Anaren®

Model B4859A53
Rev A

Xinger®

Ultra Small Low Profile 0603 Balun
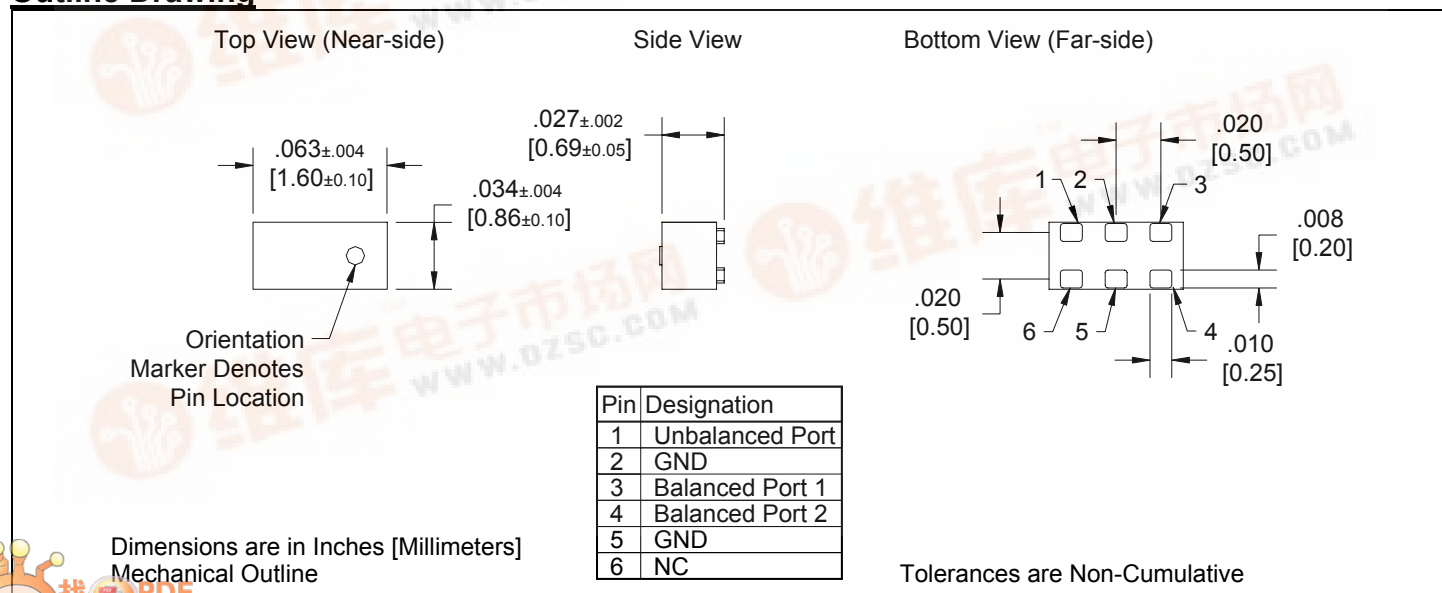## 50Ω to 100Ω Balanced

Description

The B4859A53 is an ultra-small low profile 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 B4859A53 is ideal for high volume manufacturing and is higher performance than traditional ceramic baluns. The B4859A53 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 B4859A53 is available on tape and reel for pick and place high volume manufacturing.

Detailed Electrical Specifications: Specifications subject to change without notice.

Features:
- 4800 – 5900 MHz
- 0.7mm Height Profile
- 50 Ohm to 2 x 50 Ohm
- Covers 802.11a Uni-Band II & III
- Low Insertion Loss
- Input to Output DC Isolation
- Surface Mountable
- Tape & Reel
- Non-conductive Surface
- RoHS Compliant

Parameter	Min.	Typ.	Max	Unit
		ROOM (25°C)		
Frequency	4800		5900	MHz
Unbalanced Port Impedance		50		Ω
Balanced Port Impedance		100		Ω
Return Loss	12	15		dB
Insertion Loss*		0.7	0.9	dB
Amplitude Balance		0.5	1.0	dB
Phase Balance		5	7	Degrees
CMRR		27		dB
Power Handling			0.5	Watts
Operating Temperature	-55		+85	°C

* Insertion Loss stated at room temperature (Insertion Loss is approximately 0.1 dB higher at +85 °C)

Outline Drawing

Top View (Near-side)   Side View   Bottom View (Far-side)

.063±.004 [1.60±0.10]

.034±.004 [0.86±0.10]

.027±.002 [0.69±0.05]

.020 [0.50]

.008 [0.20]

.020 [0.50]

.010 [0.25]

1 2 3
6 5 4

Orientation Marker Denotes Pin Location

Pin	Designation
1	Unbalanced Port
2	GND
3	Balanced Port 1
4	Balanced Port 2
5	GND
6	NC

Dimensions are in Inches [Millimeters]
Mechanical Outline

Tolerances are Non-Cumulative

Anaren

Available on Tape and Reel for Pick and

USA/Canada: (315) 432-8909
Toll Free: (800) 411-6596
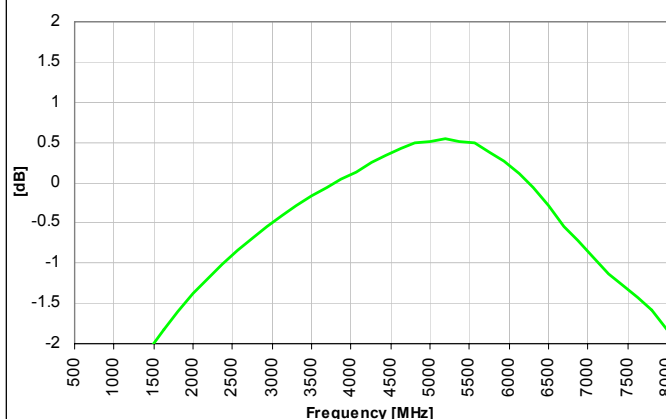
Anaren®

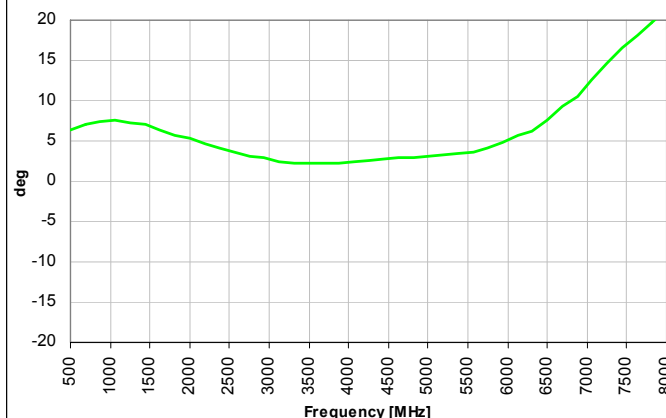## Typical Broadband Performance: 500 MHz. to 8000 MHz.
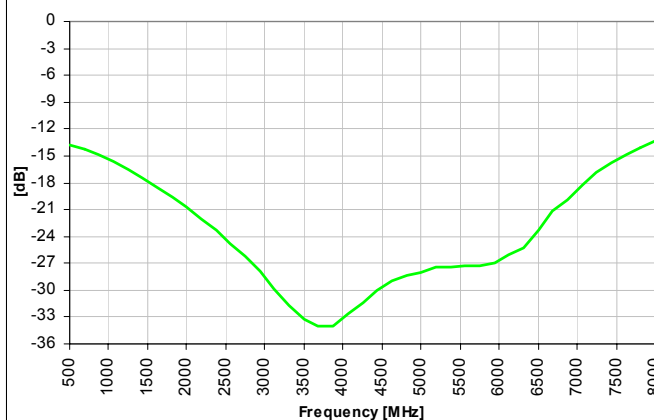
Return Loss - Input
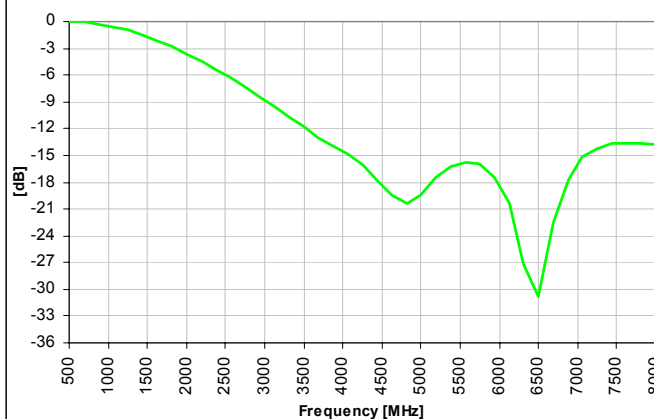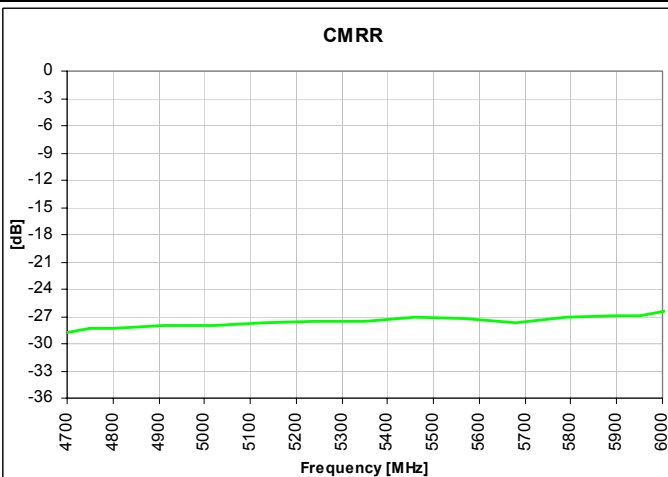
Amplitude Balance

Insertion Loss
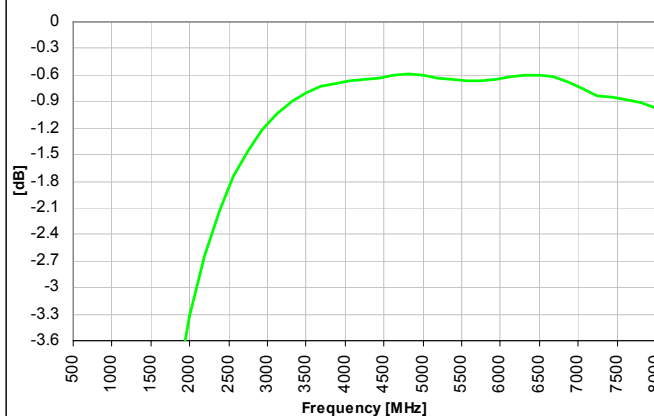
Phase Balance

CMRR

Typical Performance: 4700 MHz. to 6000 MHz.

Return Loss - Input

Amplitude Balance

Insertion Loss

Phase Balance

CMRR
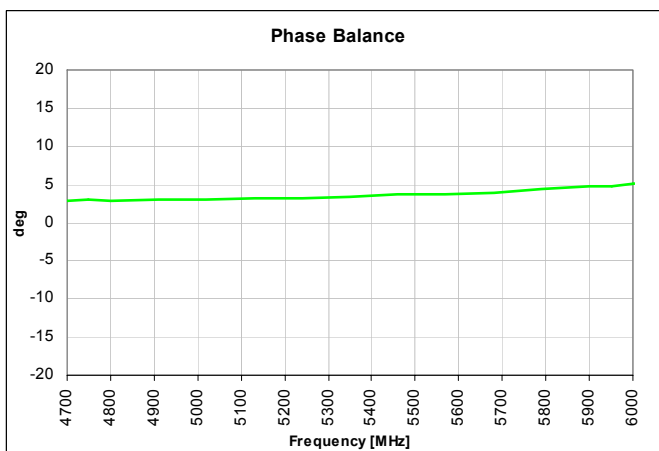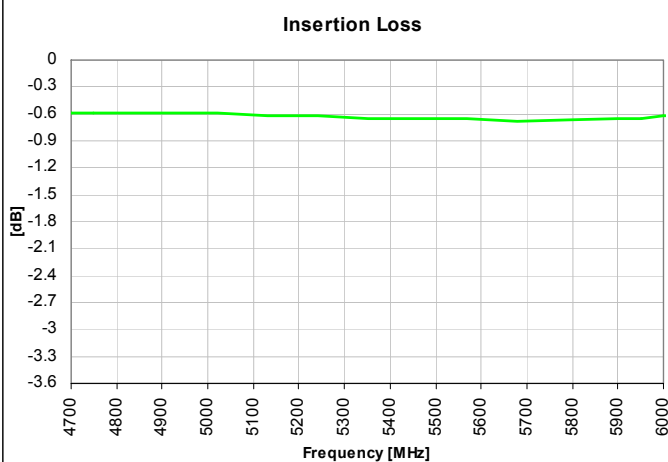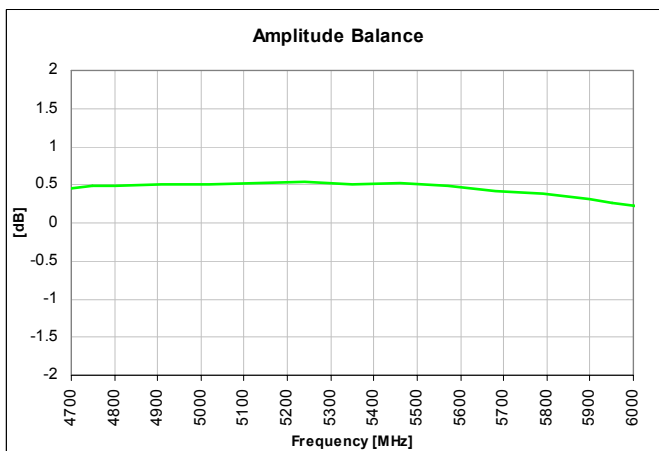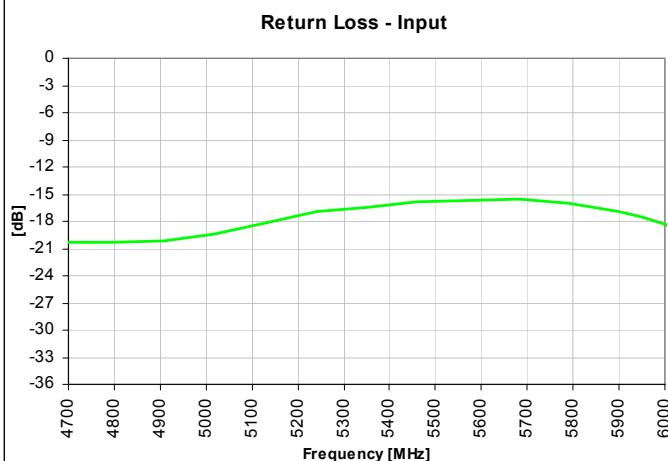
Anaren®

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.

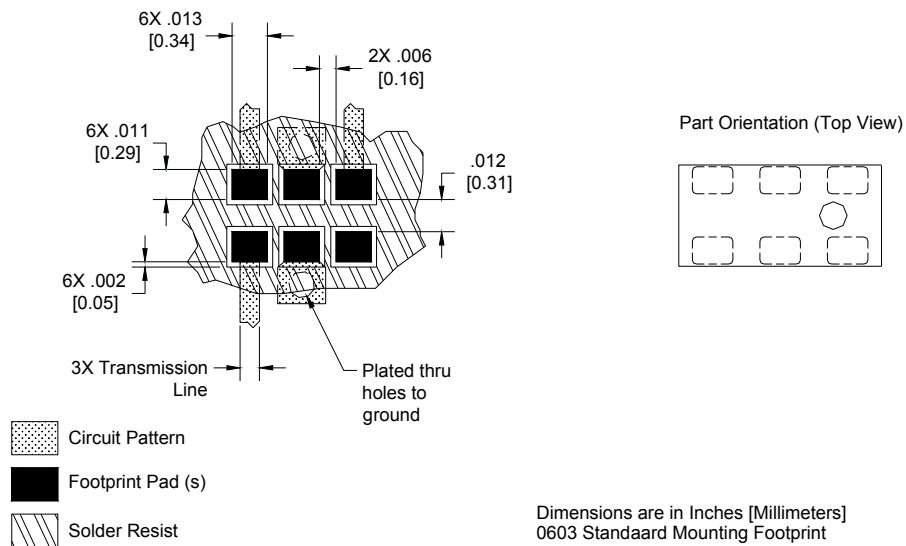All of the Xinger components are constructed from ceramic filled PTFE composites which possess excellent electrical and mechanical stability having X and Y thermal coefficient of expansion (CTE) of 17 ppm/^{o}C.

An example of the PCB footprint used in the testing of these parts is shown below. 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.

6X .013
[0.34]

2X .006
[0.16]

6X .011
[0.29]

.012
[0.31]

6X .002
[0.05]

3X Transmission Line

Plated thru holes to ground

Part Orientation (Top View)

Circuit Pattern

Footprint Pad (s)

Solder Resist

Dimensions are in Inches [Millimeters]
0603 Standaard Mounting Footprint

Packaging and Ordering Information

Parts are available in reel and are packaged per EIA 481-2. Parts are oriented in tape and reel as shown below. Minimum order quantities are 4000 per reel. See Model Numbers below for further ordering information.

.078
[2.00]

.157
[4.00]

.157
[4.00]

ø.059
[ø1.50]

.010
[0.25]

.073
[1.85]

.138
[3.51]

.315
[8.00]

.044
[1.12]

Direction of
Part Feed
(Unloading)

.033
[0.84]

Dimensions are in inches [mm]

ØA

ØC

ØD

B

TABLE 1	
QUANTITY/REEL	REEL DIMENSIONS (inches [mm])
4000	ØA 7.00 [177.8]
	B 0.32 [8.0]
	ØC 2.0 [50.8]
	ØD 0.512 [13.0]
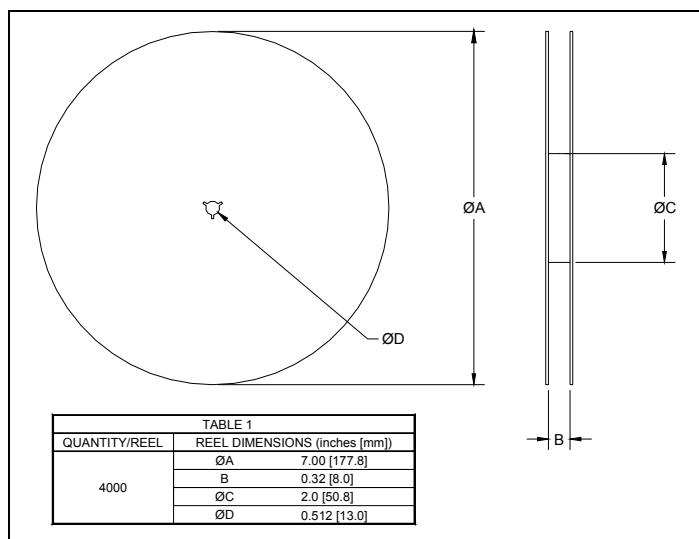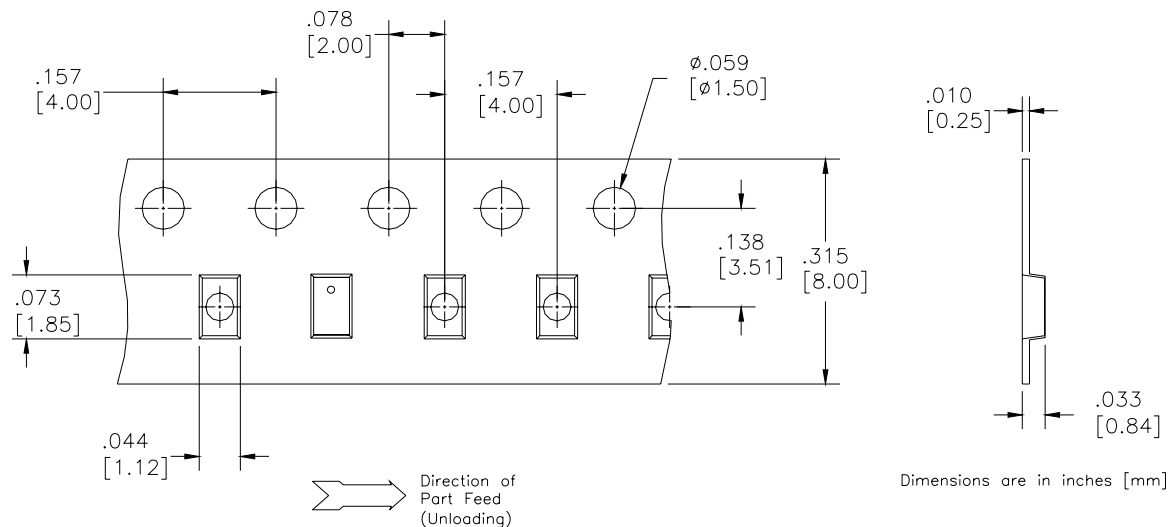
BD 2425 J 50 100 A 00

Function	Frequency	Package Dimensions	Unbalanced Impedance	Balanced Impedance + Coupling	Plating Finish	Codes
B = Balun BD = Balun + DC F = Filter FB = Filter / Balun C = 3dB Coupler DC = Directional J = RF Jumper X = RF cross over	0110 = 100 – 1000 MHz 0810 = 800 – 1000 MHz 0922 = 950 – 2150 MHz 0826 = 800 – 6200 MHz 1222 = 1200 – 2200 MHz 1416 = 1400 – 1600 MHz 1722 = 1700 – 2200 MHz 2326 = 2300 – 2600 MHz 2425 = 2400 – 2500 MHz 3150 = 3100 – 5000 MHz 3436 = 3400 – 3600 MHz 4859 = 4800 – 5900MHz 5153 = 5100 – 5300 MHz 5159 = 5100 – 5900 MHz 5759 = 5700 – 5900 MHz	A = 150 x 150 mils (4mm x 4mm) C = 120 x 120 mils (3mm x 3mm) E = 100 x 80 mils (2.5mm x 2mm) J = 80 x 50 mils (2mm x 1.25mm) L = 60 x 30 mils (1.5mm x 0.75mm) N = 40 x 40 mils (1mm x 1mm)	50 = 50 Ohm 75 = 75 Ohm	25 = 25 Ω Balanced 30 = 30 Ω Balanced 50 = 50 Ω Balanced 75 = 75 Ω Balanced 100 = 100 Ω Balanced 150 = 150 Ω Balanced 200 = 200 Ω Balanced 300 = 300 Ω Balanced 400 = 400 Ω Balanced 03 = 3dB Hybrid 10 = 10dB Directional 20 = 20dB Directional	A = Gold P = Tin-Lead	