## Xinger

## Ultra Low Profile 0404 Balun $50 \Omega$ to $100 \Omega$ Balanced

## Description

The BD2425N50100A00 is a low cost, low profile sub-miniature unbalanced to
 balanced transformer designed for differential inputs and output locations on modern chipsets in an easy to use surface mount package. The BD2425N50100A00 is ideal for high volume manufacturing and delivers higher performance than traditional ceramic baluns. The BD2425N50100A00 has an unbalanced port impedance of $50 \Omega$ and a $100 \Omega$ 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 ( -3 dB ) with 180 degree phase differential. The BD2425N50100A00 is available on tape and reel for pick and place high volume manufacturing.

Detailed Electrical Specifications: Specifications subject to change without notice.

## Features:

- $2400-2500 \mathrm{MHz}$
- 0.57 mm Height Profile
- 50 Ohm to $2 \times 50$ Ohm
- Low Insertion Loss
- 802.11 b+g
- MIMO b+g
- Bluetooth
- Zigbee
- Surface Mountable
- Tape \& Reel
- Non-conductive
- RoHS Compliant

|  | ROOM (25 $\left.{ }^{\circ} \mathbf{C}\right)$ |  |  |  |
| :--- | :---: | :---: | :---: | :---: |
| Parameter | Min. | Typ. | Max | Unit |
| Frequency | 2400 |  | 2500 | MHz |
| Unbalanced Port Impedance |  | 50 |  | $\Omega$ |
| Balanced Port Impedance |  | 100 |  | $\Omega$ |
| Return Loss | 18 | 25 |  | dB |
| Insertion Loss* |  | 0.6 | 0.7 | dB |
| Amplitude Balance |  | 0.2 | 0.6 | dB |
| Phase Balance |  | 1 | 3 | Degrees |
| CMRR |  | 37 |  | dB |
| Power Handling |  |  | 1 | Watts |
| Operating Temperature | -55 |  | +85 | ${ }^{\circ} \mathrm{C}$ |

* Insertion Loss stated at room temperature (Insertion Loss is approximately 0.1 dB higher at $+85^{\circ} \mathrm{C}$ )


## Outline Drawing

Top View (Near-side)


Dimensions are in Inches [Millimeters] Mechanical Outline

Side View
Bottom View (Far-side)

| Pin | Designation |
| :---: | :--- |
| 1 | GND / DC Feed <br> + RF GND |
| 2 | Unbalanced Port |
| 3 | Balanced Port |
| 4 | Balanced Port |

Tolerances are Non-Cumulative


USA/Canada:
(315) 432-8909

Toll Free:
(800) 411-6596

Europe: $\quad+44$ 2392-232392

Typical Performance:2300 MHz. to 2600 MHz.



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Wide Band Performance: 500 MHz. to 8500 MHz.


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## 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 $17 \mathrm{ppm} /{ }^{\circ} \mathrm{C}$.

An example of the PCB footprint used in the testing of these parts is shown below. An example of a DC-biased footprint is also 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.

| With No DC Bias | With DC Bias |
| :---: | :---: |
|  |  |
| Circuit Pattern <br> Footprint Pad (s) | Circuit Pattern <br> Footprint Pad (s) |
| Dimensions are in Inches [Millimeters] Mounting Footprint | $\$$ Solder ResistDimensions are in Inches [Millimeters] <br> Mounting Footprint |

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## 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.




| Function | Frequency | Package Dimensions | Unbalanced Impedance | Balanced Impedance <br> + Coupling | Plating Finish | Codes |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{array}{\|l} \hline \mathrm{B}=\text { Balun } \\ \mathrm{BD}=\text { Balun }+\mathrm{DC} \\ \mathrm{~F}=\text { Filter } \\ \mathrm{FB}=\text { Filter } / \text { Balun } \\ \mathrm{C}=3 \mathrm{~dB} \text { Coupler } \\ \mathrm{DC}=\text { Directional } \\ \mathrm{J}=\mathrm{RF} \text { Jumper } \\ \mathrm{X}=\mathrm{RF} \text { cross over } \end{array}$ | $\begin{aligned} & 0110=100-1000 \mathrm{MHz} \\ & 0810=800-1000 \mathrm{MHz} \\ & 0922=950-2150 \mathrm{MHz} \\ & 0826=800-6200 \mathrm{MHz} \\ & 1222=1200-2200 \mathrm{MHz} \\ & 1416=1400-1600 \mathrm{MHz} \\ & 1722=1700-2200 \mathrm{MHz} \\ & 2326=2300-2600 \mathrm{MHz} \\ & 2425=2400-2500 \mathrm{MHz} \\ & 3150=3100-5000 \mathrm{MHz} \\ & 3436=3400-3600 \mathrm{MHz} \\ & 4859=4800-5900 \mathrm{MHz} \\ & 5153=5100-5300 \mathrm{MHz} \\ & 5159=5100-5900 \mathrm{MHz} \\ & 5759=5700-5900 \mathrm{MHz} \end{aligned}$ | $\begin{aligned} & \mathrm{A}=150 \times 150 \mathrm{mils} \\ & (4 \mathrm{~mm} \times 4 \mathrm{~mm}) \\ & \mathrm{C}=120 \times 120 \mathrm{mils} \\ & \mathrm{( } 3 \mathrm{~mm} \times 3 \mathrm{~mm}) \\ & \mathrm{E}=100 \times 80 \mathrm{mils} \\ & (2.5 \mathrm{~mm} \times 2 \mathrm{~mm}) \\ & \mathrm{J}=80 \times 50 \mathrm{mils} \\ & (2 \mathrm{~mm} \times 1.25 \mathrm{~mm}) \\ & \mathrm{L}=60 \times 30 \mathrm{mils} \\ & (1.5 \mathrm{~mm} \times 0.75 \mathrm{~mm}) \\ & \mathrm{N}=40 \times 40 \mathrm{mils} \\ & (1 \mathrm{~mm} \times 1 \mathrm{~mm}) \end{aligned}$ | $\begin{aligned} & 50=500 \mathrm{hm} \\ & 75=75 \mathrm{Ohm} \end{aligned}$ | $\begin{aligned} & 25=25 \Omega \text { Balanced } \\ & 30=30 \Omega \text { Balanced } \\ & 50=50 \Omega \text { Balanced } \\ & 75=75 \Omega \text { Balanced } \\ & 100=100 \Omega \text { Balanced } \\ & 150=150 \Omega \text { Balanced } \\ & 200=200 \Omega \text { Balanced } \\ & 300=300 \Omega \text { Balanced } \\ & 400=400 \Omega \text { Balanced } \\ & 03=3 \mathrm{~dB} \text { Hybrid } \\ & 10=10 \mathrm{~dB} \text { Directional } \\ & 20=20 \mathrm{~dB} \text { Directional } \end{aligned}$ | $\begin{aligned} & A=\text { Gold } \\ & P=\text { Tin-Lead } \end{aligned}$ |  |

## X-ON Electronics

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