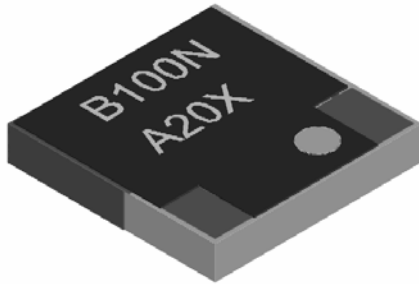


**ROHS  
Compliant**

**Chip Attenuator  
100 Watts, 20 dB**



### Description

The B100NA20X4 is high performance Aluminum Nitride (AlN) chip attenuator intended as a cost competitive alternative to Beryllium Oxide (BeO). The termination is well suited to all cellular frequency bands such as; AMPS, GSM, DCS, PCS, PHS and UMTS. The high power handling makes the part ideal for terminating circulators, and for use in power monitoring. The termination is also RoHS compliant!

### General Specifications

<b>Resistive Element</b>	Thick film
<b>Substrate</b>	AlN Ceramic
<b>Terminal Finish</b>	Matte Tin over Nickel Barrier
<b>Operating Temperature</b>	-55 to +150°C (see de rating chart)

Tolerance is  $\pm 0.010$ ", unless otherwise specified. Designed to meet or exceed applicable portions of MIL-E-5400. All dimensions in inches.

### Features:

- RoHS Compliant
- 100 Watts
- DC – 4.0 GHz
- AlN Ceramic
- Non-Nichrome Resistive Element
- Low VSWR
- 100% Tested
- Small Size

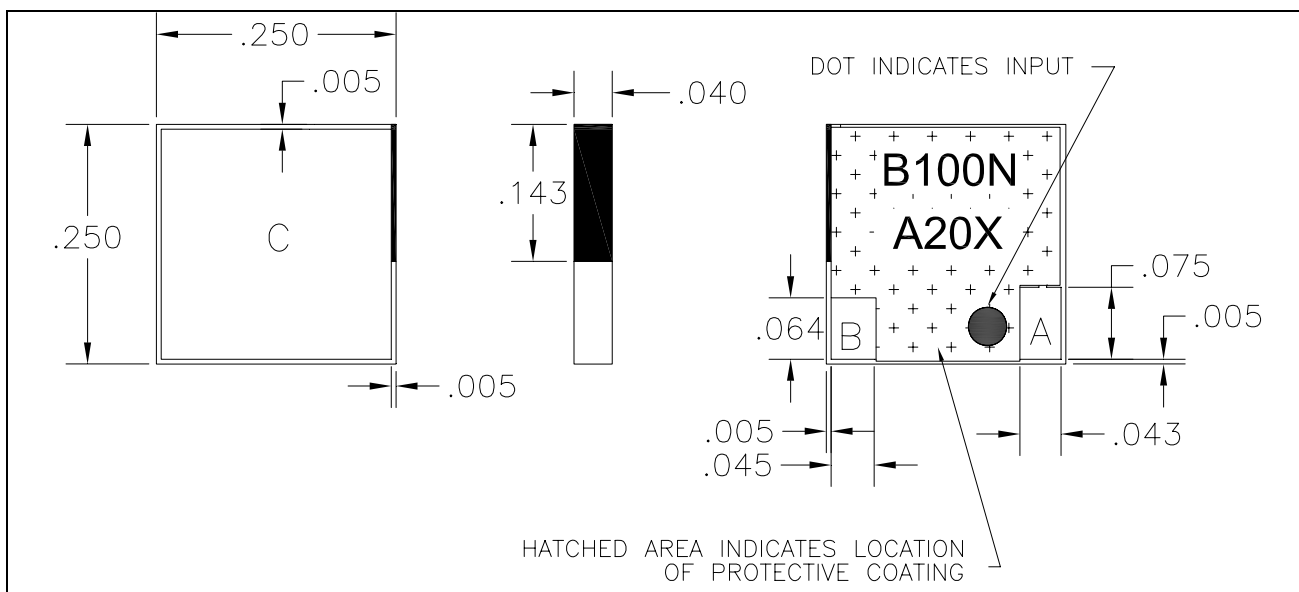
### Electrical Specifications

<b>Attenuation Value:</b>	20 dB, $\pm 1.0$ dB, DC – 4.0 GHz		
<b>Power:</b>	100 Watts		
<b>Frequency Range:</b>	DC – 4.0 GHz		
<b>Return Loss</b>	>20 dB to 2.7 GHz >19 dB to 4.0 GHz		

Value (A-B)	Value (A-C)	Value (B-C)	Tolerance
81.8 $\Omega$	50.9 $\Omega$	50.9 $\Omega$	$\pm 4\%$

Specification based on unit properly installed using suggested mounting instructions and a 50 ohm nominal impedance. **Specifications subject to change.**

### Outline Drawing

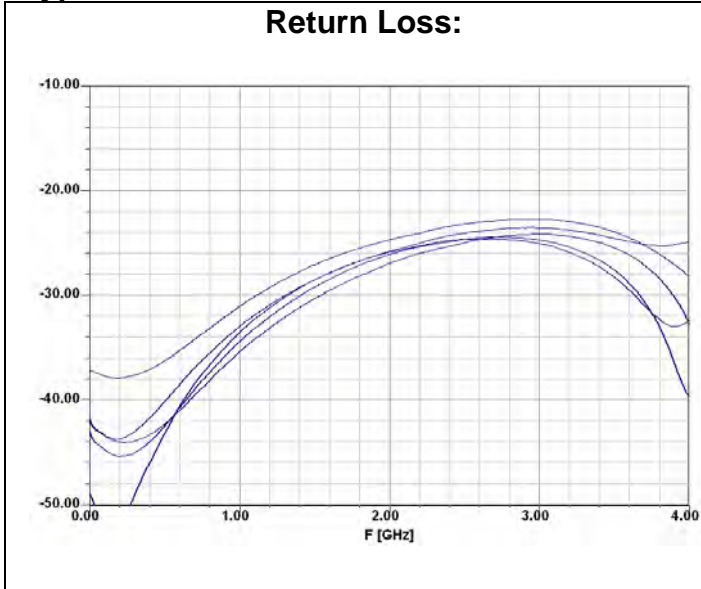


B100NA20X4 (097) Rev. E pg.1 of 2

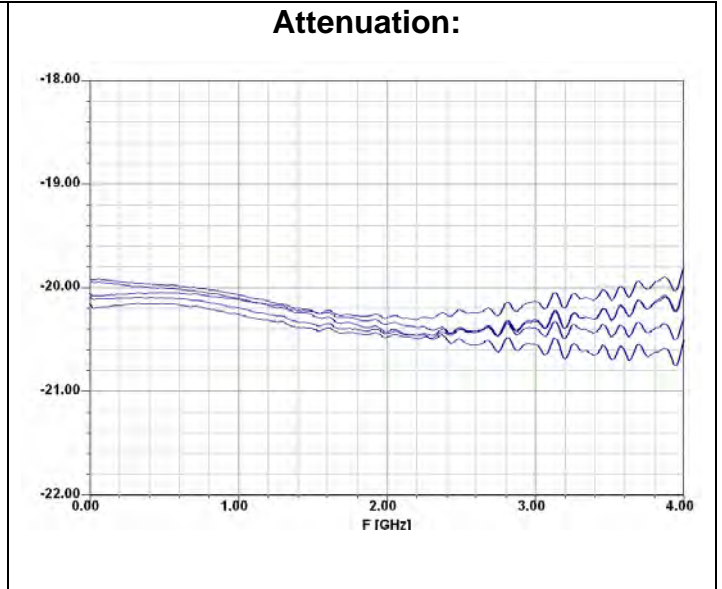


## Typical Performance:

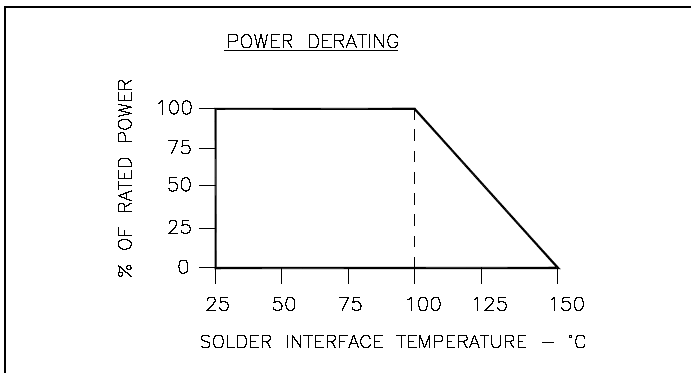
### Return Loss:



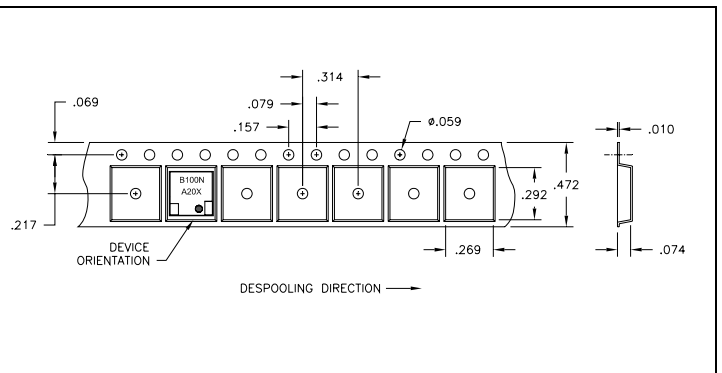
### Attenuation:



## Power De-rating:



## Tape & Reel:



## Mounting Footprint and Procedure:

**SUGGESTED STRESS RELIEF METHODS**  
SCALE: NONE

**NOT RECOMMENDED APPLICATION**  
SCALE: NONE

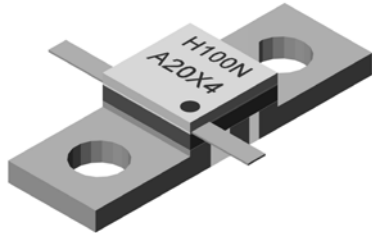
Correct lead orientation

Alternate lead Orientation.  
(May require external matching)

**SUGGESTED MOUNTING PROCEDURES:**

- MAKE SURE THAT THE DEVICES ARE MOUNTED ON FLAT SURFACES (.001" UNDER THE DEVICE) TO OPTIMIZE THE HEAT TRANSFER.
- POSITION DEVICE ON MOUNTING SURFACE AND SOLDER IN PLACE USING SN96 SOLDER.
- SOLDER LEADS IN PLACE USING AN SN96 TYPE SOLDER WITH A CONTROLLED TEMPERATURE IRON (260°C).





#### Description

The H100NA20X4 is high performance Aluminum Nitride (AlN) high power flange mount attenuator intended as a cost competitive alternative to Beryllium Oxide (BeO). The termination is well suited to all cellular frequency bands such as; AMPS, GSM, DCS, PCS, PHS and UMTS. The high power handling makes the part ideal for terminating circulators, and for use in power monitoring. The termination is also RoHS compliant!

#### General Specifications

<b>Resistive Element</b>	Thick film
<b>Substrate</b>	AlN Ceramic
<b>Cover</b>	Alumina Ceramic
<b>Mounting Flange</b>	Nickel Plated Copper
<b>Operating Temperature</b>	-55 to +150°C (see de rating chart)

Tolerance is  $\pm 0.010$ ", unless otherwise specified. Designed to meet or exceed applicable portions of MIL-E-5400. **All dimensions in inches.**

#### Electrical Specifications

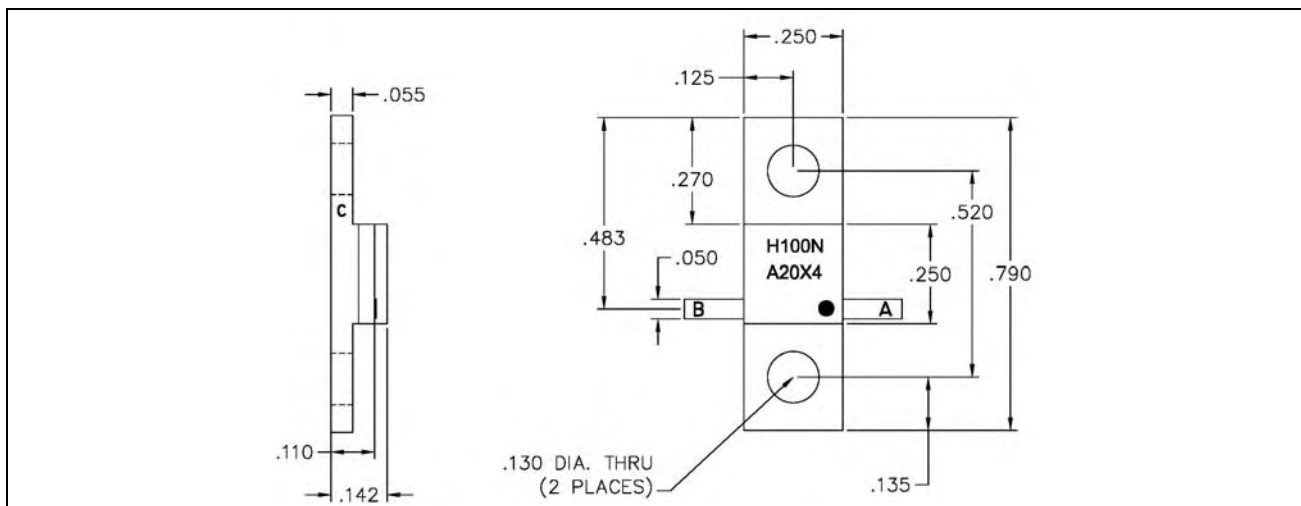
<b>Attenuation Value:</b>	20 dB, $\pm 1.0$ dB, DC – 4.0GHz
<b>Power:</b>	100 Watts
<b>Frequency Range:</b>	DC – 4.0 GHz
<b>Return Loss</b>	> 24 dB to 2.7 GHz > 20 dB to 4.0 GHz

Specification based on unit properly installed using suggested mounting instructions and a 50 ohm nominal impedance. **Specifications subject to change.**

#### Features:

- RoHS Compliant
- 100 Watts
- DC - 2.7 GHz
- AlN Ceramic
- Non-Nichrome Resistive Element
- Low VSWR
- 100% Tested
- Small Size

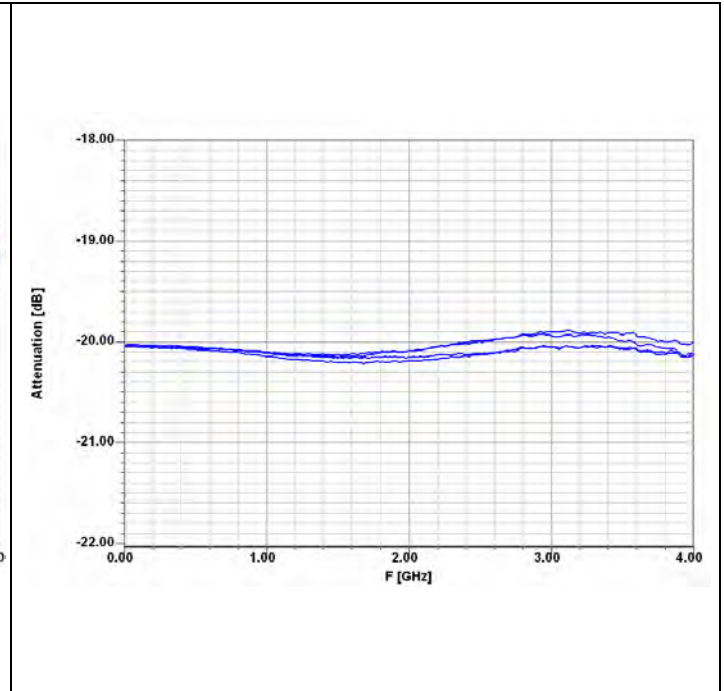
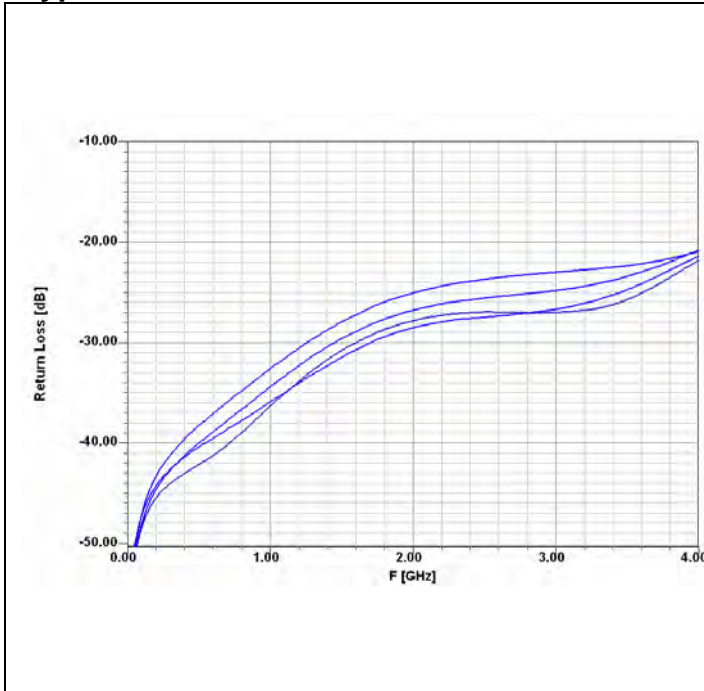
#### Outline Drawing



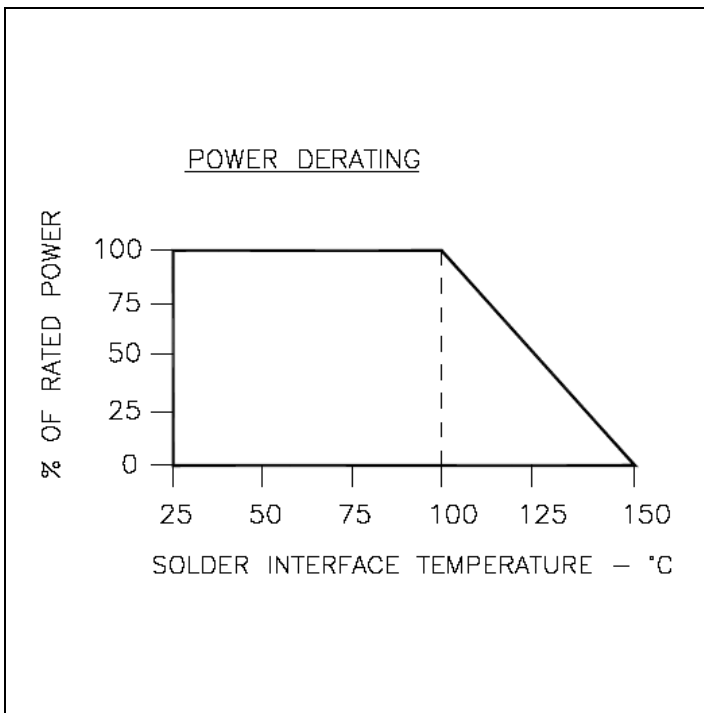
H100NA20X4 (097) rev.B pg. 1 of 2



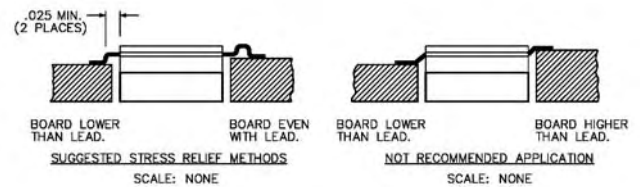
### Typical Performance:



### Power De-rating:

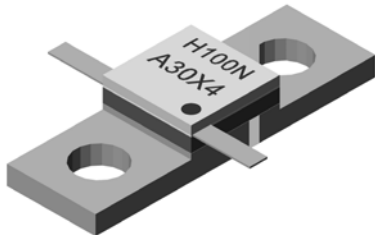


### Mounting Footprint and Procedure:



SUGGESTED MOUNTING PROCEDURES:

1. MAKE SURE THAT THE DEVICES ARE MOUNTED ON FLAT SURFACES (.001" UNDER THE DEVICE) TO OPTIMIZE THE HEAT TRANSFER.
2. DRILL & TAP THE HEATSINK FOR THE APPROPRIATE THREAD SIZE TO BE USED.
3. COAT HEATSINK WITH A MINIMUM AMOUNT OF HIGH QUALITY SILICONE GREASE (.001" MAX. THICKNESS).
4. POSITION DEVICE ON MOUNTING SURFACE & SECURE USING SOCKET HEAD SCREWS, FLAT & SPLIT WASHER. TORQUE SCREWS TO THE APPROPRIATE VALUE. MAKE SURE THAT THE DEVICE IS FLAT AGAINST THE HEATSINK. (CARE SHOULD BE TAKEN TO AVOID UPWARD PRESSURE OF THE LEADS TOWARDS THE LID).
5. SOLDER LEADS IN PLACE USING LEAD FREE TYPE SOLDER WITH A CONTROLLED TEMPERATURE IRON



#### Description

The H100NA30X4 is high performance Aluminum Nitride (AlN) high power flange mount attenuator intended as a cost competitive alternative to Beryllium Oxide (BeO). The termination is well suited to all cellular frequency bands such as; AMPS, GSM, DCS, PCS, PHS and UMTS. The high power handling makes the part ideal for terminating circulators, and for use in power monitoring. The termination is also RoHS compliant!

#### General Specifications

<b>Resistive Element</b>	Thick film
<b>Substrate</b>	AlN Ceramic
<b>Cover</b>	Alumina Ceramic
<b>Mounting Flange</b>	Nickel Plated Copper
<b>Operating Temperature</b>	-55 to +150°C (see de rating chart)

Tolerance is  $\pm 0.010$ ", unless otherwise specified. Designed to meet or exceed applicable portions of MIL-E-5400. **All dimensions in inches.**

#### Electrical Specifications

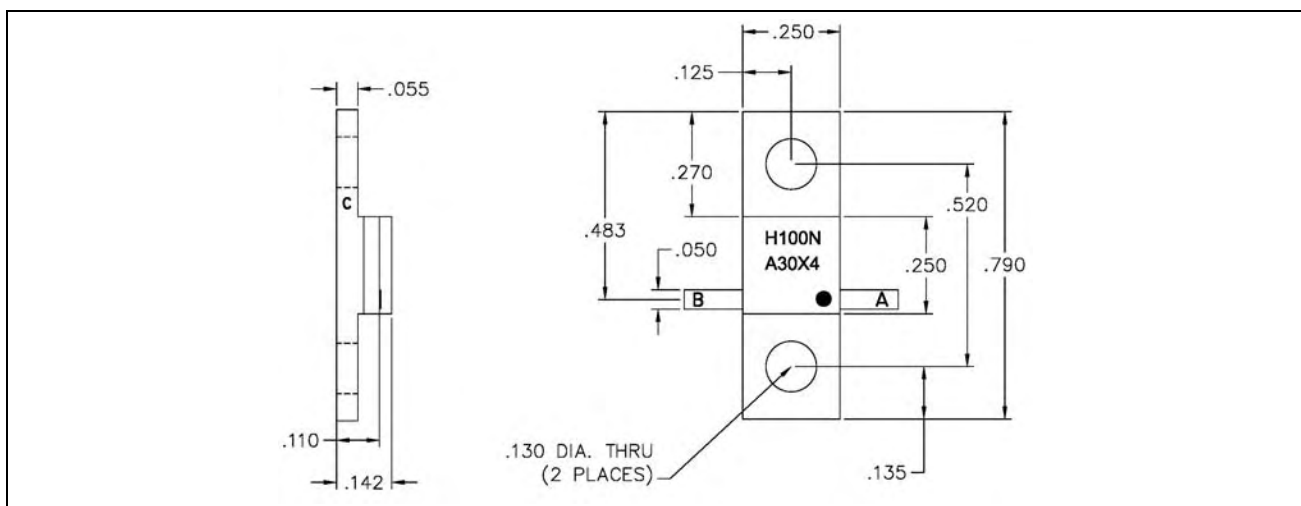
<b>Attenuation Value:</b>	30 dB, +5/-2 dB, DC - 2.2 GHz 30 dB, +7/-2 dB, 2.2 GHz - 2.7 GHz
<b>Power:</b>	100 Watts
<b>Frequency Range:</b>	DC - 2.7 GHz
<b>Return Loss</b>	>24 dB to 2.2 GHz >20 dB to 4.0 GHz

Specification based on unit properly installed using suggested mounting instructions and a 50 ohm nominal impedance. **Specifications subject to change.**

#### Features:

- RoHS Compliant
- 100 Watts
- DC - 4.0 GHz
- AlN Ceramic
- Non-Nichrome Resistive Element
- Low VSWR
- 100% Tested
- Small Size

#### Outline Drawing

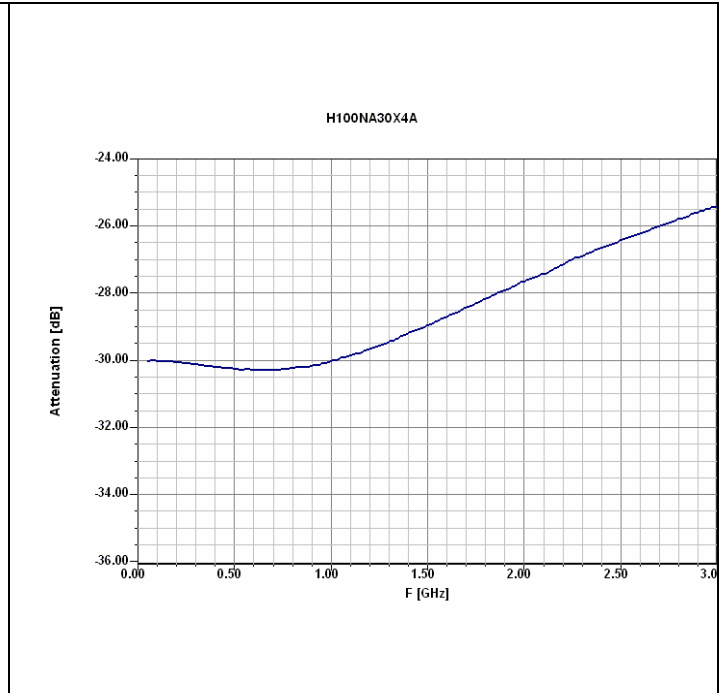
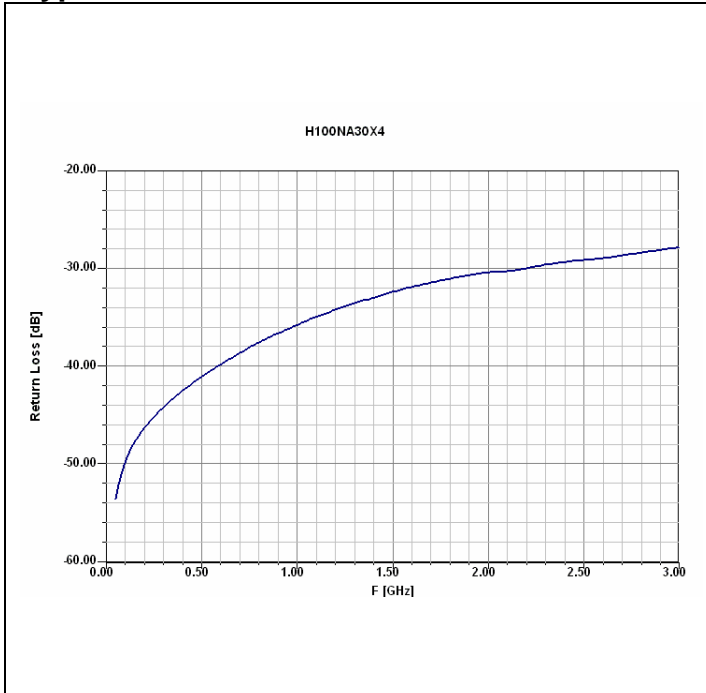


H100NA30X4 (097) rev.B pg. 1 of 2

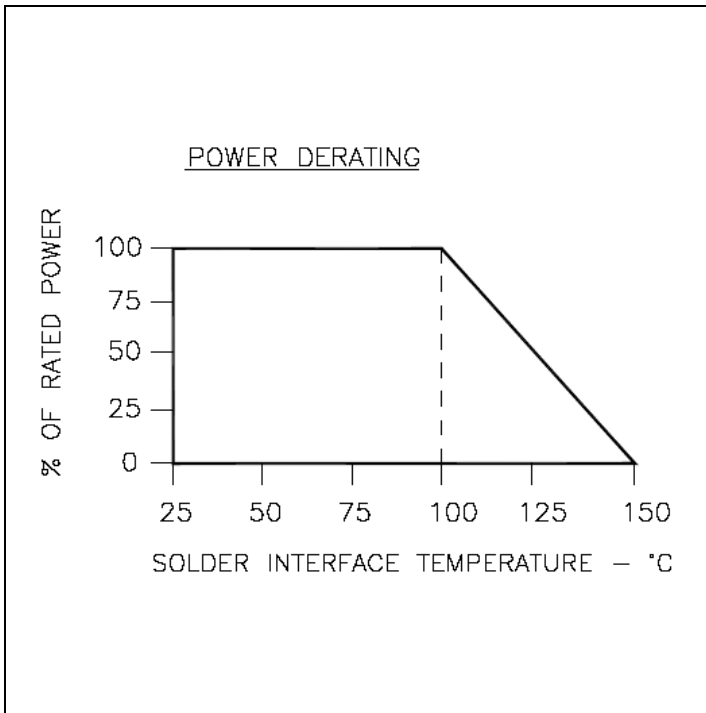




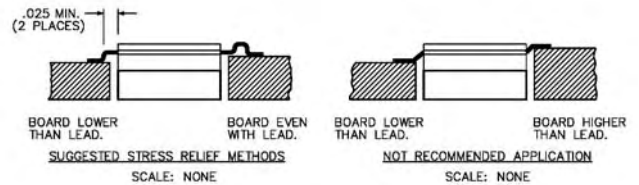
### Typical Performance:



### Power De-rating:



### Mounting Footprint and Procedure:

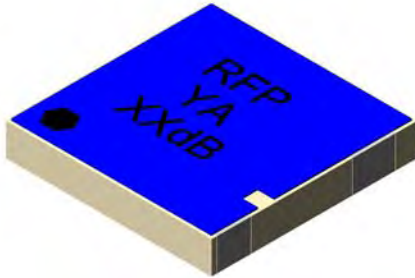


#### SUGGESTED MOUNTING PROCEDURES:

1. MAKE SURE THAT THE DEVICES ARE MOUNTED ON FLAT SURFACES (.001" UNDER THE DEVICE) TO OPTIMIZE THE HEAT TRANSFER.
2. DRILL & TAP THE HEATSINK FOR THE APPROPRIATE THREAD SIZE TO BE USED.
3. COAT HEATSINK WITH A MINIMUM AMOUNT OF HIGH QUALITY SILICONE GREASE (.001" MAX. THICKNESS).
4. POSITION DEVICE ON MOUNTING SURFACE & SECURE USING SOCKET HEAD SCREWS, FLAT & SPLIT WASHER. TORQUE SCREWS TO THE APPROPRIATE VALUE. MAKE SURE THAT THE DEVICE IS FLAT AGAINST THE HEATSINK. (CARE SHOULD BE TAKEN TO AVOID UPWARD PRESSURE OF THE LEADS TOWARDS THE LID).
5. SOLDER LEADS IN PLACE USING LEAD FREE TYPE SOLDER WITH A CONTROLLED TEMPERATURE IRON

**RoHS  
Compliant**

**Surface Mount  
Attenuator  
30 Watts**



### Description

The D30AXXY4 is high performance Alumina (Al<sub>2</sub>O<sub>3</sub>) surface mount attenuator intended as a lower cost alternative to Aluminum Nitride (AlN) and Beryllium Oxide (BeO). The attenuator is well suited to all cellular frequency bands such as; AMPS, GSM, DCS, PCS, PHS and UMTS. The high power handling makes the part ideal for inter-stage matching, directional couplers, and for use in isolators.

### General Specifications

<b>Resistive Element</b>	Thick film
<b>Substrate</b>	Alumina Ceramic
<b>Terminal Finish</b>	Matte Tin over Sulfamate Nickel
<b>Operating Temperature</b>	-55 to +150°C (see chart)

Tolerance is ±0.010", unless otherwise specified. Designed to meet or exceed applicable portions of MIL-E-5400. All dimensions in inches.

### Electrical Specifications

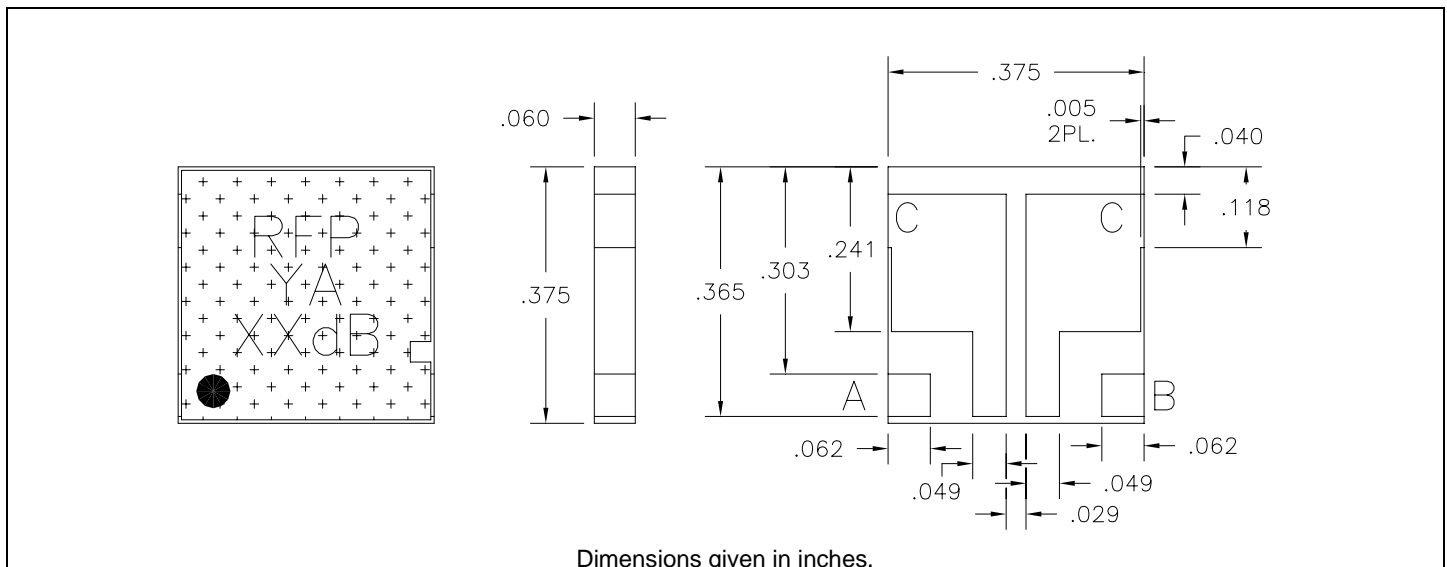
<b>Attenuation Value:</b>	20 & 30dB
<b>Power:</b>	30 Watts
<b>Frequency Range:</b>	DC – 2.0 GHz
<b>V.S.W.R.:</b>	1.20:1

Specification based on unit properly installed using suggested mounting instructions and a 50 ohm nominal impedance. **Specifications subject to change.**

### Features:

- 30 Watts
- Lowest Cost
- True Surface Mount
- Alumina Ceramic
- Non-Nichrome Resistive Element
- Low VSWR
- 100% Tested

### Outline Drawing



D30AXXY1 (097) Rev B

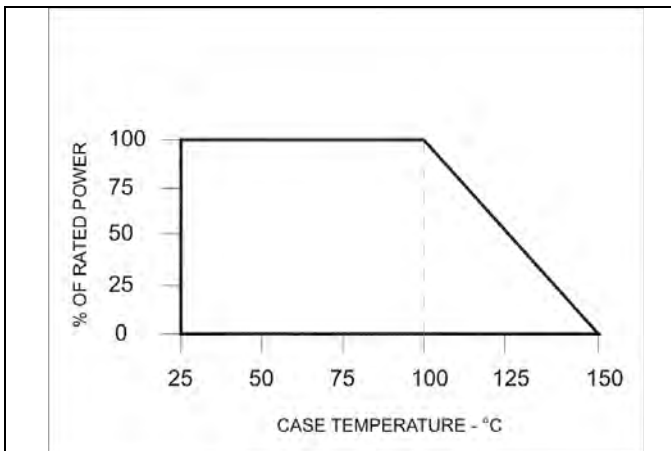




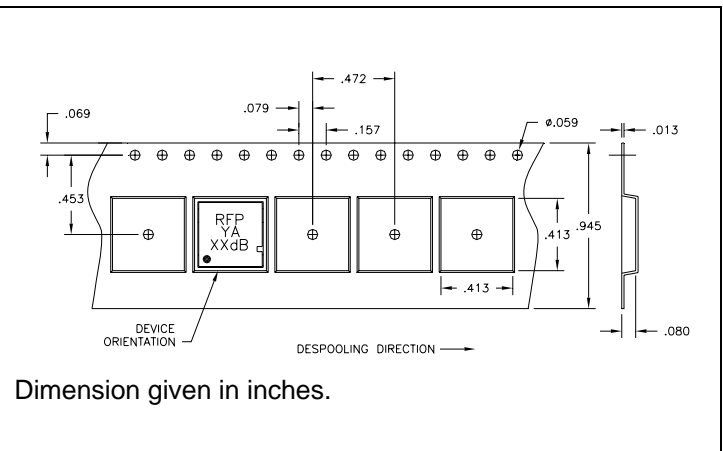
## Specifications:

RESISTOR VALUE CHART					
ATTENUATION	VALUE (A-B)	VALUE (A-C)	VALUE (B-C)	TOLERANCE	R.F.P. STOCKING P/N
20dB±.75dB	258 Ω	61 Ω	61 Ω	±4%	D30A20Y4
30dB±.75dB	197 Ω	53 Ω	53 Ω	±4%	D30A30Y4

## Power De-rating:



## Tape & Reel:



## Mounting Footprint and Procedure:

Dimension given in inches.  
For best thermal performance the PCB should be placed with thermal joint compound to the heat sink.

**MOUNTING PROCEDURE**

1. Drill thermal vias through PCB and fill with solder, such as SN63 type.
2. Solder part in place using SN63 type solder with controlled temperature iron (700°F).
3. To ensure good thermal connectivity to heat sink, drill and tap heatsink and mount PCB board to heat sink using screws.

D30AXXY4 (097) Rev B

USA/Canada: (315) 432-8909  
 Toll Free: (800) 544-2414  
 Europe: +44 2392-232392

Available on Tape and Reel For Pick and Place Manufacturing.



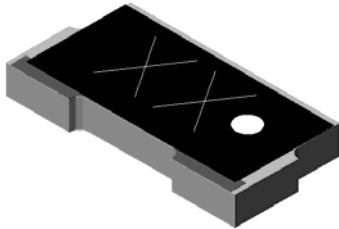
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### Surface Mount Attenuator 7 Watts

#### Description



The D10AAXXZ4 is high performance Alumina (Al<sub>2</sub>O<sub>3</sub>) surface mount attenuator intended as a lower cost alternative to Aluminum Nitride (AlN) and Beryllium Oxide (BeO). The attenuator is well suited to all cellular frequency bands such as; AMPS, GSM, DCS, PCS, PHS and UMTS. The high power handling makes the part ideal for inter-stage matching, directional couplers, and for use in isolators.

#### General Specifications

<b>Resistive Element</b>	Thick film
<b>Substrate</b>	Alumina Ceramic
<b>Terminal Finish</b>	Matte Tin over Sulfamate Nickel
<b>Operating Temperature</b>	-55 to +125°C (see chart)

Tolerance is  $\pm 0.010"$ , unless otherwise specified. Designed to meet or exceed applicable portions of MIL-E-5400. All dimensions in inches.

#### Features:

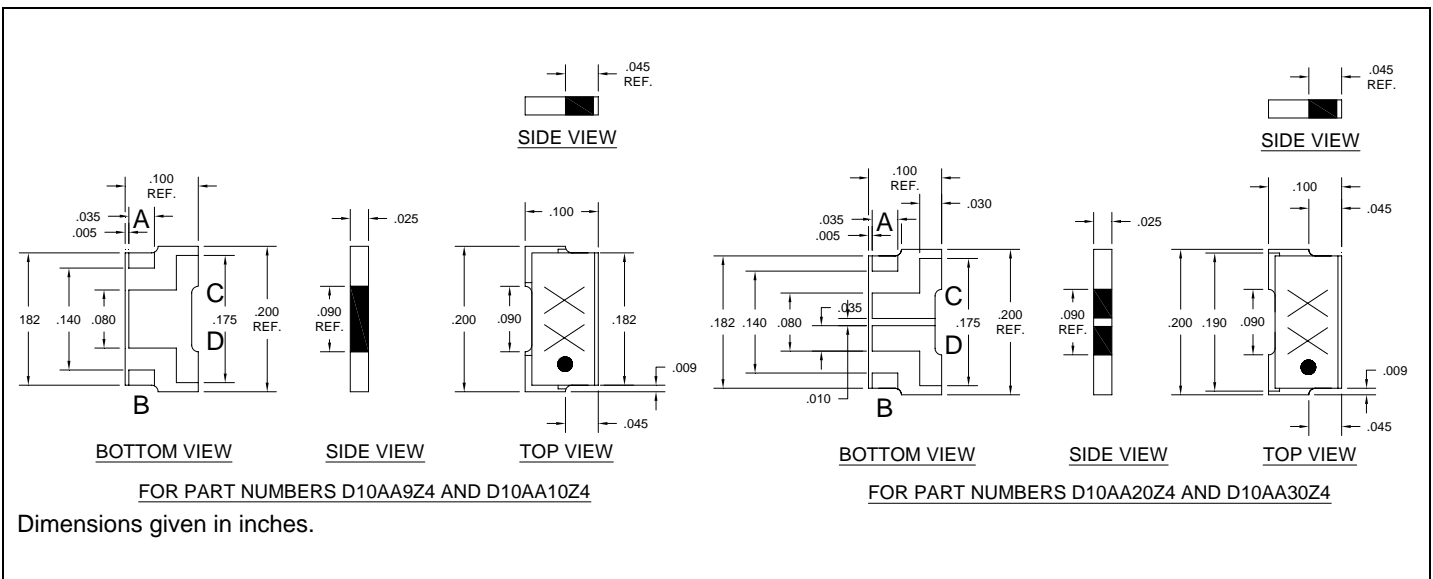
- RoHS compliant
- Lowest Cost
- True Surface Mount
- Alumina Ceramic
- Non-Nichrome Resistive Element
- Low VSWR
- 100% Tested

#### Electrical Specifications

<b>Attenuation Value:</b>	1 – 6, 9, 10, 20 & 30dB
<b>Power:</b>	7 Watts
<b>Frequency Range:</b>	DC – 3.0 GHz
<b>V.S.W.R.:</b>	<1.25:1

Specification based on unit properly installed using suggested mounting instructions and a 50 ohm nominal impedance. **Specifications subject to change.**

#### Outline Drawing



Rev. 6/24/05

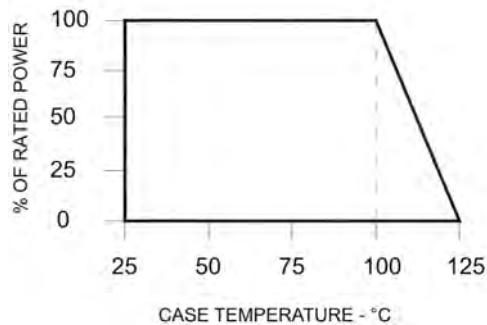




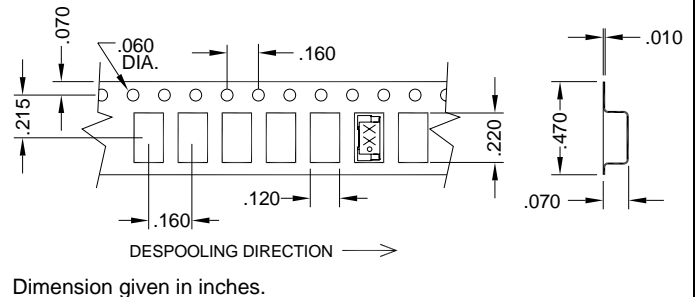
## Specifications:

PART NUMBER	ATTENUATION(dB)	TOL. ( $\pm$ dB)	POWER (WATTS)	VSWR	FREQ (GHZ)
D10AA1Z4	1	0.30	7	1.25:1	3.0
D10AA2Z4	2	0.30	7	1.25:1	3.0
D10AA3Z4	3	0.30	7	1.25:1	3.0
D10AA4Z4	4	0.30	7	1.25:1	3.0
D10AA5Z4	5	0.30	7	1.25:1	3.0
D10AA6Z4	6	0.30	7	1.25:1	3.0
D10AA9Z4	9	0.25	7	1.25:1	3.0
D10AA10Z4	10	0.25	7	1.25:1	3.0
D10AA20Z4	20	0.50	7	1.25:1	3.0
D10AA30Z4	30	1.50	7	1.25:1	3.0

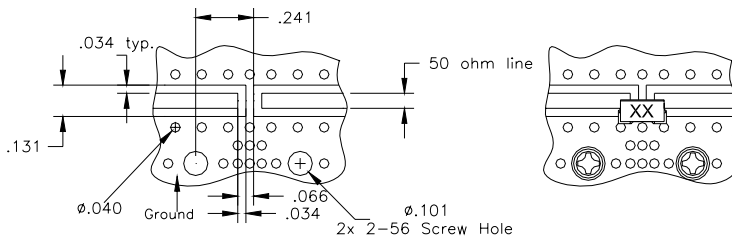
## Power De-rating:



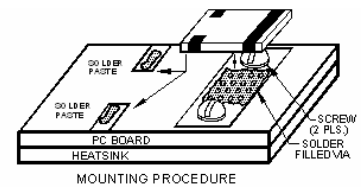
## Tape & Reel:



## Mounting Footprint and Procedure:



Dimension given in inches.  
For best thermal performance the PCB should be placed with thermal joint compound to the heat sink.



1. DRILL THERMAL VIAS THROUGH PCB AND FILL WITH SOLDER, SUCH AS Sn96.
2. SOLDER PART IN PLACE USING Sn96 TYPE SOLDER WITH A CONTROLLED TEMPERATURE IRON (260°C)
3. TO ENSURE GOOD THERMAL CONNECTIVITY TO HEAT SINK, DRILL AND TAP HEATSINK AND MOUNT PCB BOARD TO HEATSINK USING SCREWS.

USA/Canada: (315) 432-8909  
Toll Free: (800) 544-2414  
Europe: +44 2392-232392

Available on Tape and Reel For Pick and Place Manufacturing.



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### Material Declaration

D10AAXXZ4

Matte Tin Finish

Material	Weight		(PPM)	CAS Number
	(lbs)	(g)		
Alumina	5.889E-05	2.671E-02	7.496E+05	1344-28-1
Diethylene Glycol Ethyl Ether Acetate	2.212E-07	1.004E-04	2.818E+03	1121-52
Dipropylene Glycol Monomethyl Ether	2.976E-7	1.350E-04	3.789E+03	3459-09-48
Epoxy resin and polymers	1.323E-06	6.000E-04	1.684E+4	1002
Matte Tin	1.381E-06	6.262E-04	1.758E+04	7440-31-5
Nickel	8.416E-07	3.817E-04	1.071E+04	7440-02-0
Polymer	6.507E-07	2.952E-04	8.285E+03	
Propylene Glycol Monomethyl Ether Acetate	1.775E-07	8.050E-05	2.259E+03	1086-56
Ruthenium	1.618E-06	7.341E-04	2.060E+04	12036-10-1
Silicon Oxide	7.490E-07	3.397E-04	9.534E+03	10097-28-6
Silver Alloy	1.062E-05	4.816E-03	1.352E+05	7440-22-4
<hr/>				
<b>Total Weight Calculated</b>	7.855E-05	3.563E-02		
<hr/>				
<b>Total Weight Measured</b>	7.932E-05	3.598E-02		

The values presented above are estimates at the current revision, and it is derived from vendor supplied data. While Anaren strives for accurate reporting, due to product and process variations at both Anaren and our suppliers, the quoted values are our best estimates only, and not measured absolute values. Product specifications are subject to change without notice.

