Raytheon

RMPA29100
27-30 GHz Power Amplifier MMIC

ADVANCED INFORMATION

Description

The Raytheon RMPA29100 is a high efficiency power amplifier designed for use in point to point radio, point to multi point communications, LMDS and other millimeter-wave applications. The RMPA29100 is a 3-stage GaAs MMIC amplifier utilizing Raytheon's advanced 0.15 μm gate length Power PHEMT process and can be used in conjunction with other driver or power amplifiers to achieve the required total power output.

Features

- 20 dB Gain at Pin (-10 dBm)
- 15% Power Added Efficiency
- 31 dBm Saturated Power Output (typ)

Absolute Maximum Ratings

Parameter	Symbol	Value	Units
Positive DC Voltage (+5V Typical)	Vd	+ 6	Volts
Negative DC Voltage	Vg	- 2	Volts
Simultaneous (Vd-Vg)	Vdg	+ 8	Volts
RF Input Power (from 50 ohm source)	P_{IN}	+15	dBm
Operating Base plate Temperature	T_C	-15 to +65	°C
Storage Temperature Range	T_{Stg}	-30 to +110	°C

Electrical Characteristics

(At 25°C)
50 ohm system,
Vd=+5V,
Quiescent current=
Idq=1000 mA
(note 2)

Parameter	Typ	Unit
Frequency Range	27 - 30	GHz
Gate Supply Voltage (Vg)	- 0.2	V
Drain Supply Voltage (Vd)	+ 5	V
Quiescent Gate Supply Current (Igq)	-0.1	mA
Quiescent Drain Supply Current (Idq)	1000	mA
Gain at Pin = -10 dBm	20	dB
Gain Variation vs Frequency	2	dB
Power Output at Pin = 0 dBm	20	dBm
Power Output at 1 dB Compression	30	dBm

Parameter	Typ	Unit
Power Output (Saturated)	31	dBm
Drain Current at Pin = -10 dBm	1000	mA
Drain Current at Pin = 0 dBm	1000	mA
Drain Current at P1 dB Compression	930	mA
Drain Current at Saturated Pout	930	mA
Power Added Efficiency (PAE): at P1 dB	15	%
Input Return Loss (Pin = -10 dBm)	8	dB
Output Return Loss (Pin = -10 dBm)	8	dB

Notes:
1. 9 Channel Forward Link QPSK Source; 1.23 Mbps modulation rate. ACPR1 measured at 885 KHz offset at a value ≥ 37 dBc. CDMA Waveform measured using the ratio of the average power within the 1.23 MHz channel and within a 30 kHz bandwidth at an 885 MHz offset.
2. Gate Voltage can be adjusted to optimize the linearity of the amplifier for differing modulation systems. Default biasing is optimized for CDMA (Ref. Note 2).
3. Not with RF power simultaneously applied.

Characteristic performance data and specifications are subject to change without notice.

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