TRANSCOM

TC5285C

PRE.1_04/18/2019

27 – 29.5 GHz 3W PA MMIC(Chip Form)

FEATURES

- Psat : +35.0dBm
- P1dB : +33.5dBm
- IMD3 : +43.0dBc @ Pscl +20dBm
- Small Signal Gain: 15dB
- Bias Condition: 1400mA @ +6V

APPLICATIONS

- New 5G Radio Link
- VSAT
- Sat-Com
- Point-to-Point Radio

DESCRIPTION

The TC5285C is a two-stages PHEMT high power amplifier MMIC that operates from 27 to 29.5 GHz. The amplifier provides a typical 15 dB of gain and delivers +35 dBm of Psat. The MMIC is fabricated using Transcom's proprietary matured GaAs PHEMT process. The process features full passivation for increased performance and reliability. All devices are 100 % DC tested to assure consistent quality. Bond pads are gold plated for either thermocompression or thermosonic wire bonding. Backside gold plating is compatible with standard AuSn die-attach.

ELECTRICAL SPECIFICATIONS (Ta = 25 °C)

SYMBOL	DESCRIPTION	MIN	TYP	MAX	UNITS
FREQ	Frequency Range	27		29.5	GHz
SSG	Small Signal Gain		15		dB
Psat	Saturation Output Power		35.0		dBm
P1dB	1dB Compression Output Power		33.5		dBm
IMD3	The Third Intermodulation level at Pout +20dBm/tone, △f=20MHz		43.0		dBc
I.L., IN	Input Return Loss		8		dB
I.L., OUT	Output Return Loss		10		dB
VDD	Supply Voltage		+6		Volt
IDQ	Current Supply Without RF		1,400		mA
IDRF	Current Supply @ Psat		2,200		mA

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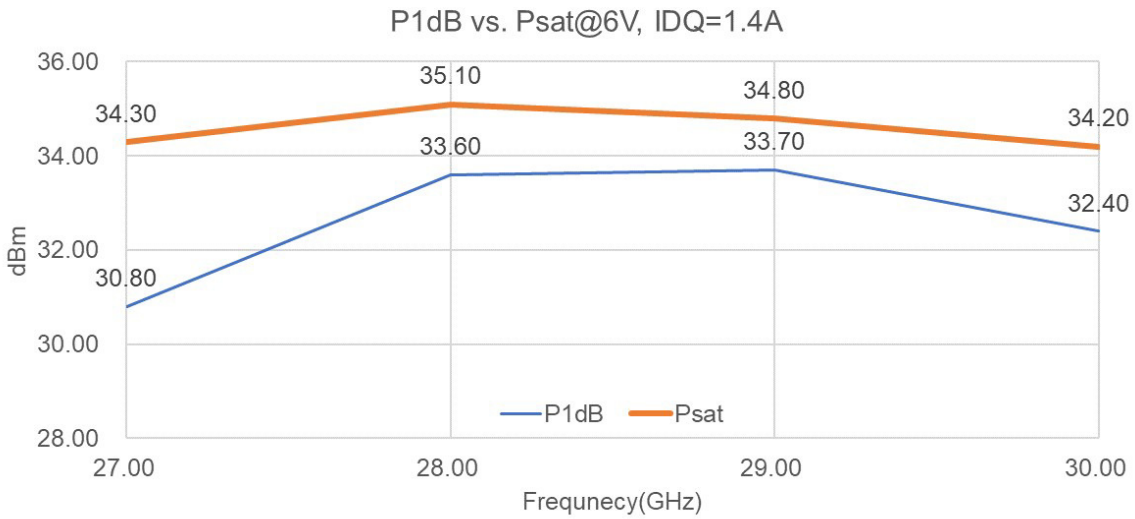
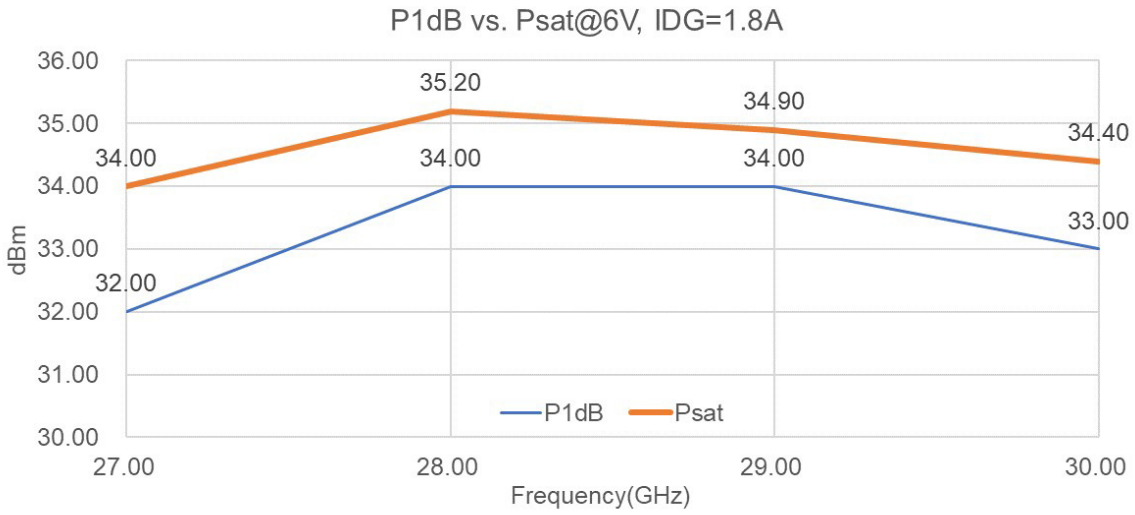
ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Rating
V_{DS}	Drain-Source Voltage	7.0 V
I_D	Drain Current	2.5 A
P_T	Continuous Dissipation	18 W
P_{in}	Input Power, CW	+25 dBm
Tch	Channel Temperature	+175
T_{STG}	Storage Temperature	- 50 °C to +150 °C

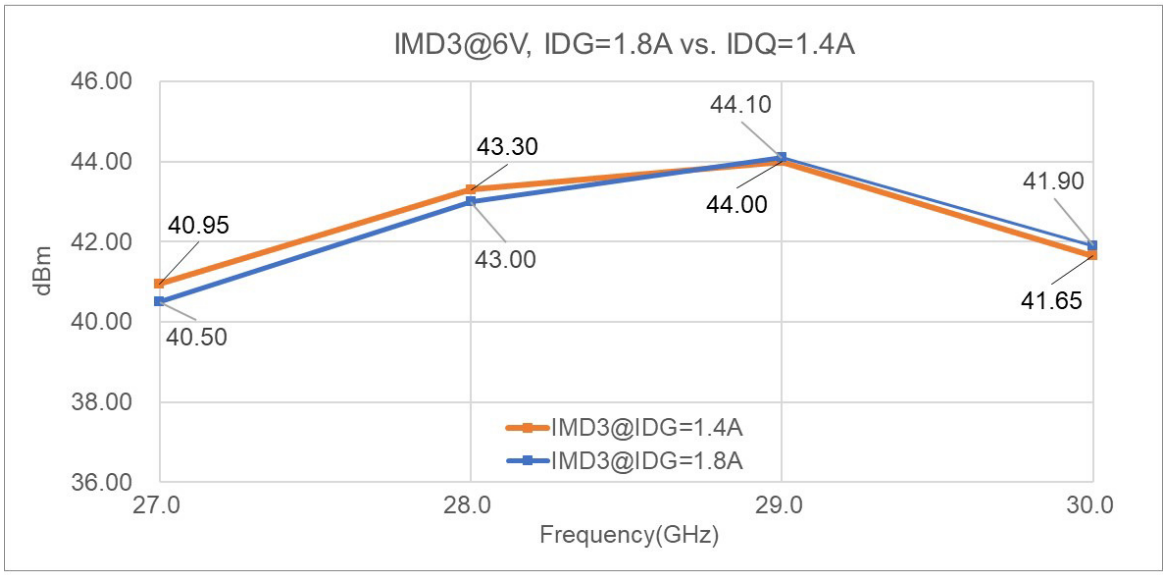
TYPICAL CHARACTERISTICS

Pout vs Freq.

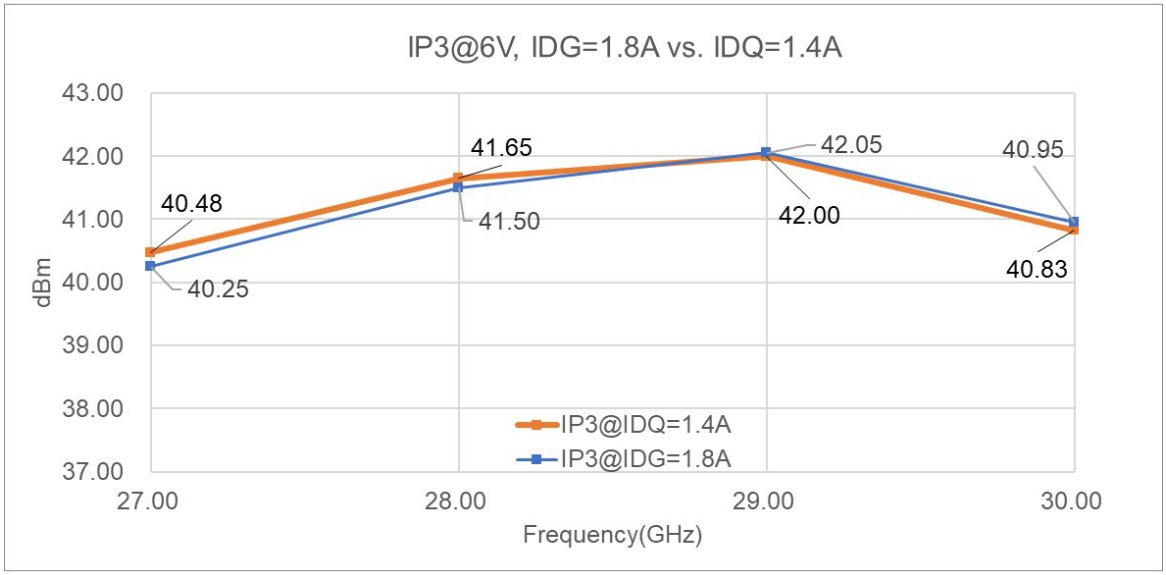




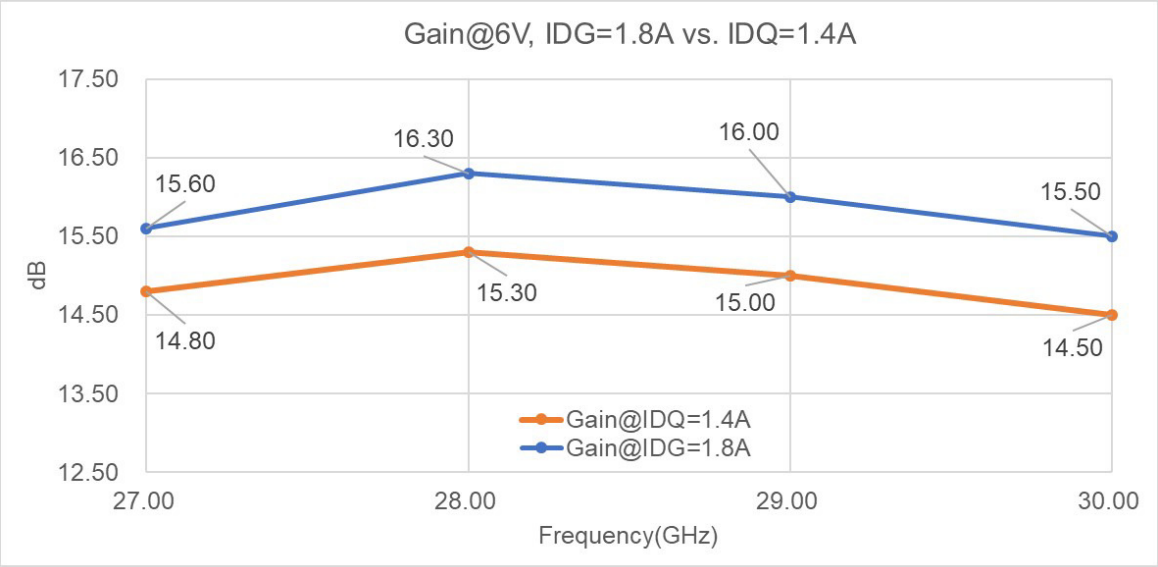
IMD3 vs Freq (@Pscl = +20dBm)



IP3 vs Freq

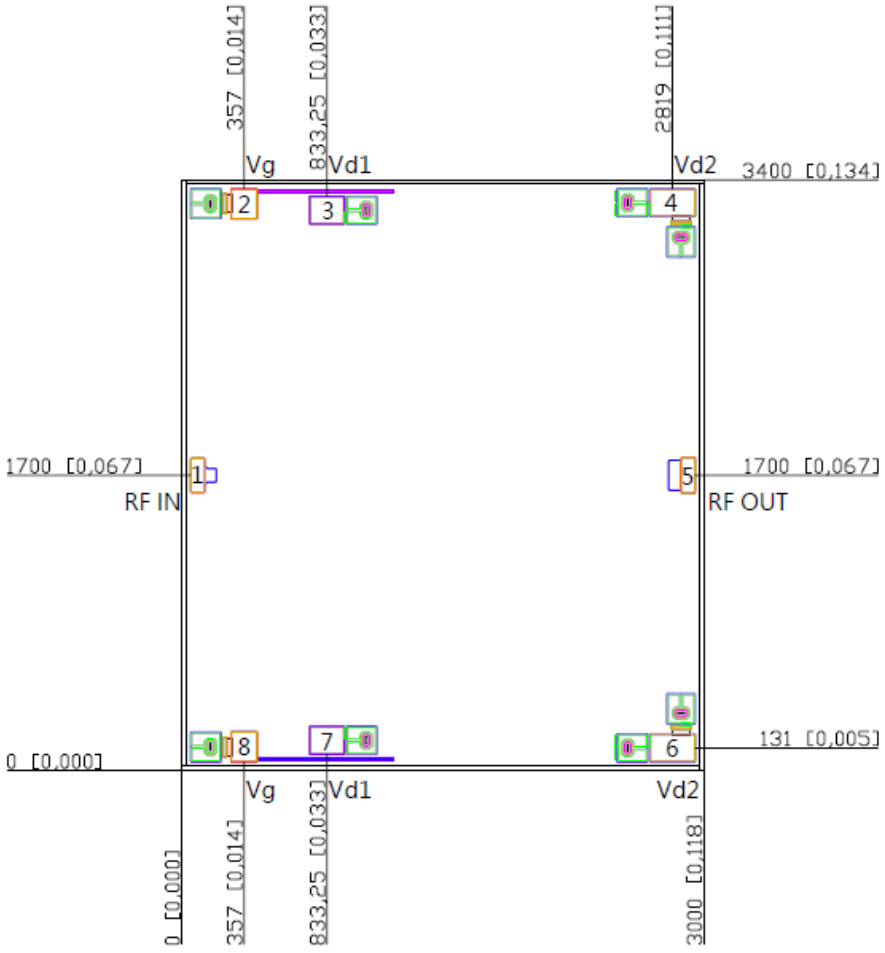


Gain vs Freq.


Gain@6V, IDG=1.8A vs. IDQ=1.4A
17.50
16.50
15.50
14.50
13.50
12.50
dB
16.30
16.00
15.60
15.50
15.30
15.00
14.80
14.50
Gain@IDQ=1.4A
Gain@IDG=1.8A
27.00
28.00
29.00
30.00
Frequency(GHz)

MECHANICAL OUTLINE

Units: micrometer (inch)
Thickness: 50.8 (0.002)
Chip Size: 3000 ± 50.8 × 3400 ± 50.8 (0.118 ± 0.002 × 0.134 ± 0.002)
Bond pad # 1 (RF IN) 82 × 200 (0.0032 × 0.0078)
Bond pad # 2,8 (Vg) 150 × 174 (0.0059 × 0.0068)
Bond pad # 3,7 (Vd1) 200 × 162 (0.0079 × 0.0063)
Bond pad # 4,6 (Vd2) 262 × 162 (0.0103 × 0.0063)
Bond pad # 5 (RF OUT) 85 × 210 (0.0033 × 0.0082)



ASSEMBLY DIAGRAM

1. Using 1mil Au Wire.
2. Substrate Material : Al2O3
3. Substrate Thickness : 10 mil