

Preliminary

## 13.75 - 14.5 GHz 1W MMIC

### FEATURES

- P<sub>1</sub> dB: 30 dBm
- Small Signal Gain: 30 dB
- IP3: 39 dBm
- Match to 50 Ω Operation
- Bias condition: 750 mA @ 8 V

### DESCRIPTION

The TC4535 is a 4 stage PHEMT MMIC power amplifier. It is designed for use in low cost, high volume, Ku band applications. The MMIC is matched to 50ohm operation. No external matching component is required. It provides a typical gain of 30 dB and P<sub>1</sub> dB power of more than 29 dBm. Typical bias condition is 8V at 750 mA. The MMIC is packaged in a copper based ceramic 6 pins power package. The copper based carrier of the package allows direct soldering of the device to the PCB for proper heat sinking.

### APPLICATIONS

- Ku Band VSAT Transmit Subsystem

### ELECTRICAL SPECIFICATIONS (T<sub>a</sub> = 25 °C)

SYMBOL	DESCRIPTION	MIN	TYP	MAX	UNITS
<b>FREQ</b>	Frequency Range	13.75		14.5	GHz
<b>SSG</b>	Small Signal Gain	29	30		dB
<b>P<sub>1</sub> dB</b>	Output Power at 1 dB Gain Compression	29	30		dBm
<b>P<sub>3</sub> dB</b>	Output Power at 3 dB Gain Compression	30	31		dBm
<b>IP3</b>	Third Order Intercept Point		39		dBm
<b>VSWR, In</b>	Input VSWR		2:1		-
<b>VSWR, Out</b>	Output VSWR		2.5:1		-
<b>VDD</b>	Supply Voltage		8		Volt
<b>Vg</b>	Gate Voltage	-0.5	-1.0	-1.5	Volt
<b>IDD</b>	Current Supply Without RF		750		mA
<b>IDP<sub>1</sub></b>	Current Supply @ P <sub>out</sub> = P <sub>1</sub> dB		750		mA

**Absolute Maximum Ratings**

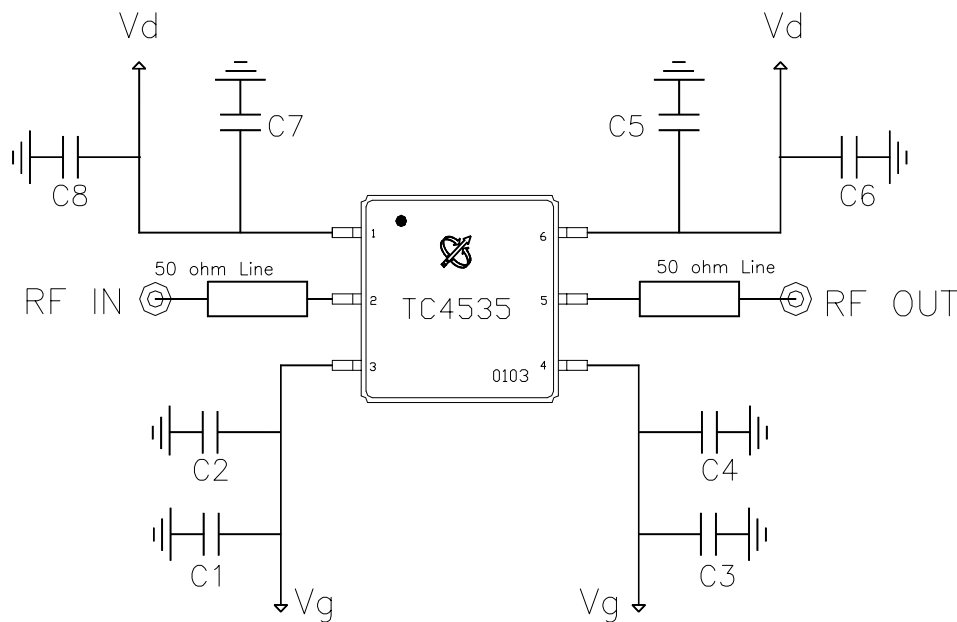
Symbol	Parameter/Conditions	Min.	Max.	Units
$V_{dd}$	Drain-Source Voltage		10	Volts
$I_{dd}$	Total Drain Current		1600	mA
$P_{in}$	RF Input Power		10	dBm
$P_t$	Power Dissipation		12	W
$T_{ch}$	Operating Channel Temperature		175	°C
$T_{STG}$	Storage Temperature	-65	175	°C

**Note:**

1. This GaAs MMIC is susceptible to damage from Electrostatic Discharge. Proper precautions should be used when handling these devices.
2. Specifications subject to change without notice.

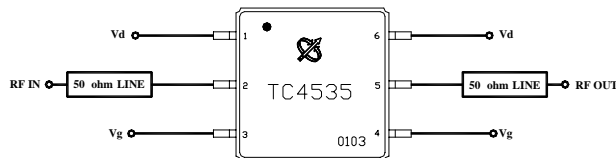
**TEST CIRCUITS**

## Evaluation Board Schematic



Part Type	Reference Designator	Description	Manufacturer	Part Number
Capacitor	C1, C3, C5, C7	1000pF 0603	Murata	GRM39C0G102J50V
Capacitor	C2, C4, C6, C8	0.1 uF 0603	Murata	GRM39Y5V104Z25V

CONNECTION DIAGRAM AND PIN DESCRIPTIONS



Pin #	Name	Description
2	RF IN	RF input (internally DC blocked)
1,6	Vd	MMIC drain bias
3,4	Vg	MMIC gate bias
5	RF OUT	RF output (internally DC blocked)

PHYSICAL DIMENSIONS (Unit: mil)

