GW5691

2.4 — 2.5GHz Power Amplifier

Ver. 2.0

■ General Description

The GW5691 is an InGaP/GaAs Heterojunction Bipolar Transistor (HBT) IC in a QFN 3.0 × 3.0 – 16 leads plastic package. The power amplifier is implemented as a two-stage monolithic microwave Integrated circuit (MMIC).

The GW5691 is designed to operate in 2.4 – 2.5GHz frequency range, compatible with 802.11b/g/n wireless LAN system with high power, high gain. Power gain of 32dB is obtained with a low quiescent current of 88mA.

The GW5691 operate at 802.11g mode (OFDM 64QAM, 54Mbps), it provides a low EVM (Error-Vector magnitude) of 3% at +20dBm linear output power, and consumes 135mA total DC current.

■ Features

- 2.4 – 2.5GHz Operation
- Quiescent Current 88mA
- Small Signal Gain 32dB
- Total Current 140mA for POUT=20dBm OFDM
- EVM ~3 % 54Mbps / 64QAM
- Small Footprint: 3.0 × 3.0mm

■APPLICATION

- IEEE 802.11b/g/n Wireless LAN System
- 2.4GHz ISM Band Application
- 2.4GHz Cordless Phones
- WLAN Pre-n applications

■ Electrical Characteristics

The following test conditions: V_{CC} = 3.3V, V_{ref} = 2.73V, I_{CQ} = 88mA, T_A = 25°C

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Frequency Range		2.4	-	2.5	GHz
EVM @ POUT < 20dBm	802.11g OFDM 64 QAM	-	3.0	-	%
Output P_{1dB}	1dB Gain compression	-	26	-	dBm
Total Current @ POUT = 20dBm	802.11g OFDM 64 QAM EVM = 3%	-	135	-	mA
Pout for 11g Spectral mask	802.11g OFDM 64 QAM	-	25	-	dBm
Quiescent Current		-	88	-	mA
Bias Control Reference Current	At I_{CQ} = 88mA	-	1.2	-	mA
Small Signal Gain	Pin=-30dBm	-	32	-	dB
Power Gain @ POUT = 20dBm		-	32.2	-	dB
Gain Flatness	2.4 – 2.5GHz	-	±0.3	-	dB
Input Return Loss	Pin=-30dBm	-	10	-	dB
Output Return Loss	Pin=-30dBm	-	6	-	dB
Second Harmonic	POUT = 20dBm	-	-45	-	dBc
Third Harmonic	POUT = 20dBm	-	-50	-	dBc
Total Current @ POUT = 23dBm	802.11b 1Mbps CCK	-	185	-	mA
2nd Side Lobe @ 22dBm		-	-50	-	dBc
Ramp-On Time		-	100	-	ns

Notes: 1. All measurements made in 50Ω system, unless otherwise specified.
2. All measured data was obtained on a 10mil FR4 evaluation board without heat sink.

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