AWT6132R

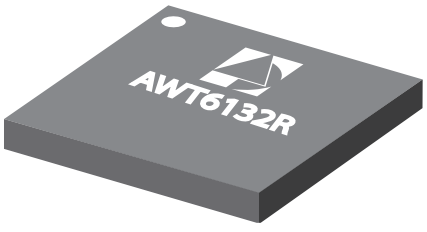
415 MHz CDMA 3.4V/29.5dBm
Linear Power Amplifier Module
Data Sheet - Rev 2.1

FEATURES

- InGaP HBT Technology
- High Efficiency 35 % CDMA
- Low Leakage Current (<5 μA)
- SMT Module Package
- 50 Ω Input and Output Matching
- Shut Down and Mode Control
- CDMA 2000 1XRTT Compliant
- RoHS Compliant Package, 250 °C MSL-3

APPLICATIONS

- CDMA/EVDO 415 MHz Wireless Handsets and Data Devices



M5 Package
7 Pin 6 mm x 6 mm x 1.5 mm
Surface Mount Module

PRODUCT DESCRIPTION

The AWT6132R is a high power, high efficiency amplifier module for CDMA wireless handset applications. The device is manufactured on an advanced InGaP HBT MMIC technology offering state-of-the-art reliability, temperature stability and ruggedness. A low power mode is available to reduce power drain on the system battery. The 6 mm x 6 mm x 1.5 mm laminate package is self contained, incorporating 50 Ω input and output matching networks optimized for output power, linearity, and efficiency.

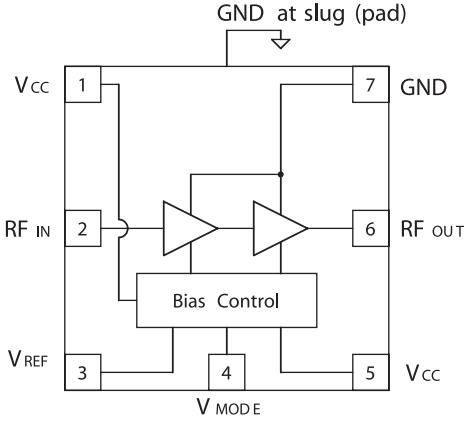


Figure 1: Block Diagram

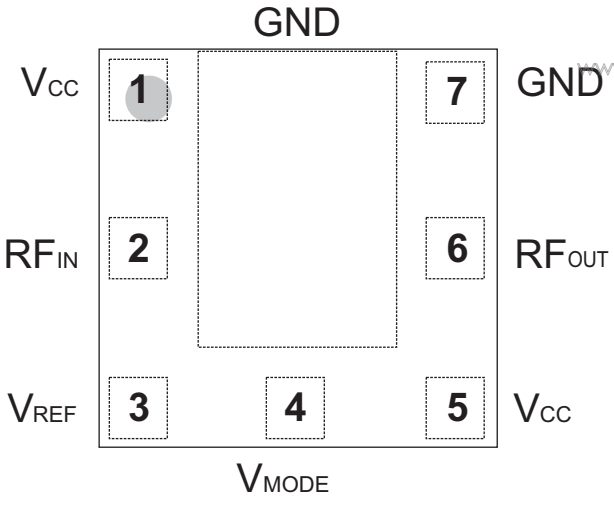


Figure 2: Pinout (X-ray Top View)

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

PARAMETER	MIN	MAX	UNIT
Supply Voltage (V_{CC})	0	+5	V
Mode Control Voltage (V_{MODE})	0	+3.4	V
Reference Voltage (V_{REF})	0	+3.4	V
RF Input Power (P_{IN})	-	+10	dBm
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.

Table 3: Operating Ranges

PARAMETER	MIN	TYP	MAX	UNIT	COMMENTS
Operating Frequency (f)	410	-	420	MHz	
Supply Voltage (V_{CC})	+3.2	+3.4	+4.2	V	
Reference Voltage (V_{REF})	+2.80 0	+2.90 -	+3.1 +0.5	V	PA"on" PA"shut down"
Mode Control Voltage (V_{MODE})	+2.5 0	+2.90 -	+3.1 +0.5	V	Low Bias Mode High Bias Mode
RF Output Power (P_{OUT})	+29.0 (1)	+29.5	-	dBm	CDMA, V_{CC} =+3.4V
Case Temperature (T_C)	-30	-	+90	°C	

The device may be operated safely over these conditions; however, parametric performance is guaranteed only over the conditions defined in the electrical specifications.

Notes:

(1) For operation at V_{CC} = +3.2 V , P_{OUT} is derated by 0.5 dB.

Table 4: Electrical Specifications – CDMA Operation
(T_C = +25 °C, V_{CC} = +3.4 V, V_{REF} = +2.90 V, 50 Ω system)

PARAMETER	MIN	TYP	MAX	UNIT	COMMENTS
Gain	26 25	28 27	31 29	dB	P_{OUT} = +29.5 dBm, V_{MODE} = 0 V P_{OUT} = +16 dBm, V_{MODE} = +2.90 V
Gain Variation	-	0.4	1.0	dB	
Adjacent Channel Power at ±885 kHz offset (1) Primary Channel BW = 1.23 MHZ Adjacent Channel BW = 30 kHz	 - -	 -52 -57	 -46.5 -47	dB	 P_{OUT} = +29.5 dBm, V_{MODE} = 0 V P_{OUT} = +16 dBm, V_{MODE} = +2.90 V
Adjacent Channel Power at ±1.98 MHz offset (1) Primary Channel BW = 1.23 MHZ Adjacent Channel BW = 30 kHz	 - -	 -62 -67	 -59 -59	dB	 P_{OUT} = +29.5 dBm, V_{MODE} = 0 V P_{OUT} = +16 dBm, V_{MODE} = +2.90 V
Power-Added Efficiency (1)	33 6	35 7	- -	%	P_{OUT} = +29.5 dBm, V_{MODE} = 0 V P_{OUT} = +16 dBm, V_{MODE} = +2.90 V
Quiescent Current (Icq)	-	60	80	mA	through V_{CC} pins, V_{MODE} = +2.90 V
Reference Current	-	6.5	9	mA	through V_{REF} pin, PA "on"
Mode Control Current	-	0.8	1.0	mA	through V_{MODE} pin, V_{MODE} = +2.90 V
Leakage Current	-	<1	5	μA	V_{CC} = +4.2 V, V_{REF} = 0 V, V_{MODE} = 0 V
Noise in Receive Band	-	-132	-130	dBm/Hz	fo +10 MHz, $P_{OUT} \leq$ +29.5 dBm
Harmonics 2fo 3fo, 4fo	 - -	 -36 -45	 -30 -35	dBc	$P_{OUT} \leq$ +29.5 dBm
Input Impedance	-	-	2:1	VSWR	
Spurious Output Level (all spurious outputs)	-	-	-70	dBc	$P_{OUT} \leq$ +29.5 dBm In-band Load VSWR < 5:1 Out-of-band Load VSWR < 10:1 Applies over all operating ranges
Load mismatch stress with no permanent degradation or failure	10:1	-	-	VSWR	Applies over all operating ranges

Notes:
(1) P_{OUT} is derated by 0.5 dB for IS-98 / CDMA 2000 operation.
(2) ACPR and Efficiency Measured at 415 MHz.

APPLICATION INFORMATION

To ensure proper performance, refer to all related Application Notes on the ANADIGICS web site: http://www.anadigics.com

Shutdown Mode

The power amplifier may be placed in a shutdown mode by applying logic low levels (see Operating Ranges table) to both the V_{REF} and V_{MODE} voltages.

High Bias Mode

The power amplifier may be placed in a high bias mode by applying a logic low level (see Operating Ranges table) to the V_{MODE} voltage.

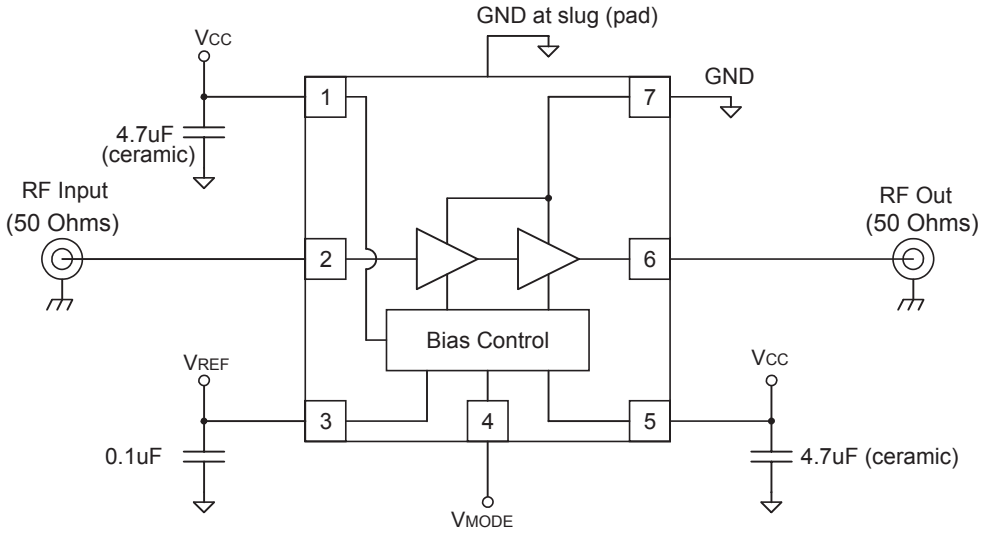
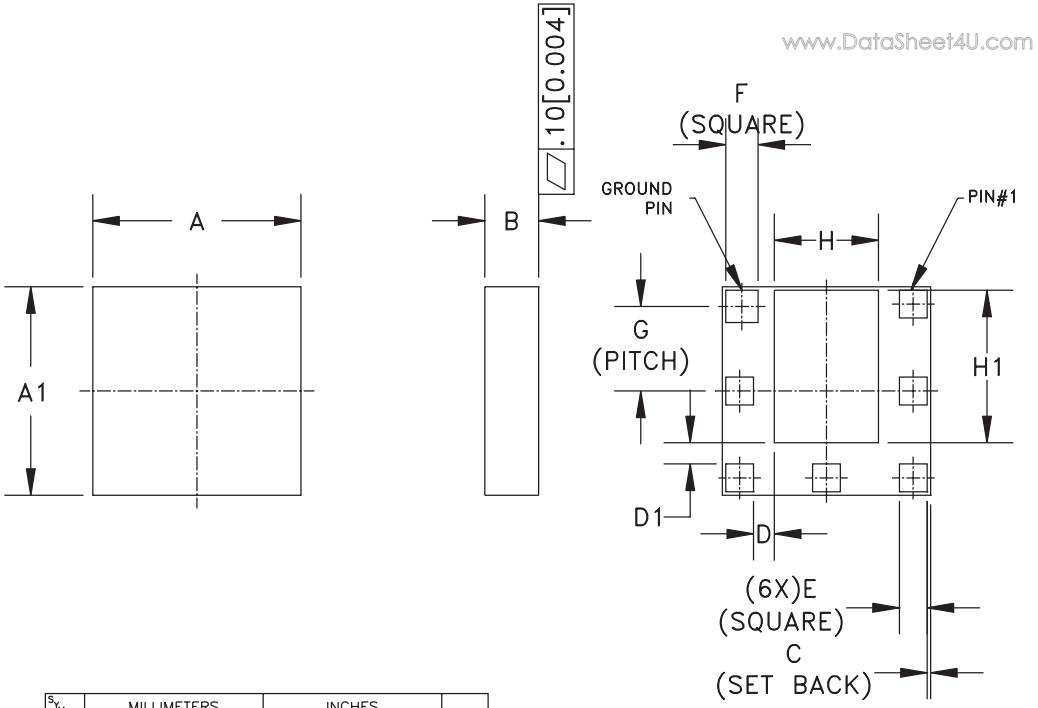


Figure 3: Application Circuit Schematic

PACKAGE OUTLINE

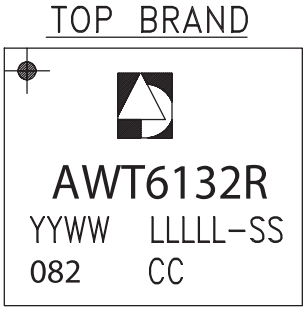


SYMBOL	MILLIMETERS			INCHES			NOTE
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.	
A	5.88	6.00	6.12	0.231	0.236	0.241	–
A1	5.88	6.00	6.12	0.231	0.236	0.241	–
B	1.30	1.55	1.70	0.051	0.061	0.067	–
C	–	0.10	–	–	0.004	–	–
D	–	0.60	–	–	0.024	–	–
D1	–	0.60	–	–	0.024	–	–
E	–	0.81	–	–	0.032	–	–
F	–	0.89	–	–	0.035	–	–
G	2.50 BSC			0.098 BSC			3
H	–	3.00	–	–	0.118	–	–
H1	–	4.39	–	–	0.173	–	–

NOTES:

1. CONTROLLING DIMENSIONS: MILLIMETERS
2. UNLESS SPECIFIED TOLERANCE=±0.076[0.003].
3. REFERENCE ONLY.

Figure 4: M5 Package Outline - 7 Pin 6 x 6 x 1.5 mm Surface Mount Module (Low Band)



NOTES:

1. PIN 1 INDICATOR:	LASER MARK
2. ANADIGICS LOGO SIZE:	X= 0.040 ±0.010 Y= 0.048 ±0.010
3. TEXT	SIZE: AS LARGE AS POSSIBLE
4. PART #	AWT6132R = ROHS COMPLIANT
5. YEAR AND WORK WEEK:	YYWW: YY = YEAR, WW = WORK WEEK
6. WAFER LOT#– WAFER I.D.:	LLLLL = WAFER LOT#, SS = WAFER I.D.
7. BOM #	082
8. COUNTRY CODE:	CC = TH FOR THAILAND TW FOR TAIWAN PH FOR PHILLIPINES CH FOR CHINA ID FOR INDONESIA HK FOR HONG KONG US FOR UNITED STATES MY FOR MALAYSIA

Figure 5: Branding Specification

COMPONENT PACKAGING

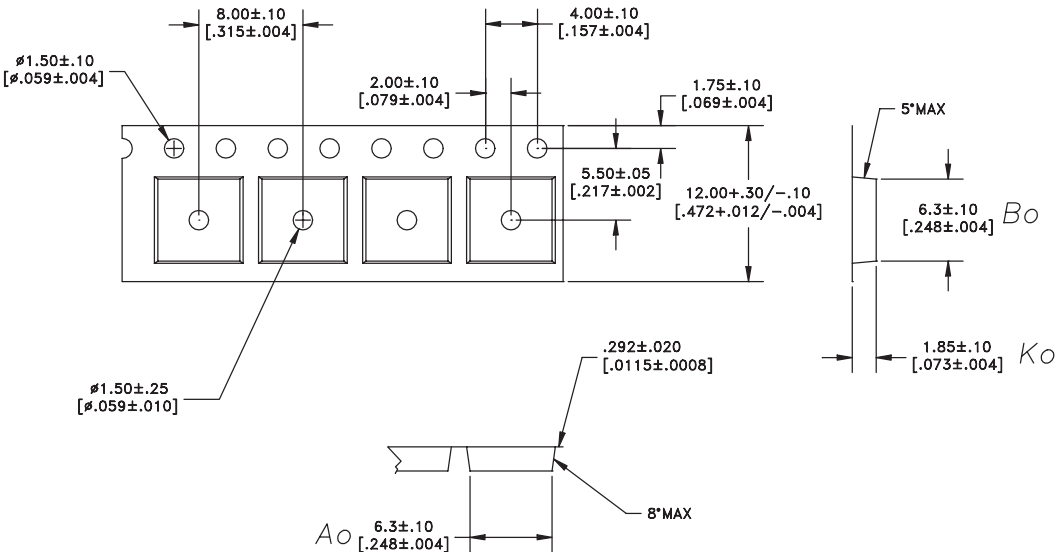


Figure 6: Tape & Reel Packaging

Table 5: Tape & Reel Dimensions

PACKAGE TYPE	TAPE WIDTH	POCKET PITCH	REEL CAPACITY	MAX REEL DIA
6 mm x 6 mm x 1.5 mm	12 mm	8 mm	2500	13"

ORDERING INFORMATION

ORDER NUMBER	TEMPERATURE RANGE	PACKAGE DESCRIPTION	COMPONENT PACKAGING
AWT6132RM5P8	-30 °C to +90 °C	RoHS Compliant 7 Pin 6 mm x 6 mm x 1.5 mm Surface Mount Module	Tape and Reel, 2500 pieces per Reel
AWT6132RM5P9	-30 °C to +90 °C	RoHS Compliant 7 Pin 6 mm x 6 mm x 1.5 mm Surface Mount Module	Partial Tape and Reel

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