TRANSCOM

TC4541

REV.2_04/12/2004

13.75 - 14.5 GHz 2W MMIC

FEATURES

- P_{-1} dB: 33 dBm
- Small Signal Gain: 26 dB
- IP3: 42 dBm
- Bias Condition: 1500 mA @ 8 V

PHOTO ENLARGEMENT

DESCRIPTION

The TC4541 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 26 dB gain and delivers 2 watt output power from 13.75 to 14.5 GHz. The small package provides a simple, cost effective solution to customized designs. The metal base carrier provides excellent thermal dissipation for the internal MMIC dies.
The MMIC is fabricated using a mature 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 (Ta = 25 °C)

SYMBOL	DESCRIPTION	MIN	TYP	MAX	UNITS
FREQ	Frequency Range	13.75		14.5	GHz
SSG	Small Signal Gain	24	26		dB
GOF	Small Signal Gain Flatness		± 0.5	± 0.75	dB
P_{-1} dB	Output Power at 1 dB Gain Compression	32.5	33		dBm
P_{-3} dB	Output Power at 3 dB Gain Compression	33.3	33.5		dBm
IP3	Third Order Intercept Point	41	42		dBm
VSWR, IN	Input VSWR		1.7:1		-
VSWR, OUT	Output VSWR		1.7:1		-
VDD	Supply Voltage		8		Volt
Vg	Gate Voltage	-0.5	-1.0	-1.5	Volt
IDD	Current Supply Without RF		1500		mA
IDP_{-1}	Current Supply @ Pout = P_{-1} dB		1500		mA
ηa	Power Added Efficiency		15		%

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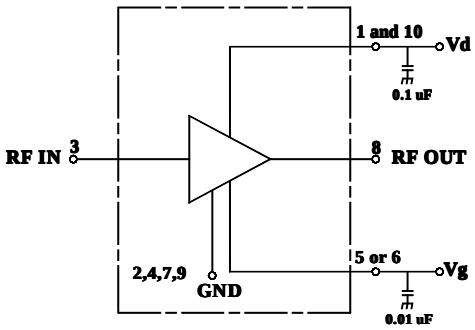
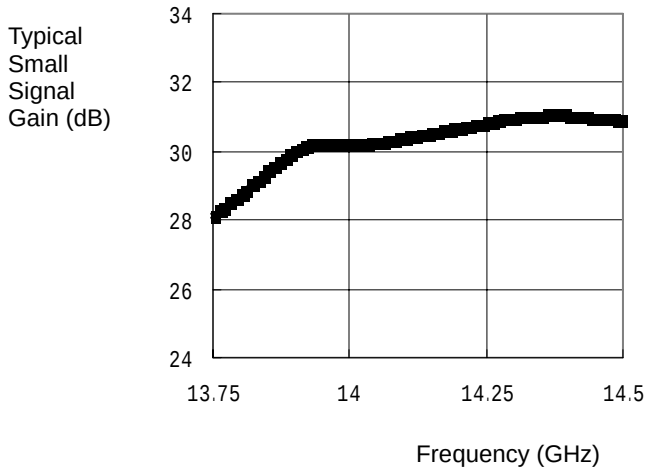
ABSOLUTE MAXIMUM RATINGS at 25 °C

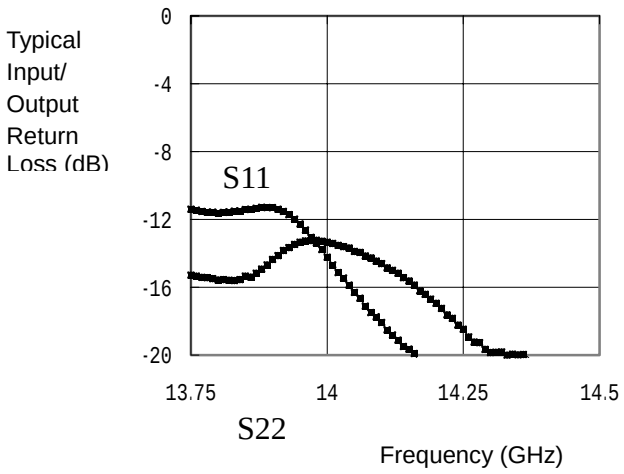
Symbol	Parameter	Rating
V_{DS}	Drain-Source Voltage	12 V
V_{GS}	Gate-Source Voltage	-5 V
I_D	Drain Current	3 A
P_T	Continuous Dissipation	24 W
P_{in}	Input Power, CW	10 dBm
T_{CH}	Channel Temperature	175 °C
T_{STG}	Storage Temperature	- 65 °C to +175 °C

TYPICAL BIAS CONFIGURATION

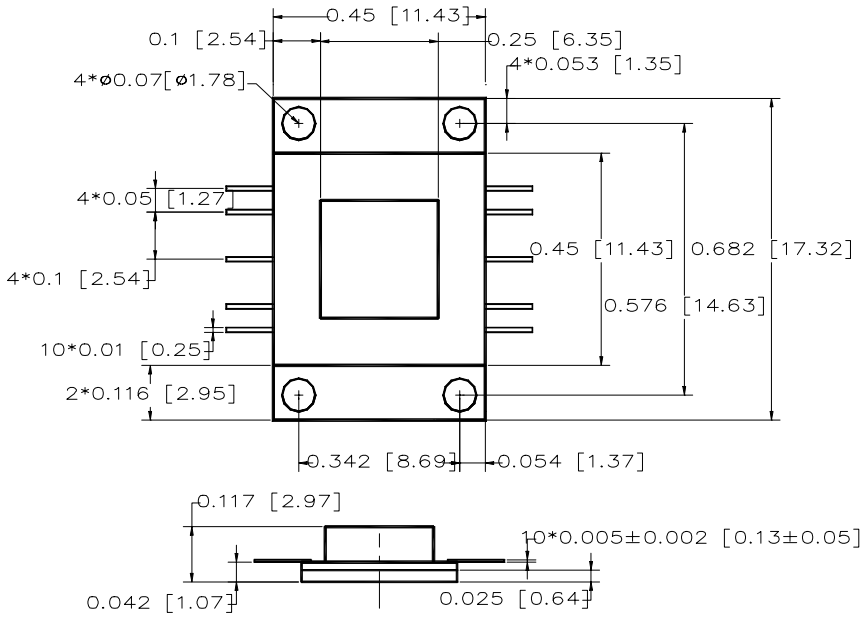


TYPICAL RF PERFORMANCE

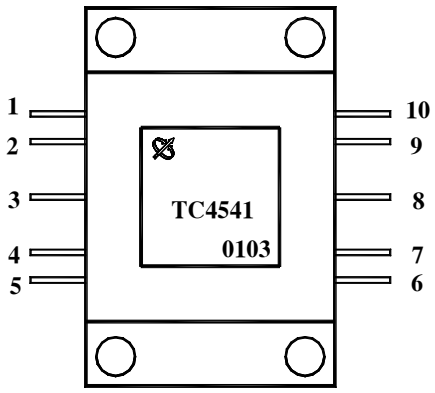




DIMENSION DRAWING (in inch (mm))



CONNECTION DIAGRAM AND PIN DESCRIPTION



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