

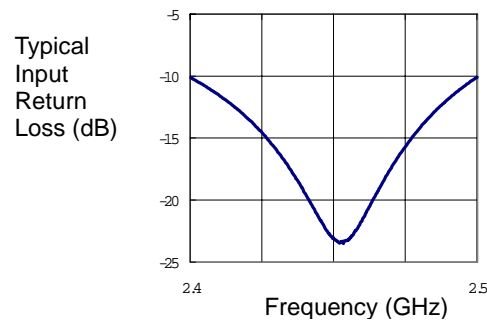
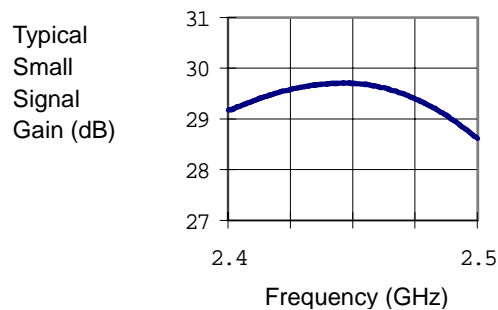
**2.4 GHz 2W MMIC**
**FEATURES**

- P<sub>1</sub> dB: 33 dBm
- Small Signal Gain: 28 dB
- Power Added Efficiency: 36 %
- IP3: 42 dBm
- DC Power: 5.6 W

**PHOTO ENLARGEMENT**

**DESCRIPTION**

The TC3151 is a 2 stage PHEMT MMIC power amplifier. It is designed for use in low cost, high volume, 2.4-2.5 GHz ISM band applications. The MMIC provides a typical gain of 28 dB and saturation power of more than 34 dBm. Typical bias condition is 7V at 800 mA. The MMIC is packaged in a standard SO-8 power package. The copper based carrier of the package allows direct soldering of the device to the PCB for proper heat sinking. The input and output matching of the MMIC require minimum external components.

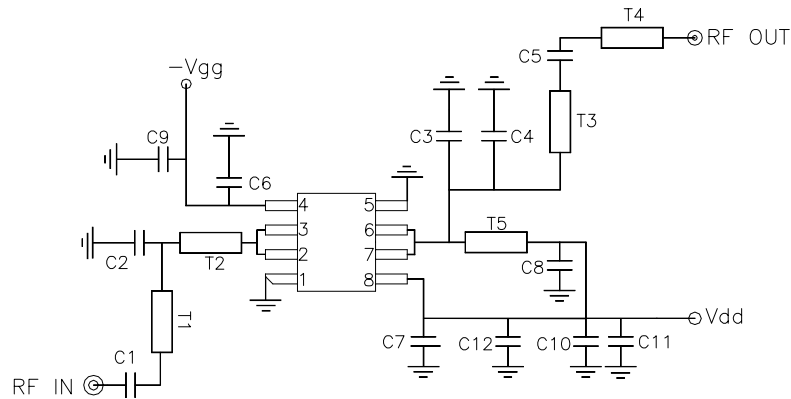

**ELECTRICAL SPECIFICATIONS (Ta = 25 °C)**

SYMBOL	DESCRIPTION	MIN	TYP	MAX	UNITS
<b>FREQ</b>	Frequency Range	2.4		2.5	GHz
<b>SSG</b>	Small Signal Gain	27	28		dB
<b>P<sub>1</sub> dB</b>	Output Power at 1 dB Gain Compression	32	33		dBm
<b>P3 dB</b>	Output Power at 3 dB Gain Compression	33	34		dBm
<b>PAE</b>	Power Added Efficiency		36		%
<b>IP3</b>	Third Order Intercept Point	41	42		dBm
<b>RL, IN</b>	Input Return Loss	9	12		dB
<b>VDD</b>	Supply Voltage		7		Volt
<b>Vg</b>	Gate Voltage	-0.6	-1.2	-2	Volt
<b>IDD</b>	Current Supply Without RF		800		mA
<b>ID_P<sub>1</sub> dB</b>	Current Supply @ Pout = P <sub>1</sub> dB		920		mA

# TC3151

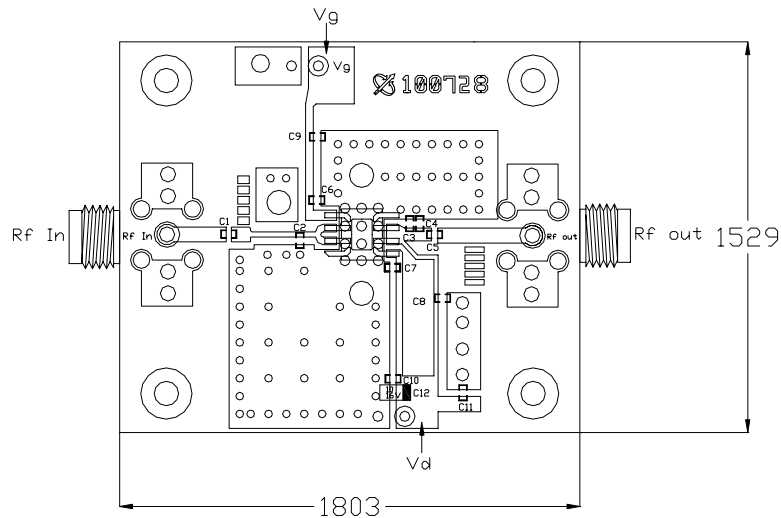
## TEST CIRCUITS

### Evaluation Board Schematic



## EVALUATION BOARD

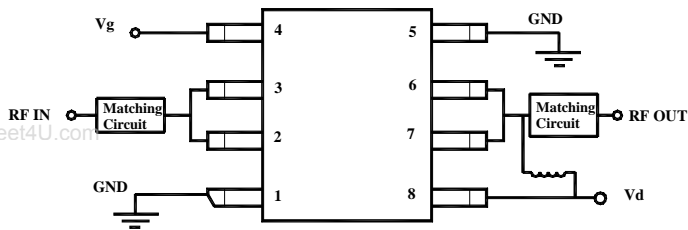
PCB Material: FR4  
 ER = 4.6  
 Thickness = 31 mil  
 Unit: mil



## Evaluation Board Parts List

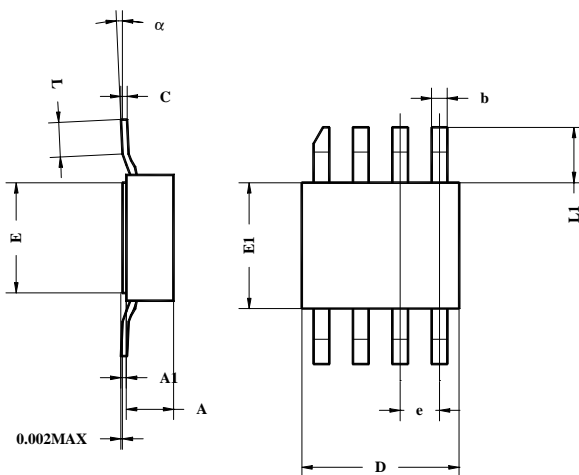
Part Type	Reference Designator	Description	Manufacturer	Part Number
Capacitor	C1	3.3 pF 0603	Murata	GRM39C0G3R3C50V
Capacitor	C2	2.5 pF 0603	Murata	GRM39C0G2R5C50V
Capacitor	C3	1 pF 0603	Murata	GRM39C0G010C50V
Capacitor	C4	0.75 pF	Murata	GRM39C0GR75C50V
Capacitor	C5	1.5 pF 0603	Murata	GRM39C0G1R5C50V
Capacitor	C6~8	1000 pF 0603	Murata	GRM39C0G102J50V
Capacitor	C9~11	0.1 uF 0603	Murata	GRM39Y5V104Z25V
Capacitor	C12	4.7uF 1206		Tan Cap

**CONNECTION DIAGRAM AND PIN DESCRIPTIONS**



Pin #	Name	Description
1	GND	Ground
2, 3	RF IN	RF input (internally DC blocked)
4	V <sub>g</sub>	FET gate bias
5	GND	Ground
6, 7	RF OUT	RF output and V <sub>d2</sub> External matching circuit required
8	V <sub>d</sub>	Input stage drain bias

**PHYSICAL DEMENSIONS**



DIMENSION	MINIMUM	NOMINAL	MAXIMUM
A	0.083	0.086	0.089
A1	0.007	0.008	0.009
b	0.017	0.020	0.023
c	0.007	0.008	0.009
D	0.195	0.200	0.205
E	0.135	0.140	0.145
E1	0.155	0.160	0.165
e		0.050	
L	0.020		0.040
L1	0.055	0.065	0.075
α	0°		7°

Dimensions in inches