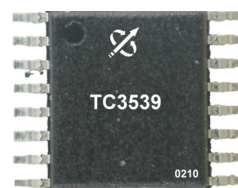


### 4.8 - 6 GHz 29dBm Self-Bias MMIC

#### FEATURES

- P<sub>-1</sub> dB: 29 dBm
- Small Signal Gain: 19 dB
- Power Added Efficiency: 25 %
- IP3: 40 dBm
- Matched to 50 Ω operation
- Bias condition: 400 mA @ 8 V

#### PHOTO ENLARGEMENT



#### DESCRIPTION

The TC3539 is a 2-stage PHEMT MMIC power amplifier. It requires only a single positive supply. It is designed for use in low cost, high volume, 4.8 - 6 GHz band applications. The MMIC is matched to 50Ω operation. It provides a typical gain of 19 dB and P1dB power of more than 29 dBm. Typical bias condition is 8V at 400 mA. The MMIC is packaged in a low-cost surface-mountable plastic package.

#### APPLICATIONS

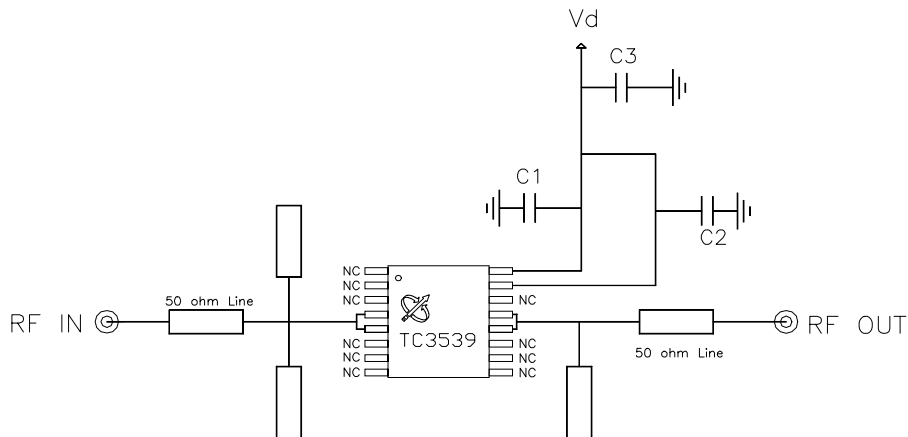
- Wireless Internet Access

#### ELECTRICAL SPECIFICATIONS (Ta = 25 °C)

SYMBOL	DESCRIPTION	MIN	TYP	MAX	UNITS
FREQ	Frequency Range	4.8		6	GHz
SSG	Small Signal Gain	17	19		dB
GOF	Small Signal Gain Flatness		± 0.5		
P <sub>-1</sub> dB	Output Power at 1 dB Gain Compression	28	29		dBm
P <sub>-3</sub> dB	Output Power at 3 dB Gain Compression	29	30		dBm
IP3	Third Order Intercept Point	38	40		dBm
VSWR, IN	Input VSWR		2:1		
VDD	Supply Voltage		8		Volt
IDD	Current Supply Without RF		400		mA
IDP <sub>-1</sub>	Current Supply @ Pout=P <sub>-1</sub> dB		420		mA
η <sub>a</sub>	Power Added Efficiency		25		%

**TEST CIRCUITS**

## Evaluation Board Schematic


**EVALUATION BOARD**

DXF file of the PCB can be downloaded from our web-site at [www.transcominc.com.tw](http://www.transcominc.com.tw)

PCB Material: RO4003

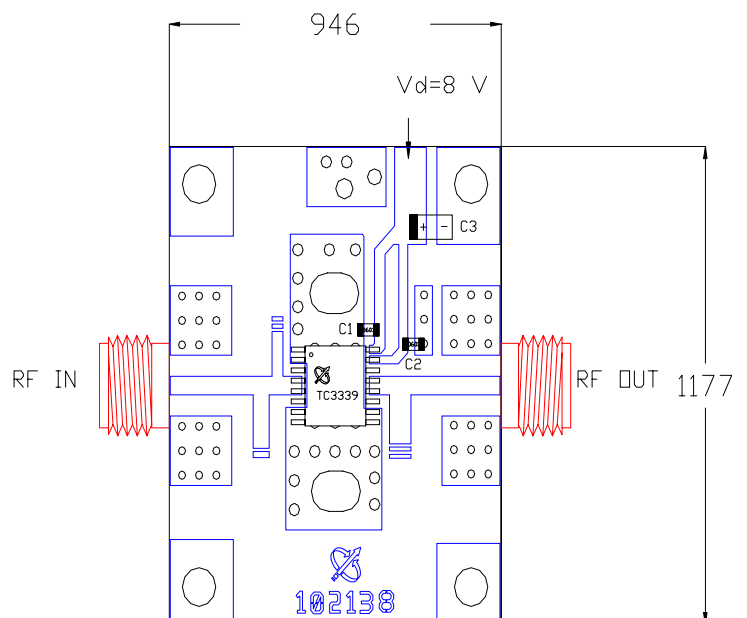
ER = 3.38

Thickness = 20 mil

Unit: mil

**Application Notes:**

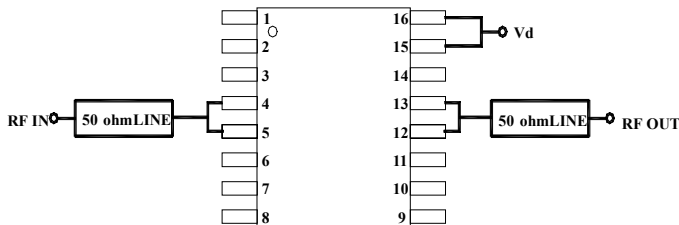
For better heat sinking and grounding, it's recommended to have the via holes beneath TC3539 filled with solder and have two screws besides TC3539 installed on the PCB area.



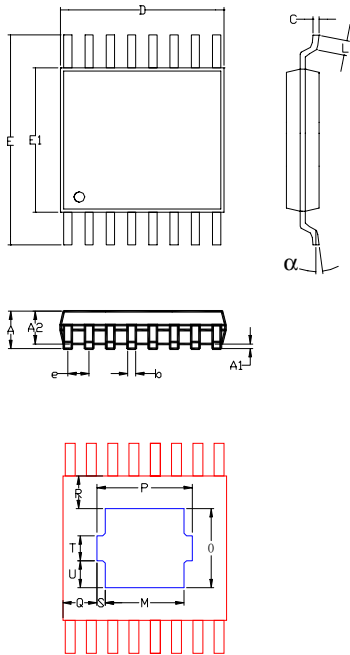
**Evaluation Board Parts List**

Part Type	Reference Designator	Description	Manufacturer	Part Number
Capacitor	C1, C2	1000pF 0603	Murata	GRM39C0G102J50V
Capacitor	C3	4.7uF Tantalum Cap.		

**CONNECTION DIAGRAM AND PIN DESCRIPTIONS**



Pin #	Name	Description
4, 5	RF IN	RF input
15, 16	V <sub>d</sub>	MMIC drain bias
12, 13	RF OUT	RF output (internally DC blocked)
Others	NC	No Connection

**PHYSICAL DIMENSIONS (Unit: inches)**


DIMENSION	MINIMUM	NOMINAL	MAXIMUM
A			0.045
A1	0.000		0.004
A2	0.031	0.039	0.041
b	0.007		0.012
C	0.004		0.008
D	0.193	0.197	0.201
E		0.252	
E1	0.169	0.173	0.177
e		0.026	
L	0.018	0.024	0.030
M		0.095	
O		0.095	
P		0.115	
Q		0.041	
R		0.039	
S		0.010	
T		0.030	
U		0.033	
y			0.004
$\alpha$	0°		8°

Dimensions in inches