AWT6109

KPCS CDMA 3.5V/28.5 dBm
Linear Power Amplifier Module

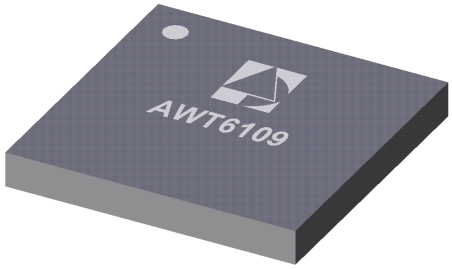
PRELIMINARY DATA SHEET - Rev 1.2

FEATURES

- InGaP HBT Technology
- High Efficiency (35% Typ)
- Low Leakage Current (5µA)
- SMT Module Package
- Small Foot Print (6mm x 6mm)
- Low Profile (1.5mm)
- 50 Ω Input and Output Matching
- POUT = 28.5 dBm @ Icq= 60 mA Typ
- No Mode Switching Required
- CDMA 2000 IXRTT Compliant

APPLICATIONS

- Korean Band PCS CDMA Handsets



M5 Package
6x6mm Module

PRODUCT DESCRIPTION

The AWT6109 is a 3.5V (3.0V to 4.2V) high efficiency, 3 stage amplifier module for Korean Band PCS handsets. The device is manufactured on an advanced InGaP HBT MMIC technology offering state-of-the-art reliability, temperature stability, and ruggedness. Full output power is achieved at a low quiescent current of 60mA reducing power drain on the system battery. No switching is required between high and low output power levels. The 6mm x 6mm laminate package is self contained, incorporating 50Ω input and output matching networks optimized for output power, linearity, and efficiency.

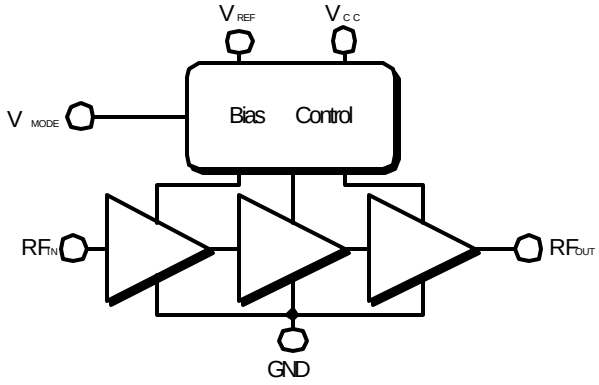


Figure 1: Block Diagram

Table 1: Pin Description

PIN	NAME	DESCRIPTION
1	V_{CC}	Supply Voltage
2	RF_{IN}	RF Input Signal
3	V_{REF}	Reference Voltage
4	V_{MODE}	Mode Control
5	V_{CC}	Supply Voltage
6	RF_{OUT}	RF output
7	GND	Ground

ELECTRICAL CHARACTERISTICS

Table 2: Absolute Minimum and Maximum Ratings

SIGNAL	MIN	MAX	UNITS
Supply Voltage (V_{CC})		+5	V
Bias Mode Select Voltage (V_{MODE})		+3.5	V
Shut Down Control Voltage (V_{REF})		+3.5	V
Input Power (RF_{IN})		+10	dBm
Operating Temperature (T_C)	-30	110	°C
Storage Temperature (T_{STG})	-40	150	°C

Stresses in excess of the absolute ratings may cause permanent damage. Functional operation is not implied under these conditions. Exposure to absolute ratings for extended periods of time may adversely affect reliability.

Note: Module may withstand all conditions.

Table 3: Electrical Specifications (CDMA 1750-1780 MHz)

Unless otherwise specified: V_{CC} + 3.5V, 50W System, T_C = 25 °C, V_{REF} = 3.0V, V_{MODE} = 2.7V

PARAMETER	MIN	TYP	MAX	UNIT
Frequency Range	1750		1780	MHz
Supply Voltage Range	3.0	3.5	4.2	V
Ref Voltage Range: PA "On"	2.9	3.0	3.1	V
Ref Voltage Range: PA "Off"		0	0.5	V
V_{Mode} High Bias		0	0.5	V
V_{Mode} Low Bias	2.5	2.7	3.1	V
Pout:	28	28.5		dBm
Input Impedance			2:1	Ratio
Efficiency: Pout = 28.5 dBm		35		%
Efficiency: Pout = 16 dBm	6	7		%
Icq: Pout≤ 0 dBm		60		mA
Linearity: Pout ≤ 28.5 dBm & V_{CC} = 3.5 V				
ACPR ±1.25 MHz offset, Primary Channel BW = 1.23 MHz Adj. Channel BW = 30KHz		-53	-46.5	dBc
ACPR ±2.25 MHz offset, Primary Channel BW = 1.23 MHz Adj. Channel BW = 30KHz		-60	-57	dBc
Noise at Receiver Band: 1840MHz - 1870MHz, P_{OUT} = 28.5dBm		-136		dBm / Hz
Gain		30		dB
Harmonics 2fo: Pout = 28.5 dBm		-45	-30	dBc
3fo, 4fo: Pout = 28.5 dBm		-50	-30	dBc

Table 3 Continued: Electrical Specifications (CDMA 1750-1780 MHz)

PARAMETER	MIN	TYP	MAX	UNIT
Stability (out of band load VSWR < 8:1) (in band load VSWR < 8:1) Over Temperature and Voltage			-70	dBc, all spurious $P_{OUT} \leq$ 29dBm
Ruggedness Load mismatch stress for no permanent degradation or failure, V_{CC} = 5.0V, Over Temperature, P_{IN} = +5dBm	8:1			Ratio

Table 4: Bias Control

Bias Mode	V_{MODE}	ICQ Typ	Power Range	P_{OUT} Levels
Low	2.7V	60 mA	ALL	28.5 dBm

PERFORMANCE CHARACTERISTICS

Figure 2

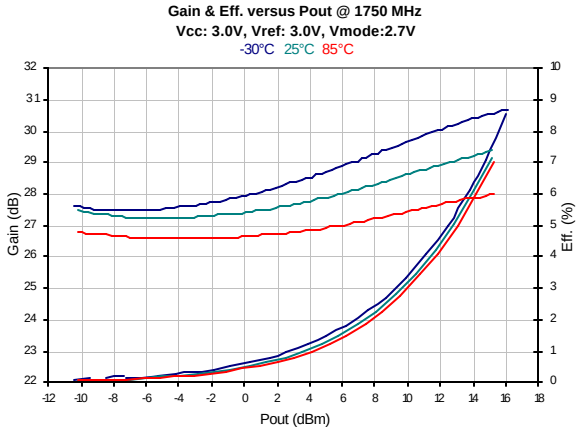


Figure 3

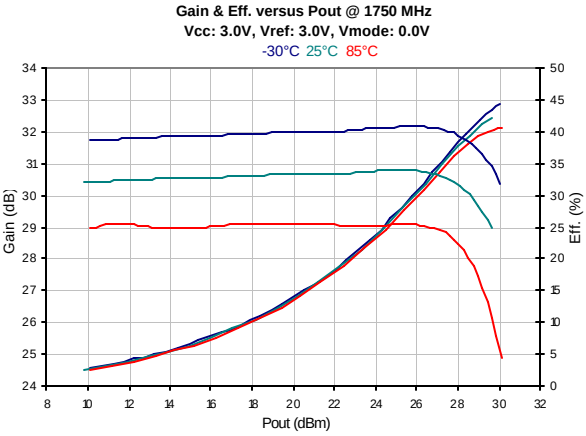


Figure 4

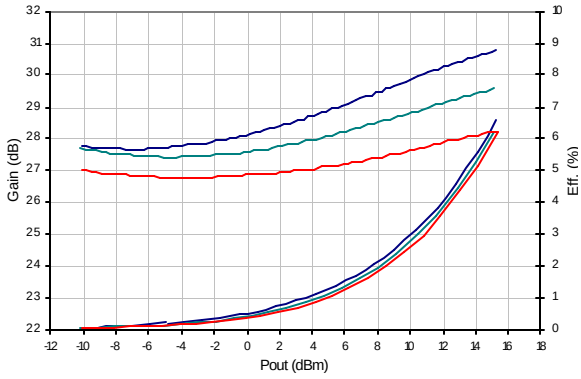


Figure 5

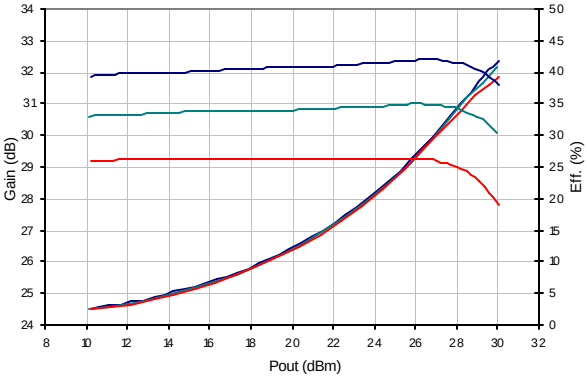


Figure 6

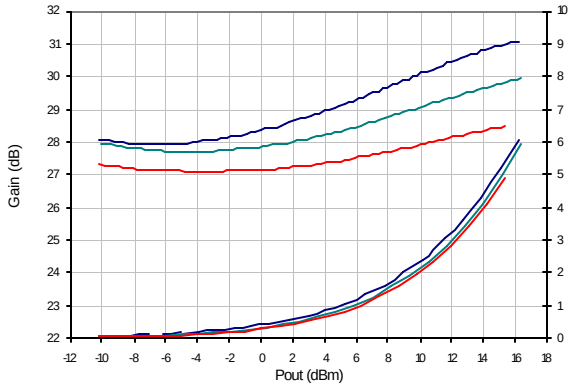


Figure 7

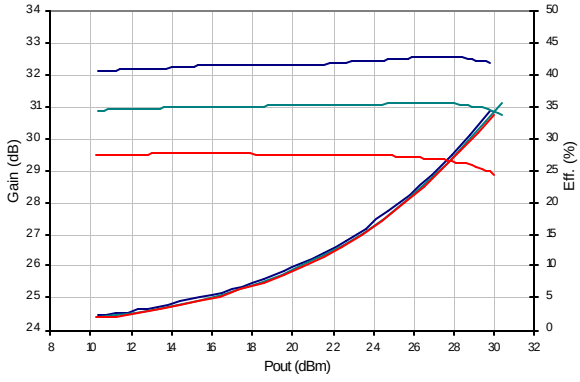


Figure 8

ACPR versus Pout @ 1780 MHz
Vcc: 3.0V, Vref: 3.0V, Vmode:2.7V, ACPR: 1.25 MHz
-30°C 25°C 85°C

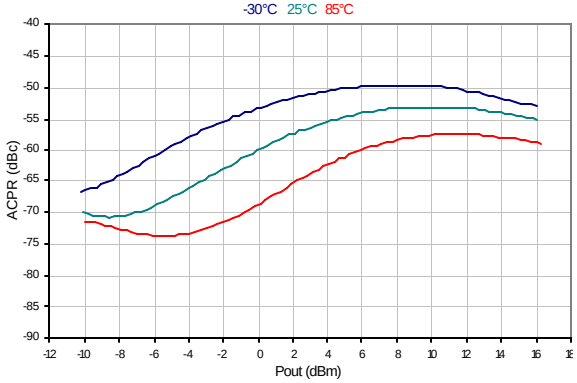


Figure 9

ACPR versus Pout @ 1780 MHz
Vcc: 3.0V, Vref: 3.0V, Vmode: 0.0V, ACPR: 1.25 MHz
-30°C 25°C 85°C

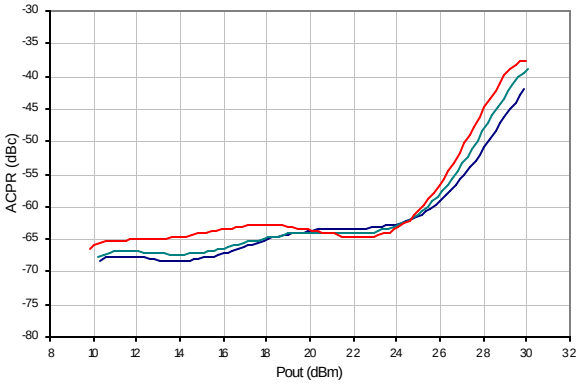


Figure 10

ACPR versus Pout @ 1780 MHz
Vcc: 3.4V, Vref: 3.0V, Vmode:2.7V, ACPR: 1.25 MHz
-30°C 25°C 85°C

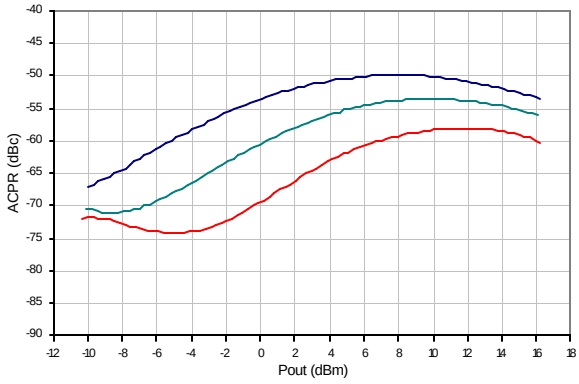


Figure 11

ACPR versus Pout @ 1780 MHz
Vcc: 3.4V, Vref: 3.0V, Vmode: 0.0V, ACPR: 1.25 MHz
-30°C 25°C 85°C

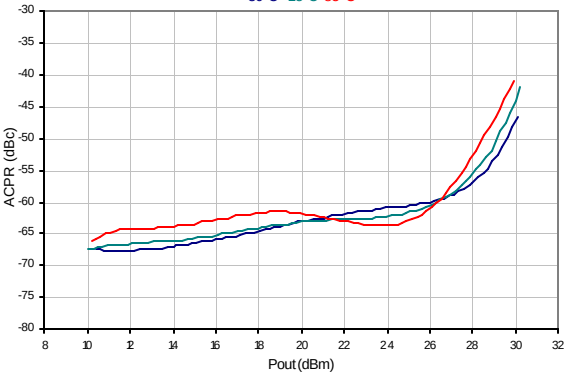


Figure 12

ACPR versus Pout @ 1780 MHz
Vcc: 4.2V, Vref: 3.0V, Vmode:2.7V, ACPR: 1.25 MHz
-30°C 25°C 85°C

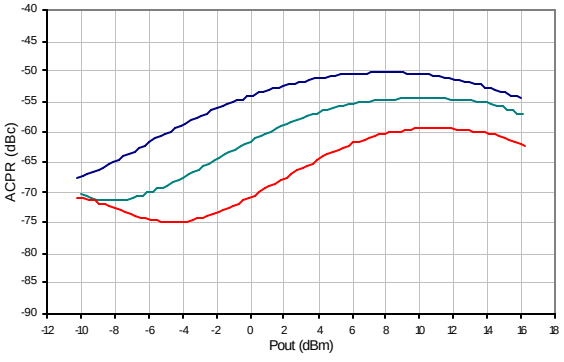
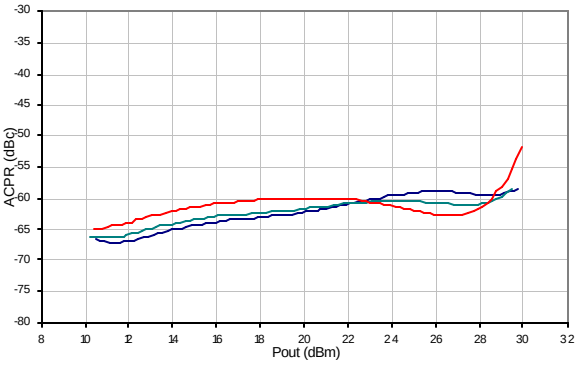
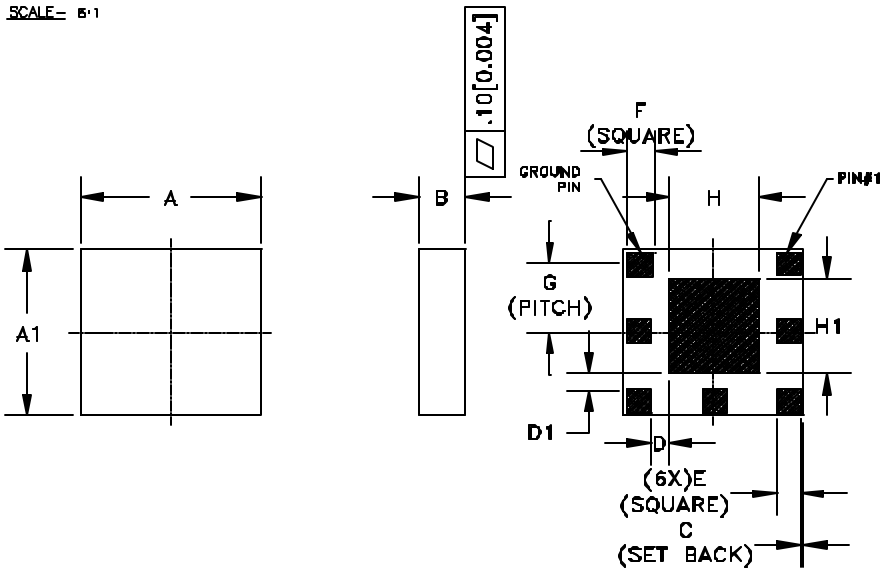


Figure 13

ACPR versus Pout @ 1780 MHz
Vcc: 4.2V, Vref: 3.0V, Vmode: 0.0V, ACPR: 1.25 MHz
-30°C 25°C 85°C



PACKAGE OUTLINE



SYMBOL	MILLIMETERS			INCHES			NOTE
	MIN.	NOM	MAX	MIN.	NOM	MAX.	
A	5.88	6.00	6.12	0.231	0.236	0.241	–
A1	5.88	6.00	6.12	0.231	0.236	0.241	–
B	1.30	1.50	1.70	0.051	0.059	0.067	–
C	0.05	–	–	0.002	–	–	–
D	–	0.60	–	–	0.024	–	3
D1	–	0.60	–	–	0.024	–	3
E	–	0.81	–	–	0.032	–	3
F	–	0.89	–	–	0.035	–	3
G	2.5 BSC			0.098 BSC			3
H	–	3.00	–	–	0.118	–	3

NOTES:

1. CONTROLLING DIMENSIONS: MILLIMETERS
2. UNLESS SPECIFIED TOLERANCE=± DS[0.002]
3. FOR REFERENCE ONLY.

Figure 14: Package Outline (High Band M5)

COMPONENT PACKAGING

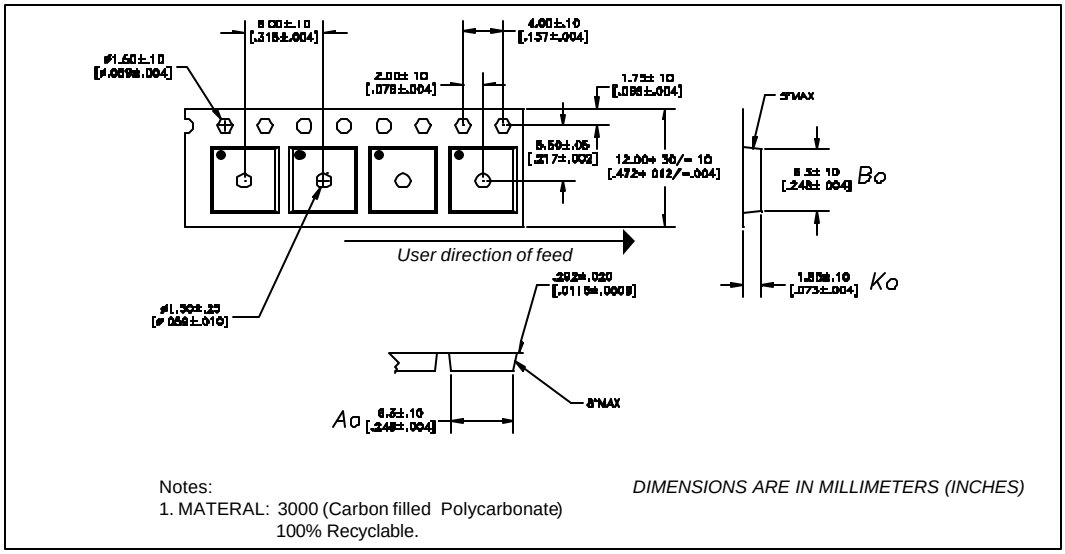


Figure 15: Tape & Reel Packing Specifications

PACKAGE TYPE	TAPE WIDTH	POCKET PITCH	REEL CAPACITY	MAX REEL DIA
6X6	12	8	2500	13"

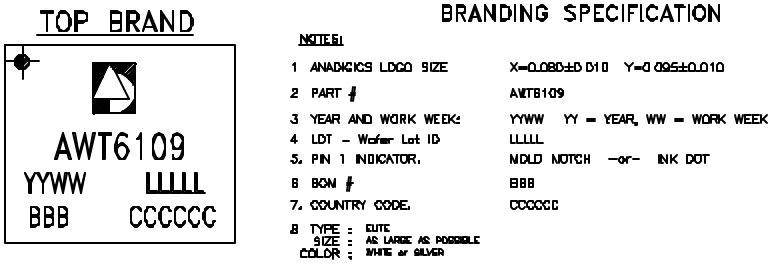


Figure 16: Branding Specification

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ORDERING INFORMATION

PART NUMBER	PACKAGE OPTION	PACKAGE DESCRIPTION
AWT6109M5	M5	6X6 mm Module Package

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