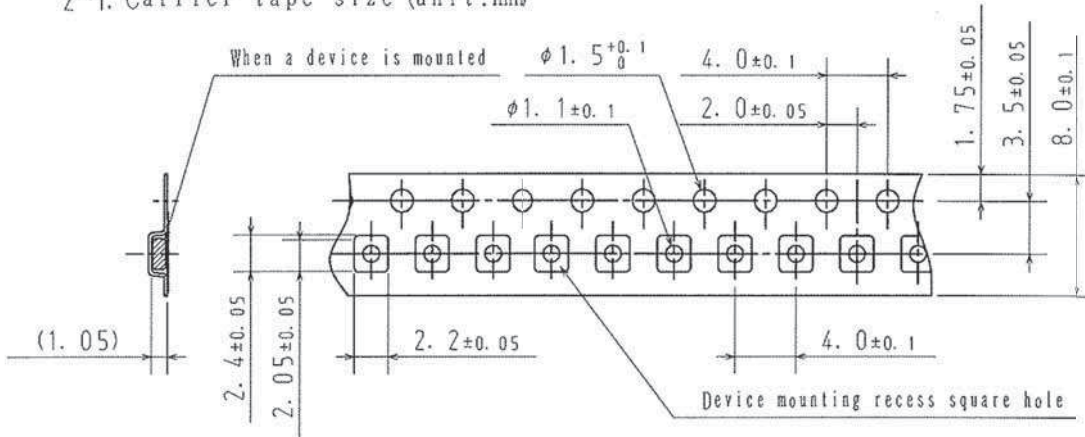
NOTE (1)

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

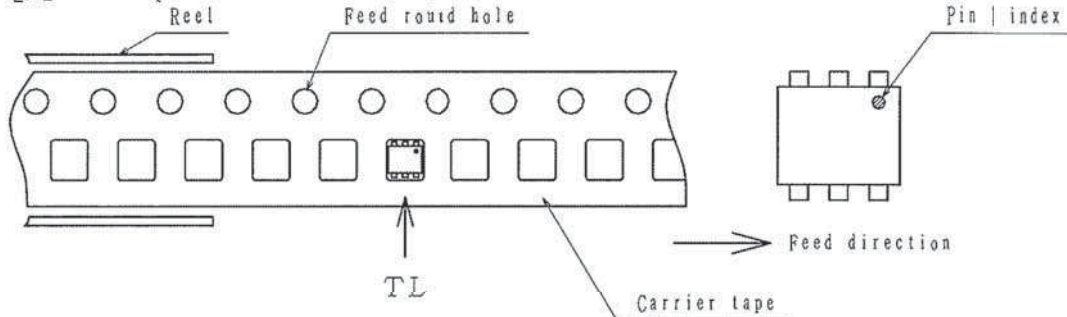
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



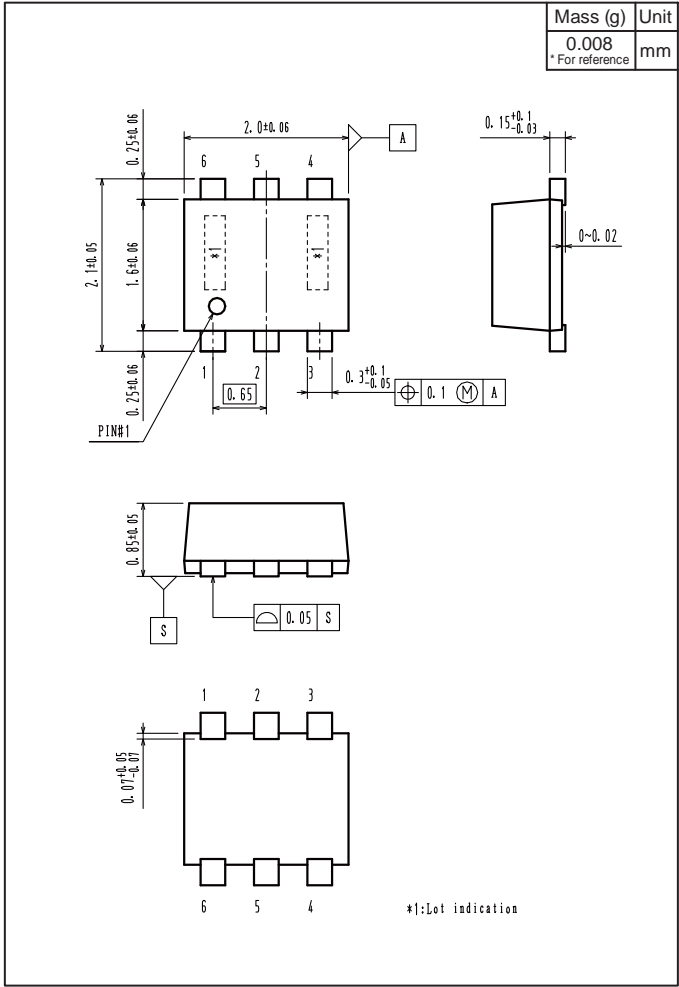
2-2. Device placement direction



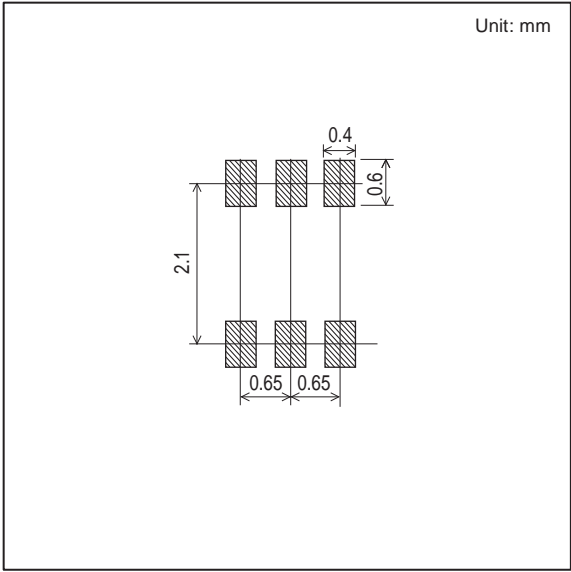
Those with pin 1 index on the feed hole side.....TL

SMA3103

Outline Drawing
SMA3103-TL-E



Land Pattern Example



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