

## 4.9 - 6 GHz 29dBm MMIC

### FEATURES

- P<sub>1</sub> dB: 29 dBm
- Small Signal Gain: 21 dB
- Power Added Efficiency: 25 %
- IP3: 39 dBm
- Match to 50  $\Omega$  operation
- Bias condition: 400 mA @ 8 V

### PHOTO ENLARGEMENT



### DESCRIPTION

The TC3532 is a 2 stage PHEMT MMIC power amplifier. It is designed for use in low cost, high volume, 4.9~6 GHz band applications. The MMIC is matched to 50 $\Omega$  operation. No external matching component is required. It provides a typical gain of 21 dB and P1dB power of more than 29 dBm. Typical bias condition is 8V at 400 mA. The MMIC is packaged in a Ceramic 10 Pins package. The copper based carrier of the package allows direct soldering of the device to the PCB.

### APPLICATIONS

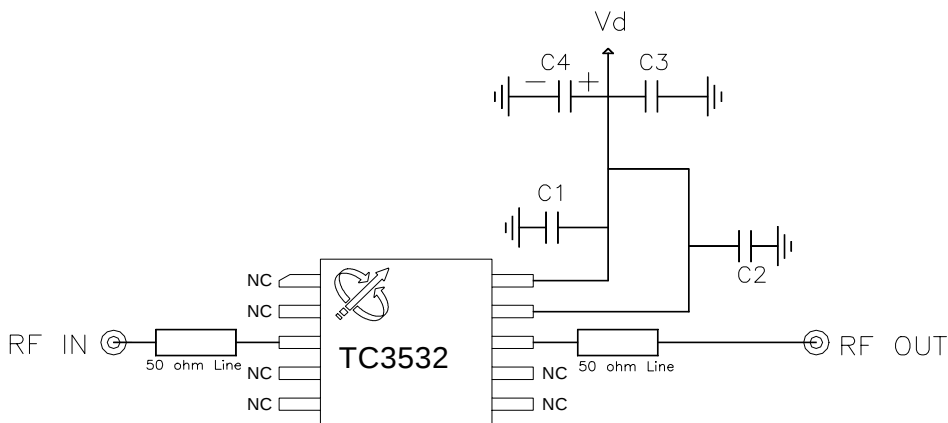
- Wireless Internet Access

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

| SYMBOL                     | DESCRIPTION                             | MIN | TYP       | MAX        | UNITS |
|----------------------------|-----------------------------------------|-----|-----------|------------|-------|
| <b>FREQ</b>                | Frequency Range                         | 4.9 |           | 6          | GHz   |
| <b>SSG</b>                 | Small Signal Gain                       | 19  | 21        |            | dB    |
| <b>GOF</b>                 | Small Signal Gain Flatness              |     | $\pm 0.5$ | $\pm 0.75$ | dB    |
| <b>P<sub>1</sub> dB</b>    | Output Power at 1 dB Gain Compression   | 28  | 29        |            | dBm   |
| <b>P<sub>3</sub> dB</b>    | Output Power at 3 dB Gain Compression   | 29  | 30        |            | dBm   |
| <b>IP3</b>                 | Third Order Intercept Point             | 37  | 39        |            | dBm   |
| <b>VSWR, IN</b>            | Input VSWR                              |     | 2:1       |            |       |
| <b>VDD</b>                 | Supply Voltage                          |     | 8         |            | Volt  |
| <b>IDD</b>                 | Current Supply Without RF               |     | 400       |            | mA    |
| <b>IDP<sub>1</sub></b>     | Current Supply @ Pout=P <sub>1</sub> dB |     | 400       | 450        | mA    |
| <b><math>\eta_a</math></b> | 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:

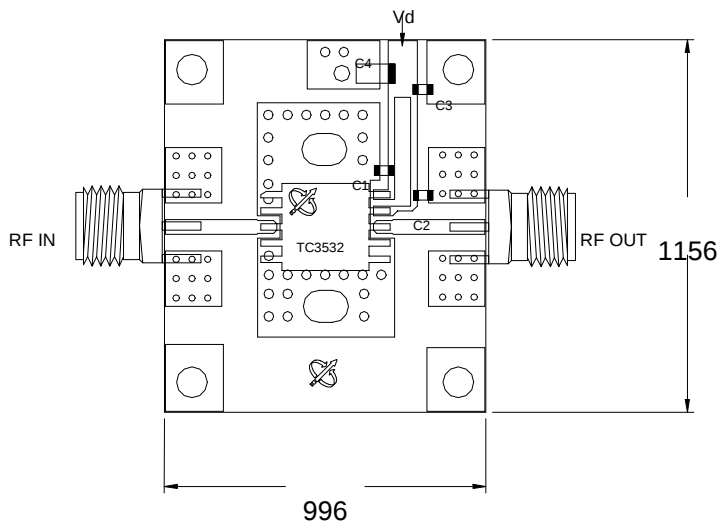
For better heat sinking and grounding,

it's recommended to have the via holes

beneath TC3532 filled with solder and

have two screws besides TC3532

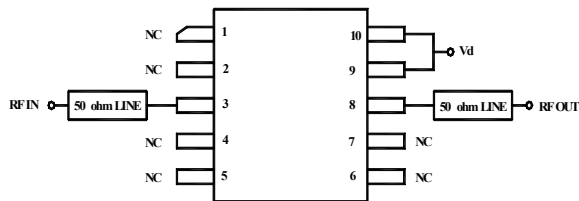
installed on the PCB area.



### Evaluation Board Parts List

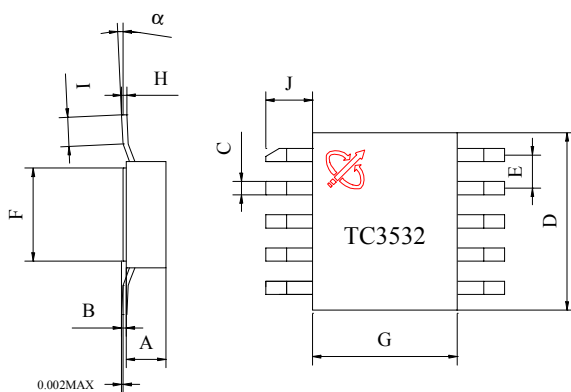
| Part Type | Reference Designator | Description         | Manufacturer | Part Number     |
|-----------|----------------------|---------------------|--------------|-----------------|
| Capacitor | C1, C2               | 0.1 uF 0603         | Murata       | GRM39Y5V104Z25V |
| Capacitor | C3                   | 1000pF 0603         | Murata       | GRM39C0G102J50V |
| Capacitor | C4                   | 4.7uF Tantalum Cap. |              |                 |

### CONNECTION DIAGRAM AND PIN DESCRIPTIONS



| Pin #  | Name   | Description                       |
|--------|--------|-----------------------------------|
| 3      | RF IN  | RF input                          |
| 9, 10  | Vd     | MMIC Drain bias                   |
| 8      | RF OUT | RF output (internally DC blocked) |
| Others | NC     | No Connection                     |

### PHYSICAL DIMENSIONS (Unit: inches)



| DIMENSION | MINIMUM | NOMINAL | MAXIMUM |
|-----------|---------|---------|---------|
| A         | 0.054   | 0.057   | 0.060   |
| B         | 0.007   | 0.008   | 0.009   |
| C         | 0.017   | 0.020   | 0.023   |
| D         | 0.267   | 0.270   | 0.273   |
| E         | 0.047   | 0.050   | 0.053   |
| F         | 0.247   | 0.250   | 0.253   |
| G         | 0.267   | 0.270   | 0.273   |
| H         | 0.007   | 0.008   | 0.009   |
| I         | 0.020   |         | 0.040   |
| J         | 0.073   | 0.080   | 0.087   |
| α         | 0°      |         | 7°      |