AWT6235

WiBro 3.4V/25.5dBm
Linear Power Amplifier Module

Data Sheet - Rev 2.0

FEATURES

- InGaP HBT Technology
- Low ACPR:
  - -40 dBc @ 9 MHz Offset
  - -46 dBc @ 13.5 MHz Offset
- Low Leakage Current in Shutdown Mode: <1 μA
- V_{REF} = +2.85 V (+2.75 V min over temp)
- Optimized for a 50 Ω System
- Low Profile Miniature Surface Mount Package: 1.05 mm Max
- RoHS Compliant Package Option

APPLICATIONS

- WiBro Data Cards and Terminals

M20 Package
10 Pin 4 mm x 4 mm x 1 mm
Surface Mount Module

PRODUCT DESCRIPTION

The AWT6235R meets the stringent linearity and output power requirements of the WiBro high speed data system. The device is manufactured on an advanced InGaP HBT MMIC technology offering state-of-the-art reliability, temperature stability, and ruggedness. A shutdown mode with low leakage current increases talk and standby time. The self-contained 4 mm x 4 mm x 1 mm surface mount package incorporates matching networks optimized for output power, efficiency, and linearity in a 50 Ω system.

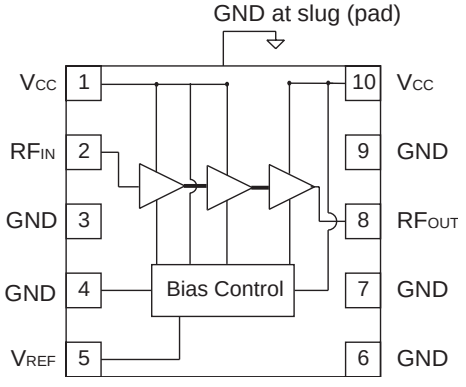


Figure 1: Block Diagram

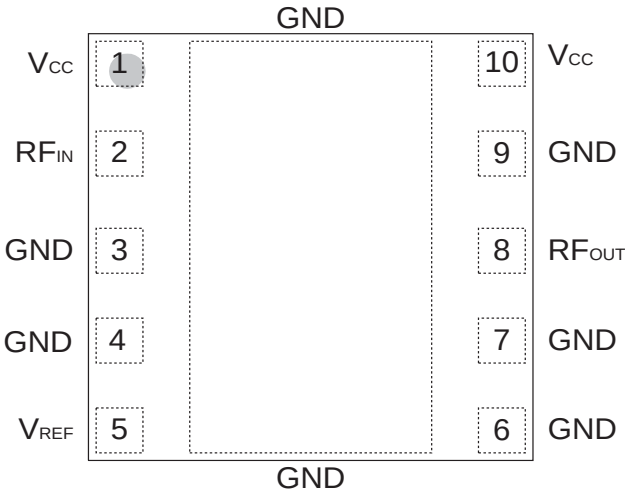


Figure 2: Pinout (X-ray Top View)

Table 1: Pin Description

PIN	NAME	DESCRIPTION
1	V_{CC}	Supply Voltage
2	RF_{IN}	RF Input
3	GND	Ground
4	GND	Ground
5	V_{REF}	Reference Voltage
6	GND	Ground
7	GND	Ground
8	RF_{OUT}	RF Output
9	GND	Ground
10	V_{CC}	Supply Voltage

ELECTRICAL CHARACTERISTICS

Table 2: Absolute Minimum and Maximum Ratings

PARAMETER	MIN	MAX	UNIT
Supply Voltage (V_{CC})	0	+5	V
Reference Voltage (V_{REF})	0	+3.5	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)	2300	-	2390	MHz	
Supply Voltage (V_{CC})	+3.2	+3.4	+4.2	V	
Reference Voltage (V_{REF})	+2.75 0	+2.85 -	+2.95 +0.5	V	PA "on" PA "shut down"
RF Output Power (P_{OUT})	+25.0 (1), (2)	+25.5	-	dBm	
Case Temperature (T_C)	-10	-	+85	°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 T_C = +85 °C, P_{OUT} is derated by 0.5 dB.

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

Table 4: Electrical Specifications
(T_C = +25 °C, V_{CC} = +3.4 V, V_{REF} = +2.85 V, 50 Ω system)

PARAMETER	MIN	TYP	MAX	UNIT	COMMENTS
Gain	26.5	29	-	dB	P_{OUT} = +25.5 dBm
Spectrum Mask (1) @ 4.77 MHz @ 9.27 MHz @ 13.23 MHz @ 17.73 MHz	 - - - -	 -36 -41 -47 -51	 -31 -37 -42 -44	dBr	
Power-Added Efficiency (1)	20	23	-	%	P_{OUT} = +25.5 dBm
Quiescent Current (Icq)	-	75	95	mA	
Reference Current	-	5.5	7	mA	through V_{REF} pin
Leakage Current	-	<1	5	µA	V_{CC} = +4.2 V, V_{REF} = 0 V, V_{MODE} = 0 V
Harmonics 2fo 3fo, 4fo	 - -	 -40 -40	 -30 -30	dBc	
Input Impedance	-	2:1	-	VSWR	
Spurious Output Level (all spurious outputs)	-	-	-70	dBc	$P_{OUT} \leq$ +25.5 dBm In-band load VSWR < 5:1 Out-of-band load VSWR < 10:1 Applies over all voltage and temperature operating ranges
Load mismatch stress with no permanent degradation or failure	8:1	-	-	VSWR	V_{CC} = +5.0 V, P_{IN} = +5 dBm Applies over full operating temperature range

Notes:
(1) Spectrum Mask and Efficiency measured at 2345 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 the V_{REF} voltage.

Table 5: Bias Control

APPLICATION	P_{OUT} LEVELS	BIAS MODE	V_{REF}	V_{CC}
WiBRO - high power	All	High	+2.85 V	+3.4
Shutdown	-	Shutdown	0 V	-

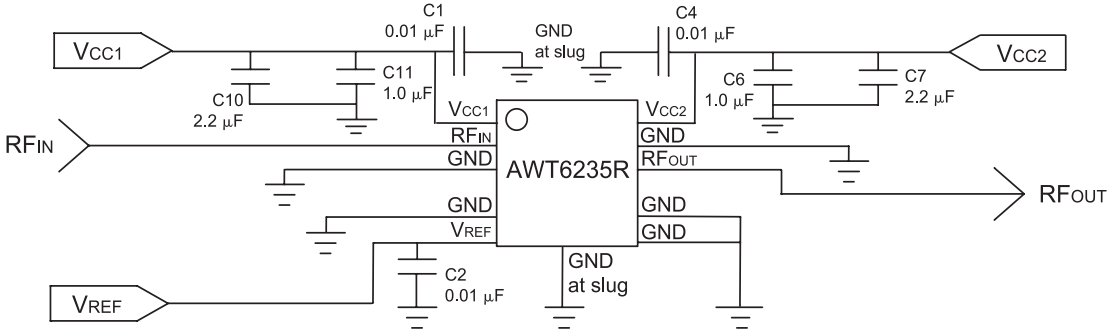
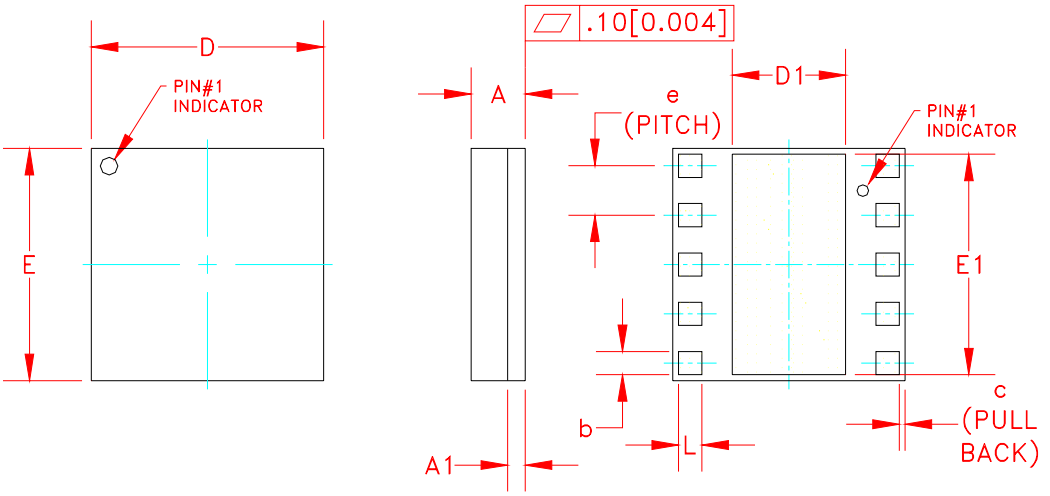


Figure 3: Application Circuit Schematic

PACKAGE OUTLINE

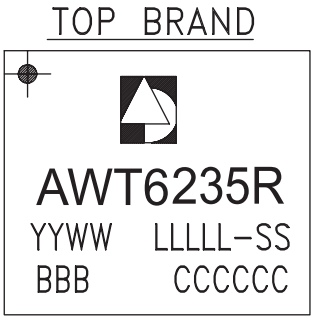


SYMBOL	MILLIMETERS			INCHES			NOTE
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.	
A	0.85	0.95	1.05	0.033	0.037	0.041	–
A1	–	0.30	–	–	0.012	–	–
b	0.35	–	0.60	0.013	–	0.024	3
c	–	0.10	–	–	0.004	–	–
D	3.88	4.00	4.12	0.152	0.157	0.162	–
D1	1.90	–	2.20	0.075	–	0.086	–
E	3.88	4.00	4.12	0.152	0.157	0.162	–
E1	3.75	–	3.85	0.148	–	0.152	–
e		0.85			0.033		3
L	0.35	–	0.60	0.013	–	0.024	3

NOTES:

1. CONTROLLING DIMENSIONS: MILLIMETERS
2. UNLESS SPECIFIED TOLERANCE=±0.076[0.003].
3. PADS (INCLUDING CENTER) SHOWN UNIFORM SIZE FOR REFERENCE ONLY. ACTUAL PAD SIZE AND LOCATION WILL VARY WITHIN MIN. AND MAX. DIMENSIONS ACCORDING TO SPECIFIC LAMINATE DESIGN.

Figure 4: M20 Package Outline - 10 Pin 4 mm x 4 mm x 1.1 mm Surface Mount Module



NOTES:

1.	ANADIGICS LOGO SIZE:	X=0.040±0.010 Y=0.048±0.010
2.	PART #	AWT6235R
3.	YEAR AND WORK WEEK:	YYWW: YY = YEAR, WW = WORK WEEK
4.	LOT – WAFER I.D.:	LLLLL – SS = WAFER/LOT I.D.
5.	PIN 1 INDICATOR:	MOLD NOTCH –or– INK DOT
6.	BOM #	BBB
7.	COUNTRY CODE:	CCCCCC
8.	TYPE : ELITE SIZE : AS LARGE AS POSSIBLE LASER MARKED	

Figure 5: Branding Specification

COMPONENT PACKAGING

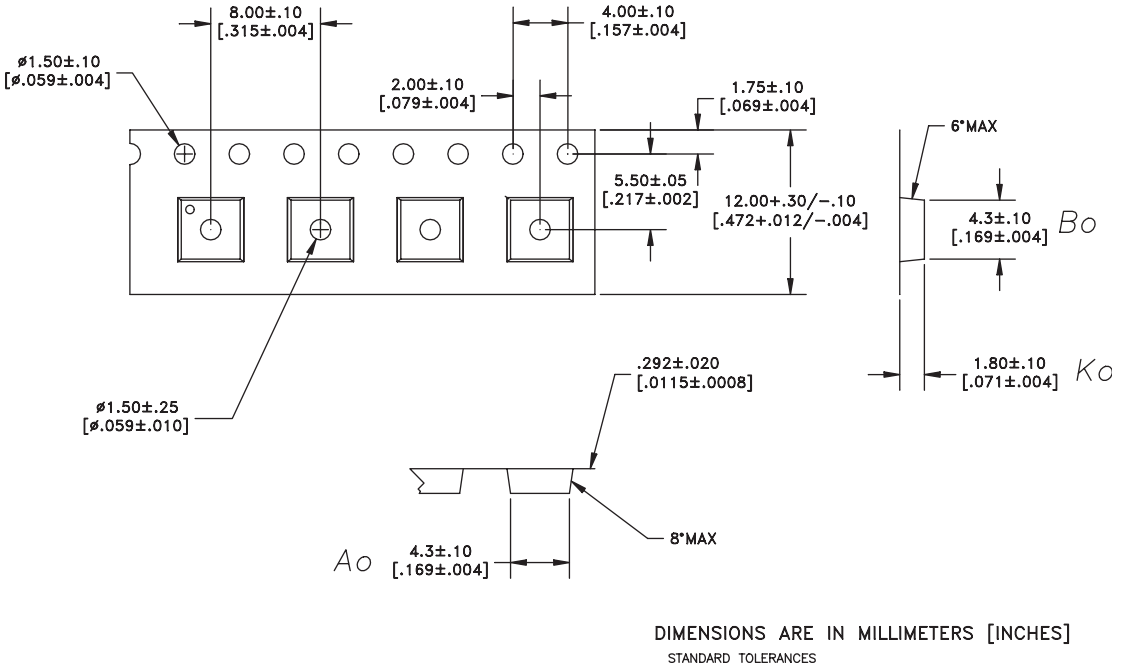


Figure 6: Tape & Reel Packaging

Table 6: Tape & Reel Dimensions

PACKAGE TYPE	TAPE WIDTH	POCKET PITCH	REEL CAPACITY	MAX REEL DIA
4 mm x 4 mm x 1.1 mm	12 mm	8 mm	2500	13"

ORDERING INFORMATION

ORDER NUMBER	TEMPERATURE RANGE	PACKAGE DESCRIPTION	COMPONENT PACKAGING
AWT6235RM20P8	-10 °C to +85 °C	RoHS Compliant 10 Pin 4 mm x 4 mm x 1.1 mm Surface Mount Module	Tape and Reel, 2500 pieces per Reel

ANADIGICS, Inc.
141 Mount Bethel Road
Warren, New Jersey 07059, U.S.A.
Tel: +1 (908) 668-5000
Fax: +1 (908) 668-5132

URL: http://www.anadigics.com
E-mail: Mktg@anadigics.com

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