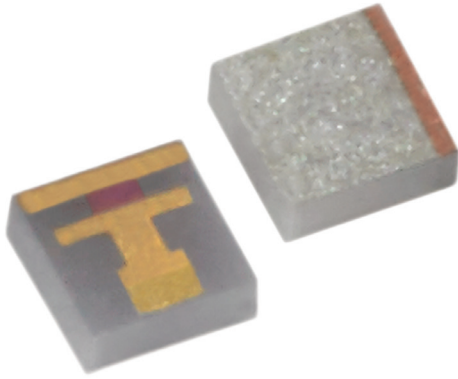


# High Reliability Wire Bondable Chip Terminations



Smiths Interconnect's HR-CTX Series is designed to offer excellent broadband performance up to 64 GHz, with optimized return loss for multiple frequency bands.

The HR-CTX high frequency termination series offers excellent broadband performance up to 64GHz and unrivalled power rating capability up to 5 Watts in a small 0404 package. Its small footprint allows customers to save space and weight on the board, while the total thin film design optimized on Aluminum Nitride offers a high power dissipation.

This lightweight and very compact termination ensures optimized return loss for multiple frequency bands and a wide array of applications. This allows the customer to use a single chip in multiple applications, reducing the total cost of ownership.

The HR-CTX high frequency termination series is qualified for space applications, eliminating the need for customer's in-house qualification. It is supplied with all the necessary test and qualification data to ensure flight compliance.

The HR-CTX series DC-64 GHz chip termination pushes the limits of frequency and power in a small, easy-to-implement, high-reliability product qualified for space applications.

## Features and Benefits

- Power rating up to 5 Watts, increased by up to 5x over alternative solutions
- Frequency rating DC to 64 GHz with optimal broad band performance
- Excellent VSWR (1.25:1 Typical)
- Total thin film construction
- Reduced footprint allowing for space and weight savings on the board: 0.040" x 0.040" x 0.015"
- Space qualified based on MIL-PRF-55342

## Applications

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

# Technical Characteristics

Mounting Configuration Options	HR-CT0404ALN1WB1	HR-CT0404ALN2WB1
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## Electrical

Nominal Impedance	50 ohms $\pm$ 10%	
Frequency Range	DC-42.5 GHz	DC-64 GHz
Input Power CW	5 Watts	1 Watt
Peak Power	10X CW power based on 1 $\mu$ S pulse width @ 1% Duty Cycle	
VSWR	1.25:1 Typical Note: When properly matched in a 50 Ohm system using Smiths Interconnect's Suggested Mounting Guidelines.	

## Environmental

Operating Temperature	-55°C to +150°C
Storage Temperature	-65°C to +150°C
Temperature Coefficient	$\pm$ 200 PPM/°C Max
Moisture Sensitivity Level	MSL 1 - Unlimited

## Mechanical

Substrate Material	Aluminum Nitride
Resistive Film	Thin Film, Tantalum Nitride
Terminal Material	Thin Film, Gold over Nickel
Ground Plane	Thin Film, Solderable Silver over Platinum
Protective Coating	Silicon Nitride

## Marking

Unit Marking	None
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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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# HR-CTX Series

## Test Parameters per Test Plan TP-9311

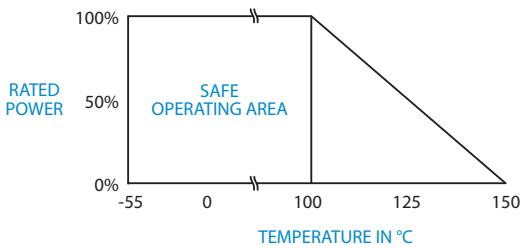
Test	Sample Qty	Test Standard and Method	Test Condition
<b>Group A Inspection</b>		<b>100% &amp; 7 destruct</b>	
Visual / Mechanical	100% & 7 destruct	MIL-PRF-55342	30X to 60X Magnification
Initial Electrical (DC/RF) Inspection	100%	MIL-PRF-55342	DC Resistance / 7 samples RF - Limits per datasheet
Thermal Shock	100%	MIL-PRF-55342, MIL-STD-202, Method 107	10 Cycles -55 to +125°C
Burn In/Bake	100%	MIL-PRF-55342, MIL-STD-202, Method 108	Stabilization Bake @ 150°C for *Exception 100 Hours
Final Electrical (RF) Inspection	100% & 7 destruct	MIL-PRF-55342	DC Resistance / 7 samples RF - Limits per datasheet
Percent Defective Allowable (PDA)	100%	Per Smiths Interconnect TP-9311	10% allowable
<b>Group B Inspection</b>		<b>4</b>	
<b>Subgroup 1</b>		<b>2</b>	
Electrical (RF) Inspection	2	MIL-PRF-55342	RF - Limits per datasheet
Low Temperature Operation	2	MIL-PRF-55342	Maximum Rated Input Power @ -55°C * Exception -55°C
Electrical (RF) Inspection	2	MIL-PRF-55342	RF - Limits per datasheet
High Temperature Exposure	2	MIL-PRF-55342	100 hours @ *Exception 150°C
Short Term Overload	2	MIL-PRF-55343 Method 4.8.6	2.5 times maximum voltage for 5 seconds
Electrical (RF) Inspection	2	MIL-PRF-55342	RF - Limits per datasheet
<b>Subgroup 2</b>		<b>2</b>	
Termination Adhesion	2	MIL-PRF-55342, MIL-STD-202, Method 211	Test Condition A - Pull Test - *Exception 15 Grams
Bondability	2	MIL-PRF-55342	Mounted to metallized substrate, a minimum of 2 bonds per chip using .001" diameter gold wire - Pull rate 50 ± 10 seconds per inch max
Termination Solderability (Resistance to Soldering Heat)	2	MIL-PRF-55342, MIL-STD-202, Method 210	Test Condition B - Solder Dip - Sn/Pb 220°C for 5 seconds
<b>Group C Inspection</b>		<b>3</b>	
Initial Electrical (RF) Inspection	3	MIL-PRF-55342	RF - Limits per datasheet
Load Life Test	3	MIL-PRF-55342, MIL-STD-202, Method 108	Test Condition D - Maximum Rated Input Power @ 100°C for 1000 Hours, Electrical measurements made @ 0, 250, 500, 1000 hours
Final Electrical (RF) Inspection	3	MIL-PRF-55342	RF - Limits per datasheet

# Sample Quantities and Lead Times

## Product Series Test Sample Requirements and Lead Times for TP-9311

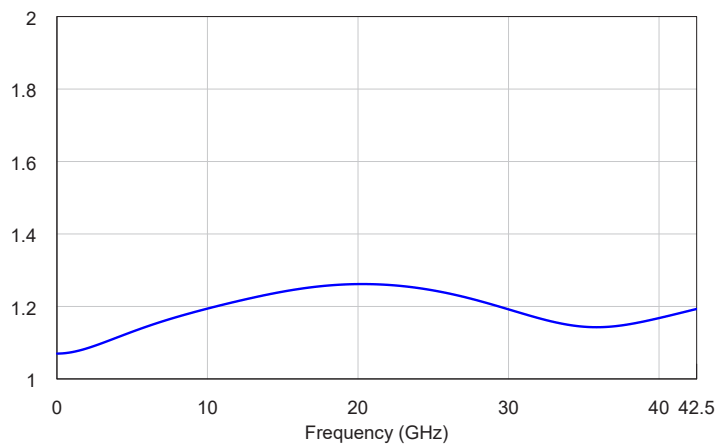
Test Level	HR-CTX SERIES	Lead Time
Group A Total	<b>7 Samples</b>	14 Weeks ARO
Group A RF	Add 7 samples	
Group A & B Total	<b>7 Samples Total</b>	22 Weeks ARO
Group B Sub-group 1	2 samples from Group A	
Group B Sub-group 2	2 samples from Group A	
Group A, B & C Total	<b>7 Samples Total</b>	24 Weeks ARO
Group C Life	3 Samples from Group A for life test	

## Power Derating Curve

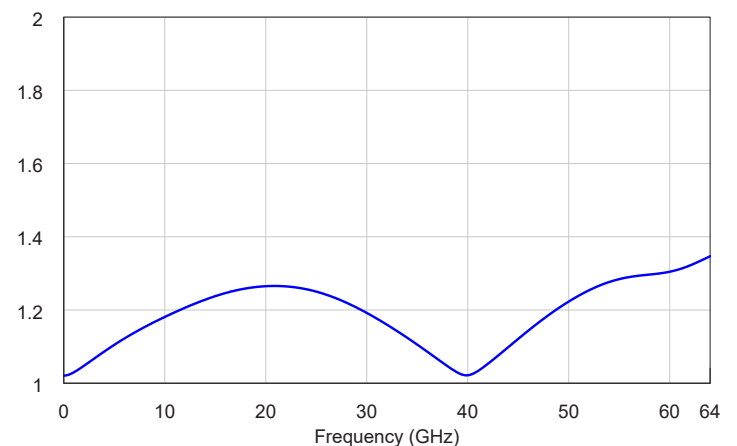


## Typical Data

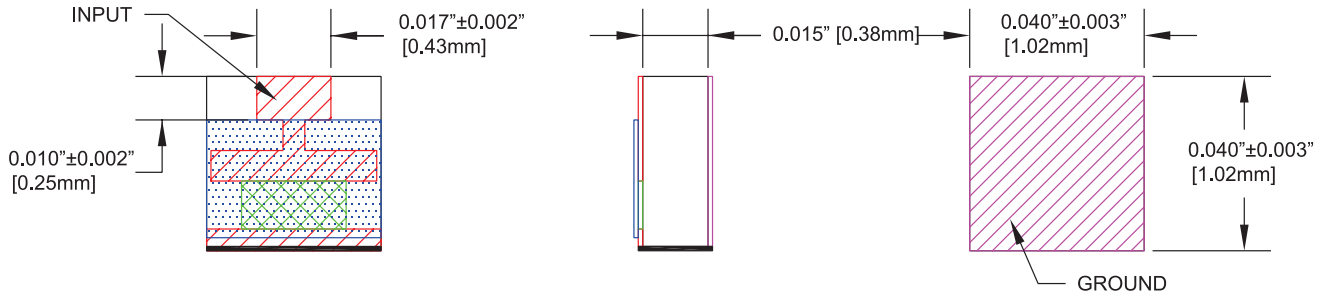
HR-CT0404ALN1WB1 Series VSWR



HR-CT04042WB1 Series VSWR



# Mechanical Specification



Unless otherwise specified, tolerance: X.XXX = ±0.01\" X.XXX = ±0.001\"

## How To Order

Specify Model Number: **HR-CT0404ALNXWB1**

	<b>H R</b>		<b>C T</b>	<b>0 4 0 4</b>	<b>A L N</b>		<b>W B 1</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>1 Component Type</b>	<b>H R</b> High Reliability						
<b>2 Test Code</b>	<b>A</b> Group A testing	<b>B</b> Group A and B testing	<b>C</b> Group A, B and C testing				
<b>3 Device Type</b>	<b>C T</b> Chip Termination						
<b>4 Device Size</b>	<b>0 4 0 4</b> 0.040 Length x 0.040 Width						
<b>5 Substrate Material</b>	<b>A L N</b> Aluminum Nitride						
<b>6 Frequency Code</b>	<b>1</b> DC to 42.5 GHz	<b>2</b> DC to 64.0 GHz					
<b>7 Terminal Finish</b>	<b>W B 1</b> Wire bondable						

# Worldwide Support

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## Connectors

### Americas

#### Sales

connectors.uscsr@smithsinterconnect.com

#### Technical Support

connectors.ustechsupport@smithsinterconnect.com

### Europe

#### Sales

connectors.emeacsr@smithsinterconnect.com

#### Technical Support

connectors.emeatechsupport@smithsinterconnect.com

### Asia

#### Sales

asiacsr@smithsinterconnect.com

#### Technical Support

asiatechsupport@smithsinterconnect.com

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## Fibre Optics & RF Components

### Americas

#### Sales

focom.uscsr@smithsinterconnect.com

#### Technical Support

focom.techsupport@smithsinterconnect.com

### Europe

#### Sales

focom.emeacsr@smithsinterconnect.com

#### Technical Support

focom.techsupport@smithsinterconnect.com

### Asia

#### Sales

focom.asiacsr@smithsinterconnect.com

#### Technical Support

focom.techsupport@smithsinterconnect.com

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## Semiconductor Test

### Americas

#### Sales

semi.uscsr@smithsinterconnect.com

#### Technical Support

semi.techsupport@smithsinterconnect.com

### Europe

#### Sales

semi.emeacsr@smithsinterconnect.com

#### Technical Support

semi.techsupport@smithsinterconnect.com

### Asia

#### Sales

semi.asiacsr@smithsinterconnect.com

#### Technical Support

semi.techsupport@smithsinterconnect.com

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## RF/MW Subsystems

### Americas, Europe & Asia

#### Sales

subsystems.csr@smithsinterconnect.com

#### Technical Support

subsystems.techsupport@smithsinterconnect.com

## Connecting Global Markets

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