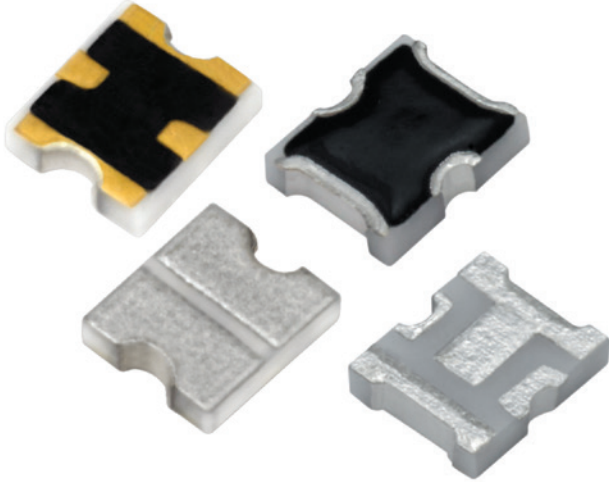


# WTVA Thermopad® Series

ATTENUATOR TEMPERATURE VARIABLE CHIP 200 MILLIWATTS



WTVA Thermopad® Series offer a passive solution for gain compensation over temperature with proven high reliability heritage.

Smiths Interconnect is the world leader in temperature variable chip attenuators offering the widest selection of products from DC through Ka band. Thermopad® products have been a highly reliable passive solution for over temperature gain compensation for more than 20 years. Backed by proven performance and significant heritage, Smiths Interconnect is the leader in high reliability components.

The WTVA platform offers significant heritage and proven performance in a cost effective commercial grade product. High reliability tested options are also available to ensure mission success in demanding high reliability applications. Rated for DC-20 GHz with excellent broadband response, the WTVA series of products has a wide range of applications. It is constructed on an Alumina substrate with rugged thick film terminations and thick film thermistor technology elements. The product also includes a protective coating for added protection from various environmental conditions. Multiple attenuation values, temperature shift options and mounting configuration are available to support both surface mount and wire bond applications. Various finish options are also available including RoHS compliance.

## Features and Benefits

- Small Footprint
- Multiple Mounting Configurations
- Broad Frequency Range
- Low VSWR
- Wide Range of Attenuation Values
- Multiple Temperature Shift Options
- Tight Attenuation Tolerance
- High Reliability Options Available

## Applications

- Amplifier Circuits
- Transmit/Receive Modules
- Up/Down Converters
- Instrumentation
- Satellite Communications
- Radar
- Broadcast

# Technical Characteristics

|                                |                     |                     |
|--------------------------------|---------------------|---------------------|
| Mounting Configuration Options | Surface Mount (SMT) | Wire Bondable (WB2) |
|--------------------------------|---------------------|---------------------|

## Electrical

|  |  |   |                      |
|--|--|---|----------------------|
| Nominal Impedance                            | 50 ohms  |   |                      |
| Frequency Range                              | DC -20 GHz   |   |                      |
| Attenuation Values Available                 | 1-10 in 1 dB Increments                              | 2-7 in 1 dB Increments                                    |                      |
| Attenuation Accuracy                         | <b>ATTENUATION ACCURACY</b>                          |   |                      |
|  | <b>Attenuation Value (dB)</b>                        | <b>DC-15 GHz</b>  | <b>15-20 GHz</b>     |
|  | 0-4  | ± 0.5   | ± 0.5                |
|  | 5-10   | ± 0.5   | ± 0.75               |
| Temperature Coefficient of Attenuation (TCA) | -0.003, -0.005 & -0.007 B/dB/°C                      | -0.003 through -0.007 B/dB/°C in 0.001dB/dB/°C increments |                      |
| Temperature Coefficient Tolerance            | ± 0.001 dB/dB/°C                                     |   |                      |
| Input Power CW                               | 200 Milliwatts Max up to 125°C (See derating curve)  |   |                      |
| Peak Power                                   | 2 Watts based on 10 µs pulse width and 1% Duty Cycle |   |                      |
| VSWR   | 1.40:1 Typical DC-20 GHz<br>1.70:1 Max DC-20 GHz     | 1.25:1 Max DC-10 GHz                                      | 1.70:1 Max 10-20 GHz |

## Environmental

|                            |                   |
|----------------------------|-------------------|
| Operating Temperature      | -55°C to +150°C   |
| Storage Temperature        | -65°C to +150°C   |
| Moisture Sensitivity Level | MSL 1 - Unlimited |

## Mechanical

|                    |   |  |     |
|--------------------|---|--|-----|
| Substrate Material | Alumina (Al <sub>2</sub> O <sub>3</sub> ) 96% |  |     |
| Resistive Film     | Thick Film                                    |  |     |
| Terminal Material  | Thick Film                                    | Thick Film Bondable Gold Input/Output Pads,<br>Solderable Platinum Silver Ground |     |
| Protective Coating | Polymer                                       |  |     |
| Finish Options     | Blank<br>-F                                   | Solder Plated (Sn60/Pb40)<br>Silver Plated (RoHS Compliant)                      | N/A |

## Marking

|              |      |
|--------------|------|
| Unit Marking | None |
|--------------|------|

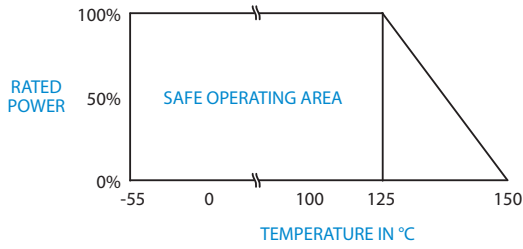
## Quality Assurance

|  |   |
|--|---|
|  | <p>Sample visual and mechanical inspection - 1.0 AQL per mechanical drawing requirements.<br/>                 Periodic electrical inspection performed for commercial grade products.<br/>                 High reliability tested products are available per MIL-PRF-55342.<br/> <b>TCA Calculation Method</b> - Measure Attenuation @ DC every 20°C over the temperature range of -55°C to +125°C<br/>                 Calculate the slope of the curve using linear regression.<br/>                 Calculate TCA using the following formula: <math>TCA = \frac{Slope}{Attenuation @ 25^\circ C}</math></p> |
|--|---|

## Packaging

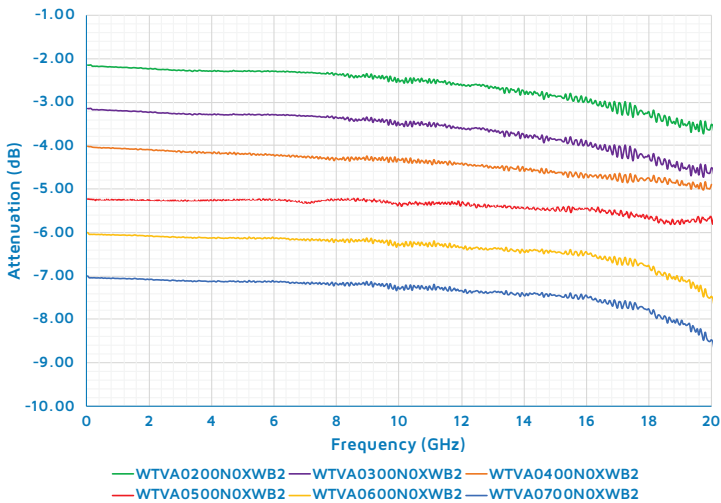
|                    |                              |
|--------------------|------------------------------|
| Standard Packaging | Tape and Reel or Waffle Pack |
|--------------------|------------------------------|

# Power Derating Curve

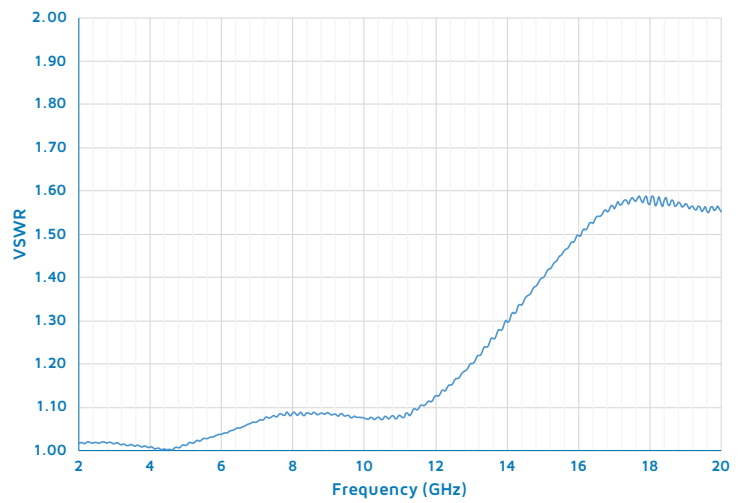


# Typical Data

WTVA0X00NXWB2 Series Attenuation

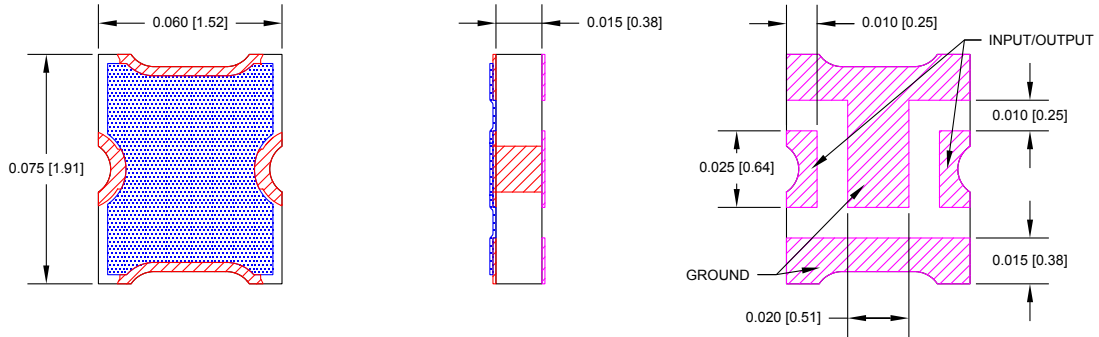


WTVA0X00NXWB2 Series VSWR

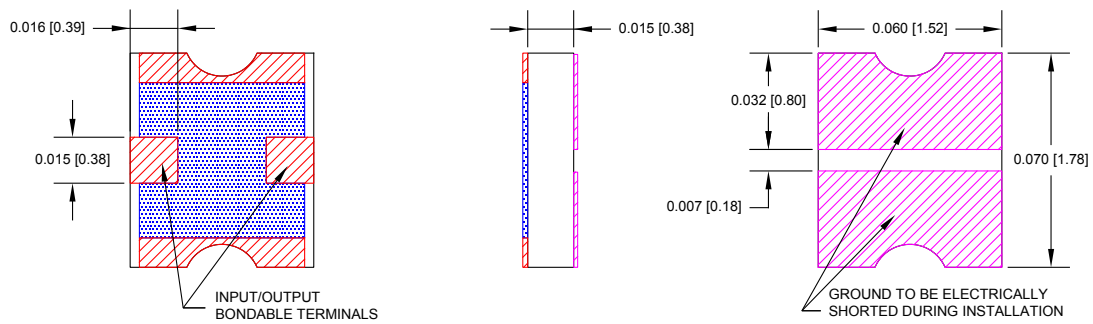


# Mechanical

## WTVAXX - Surface Mount (SMT) Option



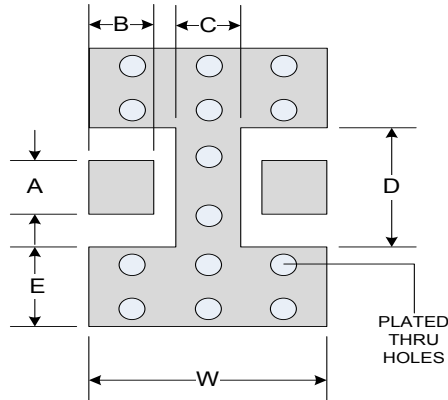
## WTVAXXWB2 - Wire Bondable Gold Option



\*Dimensions apply before solder, allow 0.015" max for all pretinned surfaces  
Unless otherwise specified, tolerance: X.XXX = ±0.005"

# Suggested Mounting Footprint

| Part Number    | Inches |       |       |       |       |       | MM   |      |      |      |      |      |
|----------------|--------|-------|-------|-------|-------|-------|------|------|------|------|------|------|
|                | A      | B     | C     | D     | S     | W     | A    | B    | C    | D    | S    | W    |
| WTVAXX00N00SMT | 0.025  | 0.015 | 0.016 | 0.049 | 0.018 | 0.070 | 0.64 | 0.38 | 0.41 | 1.24 | 0.46 | 1.78 |



## How To Order

Specify Model Number: **WTVA0X00NXXXXXX**

|   | WTVA   |   | 00     | N                      | 0 |   |   |
|---|--|---|--------|------------------------|---|---|---|
|   | 1  | 2 | 3      | 4                      | 5 | 6 | 7 |
| <b>1 Series Name</b>                    | WTVA Series  |   |        |                        |   |   |   |
| <b>2 Attenuation Value</b>              | 00 00 dB through 10 10 dB  |   |        |                        |   |   |   |
| <b>3 EMC Code</b>                       | 00 EMC Code  |   |        |                        |   |   |   |
| <b>4 TCA Slope</b>                      | N Negative   |   |        |                        |   |   |   |
| <b>5 TCA Shift Option</b><br>(dB/dB/°C) | 01 01=0.001 02 02=0.002 03 03=0.003 04 04=0.004 05 05=0.005<br>06 06=0.006 07 07=0.007 08 08=0.008 09 09=0.009 |   |        |                        |   |   |   |
| <b>6 Options</b>                        | SMT Surface Mount  |   |        | WB2 Wire Bondable Gold |   |   |   |
| <b>7 Terminal Finish</b>                | Standard   |   | F RoHS |                        |   |   |   |

# Global Support

## UK Headquarters

- London, UK  
+44 20 7004 1600  
info.uk@smithsinterconnect.com

## US Headquarters

- Stuart, FL  
+1 772 286 9300  
info.us@smithsinterconnect.com

## Americas

- Costa Mesa, CA  
+1 714 371 1100  
info.us@smithsinterconnect.com
- Milpitas, CA  
+1 408 957 9607 x-1125  
info.us@smithsinterconnect.com
- Stuart, FL  
+1 772 286 9300  
info.us@smithsinterconnect.com
- Hudson, MA  
+1 978 568 0451  
info.us@smithsinterconnect.com
- Northampton, MA  
+1 413 582 9620  
info.northampton@smithsinterconnectinc.com
- Tampa, FL  
+ 1 813 901 7200  
info.tampa@smithsinterconnectinc.com
- Kansas City, KS  
+1 913 342 5544  
info.us@smithsinterconnect.com
- Salisbury, MD  
+1 800 780 2169  
info.us@smithsinterconnect.com
- Thousand Oaks, CA  
+1 805 267 0100  
info.thousandoaks@smithsinterconnectinc.com

## Europe

- Deggendorf, Germany  
+49 991 250 120  
info.de@smithsinterconnect.com
- Genova, Italy  
+39 0 10 60361  
info.it@smithsinterconnect.com
- Dundee, UK  
+44 1382 427 200  
info.dundee@smithsinterconnect.com
- Rouen, France  
+33 2 32 96 91 76  
info.fr@smithsinterconnect.com
- Elstree, UK  
+44 20 8236 2400  
info.uk@smithsinterconnect.com

## Asia

- Shanghai, China  
+86 21 3318 4650  
info.asia@smithsinterconnect.com
- Suzhou, China  
+86 512 6273 1188  
info.asia@smithsinterconnect.com
- Singapore  
+65 6846 1655  
info.asia@smithsinterconnect.com

more > [smithsinterconnect.com](http://smithsinterconnect.com) | [in](#) [twitter](#) [G+](#) [YouTube](#)