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AWT4502S10
TX Power MMIC

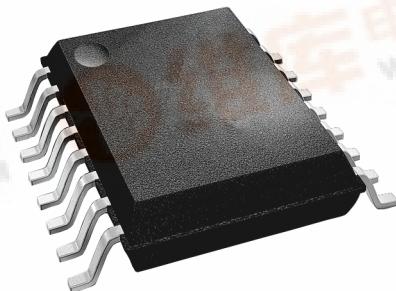
Advanced Product Information - Rev 0

FEATURES

- High Linearity.
- Low Quiescent Current.
- Intelligent Power Management™ with Temperature Compensation.
- Low Harmonics.
- Small Size.
- 16 Pin SSOP Plastic Package.
- Surface Mount Package
- 50Ω Input Impedance
- Low Cost

APPLICATIONS

- PCS CDMA/TDMA Wireless handset applications.



S10
16 Pin SSOP with Heat Slug

Description

The AWT4502 is a monolithic power amplifier IC suited for 3 Volt PCS CDMA/TDMA wireless handset applications.

Maximum Ratings

Static sensitive electronic devices. Do not operate or store near strong electrostatic, fields. Take proper ESD precautions.

PIN	DESCRIPTION	RATING	NOTES
1	V_{D1}	+8V max, 0.0V min	With no RF Applied
2	RF_{IN}	+12 dBm max	$V_D = +5.0$ Volts
3	V_{REF}	+5V max, 0.0V min	Must be presented during operation.
4	V_{DDC}	+7.5V max, 0.0V min	
8	V_{SS}	(-) 5V	
9	V_{D2}	+8V max, 0.0V min	With no RF Applied
11, 12, 13, 14	V_{D3}	+8V max, 0.0V min	With no RF Applied

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Electrical Characteristics

(Pin \leq 3dBm, V_{DS} 1, 2, 3 = +3.5 V; V_{DDC} = 3.1V; V_{SS} = (-) 3V, Set V_{REF} (Pin 3) to get IDQ of 140mA; $TC = 25^{\circ}C$, 50Ω Input 50Ω external output match)*

Parameter	Symbol	Min	Typ	Max	Unit
Frequency	f_0	1850	-	1910	MHz
Power Output	P_{out}	28.5	-	-	dBm
Intermodulation Distortion	IM3 IM5 IM7	-	-26 -36 -45	-	dBc
Power Added Efficiency @ $P_{out} = 28.5$ dBm	PAE	-	32	-	%
Gain	-	-	26	-	dB
Harmonics (@ 28.5dBm)	2 f_0 3 f_0 4 f_0	-	<-45 <-40 <-40	-	dBc
Stability: -80dBc all spurious outputs relative to desired signal	-	-	6:1	-	VSWR load, all phase angles, ($P_{out} < 28.5$ dBm) $V_{DS} = +3.4$, $Z_s = 50\Omega$
Input Return Loss	RTN_{IN}	-	12	-	dB
Operating Range	T_c	-20		+70	°C
Negative Voltage Current	I_{SS}	-	3	-	mA
Biassing Current (V_{DDC} Pin)	I_{DDC}	-	2.5	-	mA
Biassing Current (V_{REF} Pin)	I_{REF}	-	1.5	-	mA
Quiescent Current ($I_{DSQ1} + I_{DSQ2} + I_{DSQ3}$)	I_{DSQ}	-	140	-	mA

* As measured in ANADIGICS test fixture.

Recommended Operating Procedure on the Evaluation Board

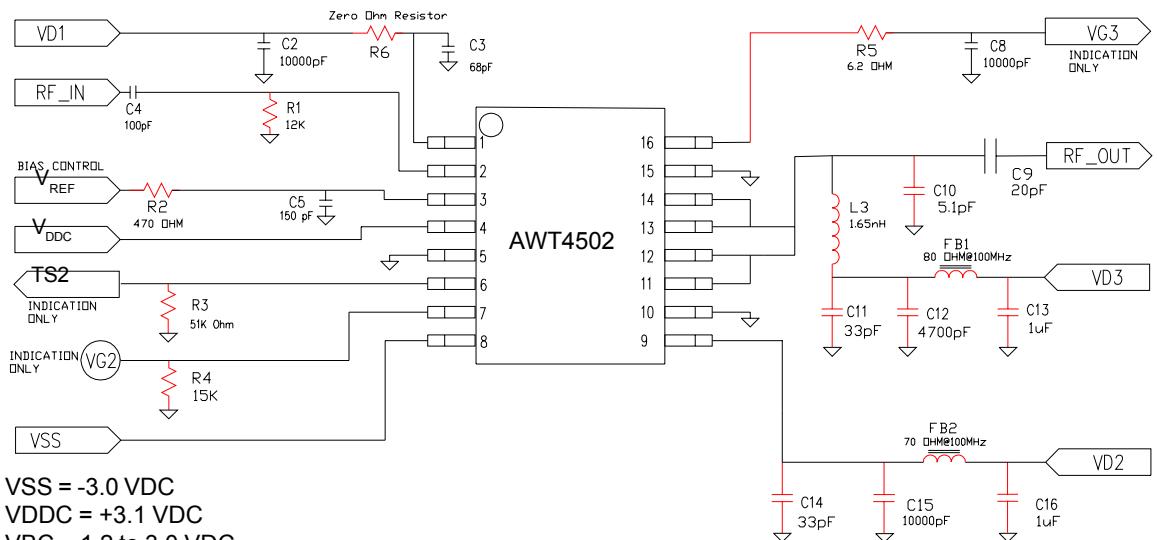
Power Up

- Begin by setting all power supplies to 0.0 Volts, and input power to 0 dBm.
- Make sure that the RF input power is turned off.
- Turn on V_{SS} (Pin 3) to (-) 3V.
- Turn V_{DS1} (Pin 1), V_{DS2} (Pin 9), V_{DS3} (Pins 11, 12, 13 and 14) and V_{DDC} (Pin 4) which are tied together on the fixture, and set to +3.5V and set V_{REF} (Pin 3) for I_{DQ} of 140 mA
- Turn RF on and adjust input power to get $P_{out} = 28.5$ dBm.

Power Down

To power down the device follow the above procedure in reverse order.

AWT4502 Fixture Schematic



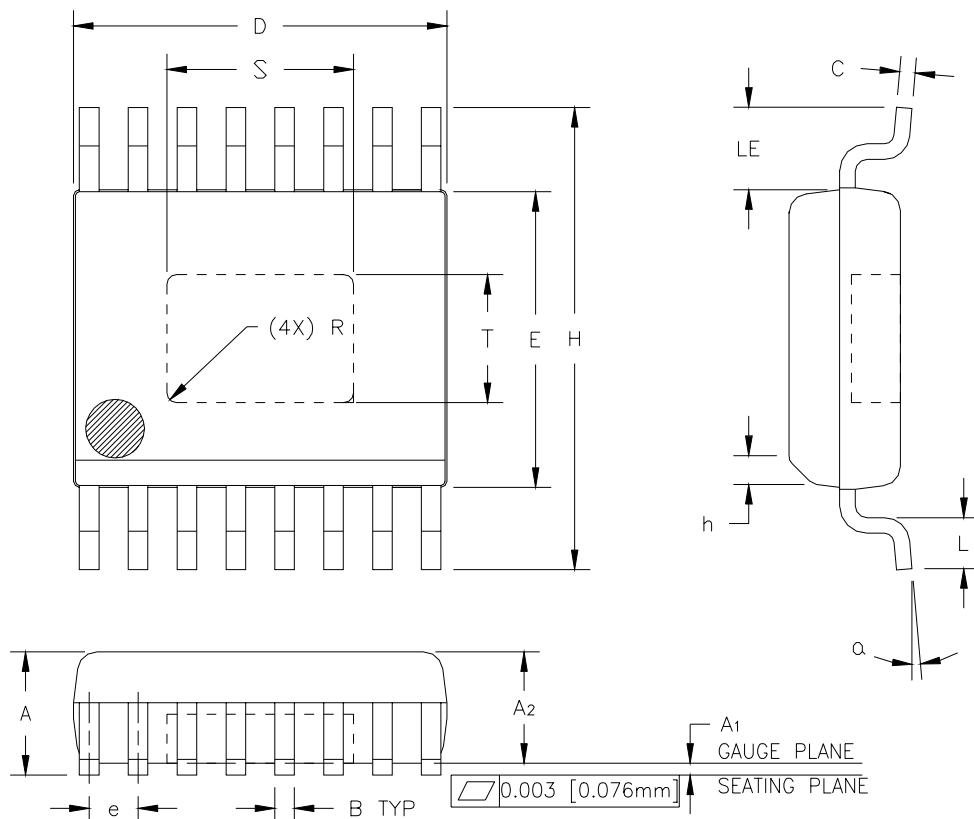
VSS = -3.0 VDC
 VDDC = +3.1 VDC
 VBC = 1.2 to 3.0 VDC
 VD1, VD2, VD3 = 3.5 VDC

Pin	Signal	Description
1	V _{D1}	Drain of the 1 st stage (+3.5V)
2	RF _{IN}	RF power input, DC blocked
3 *	V _{REF}	Part of biasing control circuit should be set to get IDQ of 140mA
4	V _{DDC}	Bias circuit supply (+3.1V)
5	GND	RF and DC Ground
6	V _{TS2}	Dynamic Bias Resistor
8	V _{SS}	Negative supply (-3V)
9	V _{D2}	Drain of the 2 nd stage (+3.5V)
10, 15	GND	RF and DC ground
11, 12, 13, 14	V _{D3} /RF _{OUT}	Drain of 3 rd stage (+3.5V) and RF _{OUT}
16	V _{G3}	Gate of 1 st stage (bias indication and tuning)

*This voltage is being adjusted to get IDQ of 140mA, the voltage range is 1.2-3V.

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CASE OUTLINE AND PIN DESCRIPTION



S _Y _M _{B₀_L}	INCHES		MILLIMETERS		NOTE
	MIN.	MAX.	MIN.	MAX.	
A	0.053	0.068	1.35	1.73	
A ₁	0.000	0.004	0.00	0.10	6
A ₂	0.052	0.064	1.32	1.63	
B	0.008	0.012	0.20	0.30	
C	0.006	0.009	0.15	0.23	
D	0.191	0.196	4.85	4.98	2
E	0.147	0.157	3.73	3.99	3
e	0.025	BSC	0.63	BSC	4
H	0.228	0.246	5.79	6.25	
h	0.014	0.016	0.36	0.41	
L	0.016	0.040	0.41	1.02	
LE	0.036	0.049	0.91	1.25	
Q	0°	8°	0°	8°	
S	0.070	0.100	1.78	2.54	5
T	0.040	0.070	1.02	1.78	5
R	0.015	REF.	0.38	REF.	5

NOTES:

1. CONTROLLING DIMENSION: INCHES
2. DIMENSION "D" DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH, PROTRUSIONS AND GATE BURRS SHALL NOT EXCEED 0.006 [0.15mm] PER SIDE.
3. DIMENSION "E" DOES NOT INCLUDE INTER-LEAD FLASH OR PROTRUSIONS. INTER-LEAD FLASH AND PROTRUSIONS SHALL NOT EXCEED 0.010 [0.25mm] PER SIDE.
4. MAXIMUM LEAD TWIST/SKEW TO BE 0.002 [0.05mm]
5. DIMENSION "S", "T" AND "R" INDICATE EXPOSED SLUG AREA.
6. A₁ STAND OFF IS MEASURED FROM BOTTOM OF HEAT SLUG TO THE SEATING PLANE.

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