



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

SMA3117 — Silicon MMIC Wideband Amplifier

Features

- High Gain : $G_p=33.5\text{dB typ. @}2.2\text{GHz}$
- Wideband response : $f_u=3.0\text{GHz}$
- Low current : $I_{CC}=22.7\text{mA typ.}$
- High output power : $P_o(1\text{dB})=5.7\text{dBm}$
- Port impedance : input/output 50Ω
- Halogen free compliance

Specifications

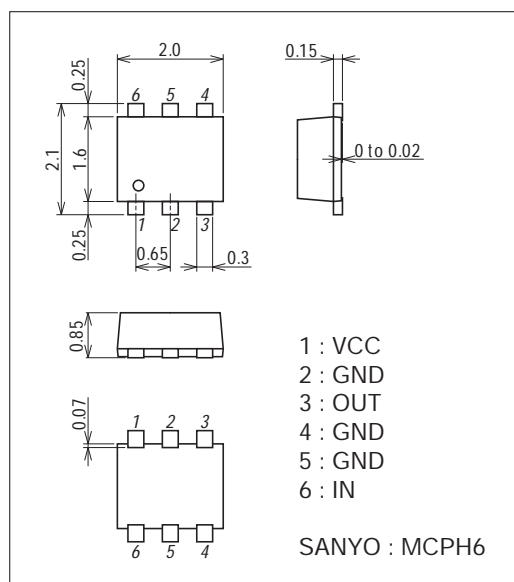
Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

| 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)

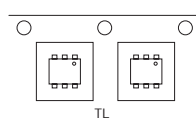
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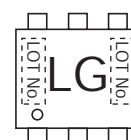
Product & Package Information

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

Packing Type: TL



Marking



SMA3117

Recommended Operating Conditions 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 |

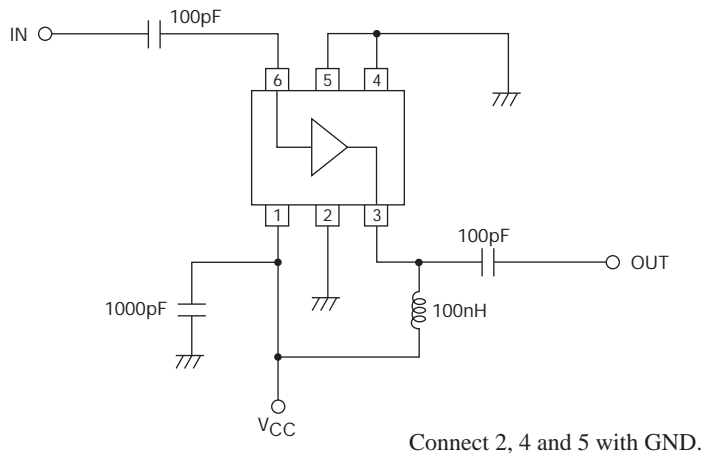
Electrical Characteristics at Ta=25°C, VCC=5V, Zs=ZL=50Ω

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|--------------------------------------|---------|------------------------------------|---------|------|------|------|
| | | | min | typ | max | |
| Circuit Current | ICC | | 18.5 | 22.7 | 28.0 | mA |
| Power Gain | Gp | f=1GHz | 29.5 | 31.2 | 32.5 | dB |
| | | f=2.2GHz | 30.5 | 33.5 | 35.5 | |
| Isolation | ISL | f=1GHz | 35.0 | 37.6 | | dB |
| | | f=2.2GHz | 34.0 | 36.5 | | |
| Input Return Loss | RLin | f=1GHz | 9.0 | 11.2 | | dB |
| | | f=2.2GHz | 4.5 | 6.0 | | |
| Output Return Loss | RLout | f=1GHz | 11.0 | 14.3 | | dB |
| | | f=2.2GHz | 12.0 | 16.3 | | |
| Noise Figure | NF | f=1GHz | | 4.1 | 5.0 | dB |
| | | f=2.2GHz | | 3.9 | 5.0 | |
| Gain 1dB Compression Output Power *1 | Po(1dB) | f=1GHz | 7.5 | 9.8 | | dBm |
| | | f=2.2GHz | 3.7 | 5.7 | | |
| Upper Limit Operating Frequency *1 | fu | 3dB down below flat gain at f=1GHz | | 3.0 | | GHz |

*1 : On evaluation board

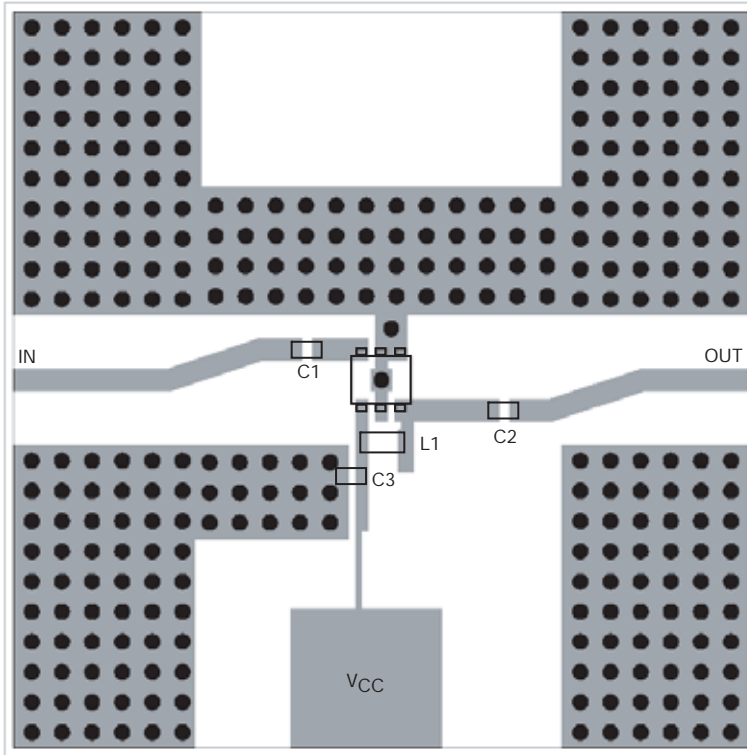
Note) Pay attention to handling since it is liable to be affected by static electricity due to the high frequency process adopted.

Test Circuit

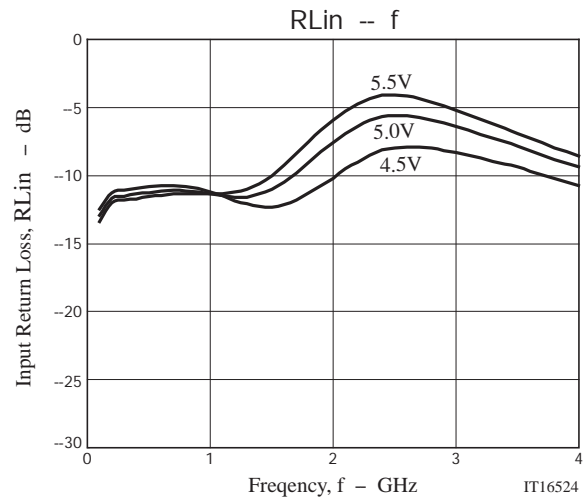
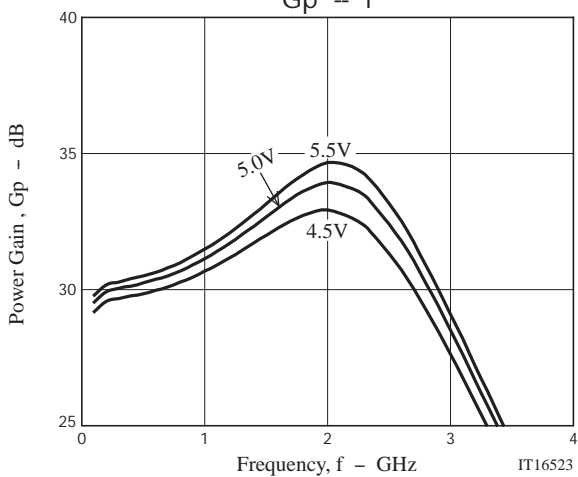
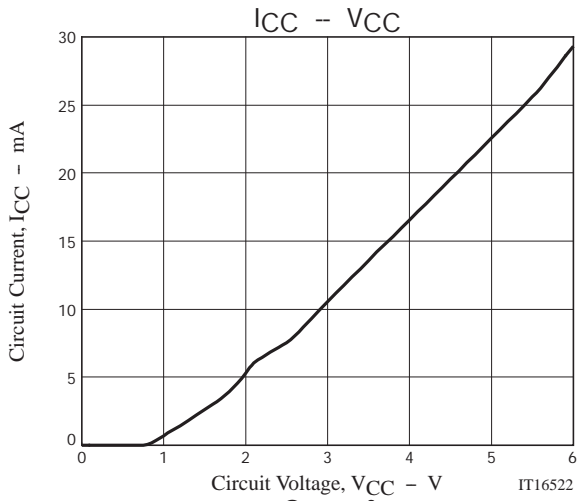


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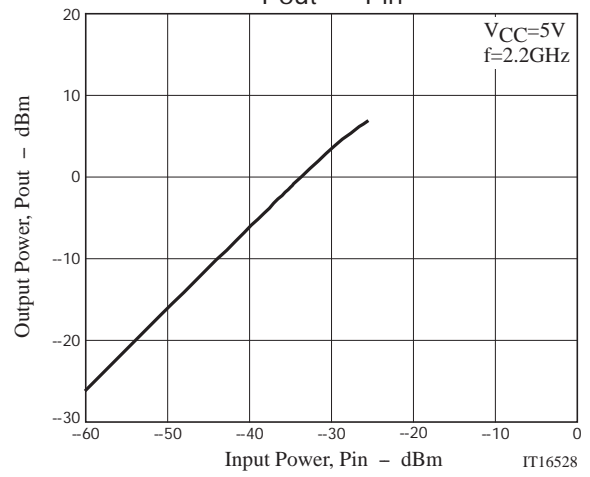
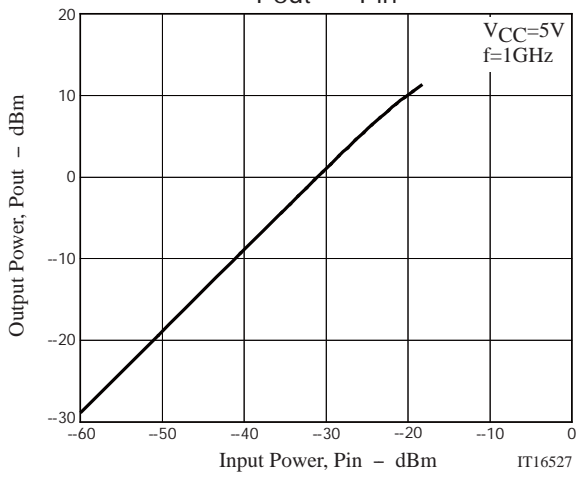
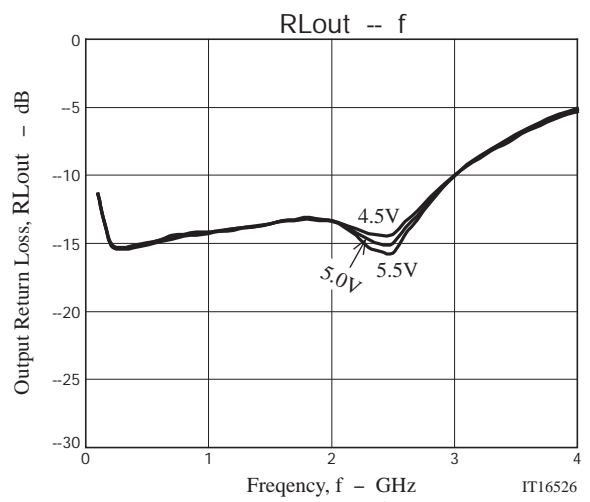
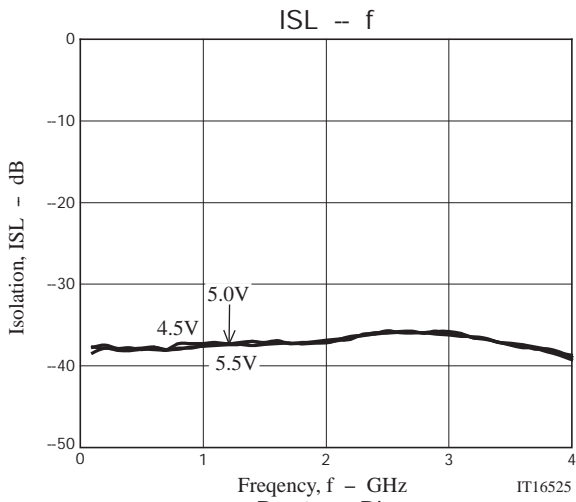
Evaluation Board



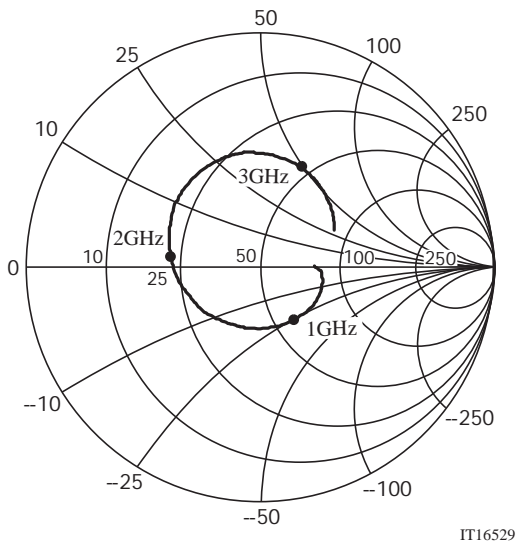
| Symbol | Value |
|--------|--------|
| C1, C2 | 100pF |
| C3 | 1000pF |
| L1 | 100nH |



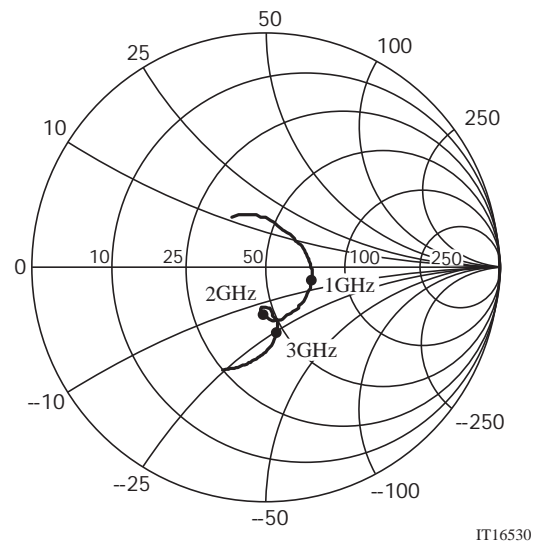
SMA3117



S Parameter (VCC=5V)
S11



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