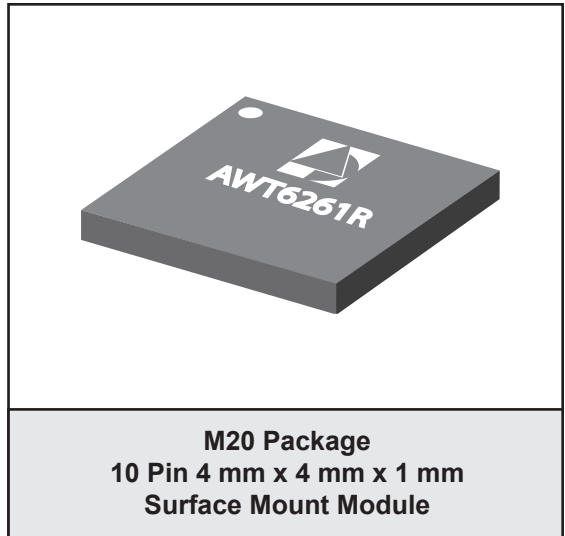


**FEATURES**

- InGaP HBT Technology
- +25 dBm Linear Output Power
- 2 % EVM QPSK 1/2 CTC OFDM Modulation
- High Efficiency
- Low Leakage Current in Shutdown Mode: <math>< 1 \mu\text{A}</math>
- $V_{REF} = +2.85 \text{ V}$  (+2.75 V min over temp)
- Optimized for a 50  $\Omega$  System
- Low Profile Miniature Surface Mount Package: 1 mm Max
- RoHS Compliant Package; 250  $^{\circ}\text{C}$  MSL-3

**APPLICATIONS**

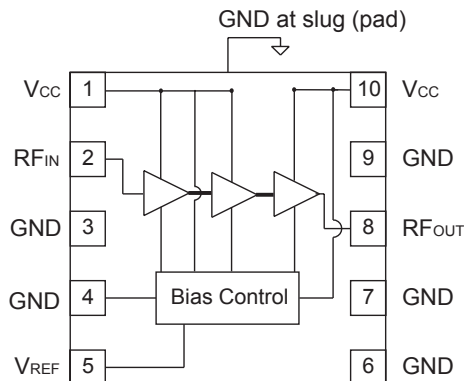
- Mobile WiMAX Data Cards and Terminals that Support the IEEE 802.16e (2005) Standard



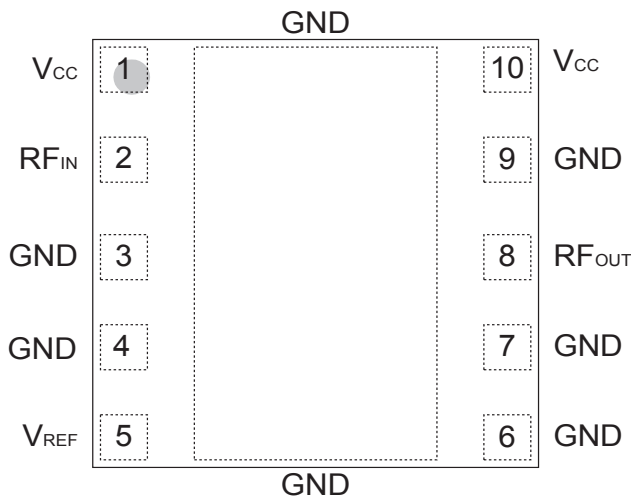
**PRODUCT DESCRIPTION**

The AWT6261R meets the stringent linearity and output power requirements of the Mobile WiMAX 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  $\Omega$  system.



**Figure 1: Block Diagram**



**Figure 2: Pinout (X-ray Top View)**

**Table 1: Pin Description**

PIN	NAME	DESCRIPTION
1	V <sub>CC</sub>	Supply Voltage
2	RF <sub>IN</sub>	RF Input
3	GND	Ground
4	GND	Ground
5	V <sub>REF</sub>	Reference Voltage
6	GND	Ground
7	GND	Ground
8	RF <sub>OUT</sub>	RF Output
9	GND	Ground
10	V <sub>CC</sub>	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)	2496	-	2690	MHz	
Supply Voltage ( $V_{CC}$ )	+3.2	+3.3	+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 ( $P_{OUT}$ )	+24.5 <sup>(1)</sup>	+25	-	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  $T_C = +85\text{ }^\circ\text{C}$  and  $V_{CC} = +3.2\text{ V}$ ,  $P_{OUT}$  is derated by 0.5 dB.

**Table 4: Electrical Specifications**  
 (T<sub>C</sub> = +25 °C, V<sub>CC</sub> = +3.3 V, V<sub>REF</sub> = +2.85 V, 50 Ω system)

PARAMETER	MIN	TYP	MAX	UNIT	COMMENTS
Gain	27	31	-	dB	P <sub>OUT</sub> = +25 dBm
Spectrum Mask <sup>(1), (2)</sup> @ 5 MHz @ 6 MHz @ 11 MHz @ 20 MHz	- - - -	-29 -28 -41 -55	-25 -25 -37 -50	dBc	Res BW 100 kHz Res BW 1 MHz Res BW 1 MHz Res BW 1 MHz
Power-Added Efficiency <sup>(1)</sup>	18	22	-	%	P <sub>OUT</sub> = +25 dBm
EVM <sup>(1), (3)</sup>	-	2	4	%	
Quiescent Current (I <sub>q</sub> )	-	110	-	mA	
Reference Current	-	6	8	mA	through V <sub>REF</sub> pin
Leakage Current	-	<1	5	μA	V <sub>CC</sub> = +4.2 V, V <sub>REF</sub> = 0 V
Harmonics 2fo 3fo, 4fo	- - -	-45 -65	-35 -45	dBc	
Input Impedance	-	-	2:1	VSWR	
Spurious Output Level (all spurious outputs)	-	-	-60	dBc	P <sub>OUT</sub> ≤ +25 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 <sub>CC</sub> = +5.0 V, P <sub>IN</sub> = +5 dBm Applies over full operating temperature range

## Notes:

(1) Spectrum Mask, Efficiency, and EVM measured at 2593 MHz and P<sub>OUT</sub> = +25 dBm.

(2) Modulation QPSK 1/2 CTC, FFT size = 1024, Band Power = 9.4 MHz, Number of Bursts = 1, No DL.

(3) Modulation QPSK 1/2 CTC, FFT size = 1024, Band Power = 9.4 MHz, Number of Bursts = 1, Symbol all from 0 to 14, Permbase = 4.

## 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	$V_{REF}$	$V_{CC}$
WiMAX - high power	All	High	+2.85 V	+3.3
Shutdown	-	Shutdown	0 V	-

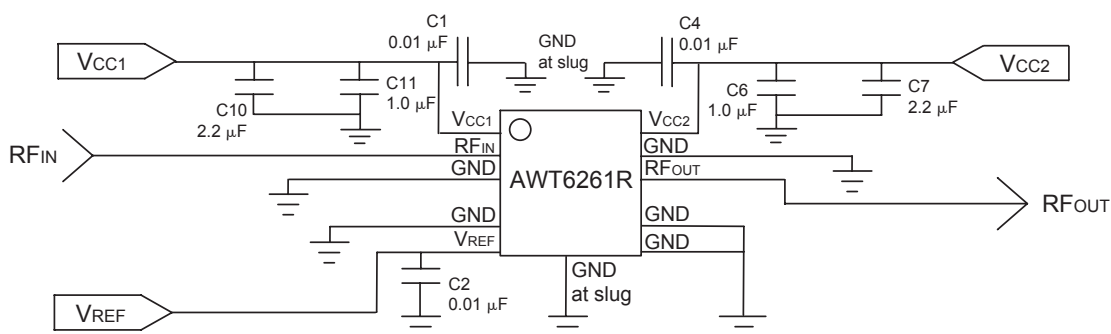
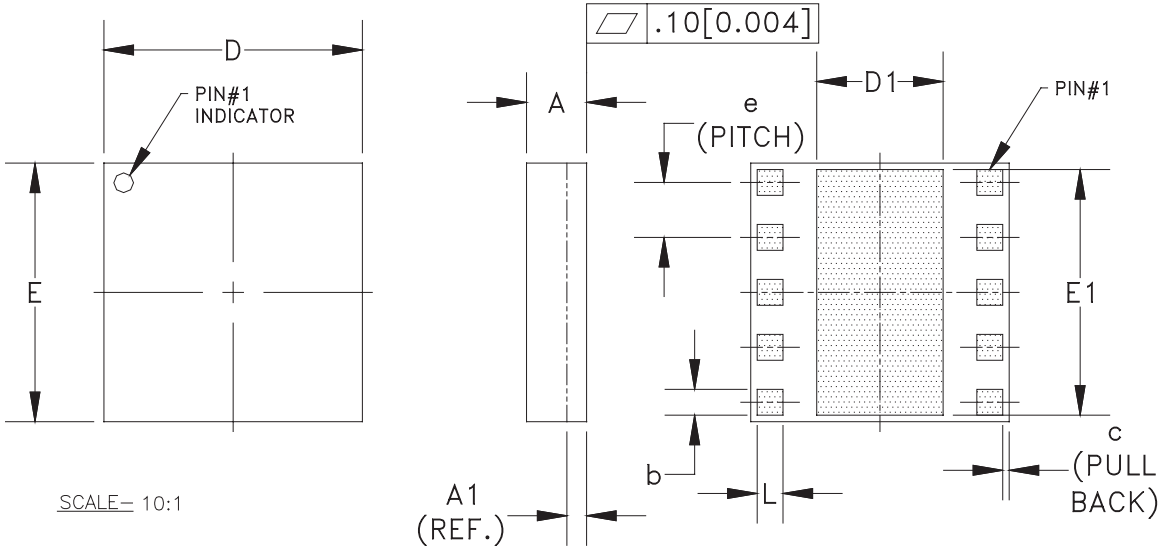


Figure 3: Application Circuit Schematic

PACKAGE OUTLINE



SCALE= 10:1

SYMBOL	MILLIMETERS			INCHES			NOTE
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.	
A	0.88	0.98	1.08	0.034	0.038	0.042	—
A1	0.32 (REF.)			0.0125 (REF.)			—
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	—	2.25	0.075	—	0.088	—
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 mm Surface Mount Module

TOP BRAND

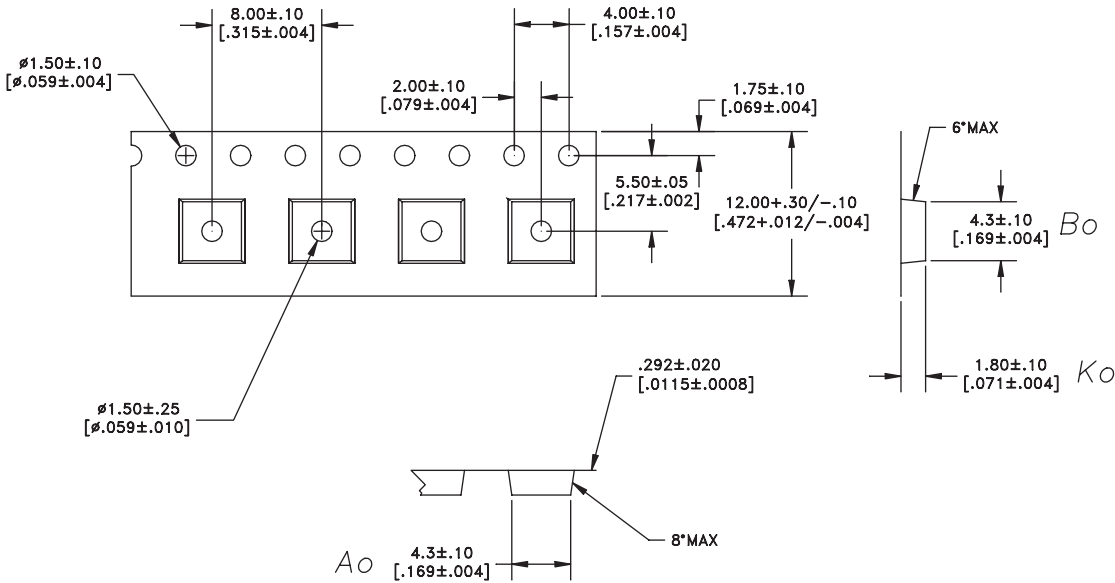


NOTES:

1. ANADIGICS LOGO SIZE: X=0.040±0.010 Y=0.048±0.010
2. PART # AWT6261R
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: CCCCC
8. TYPE : ELITE  
SIZE : AS LARGE AS POSSIBLE  
LASER MARKED

Figure 5: Branding Specification

COMPONENT PACKAGING



DIMENSIONS ARE IN MILLIMETERS [INCHES]  
STANDARD TOLERANCES

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 mm	12 mm	8 mm	2500	13"

**ORDERING INFORMATION**

<b>ORDER NUMBER</b>	<b>TEMPERATURE RANGE</b>	<b>PACKAGE DESCRIPTION</b>	<b>COMPONENT PACKAGING</b>
AWT6261RM20P8	-10 °C to +85 °C	RoHS Compliant 10 Pin 4 mm x 4 mm x 1 mm Surface Mount Module	Tape and Reel, 2500 pieces per Reel



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