



TC4522

REV.0_12/08/2004

13.75 - 14.5 GHz 0.5 W MMIC

FEATURES

- P_{-1} dB: 27 dBm
- Small Signal Gain: 28dB
- Noise Figure: 7 dB
- IP3: 39 dBm
- Bias Condition: 500 mA @ 8V

PHOTO ENLARGEMENT



DESCRIPTION

The TC4522 is a four stage PHEMT power amplifier MMIC that is designed for use as an output stage or a driver in VSAT ODU. The amplifier provides a minimum of 28 dB gain and delivers 0.5 watt output power from 13.75 to 14.5 GHz. The small package provides a simple, cost effective solution to customized designs. The base material is gold plated copper-tungsten for excellent thermal dissipation.

The MMIC is fabricated using Transcom's propriety matured GaAs PHEMT process. The process features full passivation for increased performance and reliability. It is 100% RF tested to ensure compliance to performance specifications.

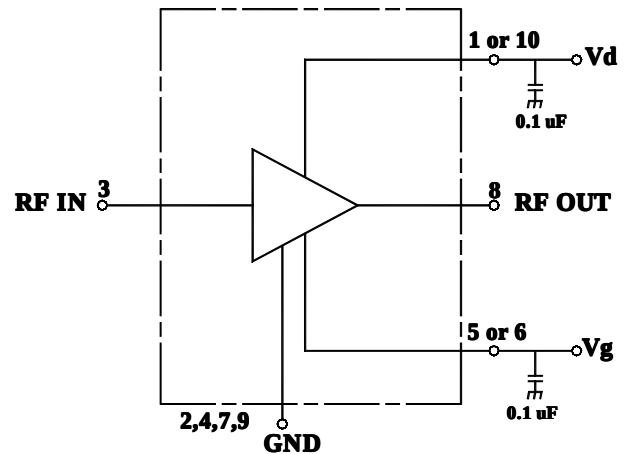
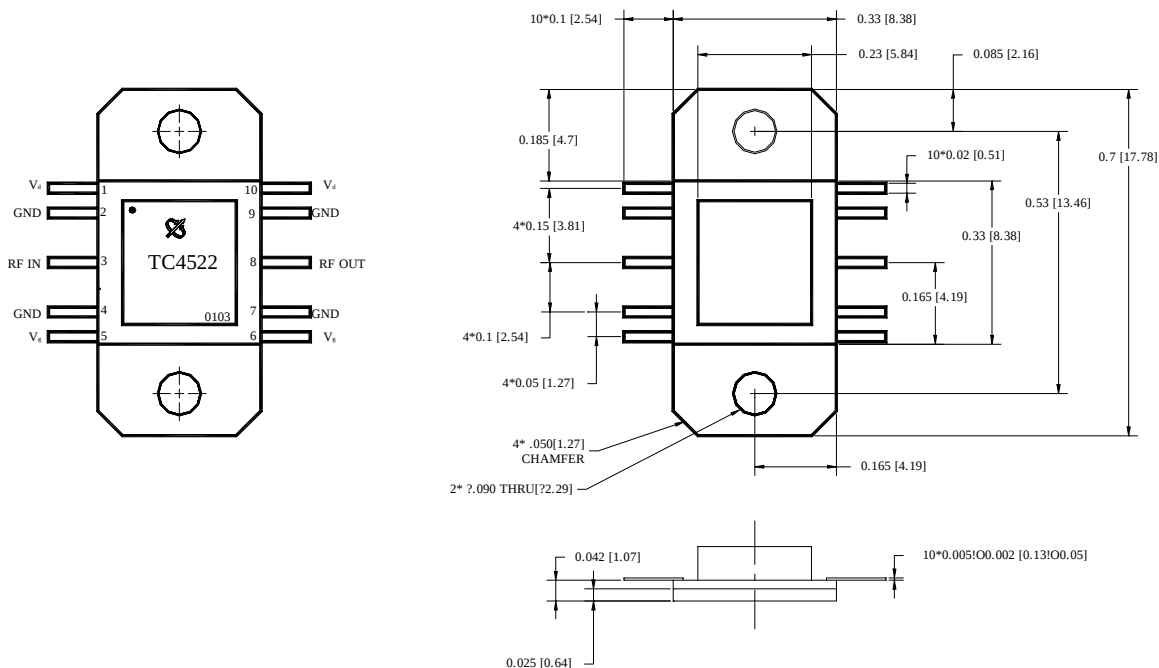
ELECTRICAL SPECIFICATIONS ($T_a = 25^\circ\text{C}$)

SYMBOL	DESCRIPTION	MIN	TYP	MAX	UNITS
FREQ	Frequency Range	13.75		14.5	GHz
SSG	Small Signal Gain	26	28		dB
GOF	Small Signal Gain Flatness		± 1	± 1.5	dB
P1dB	Output Power at 1 dB Gain Compression	26	27		dBm
P3dB	Output Power at 3 dB Gain Compression	27	28		dBm
IP3	Third Order Intercept Point	36	37		dBm
VSWR, IN	Input VSWR		2:1	2.5:1	dB
VSWR, OUT	Output VSWR		2.5:1	3:1	dB
VDD	Supply Voltage		8		Volt
Vg	Gate Voltage	-0.5	-1.0	-1.5	Volt
IDD	Current Supply Without RF		500		mA
IDP ₋₁	Current Supply @ Pout = P_{-1} dB		500		mA



ABSOLUTE MAXIMUM RATINGS at 25 °C

Symbol	Parameter	Rating
V_{DS}	Drain-Source Voltage	10 V
V_{GS}	Gate-Source Voltage	-5 V
I_D	Drain Current	1600 mA
P_T	Continuous Dissipation	7 W
P_{in}	Input Power, CW	10 dBm
T_{CH}	Channel Temperature	175 °C
T_{STG}	Storage Temperature	- 65 °C to +175 °C

TYPICAL BIAS CONFIGURATION

DIMENSION DRAWING [in inch (mm)]


Pin No.	Pin Name	Description
1, 10	VDD	Drain Supply
2, 4, 7, 9	GND	Ground
3	RF IN	RF Input
8	RF OUT	RF Output
5, 6	VGG	Gate Supply