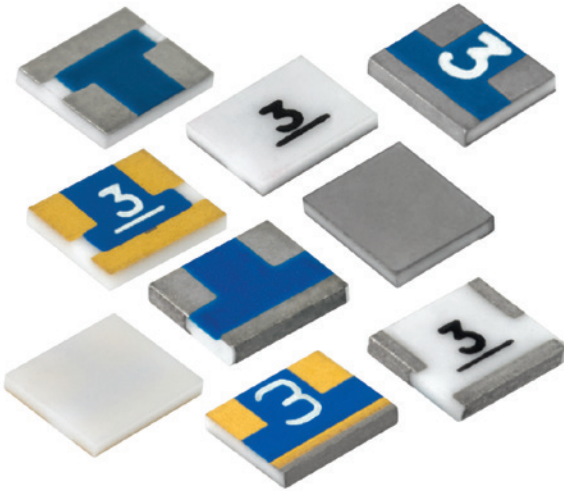


# TT3 Series

ATTENUATOR CHIP 2 WATTS



TT3 Series Chip Attenuators offer proven performance and significant high reliability heritage in a commercial grade product.

Smiths Interconnect is the world leader in chip attenuators offering the widest selection of products from DC through Q band. Chip components are offered on Alumina, Aluminum Nitride, Beryllium Oxide, and CVD Diamond for a wide range of applications. Backed by proven performance and significant heritage, Smiths Interconnect is the leader in high reliability components.

The TT3 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-12.4 GHz with excellent broadband response, the TT3 series of products has a wide range of applications. It is constructed on an Alumina substrate with rugged thick film terminations and passivated Tantalum Nitride resistive elements. The product also includes a protective coating for added protection from various environmental conditions. Multiple 0.5 dB attenuation values 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
- Tight Attenuation Tolerance
- Available in 0.5 dB Increments
- High Reliability Options Available

## Applications

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

# Technical Characteristics

Mounting Configuration Options	Planar	Single Wrap (W1)	Triple Wrap (W3)	Wire Bondable Gold (WB1)
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## Electrical

Nominal Impedance	50 ohms			
Frequency Range	DC-8 GHz (*12.4 GHz for planar option)			
Attenuation Values Available	0-20 in 0.5 dB Increments			
Attenuation Accuracy	<b>ATTENUATION ACCURACY</b>			
	<b>Attenuation Value (dB)</b>	<b>DC-4 GHz</b>	<b>4-8 GHz</b>	<b>8-12.4 GHz*</b>
	0	-0, +0.3	-0, +0.5	-0, +0.5
	1-3.5	± 0.3	± 0.5	± 0.5
	4-6.5	± 0.4	± 0.5	± 0.5
	7-10.5	± 0.5	± 0.5	± 0.75
	11-15.5	± 0.75	-3.0, +0.5	-3.5, +0.5
	16-20	± 1.0	-4.0, +0.5	-6.0, +1.0
Input Power CW	2 Watts Max up to 125°C (See derating curve)			
Peak Power	50 Watts based on 10 µs pulse width @ 1% Duty Cycle			
VSWR	<b>VSWR - applies to Planar, Single Wrap, Triple Wrap</b>			<b>Wire Bondable Gold</b>
	<b>DC-4 GHz</b>	<b>4-8 GHz</b>	<b>8-12.4 GHz*</b>	
	1.25:1 Max	1.35:1 Max	1.50:1 Max	1.30:1 Max

## 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	Thin Film, Tantalum Nitride			
Terminal Material	Thick Film			Thick Film Bondable Gold Input/Output Pads, Solderable Platinum Gold Ground
Protective Coating	Polymer			
Finish Options	<b>Blank</b>	Solder Plated (Sn60/Pb40)	Solder Plated (Sn60/Pb40)	Solder Plated (Sn60/Pb40)
	<b>-F</b>	Silver Plated (RoHS Compliant)	Silver Plated (RoHS Compliant)	Silver Plated (RoHS Compliant)
	<b>-S</b>	Pretinned (Sn60/Pb40)	Pretinned (Sn60/Pb40)	Pretinned (Sn60/Pb40)
	<b>-G</b>	Gold (Thick Film)		

## Marking

Unit Marking	dB Value
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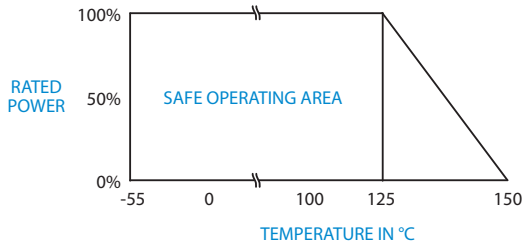
## Quality Assurance

	Sample visual and mechanical inspection - 1.0 AQL per mechanical drawing requirements. Periodic electrical inspection performed for commercial grade products. High reliability tested products are available per MIL-PRF-55342.
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## Packaging

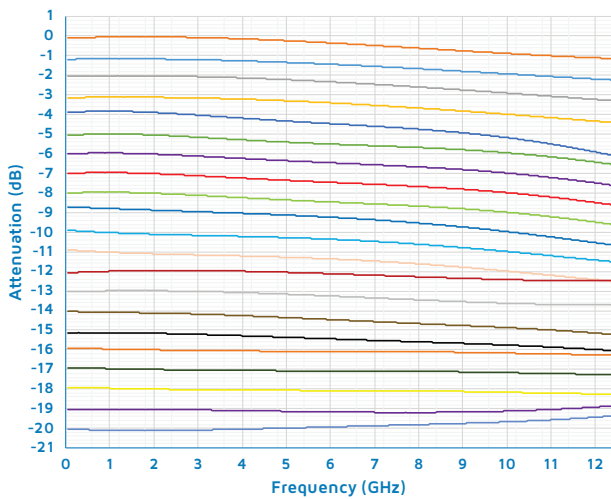
Standard Packaging	Tape and Reel or Waffle Pack
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# Power Derating Curve

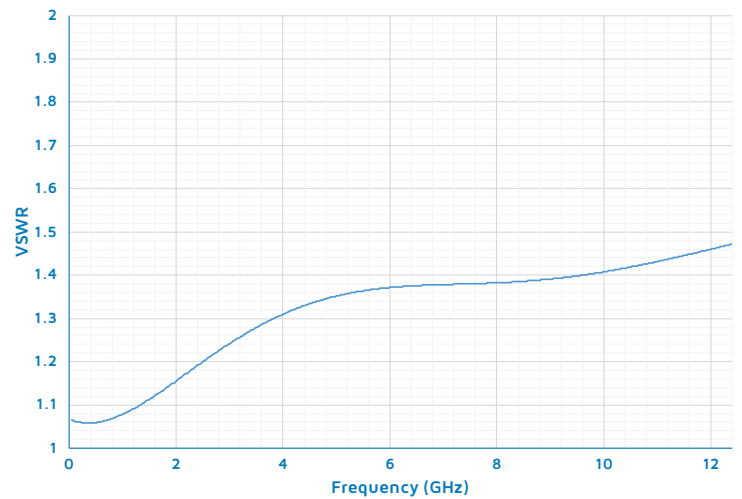


# Typical Data

### TT3XXX Series Attenuation

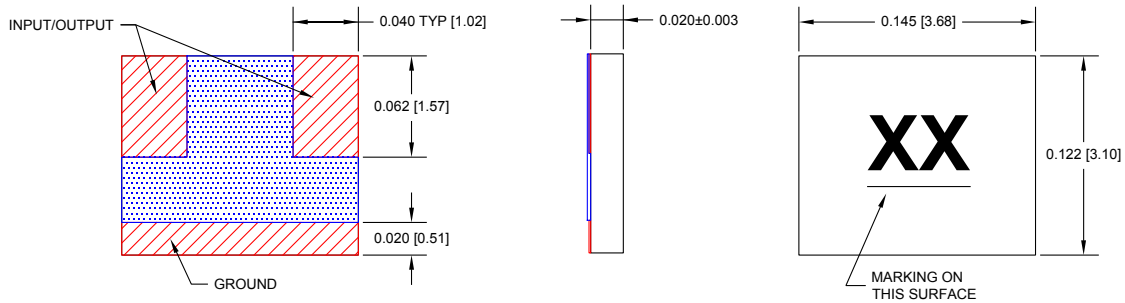


### TT3XXX Series VSWR

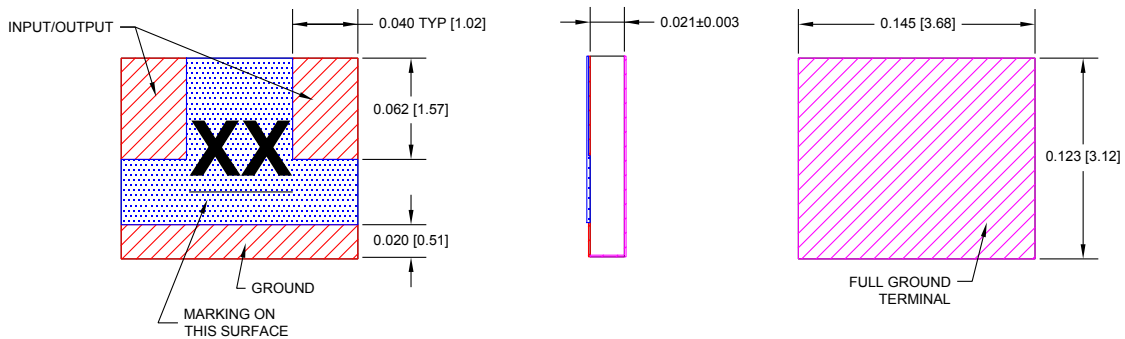


# Mechanical

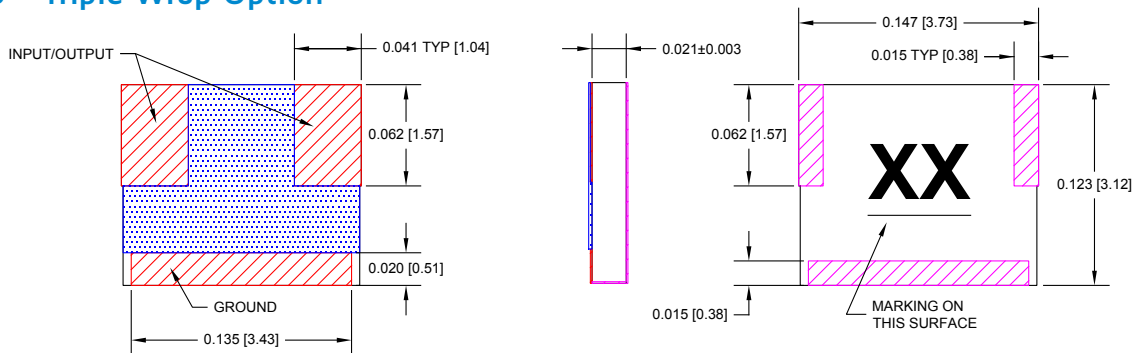
## TT3XXX - Planar Option



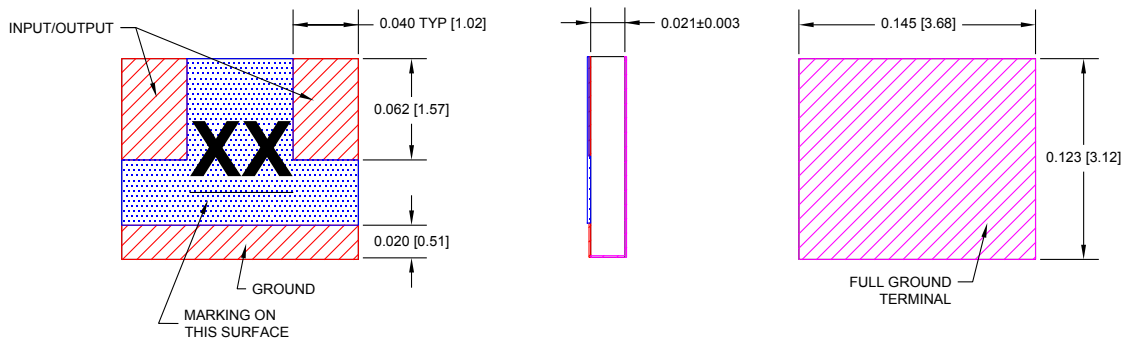
## TT3XXXW1 - Single Wrap Option



## TT3XXXW3 - Triple Wrap Option



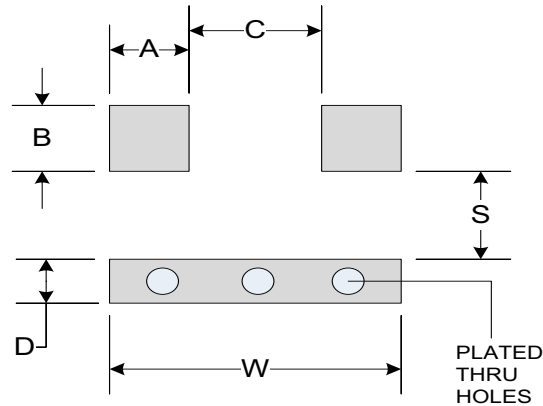
## TT3XXXWB1 - Wire Bondable Gold Option



\*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						Millimeters					
	A	B	C	D	S	W	A	B	C	D	S	W
TT3XXX (Planar)	0.043	0.065	0.065	0.025	0.040	0.150	1.09	1.65	1.65	0.64	1.02	3.81
TT3XXXW3 (Triple Wrap)	0.043	0.064	0.067	0.023	0.041	0.150	1.09	1.63	1.70	0.58	1.04	3.81



## How To Order

Specify Model Number: **TT3XXXXXXXX**

<b>TT3</b>	.	.	.
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>1 Series Name</b>	TT3 Series		
<b>2 Attenuation Value</b>	00.0 00.0 dB through 20.0 20.0 dB Available in 0.5 dB Increments		
<b>3 Options</b>	<input type="checkbox"/> Planar <input checked="" type="checkbox"/> W1 Single Wrap Ground <input checked="" type="checkbox"/> W3 Triple Wrap - All Ports <input checked="" type="checkbox"/> WB1 Wire Bondable		
<b>4 Terminal Finish</b>	<input checked="" type="checkbox"/> Standard <input checked="" type="checkbox"/> S Pretinning <input checked="" type="checkbox"/> F RoHS <input checked="" type="checkbox"/> G Gold		

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