BHWR580M

Production Datasheet

5.8GHz Active Integrated Antenna with LNA and PA

Description

BHWR580M is a complete RF Front-End solution from BHW's RF Active integrated Antenna (RFAiA™) product family. It integrates a low noise amplifier with ultra-low 1.7dB total noise figure and 10dB gain, a power amplifier with +18dBm maximum transmit power, and a pair of antennas with high efficiency and very stable VSWR under various PCB size and housing conditions, all into a compact 16x12mm design. BHWR580M can be easily surface-mounted to the main product board without requiring any additional impedance matching, resulting in significantly simplified RF design and shorter product development cycle.

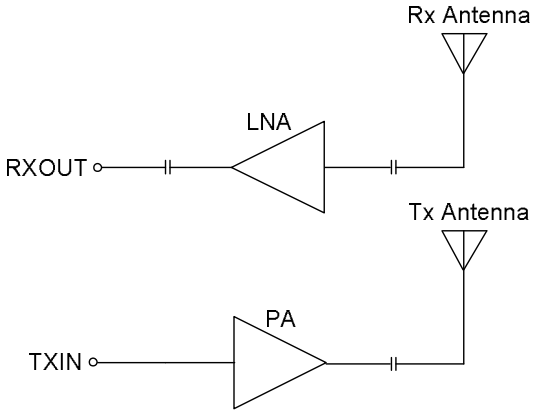
Key Features

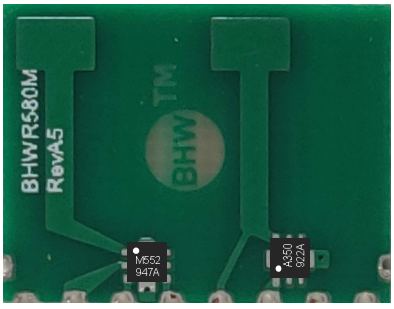
- 5.7-5.85GHz Operation Frequency Range
- Rx Noise Figure: 1.7dB; Gain: 10dB (3.3V)
- Tx Power: +18dBm; Gain: 10dB (5V)
- No External Matching Required
- Robust ESD Protection
- Stable VSWR over PCB/Housing Variations
- Compact 16x12mm footprint for SMT

Key Applications

- 5.8GHz Wireless Audio/Video
- 5.8GHz Data Transmission
- UAV/Drones
- Remote Control
- Generic 5GHz TDD Radio Designs

Functional Block and Product Information





16x12x0.6mm PCB （with BHWA350&M552）

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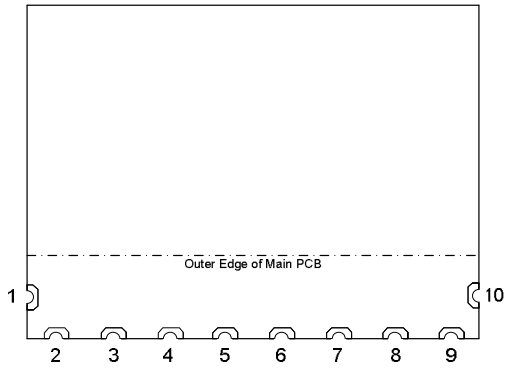
Pin Assignment and Pin Description



(Top "See-Through" View)

Pin Number	Pin Name	Description
3	RXOUT	LNA Output Port
4	VDD	LNA DC Supply Voltage
5	CRX	Logic Control Voltage for Rx
6	VCC	PA DC Supply Voltage
7	TXIN	PA Input Port
1,2,8,9,10	GND	Connect to GND on Main PCB

Absolute Maximum Ratings

Parameter		Rating	Unit
Maximum VDD Supply Voltage		4.5	V
Maximum VCC Supply Voltage		5.25	V
Maximum Control Voltage		3.6	V
Maximum VDD Supply Current		50	mA
Maximum VCC Supply Current		80	mA
Maximum Input Power		+10	dBm
Junction Temperature		+150	^{o}C
Operation Temperature		-40 to +85	^{o}C
Storage Temperature		-40 to +150	^{o}C
Moisture Sensitivity Level		MSL1	

Note: Do not exceed any single or combination of the above parameters. Sustained operation at or above the Absolute Maximum Ratings may result in permanent damage to the device. Maximum Input Power Rating assumes 50-Ohm load impedance.

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Electrical Specifications

Receive Mode: VDD=CRX=3.3V, VCC=0

Parameter	Condition	Specification			Unit
		Min.	Typ.	Max.	
Operating Frequency		5.7		5.85	GHz
Operating Voltage	VDD	1.2	3.3	4.2	V
Logic Control Voltage	For CRX=High	1.2	3.3	3.6	V
Quiescent Current*	VDD=CRX=3.3V,No RF Input		12*		mA
Shutdown Current	VDD=3.3V, CRX=0V			1	uA
Small-Signal Gain	Pin=-30dBm		10		dB
Noise Figure			1.7		dB
Input P1dB	VDD=3.3V		+3		dBm
Input VSWR			1.2:1	2:1	dB

*LNA current can be further reduced with an external resistor on CRX pin.

Transmit Mode: VDD=CRX=0, VCC=5V

Parameter	Condition	Specification			Unit
		Min.	Typ.	Max.	
Operating Frequency		5.7		5.85	GHz
Operating Voltage	VCC	4.75	5	5.25	V
Quiescent Current*	VCC=5V,No RF Input		45*		mA
Gain			10		dB
Saturated Power			+18		dBm
Input VSWR			1.5:1	2:1	dB

*PA quiescent current can be further reduced by increasing bias resistor R1 slightly.

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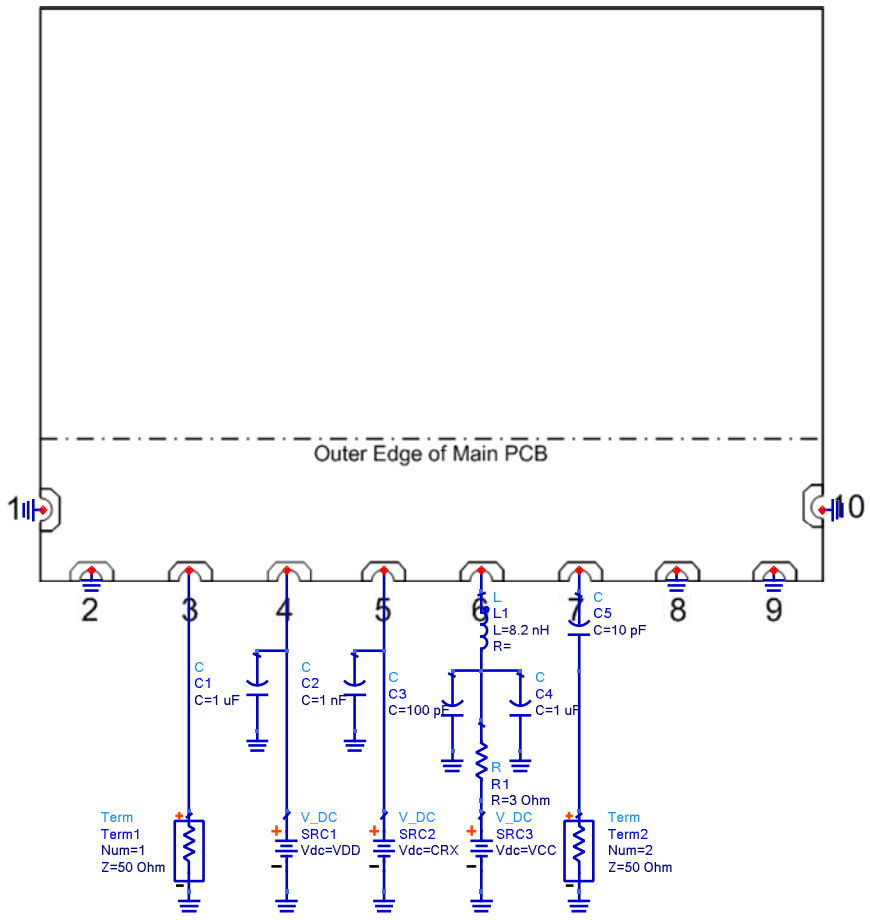
Transmit/Receive Control

CRX	VCC	Mode of Operation
0	0	All Off
1	0	Receive (LNA On)
0	1	Transmit (PA On)*

* BHWA350 is self-biased gain block and does not have dedicated control pin. Consult BHW for implementation recommendations.

Application Schematic

(Refer to BHW AppNote #023 for Details)



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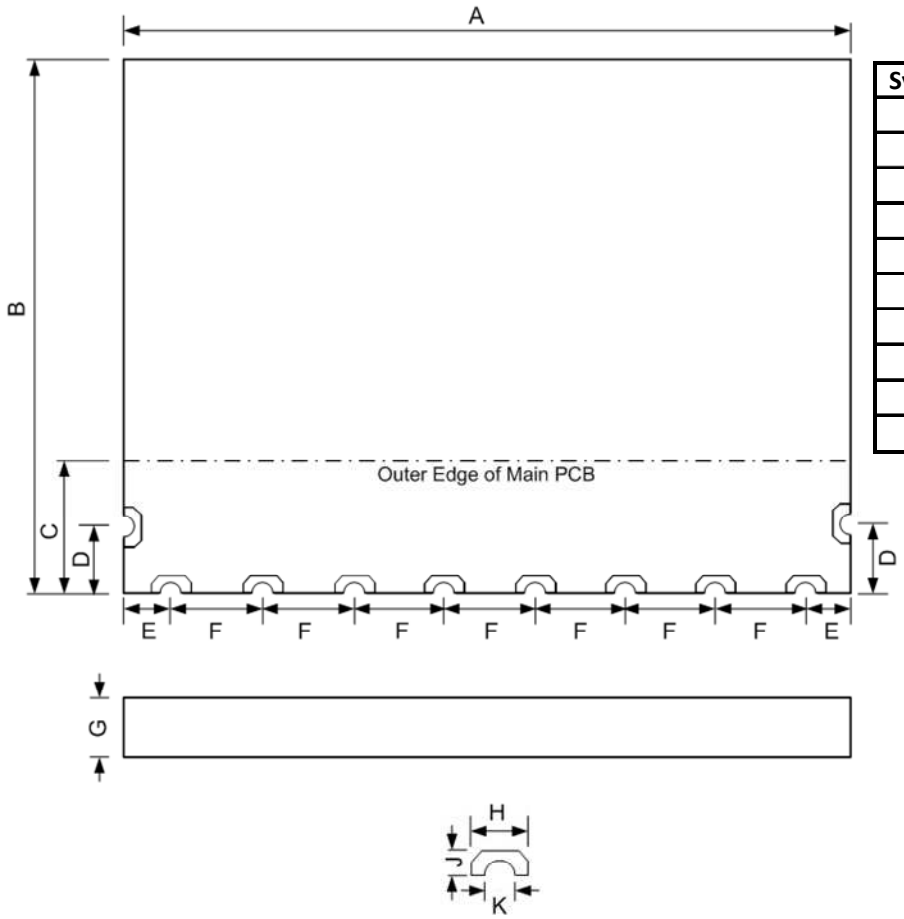
Mechanical Specifications



Symbol	Min. (mm)	Typ. (mm)	Max. (mm)
A	15.9	16	16.1
B	11.9	12	12.1
C	2.9	3	3.1
D	1.4	1.5	1.6
E	0.9	1	1.1
F	1.9	2	2.1
G	0.65	0.7	0.75
H	0.95	1	1.05
J	0.45	0.5	0.55
K	0.55	0.6	0.65