

### FEATURES

- Internal Reference Voltage
- Integrated Power Control
- InGaP HBT Technology
- ESD Protection on All Pins (2.5 kV)
- Low profile 1.0 mm
- Small Package Outline 5 mm x 5 mm
- EGPRS Capable (class 12)
- RoHS Compliant Package, 250 °C MSL-3

### GMSK MODE

- +34.8 dBm GSM850/900 Output Power
- +33 dBm DCS/PCS Output Power
- 55 % GSM 900 PAE
- 51 % DCS/PCS PAE
- Power control range > 50 dB

### EDGE MODE

- +29 dBm GSM850/900 Output Power
- +28.5 dBm DCS/PCS Output Power
- 28% GSM850/900 PAE
- 28% DCS/PCS PAE
- 64 dBc Typical ACPR (400 kHz)
- 74 dBc Typical ACPR (600 kHz)

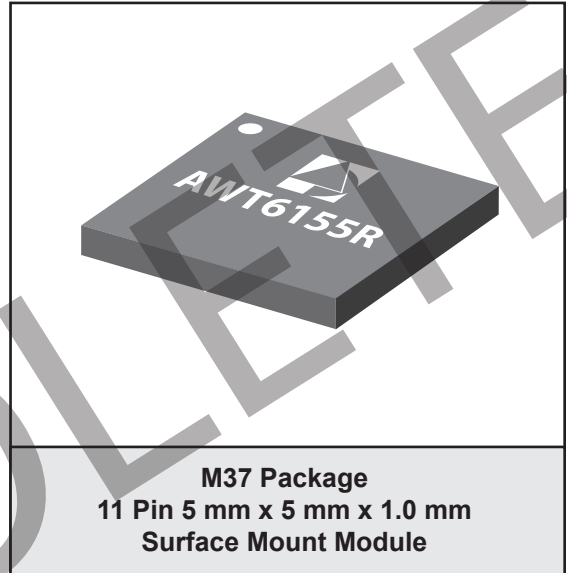
### APPLICATIONS

- Dual/Tri/Quad Band Handsets, PDAs, and Data Devices

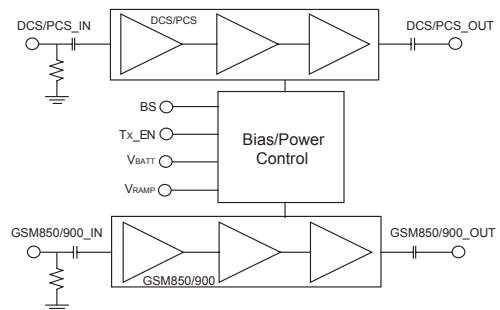
### PRODUCT DESCRIPTION

This power amplifier module supports dual, tri and quad band applications for GMSK and 8-PSK modulation schemes using a polar architecture. There are two amplifier chains, one to support GSM850/900 bands, the other for DCS/PCS bands. Each amplification chain is optimized for excellent EDGE efficiency, power, and linearity in a Polar loop environment while maintaining high efficiency in the GSM/GPRS mode.

The module includes an internal reference voltage and integrated power control scheme for use in both GMSK and 8-PSK operation. This facilitates fast and easy production calibration and reduces the number of external components required to complete a power control function.



The amplifier's power control range is typically 55 dB, with the output power set by applying an analog voltage to  $V_{RAMP}$ . All of the RF ports for this device are internally matched to 50  $\Omega$ .



**Figure 1: Block Diagram**

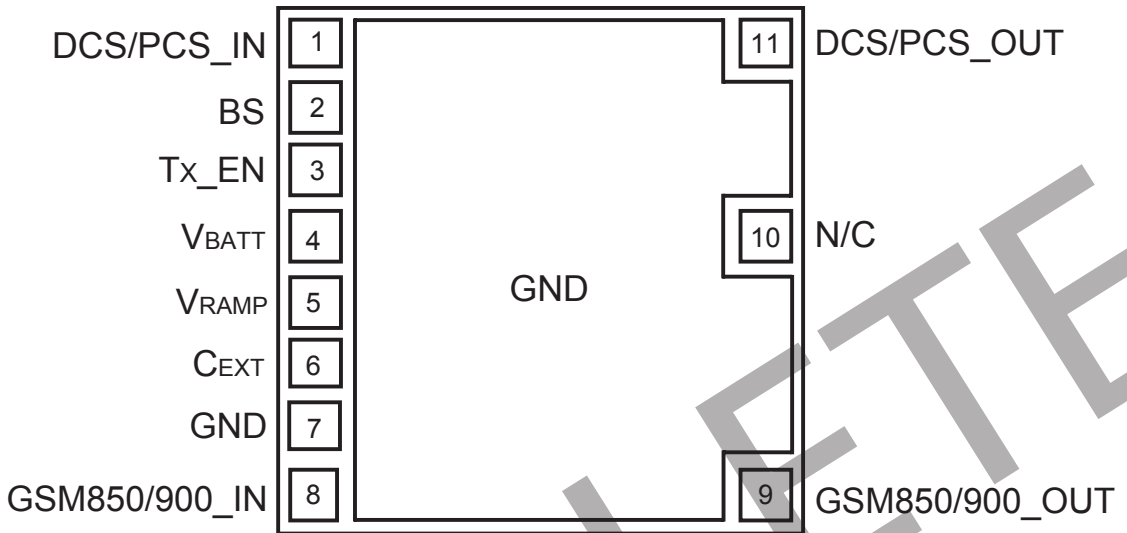


Figure 2: Pinout (X - ray Top View)

Table 1: Pin Description

PIN	NAME	DESCRIPTION	PIN	NAME	DESCRIPTION
1	DCS/PCS_IN	RF input to the DCS/PCS PA. There is a 175 Ω shunt resistor before the DC blocking capacitor to set the input impedance.	7	GND	Ground
2	BS	Band Select Logic Input	8	GSM850/900_IN	RF Input to GSM850/900 PA. There is a 185 Ω shunt resistor before the DC blocking capacitor to set the input impedance.
3	TX_EN	TX Enable Logic Input	9	GSM850/900_OUT	GSM900 RF Output
4	VBATT	Battery Supply Connection	10	N/C	No Connection Do not connect to ground
5	VRAMP	Analog Signal used to control output power	11	DCS/PCS_OUT	DCS RF Output
6	C_EXT	Bypass (VREG)			

## ELECTRICAL CHARACTERISTICS

Table 2: Absolute Maximum Ratings

PARAMETER	MIN	MAX	UNITS
Supply Voltage ( $V_{BATT}$ )	-	+5.5	V
RF Input Power ( $RF_{IN}$ )	-	11	dBm
Control Voltage ( $V_{RAMP}$ )	-0.3	1.8	V
Storage Temperature ( $T_{STG}$ )	-55	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.

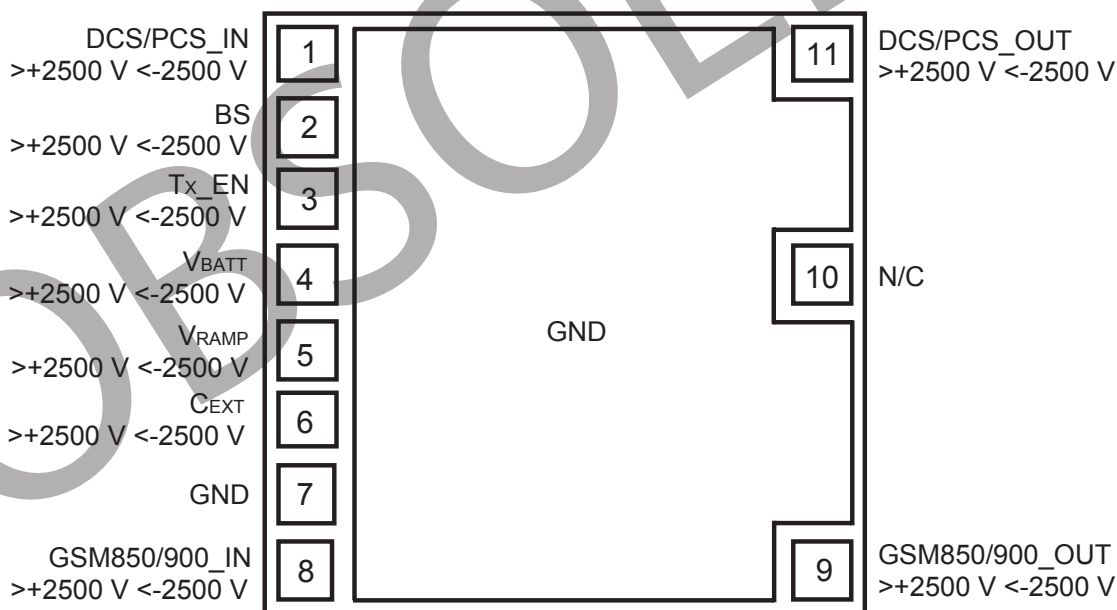


Figure 3: ESD Pin Rating

## ELECTROSTATIC DISCHARGE SENSITIVITY

The AWT6155 part was tested to determine the ESD sensitivity of each package pin with respect to ground. All the package pins were subjected to an ESD pulse event using the Human Body Model outlined in JESD22-A114C.01 in either polarity with respect

to ground. The pre and post test I-V characteristics of each pin are recorded. The ratings on each pin require that it sustain the ESD event and show no degradation.

Table 3: Operating Conditions

PARAMETER	MIN	TYP	MAX	UNITS	COMMENTS
Case temperature (T <sub>c</sub> )	-20	-	+85	°C	
Supply voltage (V <sub>BATT</sub> )	3.0	3.5	4.8	V	
Power supply leakage current	-	1	10	μA	V <sub>BATT</sub> = 4.8 V, V <sub>RAMP</sub> = 0 V, TX_EN = LOW No RF applied
Control Voltage Range	0.2	-	1.6	V	
Turn on Time (T <sub>ON</sub> )	-	-	1	μS	V <sub>RAMP</sub> = 0.2 V, TX_EN = LOW → HIGH P <sub>IN</sub> = 5 dBm
Turn Off Time (T <sub>OFF</sub> )	-	-	1	μS	V <sub>RAMP</sub> = 0.2 V, TX_EN = HIGH → LOW P <sub>IN</sub> = 5 dBm
Rise Time (T <sub>RISE</sub> )	-	-	1	μS	P <sub>OUT</sub> = -10 dBm → P <sub>MAX</sub> (within 0.2 dB)
Fall Time (T <sub>FALL</sub> )	-	-	1	μS	P <sub>OUT</sub> = P <sub>MAX</sub> → -10 dBm (within 0.2 dB)
V <sub>RAMP</sub> Input Capacitance	-	3	-	pF	
V <sub>RAMP</sub> Input Current	-	-	10	μA	
Duty Cycle	-	-	50	%	

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

Table 4: Digital Inputs

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS
Logic High Voltage	V <sub>IH</sub>	1.2	-	3.0	V
Logic Low Voltage	V <sub>IL</sub>	-	-	0.5	V
Logic High Current	I <sub>IH</sub>	-	-	30	μA
Logic Low Current	I <sub>IL</sub>	-	-	30	μA

Table 5: Logic Control Table

OPERATIONAL MODE	BS	TX_EN
GSM850/900	LOW	HIGH
DCS/PCS	HIGH	HIGH
PA DISABLED	-	LOW

Table 6: Electrical Characteristics for GSM850 GMSK mode

Unless otherwise specified:  $V_{BATT} = 3.5\text{ V}$ ,  $P_{IN} = 3.0\text{ dBm}$ , Pulse Width = 1154  $\mu\text{s}$ , Duty = 25% $Z_{IN} = Z_{OUT} = 50\ \Omega$ ,  $T_c = 25\ ^\circ\text{C}$ ,  $V_{RAMP} = 1.6\text{ V}$ , BS = LOW, TX\_EN = HIGH

PARAMETER	MIN	TYP	MAX	UNIT	COMMENTS
Operating Frequency ( $F_{IN}$ )	824	-	849	MHz	
Input Power ( $P_{IN}$ )	0	3	5	dBm	
Output Power ( $P_{MAX}$ )	34.0	34.8	-	dBm	Freq = 824 to 849 MHz
Degraded Output Power ( $P_{OUT}$ )	32	32.8	-	dBm	$V_{BATT} = 3.0\text{ V}$ , $T_c = +85\ ^\circ\text{C}$ $P_{IN} = 0\text{ dBm}$
PAE @ $P_{MAX}$	48	53	-	%	Freq = 824 to 849 MHz
Forward Isolation 1	-	-49	-30	dBm	TX_EN = 0 V, $P_{IN} = 5\text{ dBm}$
Forward Isolation 2	-	-29	-15	dBm	TX_EN = HIGH, $V_{RAMP} = 0.2\text{ V}$ $P_{IN} = 5\text{ dBm}$
Cross Isolation (2Fo @ DCS/PCS port)	-	-30	-20	dBm	$P_{OUT} \leq 34.0\text{ dBm}$
Cross Isolation (3Fo @ DCS/PCS port)	-	-20	-12	dBm	$P_{OUT} \leq 34.0\text{ dBm}$
Second Harmonic	-	-23	-10	dBm	$P_{OUT} \leq 34.0\text{ dBm}$
Third Harmonic	-	-18	-10	dBm	$P_{OUT} \leq 34.0\text{ dBm}$
$n * f_o$ ( $n \geq 4$ ), $F_o \leq 12.75\text{ GHz}$	-	-30	-10	dBm	$P_{OUT} \leq 34.0\text{ dBm}$
Stability	VSWR = 6:1 All Phases, $P_{OUT} \leq 34.0\text{ dBm}$				
	-	-	-36	dBm	$F_{OUT} < 1\text{ GHz}$
	-	-	-30	dBm	$F_{OUT} > 1\text{ GHz}$
Ruggedness	No Permanent Degradation VSWR 10:1, All Phase Angles				$P_{OUT} \leq 34.0\text{ dBm}$
RX Noise Power	-	-88	-82	dBm	$F_{TX} = 849\text{ MHz}$ , RBW = 100 kHz, $F_{RX} = 869\text{ to }894\text{ MHz}$ , $P_{OUT} \leq 34.0\text{ dBm}$
Input Return Loss	-	1.5:1	2.5:1	VSWR	$P_{OUT} \leq 34.0\text{ dBm}$

Table 7: Electrical Characteristics for GSM850 8PSK mode

Unless otherwise specified:  $V_{BATT} = 3.5\text{ V}$ ,  $P_{IN} = 3.0\text{ dBm}$ , Pulse Width = 1154  $\mu\text{s}$ , Duty = 25%  
 $Z_{IN} = Z_{OUT} = 50\ \Omega$ ,  $T_c = 25\ ^\circ\text{C}$ , BS = LOW, TX\_EN = HIGH

PARAMETER	MIN	TYP	MAX	UNIT	COMMENTS
Operating Frequency ( $F_{IN}$ )	824	-	849	MHz	
Input Power	0	3	5	dBm	
PAE	20	28	-	%	$F_{IN} = 824$ to $849\text{ MHz}$ $P_{OUT}$ set = +29 dBm
ACPR 200 kHz 400 kHz 600 kHz 1800 kHz	- - - -	-37 -62 -74 -78	-34 -58 -64 -66	dBc/30 kHz dBc/30 kHz dBc/30 kHz dBc/100 kHz	All conditions under Polar operation $P_{OUT} = +29\text{ dBm}$
EVM	-	1	5	%	All Conditions under Polar operation $P_{OUT} = +29\text{ dBm}$

Table 8: Electrical Characteristics for GSM900 GMSK mode

Unless otherwise specified:  $V_{BATT} = 3.5 \text{ V}$ ,  $P_{IN} = 3.0 \text{ dBm}$ , Pulse Width = 1154  $\mu\text{s}$ , Duty = 25% $Z_{IN} = Z_{OUT} = 50 \Omega$ ,  $T_c = 25 \text{ }^\circ\text{C}$ ,  $V_{RAMP} = 1.6 \text{ V}$ , BS = LOW, TX\_EN = HIGH

PARAMETER	MIN	TYP	MAX	UNIT	COMMENTS
Operating Frequency ( $F_{IN}$ )	880	-	915	MHz	
Input Power ( $P_{IN}$ )	0	3	5	dBm	
Output Power ( $P_{MAX}$ )	34.0	34.8	-	dBm	Freq = 880 to 915 MHz
Degraded Output Power ( $P_{OUT}$ )	32	32.8	-	dBm	$V_{BATT} = 3.0 \text{ V}$ , $T_c = +85 \text{ }^\circ\text{C}$ $P_{IN} = 0 \text{ dBm}$
PAE @ $P_{MAX}$	50	56	-	%	Freq = 880 to 915 MHz
Forward Isolation 1	-	-46	-30	dBm	TX_EN = 0 V, $P_{IN} = 5 \text{ dBm}$
Forward Isolation 2	-	-28	-15	dBm	TX_EN = HIGH, $V_{RAMP} = 0.2 \text{ V}$ $P_{IN} = 5 \text{ dBm}$
Cross Isolation ( $2F_o$ @ DCS/PCS port)	-	-24	-18	dBm	$P_{OUT} \leq 34.0 \text{ dBm}$
Cross Isolation ( $3F_o$ @ DCS/PCS port)	-	-21	-12	dBm	$P_{OUT} \leq 34.0 \text{ dBm}$
Second Harmonic	-	-22	-10	dBm	$P_{OUT} \leq 34.0 \text{ dBm}$
Third Harmonic	-	-18	-10	dBm	$P_{OUT} \leq 34.0 \text{ dBm}$
$n * f_o$ ( $n \geq 4$ ), $F_o \leq 12.75 \text{ GHz}$	-	-29	-8	dBm	$P_{OUT} \leq 34.0 \text{ dBm}$
Stability	VSWR = 6:1 All Phases, $P_{OUT} \leq 34.0 \text{ dBm}$				
	-	-	-36	dBm	$F_{OUT} < 1 \text{ GHz}$
	-	-	-30	dBm	$F_{OUT} > 1 \text{ GHz}$
Ruggedness	No Permanent Degradation VSWR 10:1, All Phase Angles			$P_{OUT} \leq 34.0 \text{ dBm}$	
RX Noise Power	-	-87	-76	dBm	$F_{TX} = 915 \text{ MHz}$ , RBW = 100 kHz, $F_{RX} = 925 \text{ to } 935 \text{ MHz}$ , $P_{OUT} \leq 34.0 \text{ dBm}$
	-	-87	-82	dBm	$F_{TX} = 915 \text{ MHz}$ , RBW = 100 kHz, $F_{RX} = 935 \text{ to } 960 \text{ MHz}$ , $P_{OUT} \leq 34.0 \text{ dBm}$
Input Return Loss	-	1.5:1	2.5:1	VSWR	$P_{OUT} \leq 34.0 \text{ dBm}$

**Table 9: Electrical Characteristics for GSM900 8PSK mode**

Unless otherwise specified:  $V_{BATT} = 3.5\text{ V}$ ,  $P_{IN} = 3.0\text{ dBm}$ , Pulse Width = 1154  $\mu\text{s}$ , Duty = 25%  
 $Z_{IN} = Z_{OUT} = 50\ \Omega$ ,  $T_c = 25\ ^\circ\text{C}$ , BS = LOW, TX\_EN = HIGH

PARAMETER	MIN	TYP	MAX	UNIT	COMMENTS
Operating Frequency ( $F_{IN}$ )	880	-	915	MHz	
Input Power	0	3	5	dBm	
PAE	20	28	-	%	$F_{IN} = 880\text{ to }915\text{ MHz}$ $P_{OUT}$ set = +29 dBm
ACPR 200 kHz 400 kHz 600 kHz 1800 kHz	- - - -	-38 -65 -74 -78	-34 -58 -64 -66	dBc/30 kHz dBc/30 kHz dBc/30 kHz dBc/100 kHz	All conditions under Polar operation $P_{OUT} = +29\text{ dBm}$
EVM	-	1	5	%	All Conditions under Polar operation $P_{OUT} = +29\text{ dBm}$



**Table 10: Electrical Characteristics for DCS GMSK mode**  
**Unless otherwise specified:  $V_{BATT} = 3.5\text{ V}$ ,  $P_{IN} = 3.0\text{ dBm}$ ,  $V_{RAMP} = 1.6\text{ V}$ , Pulse Width = 1154  $\mu\text{s}$**   
**Duty = 25%,  $Z_{IN} = Z_{OUT} = 50\ \Omega$ ,  $T_c = 25\ ^\circ\text{C}$ , BS = HIGH, TX\_EN = HIGH**

PARAMETER	MIN	TYP	MAX	UNIT	COMMENTS
Operating Frequency ( $F_{IN}$ )	1710	-	1785	MHz	
Input Power ( $P_{IN}$ )	0	3	5	dBm	
Output Power ( $P_{MAX}$ )	32.0	32.9	-	dBm	Freq = 1710 to 1785 MHz
Degraded Output Power ( $P_{OUT}$ )	30.0	31.0	-	dBm	$V_{BATT} = 3.0\text{ V}$ , $T_c = +85\ ^\circ\text{C}$ $P_{IN} = 0\text{ dBm}$
PAE @ $P_{MAX}$	45	51	-	%	Freq = 1710 to 1785 MHz
Forward Isolation 1	-	-46	-30	dBm	TX_EN = 0 V, $P_{IN} = 5\text{ dBm}$
Forward Isolation 2	-	-27	-15	dBm	TX_EN = HIGH, $V_{RAMP} = 0.2\text{ V}$ $P_{IN} = 5\text{ dBm}$
Second Harmonic	-	-19	-10	dBm	$P_{OUT} \leq 32.0\text{ dBm}$
Third Harmonic	-	-30	-15	dBm	$P_{OUT} \leq 32.0\text{ dBm}$
$n * f_0$ ( $n \geq 4$ ), $F_0 \leq 12.75\text{ GHz}$	-	-34	-8	dBm	$P_{OUT} \leq 32.0\text{ dBm}$
Stability	VSWR = 8:1 All Phases, $P_{OUT} \leq 32.0\text{ dBm}$				
	-	-	-36	dBm	$F_{OUT} < 1\text{ GHz}$
	-	-	-30	dBm	$F_{OUT} > 1\text{ GHz}$
Ruggedness	No Permanent Degradation VSWR 10:1, All Phase Angles				$P_{OUT} \leq 32.0\text{ dBm}$
RX Noise Power	-	-89	-82	dBm	$F_{TX} = 1785\text{ MHz}$ , RBW = 100 kHz, $F_{RX} = 1805\text{ to }1880\text{ MHz}$ , $P_{OUT} \leq 32.0\text{ dBm}$
Input Return Loss	-	1.5:1	2.5:1	VSWR	$P_{OUT} \leq 32.0\text{ dBm}$

Table 11: Electrical Characteristics for DCS 8PSK mode

Unless otherwise specified:  $V_{BATT} = 3.5\text{ V}$ ,  $P_{IN} = 3.0\text{ dBm}$ , Pulse Width = 1154  $\mu\text{s}$ , Duty = 25%  
 $Z_{IN} = Z_{OUT} = 50\ \Omega$ ,  $T_c = 25\ ^\circ\text{C}$ , BS = HIGH, TX\_EN = HIGH

PARAMETER	MIN	TYP	MAX	UNIT	COMMENTS
Operating Frequency ( $F_{IN}$ )	1710	-	1785	MHz	
Input Power	0	3	5	dBm	
PAE	22	28	-	%	$F_{IN} = 1710\text{ to }1785\text{ MHz}$ $P_{OUT}\text{ set} = +28.5\text{ dBm}$
ACPR					
200 kHz	-	-37	-34	dBc/30 kHz	All conditions under Polar operation $P_{OUT} = +28.5\text{ dBm}$
400 kHz	-	-64	-58	dBc/30 kHz	
600 kHz	-	-74	-64	dBc/30 kHz	
1800 kHz	-	-78	-66	dBc/100 kHz	
EVM	-	1	5	%	All Conditions under Polar operation $P_{OUT} = +28.5\text{ dBm}$

Table 12: Electrical Characteristics for PCS GMSK mode

Unless otherwise specified:  $V_{BATT} = 3.5\text{ V}$ ,  $P_{IN} = 3.0\text{ dBm}$ ,  $V_{RAMP} = 1.6\text{ V}$ , Pulse Width = 1154  $\mu\text{s}$   
 Duty = 25%,  $Z_{IN} = Z_{OUT} = 50\ \Omega$ ,  $T_c = 25\ ^\circ\text{C}$ , BS = HIGH, TX\_EN = HIGH

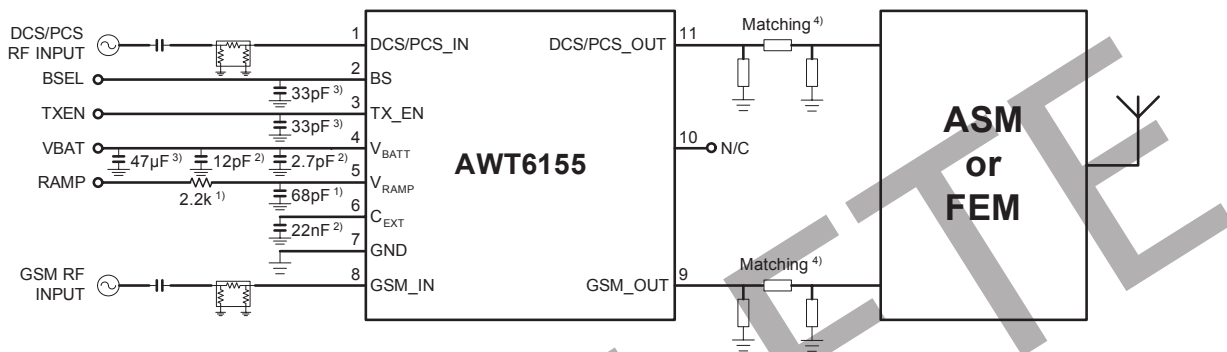
PARAMETER	MIN	TYP	MAX	UNIT	COMMENTS
Operating Frequency ( $F_{IN}$ )	1850	-	1910	MHz	
Input Power ( $P_{IN}$ )	0	3	5	dBm	
Output Power ( $P_{MAX}$ )	32.0	32.9	-	dBm	Freq = 1850 to 1910 MHz
Degraded Output Power ( $P_{OUT}$ )	30.0	31.0	-	dBm	$V_{BATT} = 3.0\text{ V}$ , $T_c = +85\ ^\circ\text{C}$ $P_{IN} = 0\text{ dBm}$
PAE @ $P_{MAX}$	45	51	-	%	Freq = 1850 to 1910 MHz
Forward Isolation 1	-	-45	-30	dBm	TX_EN = 0 V, $P_{IN} = 5\text{ dBm}$
Forward Isolation 2	-	-27	-15	dBm	TX_EN = HIGH, $V_{RAMP} = 0.2\text{ V}$ $P_{IN} = 5\text{ dBm}$
Second Harmonic	-	-26	-10	dBm	$P_{OUT} \leq 32.0\text{ dBm}$
Third Harmonic	-	-34	-15	dBm	$P_{OUT} \leq 32.0\text{ dBm}$
$n * f_0$ ( $n \geq 4$ ), $F_0 \leq 12.75\text{ GHz}$	-	-33	-8	dBm	$P_{OUT} \leq 32.0\text{ dBm}$
Stability	VSWR = 8:1 All Phases, $P_{OUT} \leq 32.0\text{ dBm}$				
	-	-	-36	dBm	$F_{OUT} < 1\text{ GHz}$
	-	-	-30	dBm	$F_{OUT} > 1\text{ GHz}$
Ruggedness	No Permanent Degradation VSWR 10:1, All Phase Angles				$P_{OUT} \leq 32.0\text{ dBm}$
RX Noise Power	-	-90	-82	dBm	$F_{TX} = 1910\text{ MHz}$ , RBW = 100 kHz, $F_{RX} = 1930\text{ to }1990\text{ MHz}$ , $P_{OUT} \leq 32.0\text{ dBm}$
Input Return Loss	-	1.5:1	2.5:1	VSWR	$P_{OUT} \leq 32.0\text{ dBm}$

Table 13: Electrical Characteristics for PCS 8PSK mode

Unless otherwise specified:  $V_{BATT} = 3.5 \text{ V}$ ,  $P_{IN} = 3.0 \text{ dBm}$ , Pulse Width = 1154  $\mu\text{s}$ , Duty = 25%  
 $Z_{IN} = Z_{OUT} = 50 \Omega$ ,  $T_c = 25 \text{ }^\circ\text{C}$ , BS = HIGH, TX\_EN = HIGH

PARAMETER	MIN	TYP	MAX	UNIT	COMMENTS
Operating Frequency ( $F_{IN}$ )	1850	-	1910	MHz	
Input Power	0	3	5	dBm	
PAE	22	28	-	%	$F_{IN} = 1850 \text{ to } 1910 \text{ MHz}$ $P_{OUT} \text{ set} = +28.5 \text{ dBm}$
ACPR 200 kHz 400 kHz 600 kHz 1800 kHz	- - - -	-37 -64 -74 -78	-34 -58 -64 -66	dBc/30 kHz dBc/30 kHz dBc/30 kHz dBc/100 kHz	All conditions under Polar operation $P_{OUT} = +28.5 \text{ dBm}$
EVM	-	1	5	%	All Conditions under Polar operation $P_{OUT} = +28.5 \text{ dBm}$

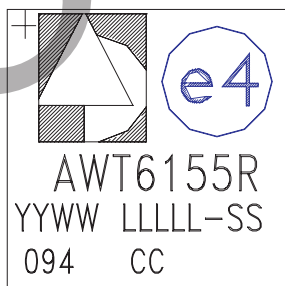
APPLICATION INFORMATION



- 1) Component values depends on baseband chipset used.
- 2) This component should be placed as close to the device pin as possible.
- 3) These components are recommended as good design practice for improving noise rejection characteristics. The values specified are not critical as they may not be required in the final application.
- 4) Actual matching component values depend on PCB layout and ASM/FEM used.

Figure 4: Recommended Application Circuit

TOP BRAND



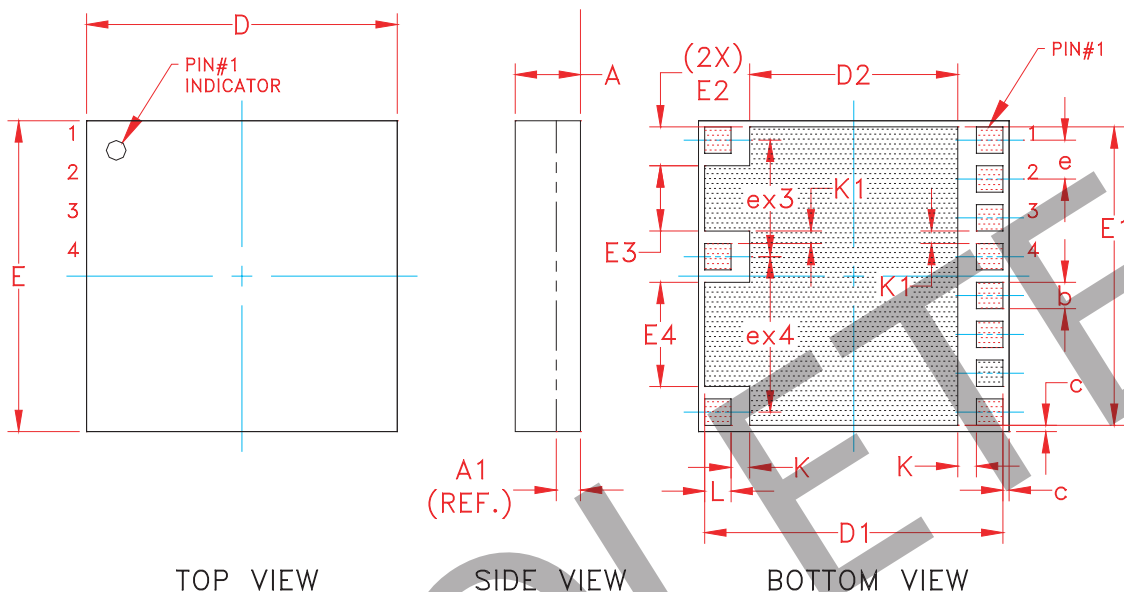
BRANDING SPECIFICATION

NOTES:

- |                         |  |
|-------------------------|--|
| 1. PIN 1 INDICATOR:     | LASER MARK                               |
| 2. ANADIGICS LOGO SIZE: | X=0.040±0.010 Y=0.048±0.010              |
| 3. TEXT :               | TYPE: ELITE                              |
| 4. JEDEC LEADFREE MARK: | SIZE : AS LARGE AS POSSIBLE              |
| 5. PART #               | 0.040 DIA.                               |
| 6. YEAR AND WORK WEEK:  | AWT6155R = RoHS COMPLIANT                |
| 7. WAFER LOT NUMBER:    | YYWW: YY = YEAR, WW = WORK WEEK          |
| 8. BOM NUMBER:          | LLLLL = WAFER LOT#,                      |
| 9. COUNTRY CODE:        | WAFER ID: SS = WAFER ID:                 |
|                         | 094                                      |
|                         | CC = TH -for- THAILAND, TW -for- TAIWAN, |
|                         | PH -for- PHILLIPPINES, CH -for- CHINA,   |
|                         | ID -for- INDONESIA, HK -for- HONG KONG   |

Figure 5: Branding Specification Diagram

PACKAGE OUTLINE



TOP VIEW

SIDE VIEW

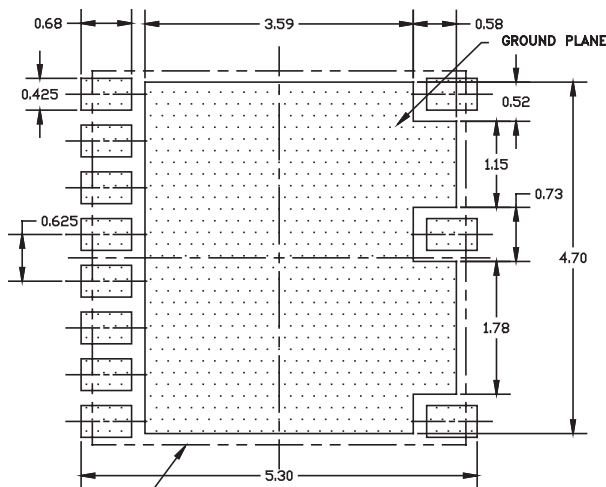
BOTTOM VIEW

SYMBOL	MILLIMETERS			INCHES			NOTE
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.	
A	0.95	1.05	1.15	0.037	0.041	0.045	—
A1	0.390 (REF.)			0.015 (REF.)			—
b	0.40	0.425	0.45	0.0157	0.0167	0.0177	—
c	—	0.10	—	—	0.004	—	—
D	4.88	5.00	5.12	0.192	0.197	0.202	—
D1	4.77	4.80	4.83	0.187	0.189	0.190	—
D2	3.320	3.35	3.380	0.1307	0.1319	0.1331	—
E	4.88	5.00	5.12	0.192	0.197	0.202	—
E1	4.77	4.80	4.83	0.188	0.189	0.190	—
E2	0.59	0.62	0.65	0.023	0.024	0.026	2X
E3	1.02	1.05	1.08	0.040	0.041	0.042	—
E4	1.64	1.67	1.70	0.065	0.066	0.067	—
e	0.625 BSC			0.025 BSC			7X
K	0.27	0.30	0.33	0.011	0.012	0.013	—
K1	0.175	0.20	0.225	0.007	0.008	0.009	—
L	0.40	0.425	0.45	0.0157	0.0167	0.0177	—

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.
4. METAL PAD DIMENSION IS MEASURED AT THE BOTTOM OF THE METAL LAYER.

Figure 6: M37 Package Outline (P800-2414) - 11 Pin 5 mm x 5 mm x 1.0 mm Surface Mount Module

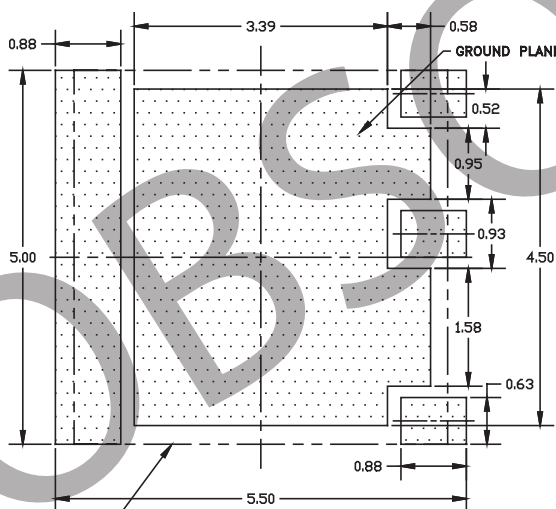


**NOTES:**

- (1) OUTLINE DRAWING REFERENCE:P8002414
- (2) UNLESS SPECIFIED DIMENSIONS ARE SYMMETRICAL ABOUT CENTER LINES SHOWN.
- (3) DIMENSIONS IN MILLIMETERS.
- (4) PCB SOLDERMASK KEPT OPEN FOR I/O's DUE TO SMALLER I/O PITCH.

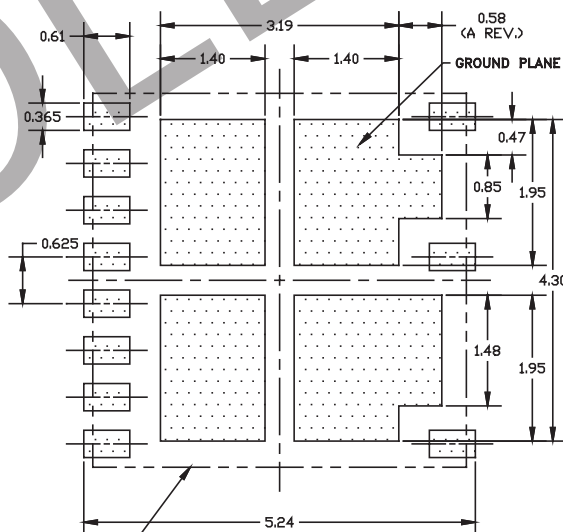
**PCB METAL TOP (X-RAY) VIEW**  
ONLY PACKAGE I/O's AND GROUND REQUIREMENTS SHOWN.

PACKAGE OUTLINE



**PCB SOLDER MASK TOP (X-RAY) VIEW**

PACKAGE OUTLINE



**STENCIL APERTURE TOP (X-RAY) VIEW**

PACKAGE OUTLINE

**Figure 7: Recommended PCB Layout Information**

**ORDERING INFORMATION**

<b>ORDER NUMBER</b>	<b>TEMPERATURE RANGE</b>	<b>PACKAGE DESCRIPTION</b>	<b>COMPONENT PACKAGING</b>
AWT6155RM37P8	-20 °C to +85°C	RoHS-compliant 11 Pin 5 mm x 5 mm x 1.0 mm Surface Mount Module	Tape and Reel, 2500 pieces per reel
AWT6155RM37P9	-20 °C to +85°C	RoHS-compliant 11 Pin 5 mm x 5 mm x 1.0 mm Surface Mount Module	Partial Tape and 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](mailto:Mktg@anadigics.com)

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