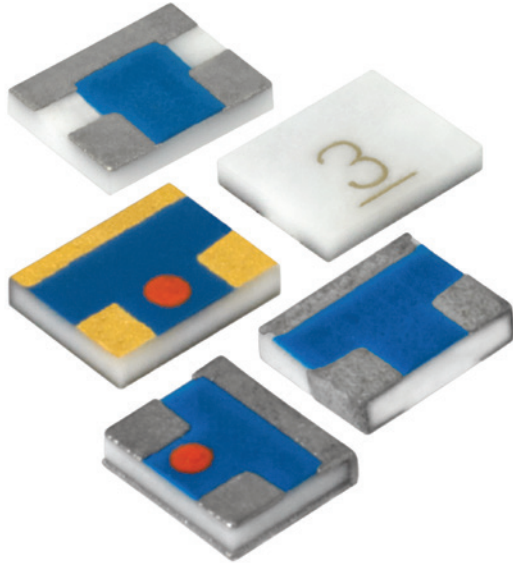


TT5 Series

ATTENUATOR CHIP DC-18 GHZ



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 TT5 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-18 GHz with excellent broadband response, the TT5 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.

TT5 Series Chip Attenuators offer proven performance and significant high reliability heritage in a commercial grade product.

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
- 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-12.4 GHz (*18 GHz for planar option)									
Attenuation Values Available	0-20 in 0.5 dB Increments									
Attenuation Accuracy	ATTENUATION ACCURACY									
	Attenuation Value (dB)	DC-4 GHz		4-8 GHz		8-12.4 GHz		12.4-18 GHz*		
	0	-0, +0.3		-0, +0.5		-0, +0.5		-0, +0.5		
	0.5-3.5	± 0.3		± 0.5		± 0.5		± 0.5		
	4-6.5	± 0.4		± 0.5		± 0.5		± 0.75		
	7-10.5	± 0.5		± 0.5		± 0.75		± 1.0		
	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		-			
Power Rating	POWER RATING									
	dB Values		Watts		dB Values		Watts			
	0-1		5.00		2-3		2.00			
Peak Power	1 Watt based on 10 μS pulse width @ 1% Duty Cycle									
	VSWR									
VSWR			DC-4 GHz		4-8 GHz		8-12.4 GHz		12.4-18 GHz*	
			1.25:1 Max		1.35:1 Max		1.50:1 Max		1.50:1 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 ₂ O ₃) 96%		
Resistive Film	Thin Film, Tantalum Nitride		
Terminal Material	Thick Film		Thick Film Bondable Gold Input/Output Pads, Solderable Platinum Silver Ground
Protective Coating	Polymer		
Finish Options	Blank	Solder Plated (Sn60/Pb40)	
	-F	Silver Plated (RoHS Compliant)	
	-S	Pretinned (Sn60/Pb40)	
	-G	Gold (Thick Film) *Available Planar Only	

Marking

Unit Marking	dB Value	Colored Dot Marking	dB Value	Colored Dot Marking
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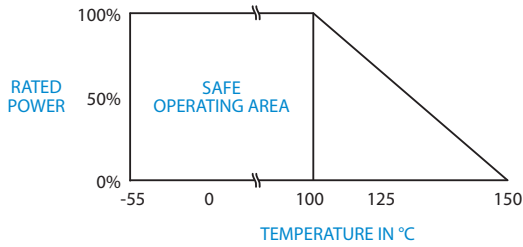
Quality Assurance

	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

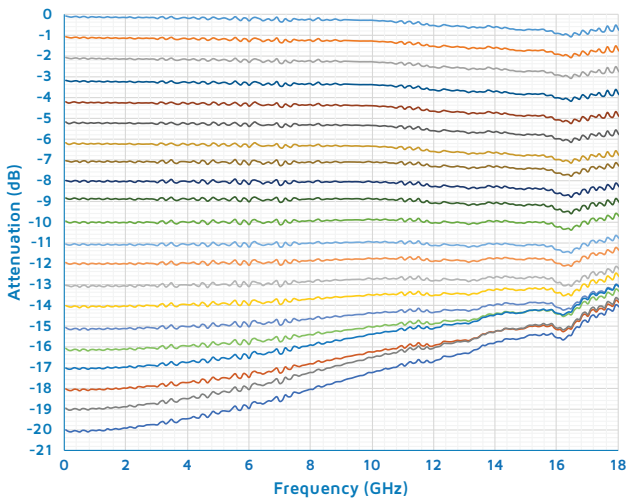
Standard Packaging	Tape and Reel or Waffle Pack
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Power Derating Curve

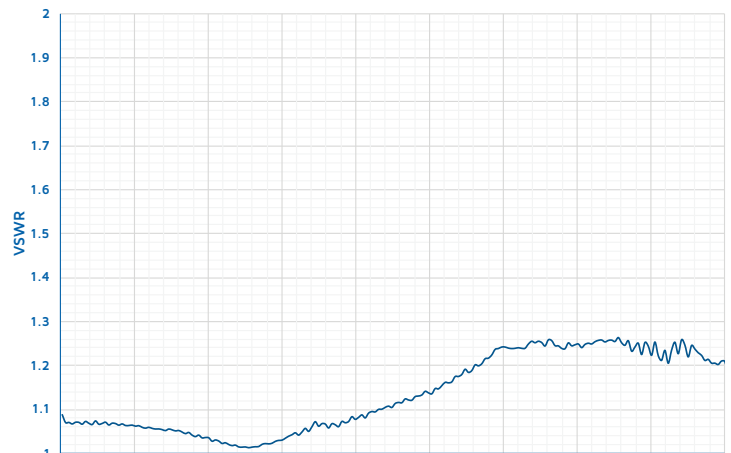


Typical Data

TT5XXX Series Attenuation



TT5XXX Series VSWR



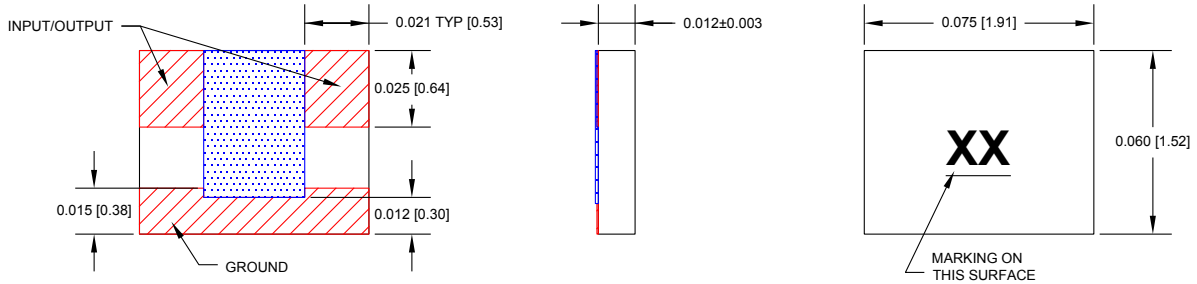
Dot Marking Reference

dB Value	DOT Color		dB Value	DOT Color	
	1st Dot	2nd Dot		1st Dot	2nd Dot
0	Black	-	11	Brown	Brown
1	Brown	-	12	Brown	Red
2	Red	-	13	Brown	Orange
3	Orange	-	14	Brown	Yellow
4	Yellow	-	15	Brown	Green
5	Green	-	16	Brown	Blue
6	Blue	-	17	Brown	Violet
7	Violet	-	18	Brown	Gray
8	Gray	-	19	Brown	White
9	White	-	20	Red	Black
10	Brown	Black			

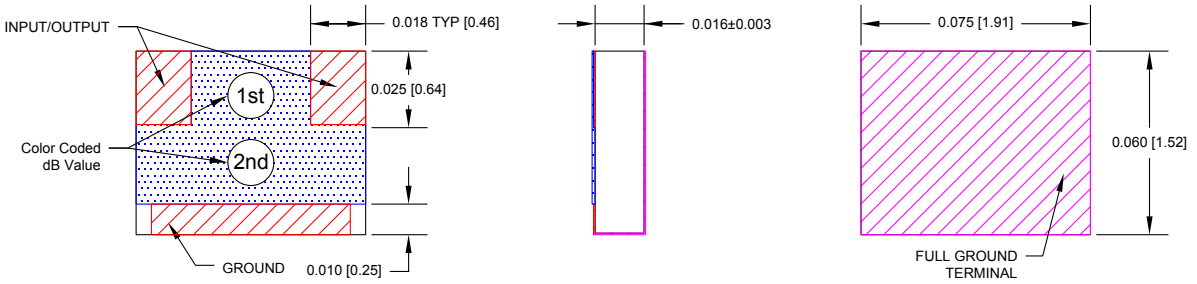
Violet Protective Coating Add Half dB

Mechanical

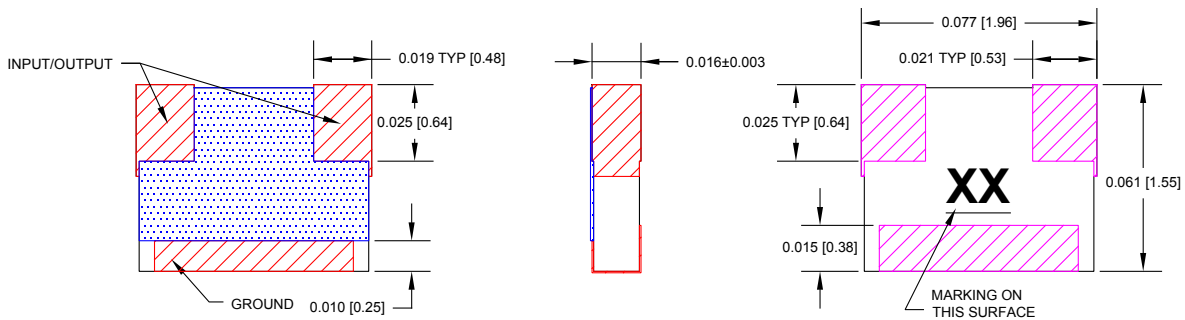
TT5XXX - Planar Option



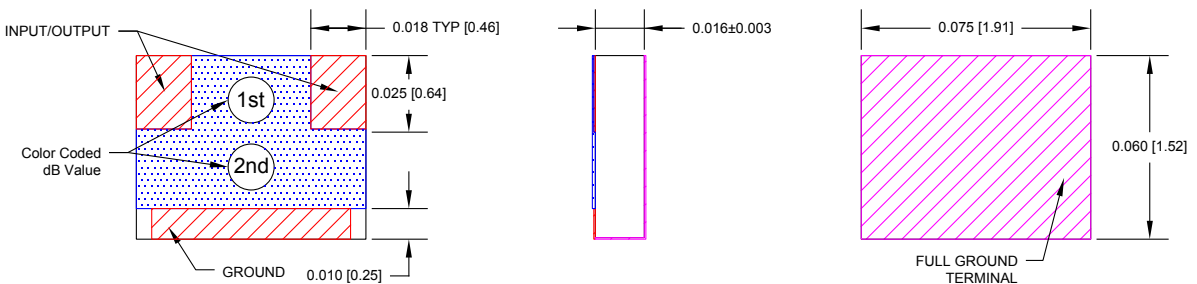
TT5XXXW1 - Single Wrap Option



TT5XXXW3 - Triple Wrap Option



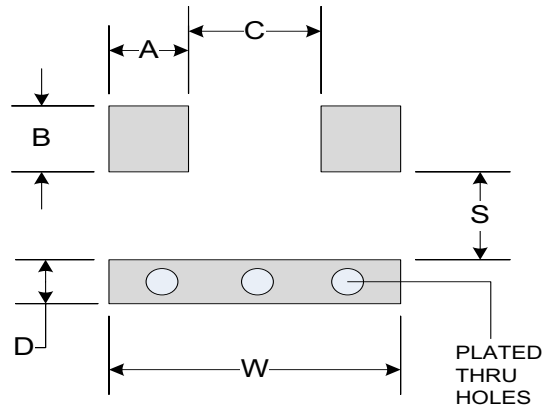
TT5XXXWB1 - Wire Bondable Option



*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
TT5XXX (Planar)	0.025	0.027	0.03	0.015	0.019	0.08	0.64	0.69	0.76	1.38	0.48	2.032
TT5XXXW3 (Triple Wrap)	0.022	0.028	0.041	0.013	0.026	0.075	0.56	0.71	1.04	0.33	0.66	1.91



How To Order

Specify Model Number: **TT5XXXXXXXX**

TT5	.	1	3	4
1 Series Name	TT5 Series			
2 Attenuation Value	00.0 00.0 dB through		20.0 20.0 dB Available in 0.5 dB Increments	
3 Options	Planar		W1 Single Wrap Ground	
	W3 Triple Wrap - All Ports		WB1 Wire Bondable	
4 Terminal Finish	Standard		S Pretinning	
			F RoHS	
			G Gold	

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