Femto Balun
50Ω to 100Ω Balanced

Description

The FB850 is a low profile sub-miniature balanced to unbalanced transformer designed for differential inputs and output locations on next generation wireless chipsets in an easy to use surface mount package covering 802.11a Uni-Band II and Uni-Band III and the Japanese ISM band (4.9GHz). The FB850 is ideal for high volume manufacturing and is higher performance than traditional ceramic baluns. The FB850 has an unbalanced port impedance of 50Ω and a 100Ω balanced port impedance*. This transformation enables single ended signals to be applied to differential ports on modern integrated chipsets. The output ports have equal amplitude (-3dB) with 180 degree phase differential. The FB850 is available on tape and reel for pick and place high volume manufacturing.

Features:

- **5.15 – 5.35 GHz Narrow Band**
- **4.8 – 5.9 GHz Extended Band**
- **180° Transformer**
- **50 Ohm to 2 x 50 Ohm**
- **Low Insertion Loss**
- **Covers 802.11a Uni-Band II & III**
- **No DC Decoupling Capacitors Required**
- **Input to Output DC Isolation**
- **Surface Mountable**
- **Tape & Reel**
- **Convenient Package**

ELECTRICAL SPECIFICATIONS**

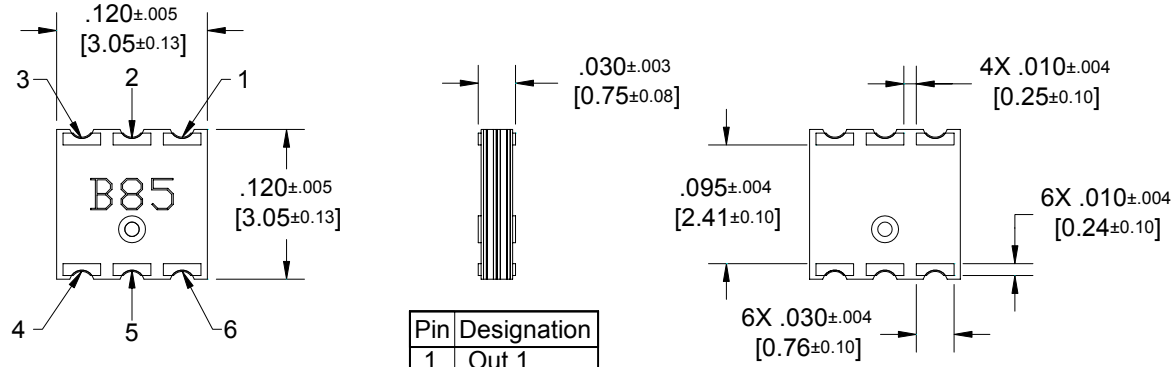
Frequency	Unbalanced Port Impedance	Balanced Port Impedance*	Return Loss	Insertion Loss
GHz	*Ohms*	*Ohms*	*dB min*	*dB max*
5.15 – 5.35	50	100	17	0.5***
4.8 – 5.9			16	0.6***
Amplitude Balance	**Phase Balance**	**Power Handling**	**ΘJC**	**Operating Temp.**
dB	*Degrees max*	*Watts*	*°C / Watt*	*°C*
0 ± 0.5	180 ± 5.0	4	75	-55 to +85
0 ± 0.6	180 ± 5.0			

**Specification based on performance of unit properly installed on microstrip printed circuit boards with 50 Ω nominal impedance. Specifications subject to change without notice.

* 50Ω reference to ground

*** Insertion Loss stated at room temperature (0.55 dB Max at +85 °C)

Outline Drawing



Pin	Designation
1	Out 1
2	GND
3	Out 2
4	GND
5	In
6	GND

Dimensions are in Inches [Millimeters]
FB850 Rev B Mechanical Outline

Tolerances are Non-Cumulative

Available on Tape and Reel For Pick and Place Manufacturing.

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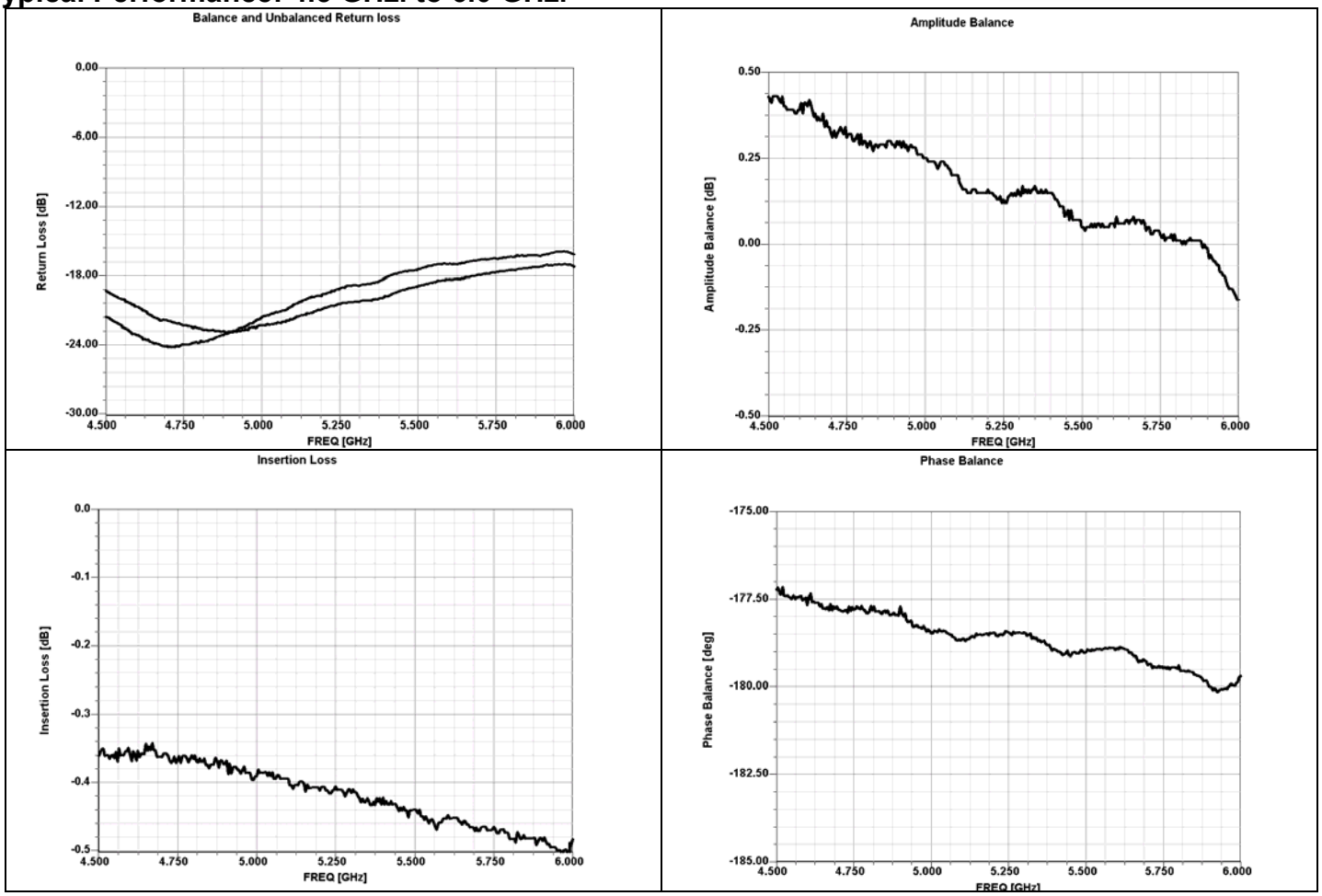
USA/Canada: (315) 432-8909
Toll Free: (800) 544-2414
Europe: +44 2392-232392

Model FB850

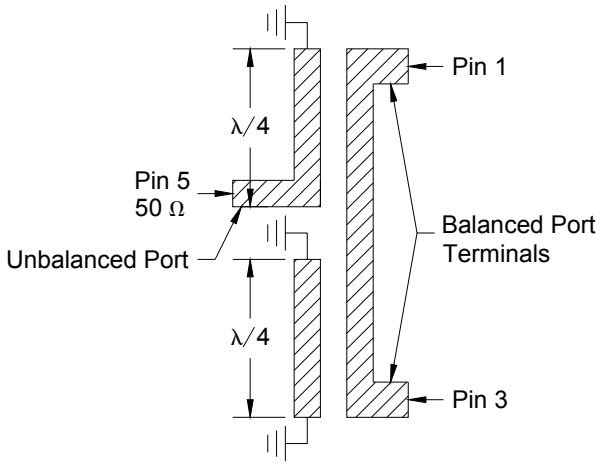
Rev. B

Typical Performance: 4.5 GHz. to 6.0 GHz.



Pin Configuration:

Balun Pin Configruation



The internal configuration of the Xinger® balun is diagramed to the left; the unbalanced port is DC connected to ground and the two balanced ports are DC connected and floating. For many chipset applications there is an opportunity to eliminate two decoupling capacitors and/or use a single bias point if applicable. Differential drive is popular in integrated circuit since it aids stability in the presence of bond wire and pin inductance, provides some degree of immunity to power supply and ground noise, and can provide higher output power in the case of some device limits. The construction of the Xinger® balun is bonded multi-layered stripline made of low loss dielectric material with plated through vias connecting the internal circuitry to the external printed circuit board, similar to that of the Xinger® hybrids and directional couplers.

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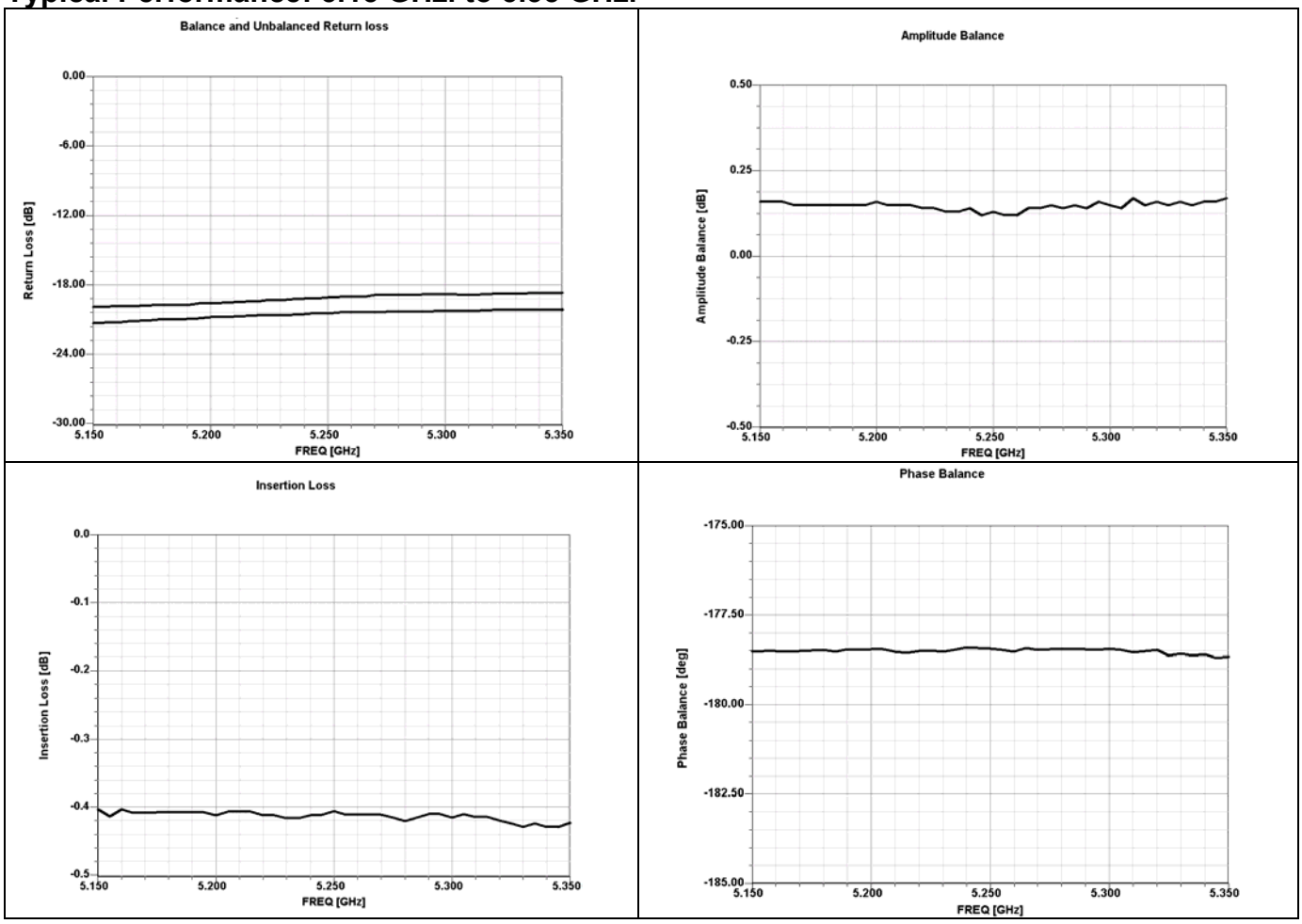
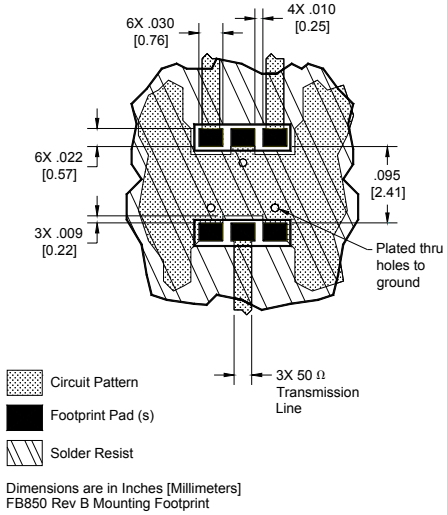
Xinger®

Typical Performance: 5.15 GHz. to 5.35 GHz.



Mounting Configuration:



Dimensions are in Inches [Millimeters]
FB850 Rev B Mounting Footprint

In order for Xinger surface mount components to work optimally, there must be a 50Ω transmission line to the balanced port and 50Ω transmission lines from the unbalanced ports. If this condition is not satisfied, amplitude balance, insertion loss and VSWR may not meet published specifications.

All of the Xinger components are constructed from ceramic filled PTFE composites which possess excellent electrical and mechanical stability having X and Y thermal coefficient of expansion (CTE) of 17 ppm/^{o}C

An example of the PCB footprint used in the testing of these parts is shown to the left. in specific designs, the transmission line widths need to be adjusted to the unique dielectric coefficients and thicknesses as well as varying pick and place equipment tolerances.

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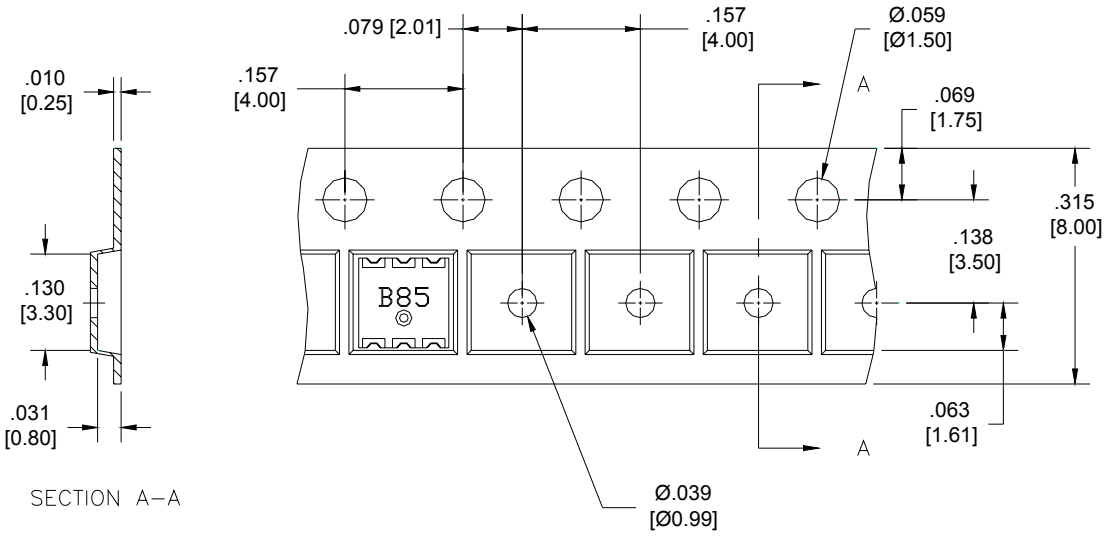
Packaging

Parts are oriented in tape as shown below.



Dimensions are in inches [mm]

Direction of Part Feed (Unloading)