



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## 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

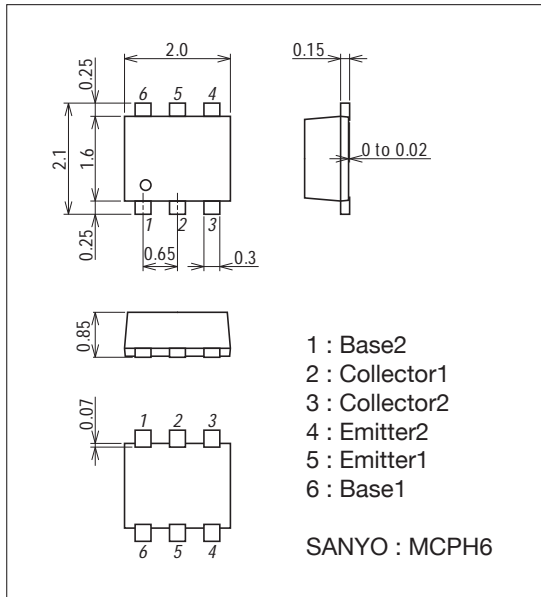
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CB0</sub>		8	V
Collector-to-Emitter Voltage	V <sub>CE0</sub>		6	V
Emitter-to-Base Voltage	V <sub>EB0</sub>		2	V
Collector Current	I <sub>CC</sub>		50	mA
Max Power Dissipation	P <sub>C</sub>		280	mW
Operating Temperature	T <sub>opr</sub>		-40 to +85	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

### Package Dimensions

unit : mm (typ)

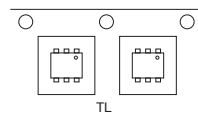
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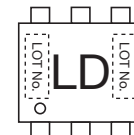
### Product & Package Information

- Package : MCPH6
- JEITA, JEDEC : SC-88, SOT363
- Minimum Packing Quantity : 3,000pcs/real

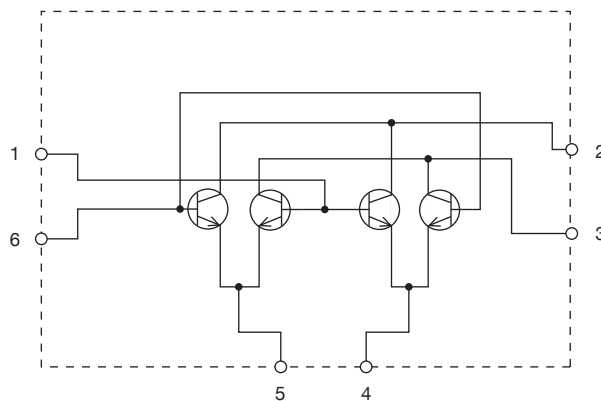
### Packing Type: TL



### Marking



### Equivalent Circuit



IT15506

# SMA5101

## Recommended Operating Conditions at Ta=25°C

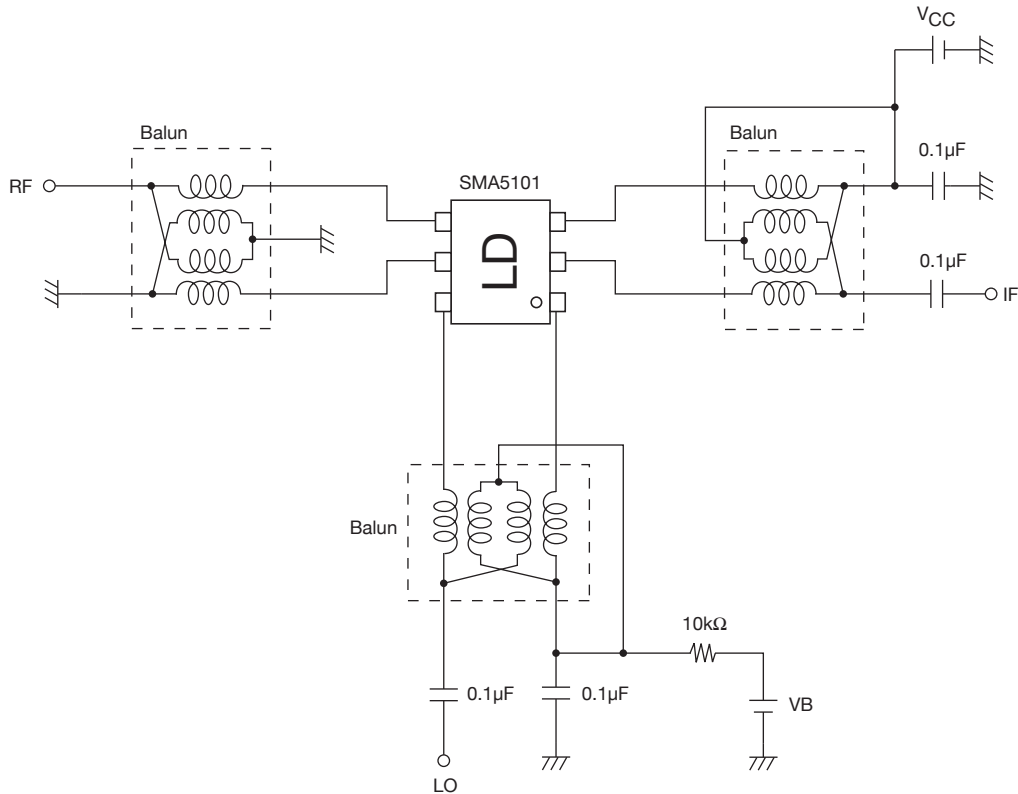
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Supply Voltage	VC1E1		1.2	3	6	V
	VC2E1		1.2	3	6	V
	VC1E2		1.2	3	6	V
	VC2E2		1.2	3	6	V

## 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

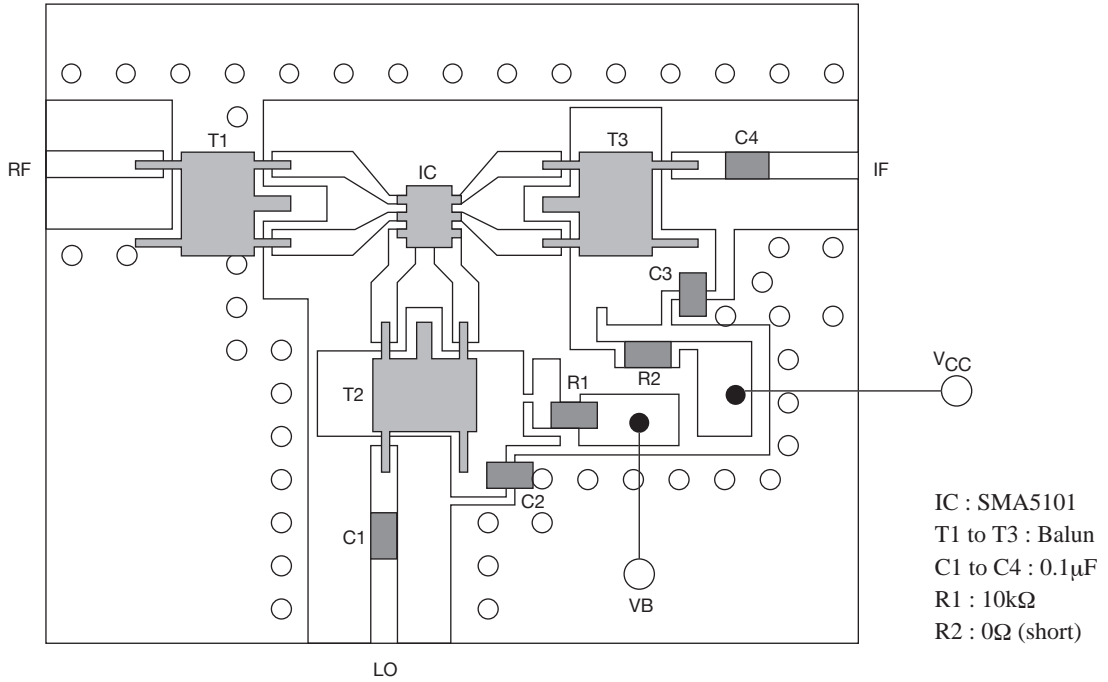
## Measurement Circuit



IT15507

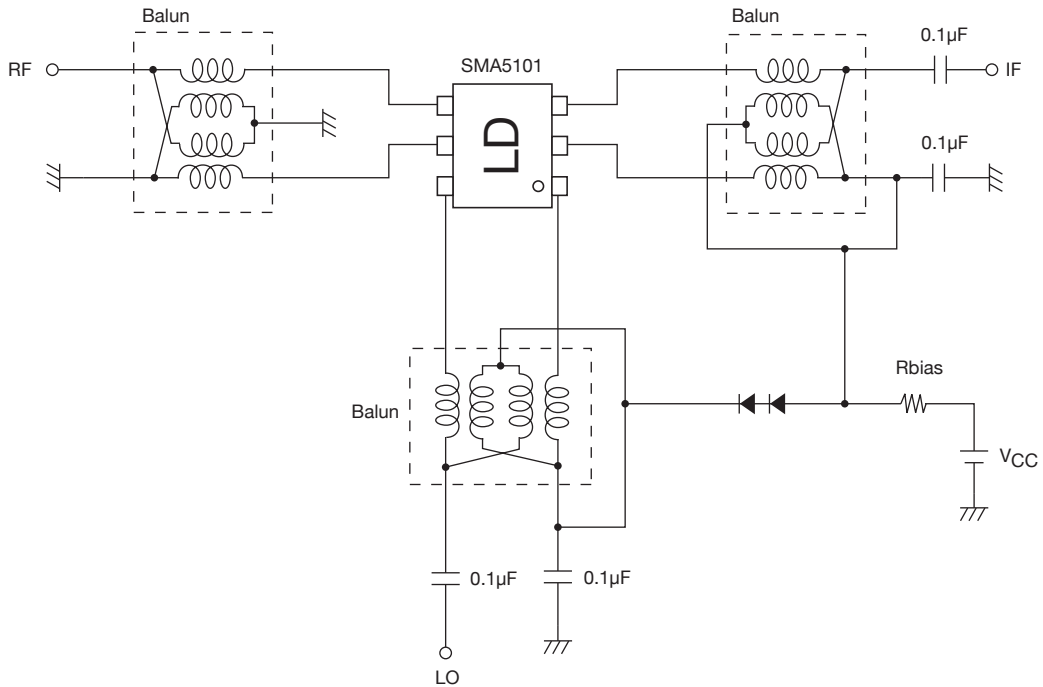
# SMA5101

## Evaluation Board



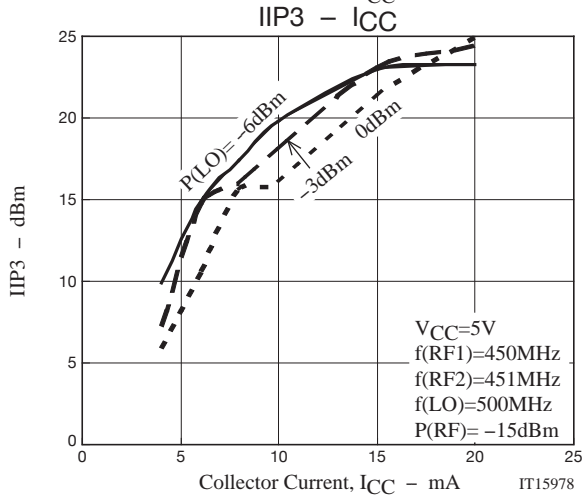
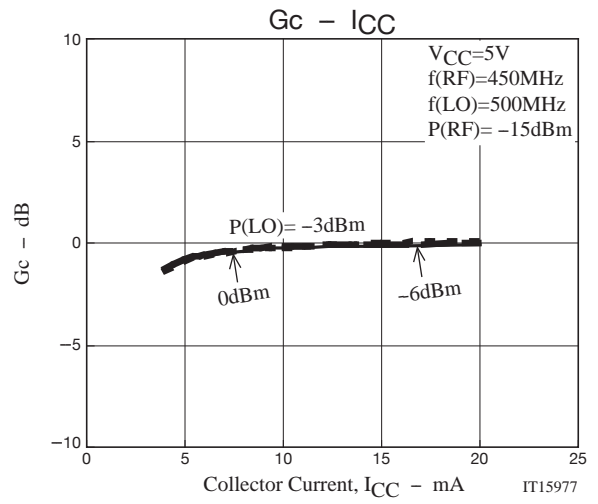
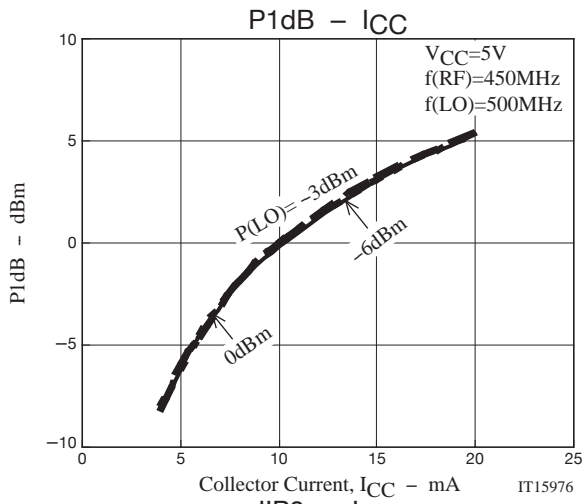
IT15508

## Circuit Example (Self Bias)



IT15509

# SMA5101



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