

Surface Mount Outrigger Resistors and Terminations

OUTRIGGER RESISTIVES, DC-27 GHz



Smiths Interconnect's Surface Mount Chip Resistors and Terminations offer increased power handling over conventional solutions.

CXH Series uses a patented layout to provide improved power handling over conventional flip chart resistors, without compromising broadband performance. This makes the Series well suited for a wide array of RF applications, particularly in the Space and Defence markets.

The power increase from the patented design (US 8, 994, 490), with added solderable outrigger pads on the sides of the chip, allows to dissipate significantly more power through the extra thermal paths (approximately 50% more than conventional surface mount solutions).

The products are designed for surface mount (SMT) applications and are manufactured using robust thick and thin film process technology.

CXH Series is lead free, RoHS compliant and available in tape and reel packaging for high volume pick and place applications.

Outrigger Resistors and Terminations with improved power handling over conventional resistives without compromising the broadband performance

Features and Benefits

- Up to 27 GHz of operating frequency when properly matched in a coplanar waveguide structure.
- Up to 12.5 watts of power to supply a wide array of applications and satisfy different customers' needs.
- Robust thick and thin film process technology, ideal for harsh environments.
- Standard resistance values ranging from 10-500ohms with a standard tolerance of $\pm 5\%$.
- Power handling performance tested according to MIL-PRF-55432 to ensure series qualification.

Applications

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

Technical Characteristics

Electrical

Resistance Range	10-500 Ohms
Resistance Tolerance	±5% Standard, ±2% Available
Nominal Impedance	50 ohms
VSWR (Termination Configuration)	DC-6 GHz 1.25:1 6-12 GHz 1.60:1

Environmental

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

Mechanical

Substrate Material	Alumina 96% or Aluminum Nitride
Resistive Film	Thick Film
Terminal Material	Thick Film, Silver Plated
Protective Coating	Polymer

Marking

Unit Marking	Ohm Value and Orientation Dot
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Quality Assurance

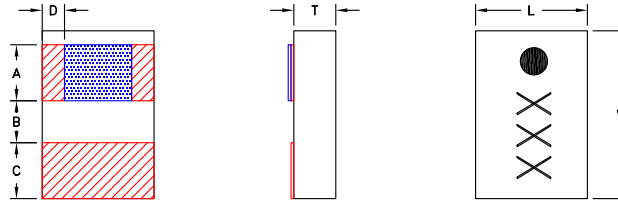
Sample visual and mechanical inspection - 1.0 AQL per mechanical drawing requirements. Periodic electrical inspection performed for commercial grade products. High reliability tested products are available per MIL-PRF-55342.
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Packaging

Standard Packaging	Tape and Reel
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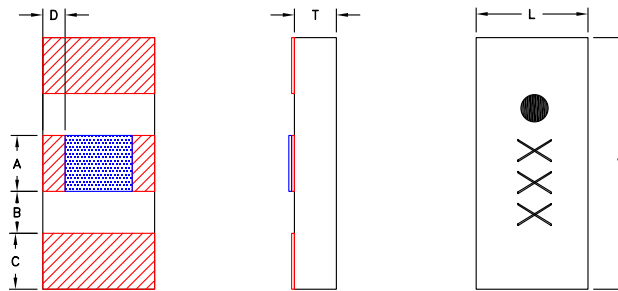
Part Number	Configuration	Frequency Range	Input Power CW (Maximum)	Peak Power (Based on 10 µS pulse width, 1% Duty Cycle)
CRH0406XXXXF	Single Outrigger	DC-27 GHz	500 mW	5 Watts
CRH0607XXXXF	Single Outrigger	DC-27 GHz	1.5 Watts	15 Watts
CRH0808XXXXF	Single Outrigger	DC-25 GHz	1.75 Watts	17.5 Watts
CRHA0808XXXXF	Single Outrigger	DC-25 GHz	6.0 Watts	60 Watts
CRH1211XXXXF	Single Outrigger	DC-20 GHz	2.75 Watts	27.5 Watts
CRHA1211XXXXF	Single Outrigger	DC-20 GHz	9.5 Watts	95 Watts
CRH0409XXXXF	Dual Outrigger	DC-27 GHz	1.0 Watt	10 Watts
CRH0610XXXXF	Dual Outrigger	DC-27 GHz	1.75 Watts	17.5 Watts
CRH0811XXXXF	Dual Outrigger	DC-25 GHz	2.5 Watts	25 Watts
CRHA0811XXXXF	Dual Outrigger	DC-25 GHz	6.0 Watts	60 Watts
CRH1216XXXXF	Dual Outrigger	DC-20 GHz	4 Watts	40 Watts
CRHA1216XXXXF	Dual Outrigger	DC-20 GHz	12.5 Watts	125 Watts
CTH0610F	Outrigger Termination	DC-12 GHz	3 Watts	20 Watts

Available Configurations and Mechanical Drawings



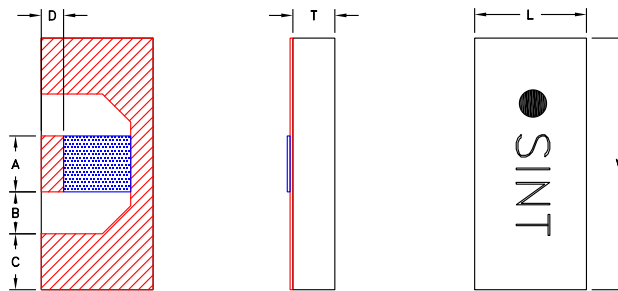
Single Outrigger Configuration

Part Number	Inches							Millimeters						
	L	W	T	A	B	C	D	L	W	T	A	B	C	D
CRH0406XXXXF	0.040	0.060	0.015	0.020	0.015	0.020	0.008	1.016	1.524	0.381	0.508	0.381	0.508	.2032
CRH0607XXXXF	0.060	0.070	0.015	0.030	0.015	0.020	0.012	1.524	1.778	0.381	0.762	0.381	0.508	.3048
CRH0808XXXXF	0.080	0.085	0.015	0.040	0.020	0.020	0.012	2.032	2.159	0.381	1.016	0.508	0.508	.3048
CRHA0808XXXXF	0.080	0.085	0.040	0.040	0.020	0.020	0.012	2.032	2.159	1.016	1.016	0.508	0.508	.3048
CRH1211XXXXF	0.120	0.115	0.020	0.060	0.030	0.020	0.016	3.048	2.921	0.508	1.524	0.762	0.508	.4064
CRHA1211XXXXF	0.120	0.115	0.040	0.060	0.030	0.020	0.016	3.048	2.921	1.016	1.524	0.762	0.508	.4064



Dual Outrigger Configuration

Part Number	Inches							Millimeters						
	L	W	T	A(2X)	B(2X)	C(2X)	D	L	W	T	A	B	C	D
CRH0409XXXXF	0.040	0.090	0.015	0.020	0.015	0.020	0.008	1.016	2.286	0.381	0.508	0.381	0.508	.2032
CRH0610XXXXF	0.060	0.100	0.015	0.030	0.015	0.020	0.012	1.524	2.540	0.381	0.762	0.381	0.508	.3048
CRH0811XXXXF	0.080	0.115	0.015	0.040	0.018	0.020	0.012	2.032	2.921	0.381	1.016	.4572	0.508	.3048
CRHA0811XXXXF	0.080	0.115	0.040	0.040	0.018	0.020	0.012	2.032	2.921	1.016	1.016	.4572	0.508	.3048
CRH1216XXXXF	0.120	0.160	0.020	0.060	0.030	0.020	0.012	3.048	4.064	0.508	1.524	0.762	0.508	.3048
CRHA1216XXXXF	0.120	0.160	0.040	0.060	0.030	0.020	0.012	3.048	4.064	1.016	1.524	0.762	0.508	.3048

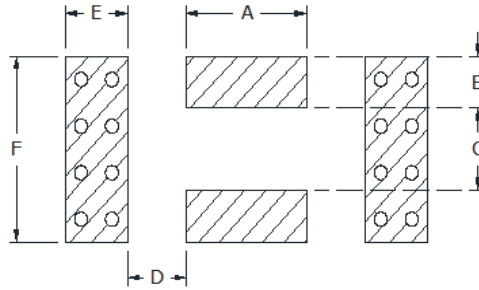


Outrigger Termination

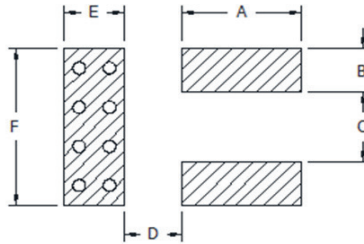
Part Number	Inches							Millimeters						
	L	W	T	A	B	C	D	L	W	T	A	B	C	D
CTH0610F	0.060	0.100	0.015	0.030	0.015	0.020	0.012	1.524	2.540	0.381	0.762	0.381	0.508	.3048

Unless otherwise specified, tolerance: X.XX = ±0.010" X.XXX = ±0.005"

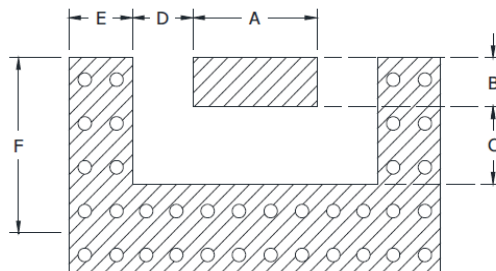
Suggested Mounting Footprint



Part Number	Inches						Millimeters					
	A	B	C	D	E	F	A	B	C	D	E	F
CRH0409XXXXF	0.025	0.010	0.024	0.015	0.025	0.045	0.635	0.25	0.61	0.38	0.64	1.14
CRH0610XXXXF	0.035	0.014	0.036	0.015	0.025	0.065	0.889	0.36	0.91	0.38	0.64	1.65
CRH0811XXXXF	0.045	0.014	0.056	0.018	0.025	0.085	1.143	0.36	1.42	0.44	0.64	2.16
CRHA0811XXXXF	0.045	0.014	0.056	0.018	0.025	0.085	1.143	0.36	1.42	0.44	0.64	2.16
CRH1216XXXXF	0.065	0.017	0.090	0.030	0.025	0.125	1.651	0.43	2.29	0.76	0.64	3.18
CRHA1216XXXXF	0.065	0.017	0.090	0.030	0.025	0.125	1.651	0.43	2.29	0.76	0.64	3.18

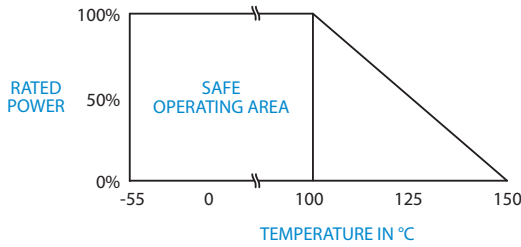


Part Number	Inches						Millimeters					
	A	B	C	D	E	F	A	B	C	D	E	F
CRH0406XXXXF	0.025	0.010	0.024	0.015	0.025	0.045	0.635	0.25	0.61	0.38	0.64	1.14
CRH0607XXXXF	0.035	0.014	0.036	0.015	0.025	0.065	0.889	0.36	0.91	0.38	0.64	1.65
CRH0808XXXXF	0.045	0.014	0.056	0.018	0.025	0.085	1.143	0.36	1.42	0.44	0.64	2.16
CRHA0808XXXXF	0.045	0.014	0.056	0.018	0.025	0.085	1.143	0.36	1.42	0.44	0.64	2.16
CRH1211XXXXF	0.065	0.016	0.088	0.039	0.025	0.125	1.651	0.41	2.24	0.99	0.64	3.18
CRHA1211XXXXF	0.065	0.016	0.088	0.039	0.025	0.125	1.651	0.41	2.24	0.99	0.64	3.18



Part Number	Inches						Millimeters					
	A	B	C	D	E	F	A	B	C	D	E	F
CTH0610F	0.035	0.014	0.039	0.007	0.030	0.065	0.889	0.36	0.99	0.18	0.76	1.65

Power Derating Curve



How To Order

Specify Model Number: **CRH A XXXX XXX, X F**

C R H	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	F
1	2	3	4	5	6
1 Series Name	C R H Chip Resistor Heatsink				
2 Substrate	<input type="checkbox"/> Alumina A ALN				
3 Dimensions	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Length x Width (ie 0409 = 0.040" x 0.90")				
4 Resistance Range	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> (in ohms)				
5 Resistance Tolerance	<input type="checkbox"/> 5% Standard, 2 or 1% available				
6 Terminal Finish	F RoHS Compliant				

Specify Model Number: **CTH XXXX F**

C T H	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	F
1	2	3
1 Series Name	C T H Chip Termination Heatsink	
2 Dimensions	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Length x Width (ie 0409 = 0.040" x 0.90")	
3 Terminal Finish	F RoHS Compliant	

Global Support

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