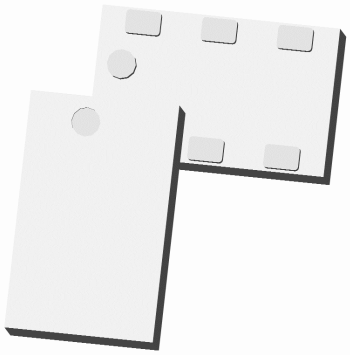
Xinger®

Ultra Low Profile 1008 Balun
50Ω to 200Ω Balanced



Description:

The B0110E50200AHF is a low profile sub-miniature balanced to unbalanced transformer designed for differential inputs and output locations on next generation digital TV chipsets in an easy to use surface mount package. The B0110E50200AHF is ideal for high volume manufacturing and is higher performance than traditional wire wound Baluns. The B0110E50200AHF has an unbalanced port impedance of 50Ω and 200Ω balanced port impedance. This transformation enables single ended signals to be applied to differential ports on modern semiconductors. The output ports have equal amplitude (-3dB) with 180 degree phase differential. The B0110E50200AHF is available on tape and reel for pick and place high volume manufacturing.

Detailed Electrical Specifications:

Specifications subject to change without notice.

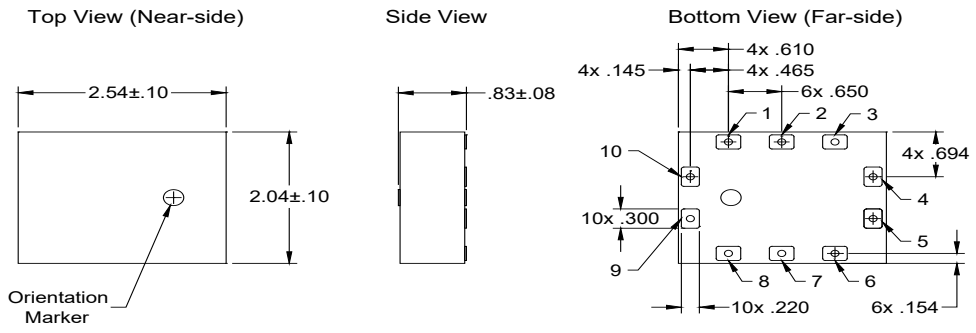
Features:

- **50 – 1450 MHz (IL 2dB BW)**
- **85-1300 MHz (IL 1dB BW)**
- **0.83 mm Height Profile**
- **50 Ohm to 2 x 100 Ohm**
- **Excellent CMRR (30dB typical)**
- **Surface Mountable**
- **Tape & Reel**
- **Non-conductive Top Surface**
- **RoHS Compliant**
- **Halogen Free**

Parameter	ROOM (25°C) Min.	Typ.	Max	Min.	Typ.	Max	Unit
Frequency	50		1450	85		1300	MHz
Unbalanced Port Impedance		50			50		Ohm
Balanced Port Impedance		200			200		Ohm
Return Loss	8	9.8		11	12.3		dB
Insertion Loss*		2.2	2.5		1.2	1.5	dB
Amplitude Balance		0.4	1		0.4	1	dB
Phase Balance		5.6	8		2.6	4	Degrees
CMRR		26			30		dB
Power Handling			0.5			0.5	Watts
Operating Temperature	-55		+85	-55		+85	°C

*Insertion Loss stated at room temperature (Insertion Loss is approximately 0.15 dB higher at +85 ºC). All performances stated for recommended operation with external circuity.

Outline Drawing:



Pin	Designation	Pin	Designation
1	Input	6	Balanced Port 1
2	GND	7	GND
3	NC	8	Balanced Port 2
4	GND	9	GND
5	GND	10	GND

Mechanical Outline
Dimensions are in Milimeters

Typical Performance with Two External 220pF Capacitors (test/specification condition)

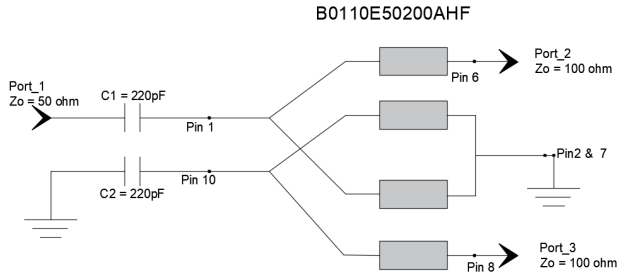
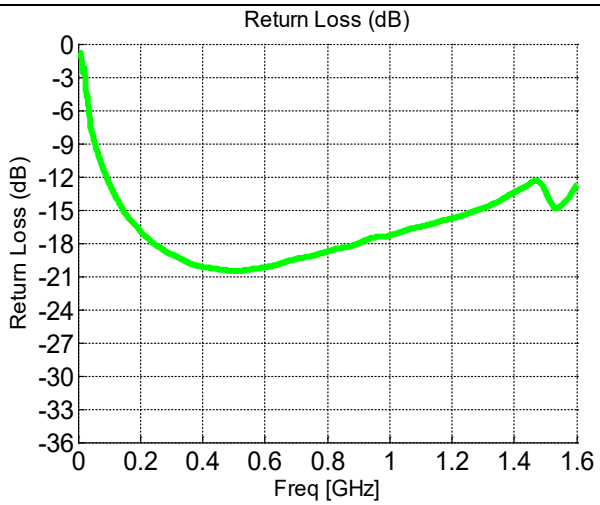
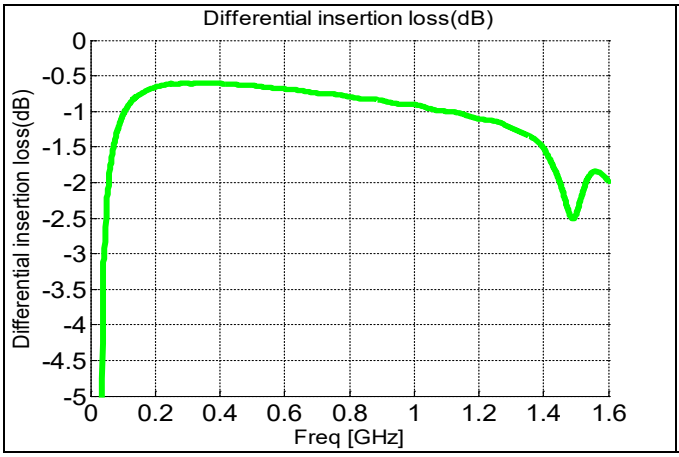
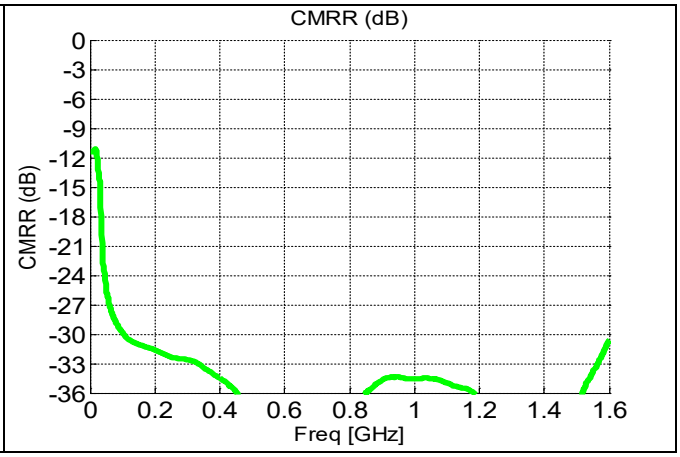
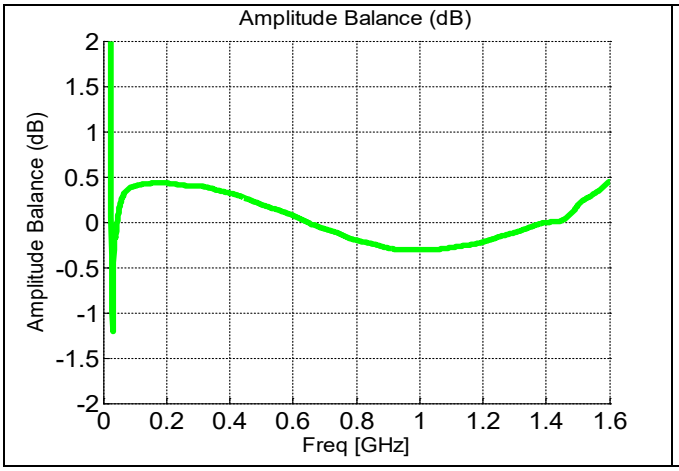


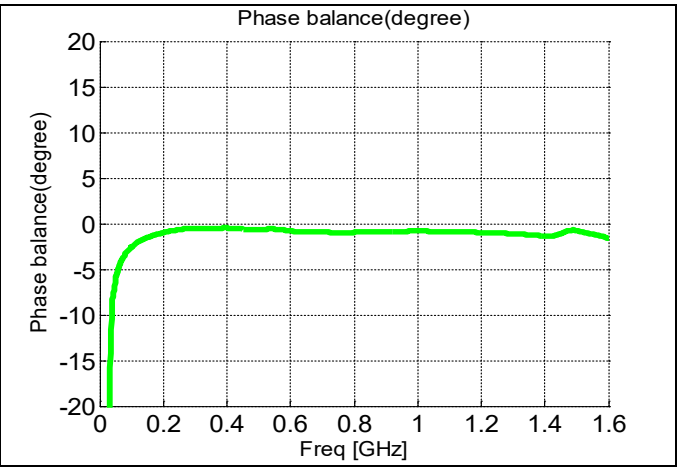
Figure 1 The Balun with external capacitors on both low impedance ports (nominal/test configuration). The two capacitors improve the insertion loss and return loss in the 40-200MHz range over that of the basic balun.











Typical Performance with no External Components

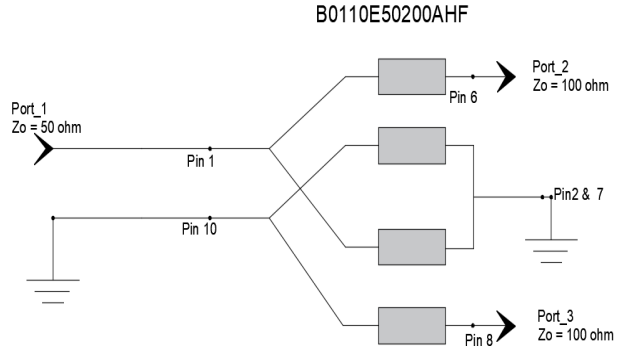
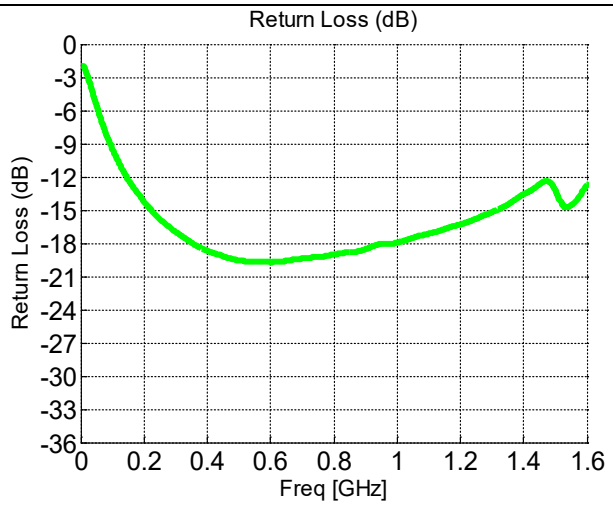
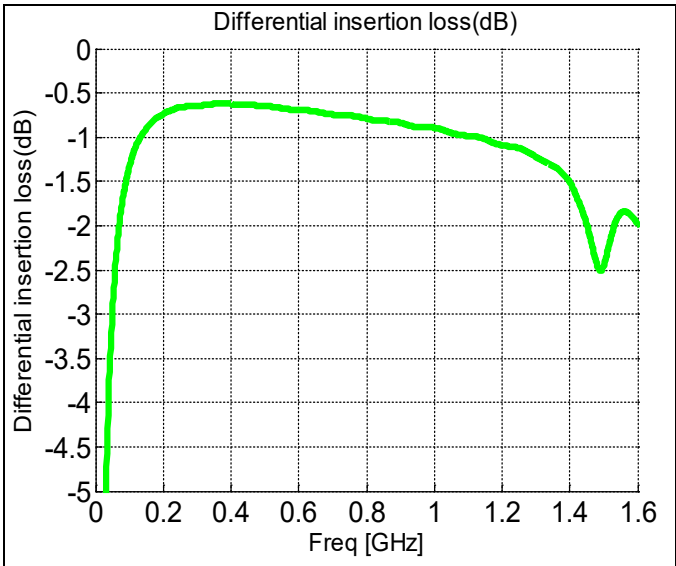
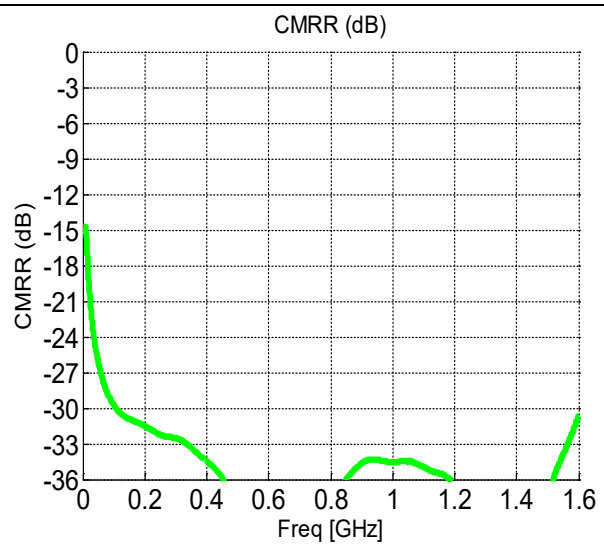
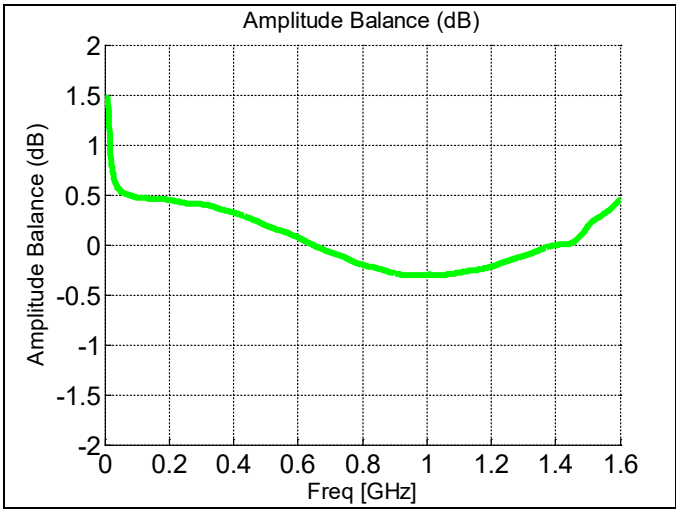


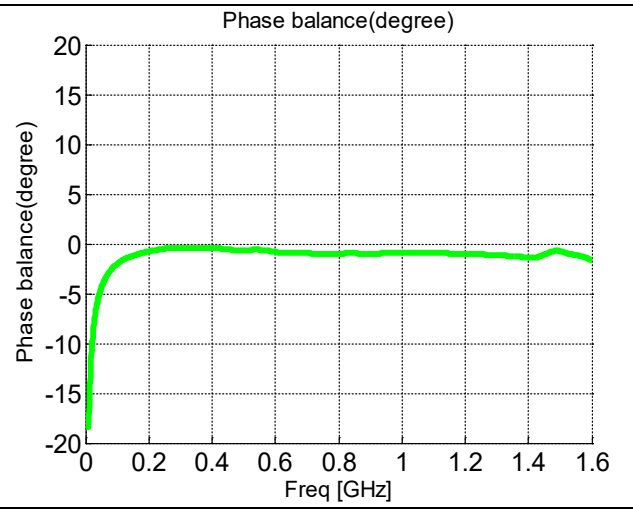
Figure 2 The Balun in it's basic configuration with no external components.











Distortion Considerations:

This balun does NOT contain any ferrite materials and are as such distortion free. Very, very low levels of distortion can arise from dissimilar metals on the contact pads of the part (Cu-Ni-Au) and from inter-metallic contaminations within the part

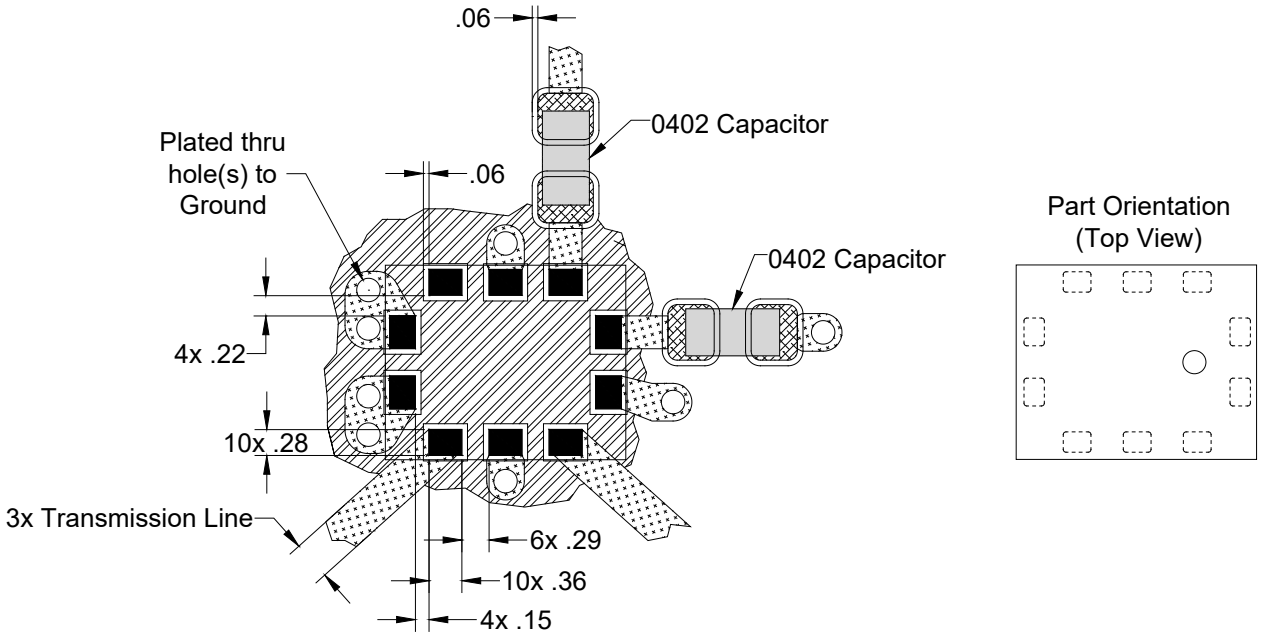
Mounting Configuration:

In order for Xinger surface mount components to work optimally, the proper impedance transmission lines must be used to connect to the RF ports. If this condition is not satisfied, insertion loss, Isolation and VSWR may not meet published specifications.

All of the Xinger components are constructed from organic PTFE based composites, which possess excellent electrical and mechanical stability. Xinger components are compliant to a variety of ROHS and Green standards and ready for Pb-free soldering processes. Pads are Gold plated with a Nickel barrier.

To supply common mode voltage offset to the analog-to-digital converter, DC blocking capacitors are needed at the balanced port (pins 6 & 8).

An example of the PCB footprint used in the testing of these parts is shown below. In specific designs, the transmission line widths need to be adjusted to the unigue dieletric coefficients and thickness as well as varying pick and place equipment tolerances. In addition, two external 0402 capacitors must be mounted in locations C1 and C2 shown in the figure below to get the performance specified in the datasheet.



Dimensions are in millimeters