

AmpliTech's Cryogenic Amplifiers



Made in USA



- **pHEMT designs to 40 GHz**
- **Lowest noise figures**
- **Smallest size/low mass special alloy for efficient cooling to 4K**
- **Custom package options**
- **Lowest power dissipation**
- **3-Year warranty**

AmpliTech's Cryogenic Amplifiers

Description

Due to the increased demand for even lower Noise Figures, AmpliTech introduces its new line of cryogenic amplifiers. These amplifiers are designed to operate at temperatures as low as the Liquid Helium temperature of 4K. The lower temperature operation further decreases the already low noise figures that AmpliTech offers.

Efficiency is the key for cryogenic amplifiers so we offer very low Power DC options (as low as +0.5V DC@8mA), very low power consumption, and a very light-weight, compact housing. These amplifiers are very useful for applications that require the absolute minimum amounts of noise injection-such as Quantum Computing, Medical Applications, RF Imaging, Research & Development, Space Communications, Accelerators, Radiometry and Telephony. Noise figures as low as 2K are possible at L band frequencies.

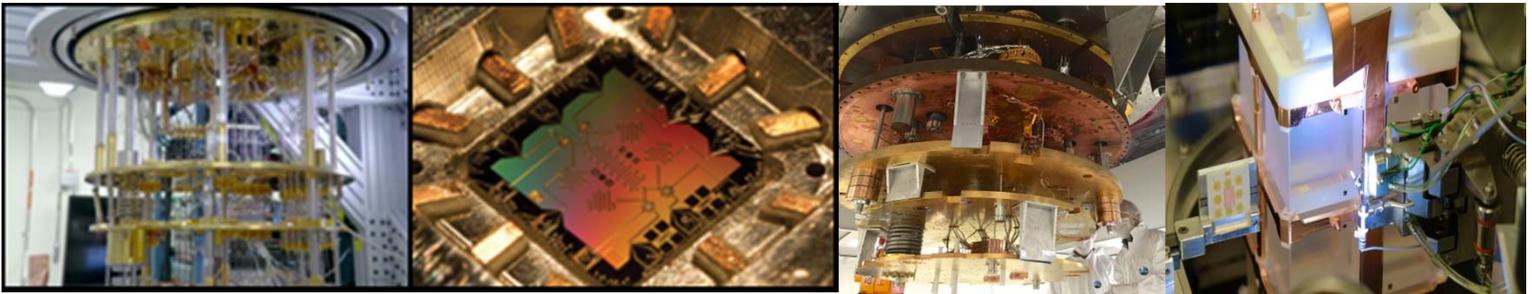
These amplifiers are extremely stable and highly reliable at these operating temperatures. Custom solutions are always an option. Cryogenic amplifiers can be supplied with wave guide or SMA connector interfaces.

Features

- | | |
|---|--|
| <ul style="list-style-type: none">• Unconditionally stable• State-of-the-Art Technology• Flexible design for custom solutions• Operating temperatures well below 4K• Very light weight, compact package | <ul style="list-style-type: none">• High Reliability• Multiple connector and waveguide interface options• Ultra-Low Power Dissipation• High Efficiency• Industry Leading Ultra-Low Noise Figures |
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Options

- | | |
|--|---|
| <ul style="list-style-type: none">• Custom designs for all specifications• MIL-STD 883 and Space-level screening• Hermetic laser sealing | <ul style="list-style-type: none">• +0.5V to +3V DC power options• Special testing options |
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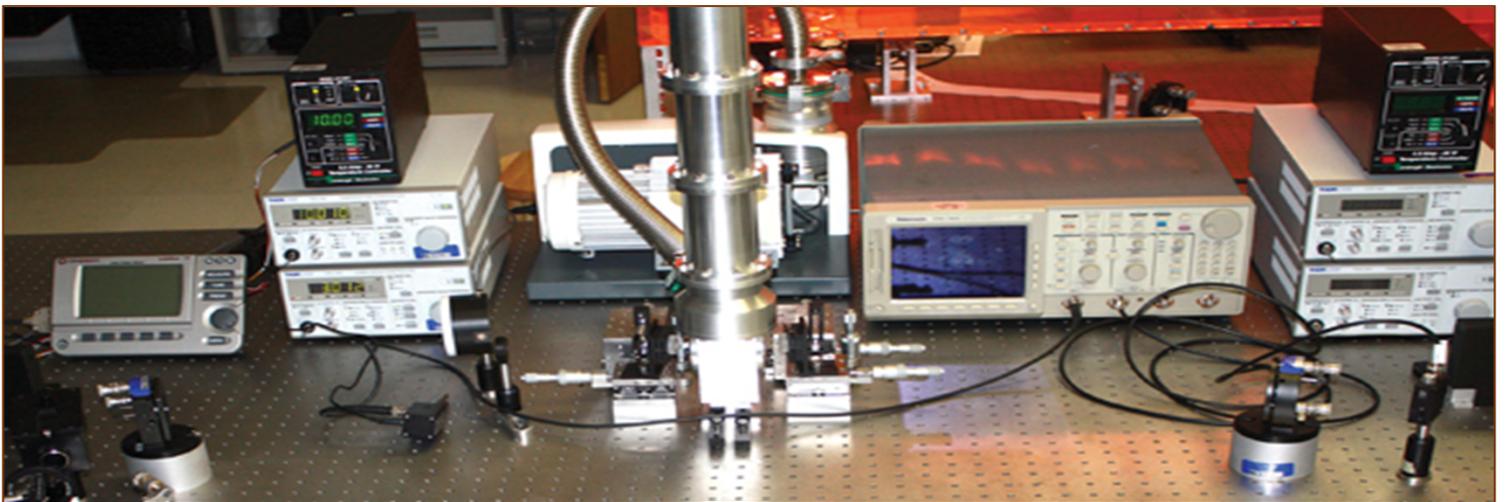
Quantum Computer Research

Advantages of AmpliTech's Cryogenic Amplifiers Over Competitors

- ❑ Smaller size and low cooling mass
- ❑ Lowest Noise Figures at room and cold temperatures
- ❑ Lower DC power dissipation at 300K (<5 mW vs. 60 mW)
- ❑ Lower DC power dissipation at 4K (<2 mW vs. 5.5 mW)
- ❑ Only one fixed single positive supply voltage vs. variable dual negative and positive supply
- ❑ No separate power supply or special connector/cable needed for special installation
- ❑ Easy and quick installation with one supply wire (amplifier case is Ground)
- ❑ Superior technical support
- ❑ Adjustable gain performance if necessary via positive bias supply voltage (can be continuously optimized for best performance)
- ❑ Significantly lower cost
- ❑ 30 Years experience in cryogenic design
- ❑ Advanced component and circuit technology
- ❑ Ultra-wide band design capability and customized bands a specialty
- ❑ Most parts available from stock at our nationwide distributor
- ❑ All parts are made in the USA

List of Cryogenic Amplifiers

Model Number	Frequency Range (GHz)	Gain (dB)	Gain Flatness (\pm dB)	Noise Temp. (K)	VSWR (Typ)	Pout@ 1dB (dBm)	VDC/mA	Outline Drawing
APTC5-00301400-4K00-D4	0.3 - 14	42	0.5	4	1.8:1	1	0.8/10	Custom/D4
APTC5-01001200-5K00-D4	1 - 12	39	1.2	5	1.7:1	0	1/12	Custom/D4
APTC5-02000400-1K00-D4	2 - 4	38	3	1	3.0:1	-10	0.6/15	Custom/D4
APTC2-04000800-2K00-D4	4 - 8	24	1	2	1.5:1	0	0.5/6	Custom/D4
APTC5-04000800-2K00-D4	4 - 8	39	0.5	2	1.3:1	-6	0.5/10	Custom/D4
APTC5-04001600-5K00-D4	4 - 16	40	1	5	1.5:1	1	1/15	Custom/D4
APTC5-06000800-2K00-D4	6 - 8	32	0.5	2	1.5:1	-11	0.5/8	Custom/D4
APTC4-06002000-6K00-D4	6 - 20	36	1	6	1.4:1	0	1.1/15	Custom/D4
APTC5-16002800-6K00-42-D4	16 - 28	32	2	6	1.3:1	-11	0.5/10	Custom/D4



Data Sheets



APTC5-00301400-4K00-D4

0.3 to 14 GHz Ultra-Low Noise Cryogenic Amplifier



Typical Key Parameters at 23°C

Parameter	Unit	Min.	Typical	Max.	Notes
Frequency	GHz	0.3	-	14	Customizable
Gain	dB	38	42	-	Customizable
Gain Flatness	dB	-	±0.5	±1.0	Customizable
In/Out VSWR	-	-	1.25:1	1.50	Customizable
Output P1dB	dBm	+0	+1	-	Customizable
DC Power	V@mA	+0.7	+0.8	+1.0	15 mA typ
Noise Figure	dB	-	0.7	1.1	@23°C
Outline/Package	-	-	-	-	Custom/D4

Absolute Maximum Ratings*

Parameters	Unit	Min.	Max.	Notes
Operating Temperature (Case)	°C	+4	+350	95% humidity, non-condensing
Storage Temperature (Case)	°C	77	+300	95% humidity, non-condensing
RF Input Power	dBm	-	+10	CW
Die Junction Temp (Tj)	°C	-	+150	For GaAs devices
Positive Supply Voltage	V	-	+3.0	At +V DC terminal
Negative Voltage	V	N/A	N/A	Reverse Voltage

Product Features

- Frequency Range = 0.3 to 14 GHz
- Typical Noise Temperature = 4K at 6K case temperature
- Gain (typical) = 42 dB
- Gain Flatness <±0.5 dB typical
- Single +0.8V Biasing @~15 mA
- State-of-the-Art PHEMT Technology
- MIL-883, MIL-45208 construction and reliability
- No dual power supply or connector needed
- SMA female connectors
- 0.030" diameter pins for DC and GND
- Custom gain and frequency options available

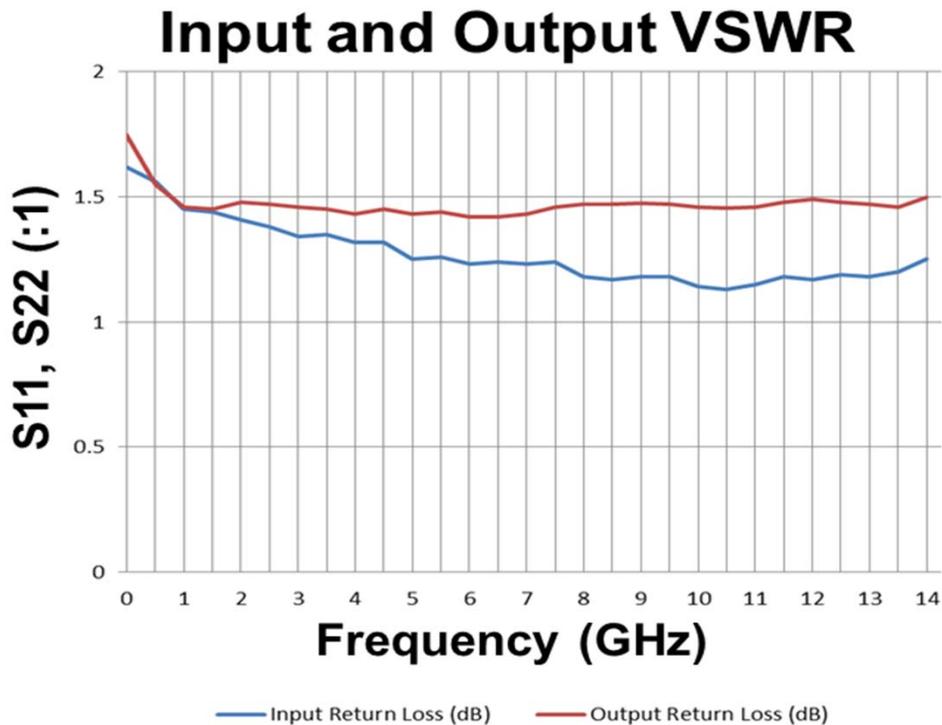
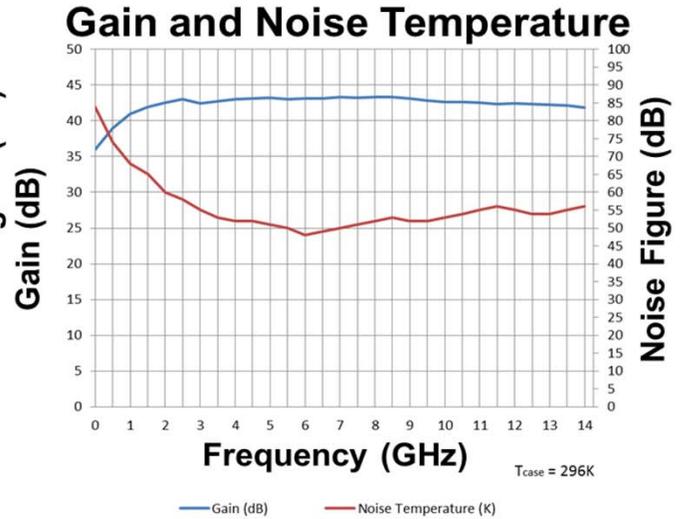
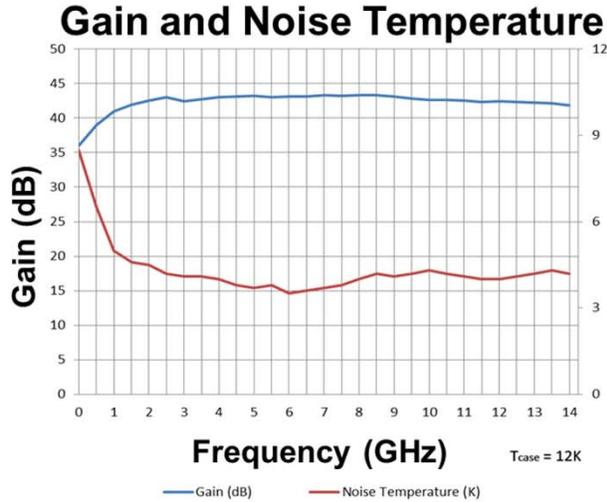
Product Description

This model is a wideband medium-gain LNA which is designed for cryogenic applications down to 4K with an industry low Noise Temperature of 55K at +23°C case temperature. The LNA has a low gain flatness and VSWR across the entire band. Lower Noise options are also available in smaller sub-bands. Compact AmpliTech D-series gold-plated package with SMA female connectors for easy installation.

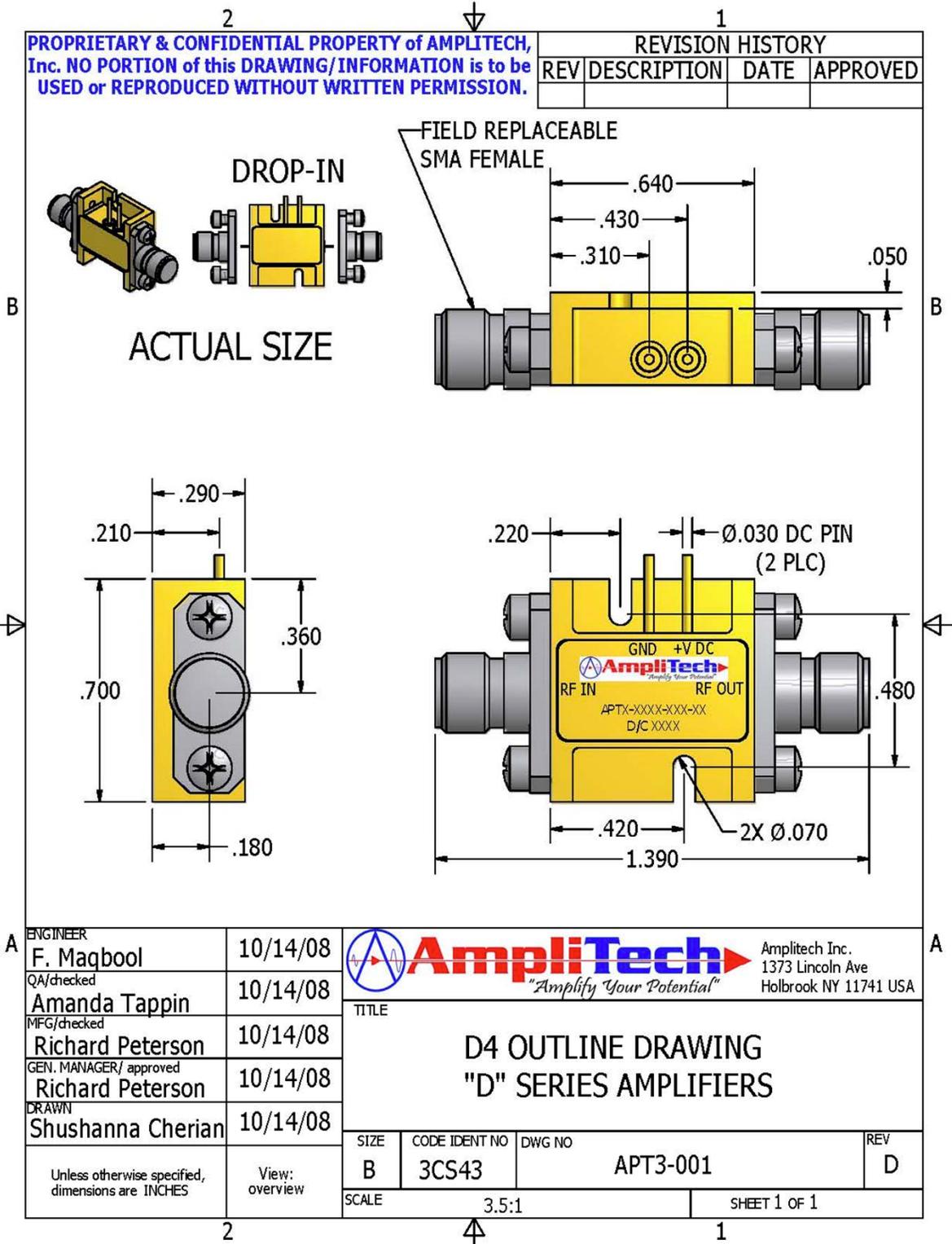
Application

- Radiometers
- Nanophysics
- Astronomy/Observatory Receivers
- Superconductor Research Labs

* Stresses above those listed under "Absolute Maximum Rating" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability. All STANDARD units are packaged in Aluminum housings that are layered with electroless Nickel and then plated with Gold to eliminate contamination of other adjacent electronic components.



Outline Drawing





Product Features

- Frequency Range = 0.5 to 18 GHz
- Typical Noise Temp = 4K @ 6K case temp
- Typical Gain = 38 dB
- State-of-the-Art PHEMT Technology
- MIL-883, MIL-45208 construction and reliability
- Single +0.6V Biasing @~14 mA at 4K
- No dual power supply or connector needed
- SMA female connectors
- 0.030" diameter pins for DC and GND
- Custom gain and frequency options available

Typical Key Parameters at 23°C

Parameter	Unit	Min.	Typical	Max.	Notes
Frequency	GHz	0.5	-	18	Customizable
Gain	dB	-	38	-	Customizable
Gain Flatness	dB	-	±2.5	-	Customizable
In/Out VSWR	-	-	2.5:1	-	Customizable
Output P1dB	dBm	-	-6	-	Customizable
DC Power	V@mA	-	+0.6	+0.6	14 mA typ.
Noise Figure	dB	-	1.5	-	@23°C
Outline/Package	-	-	-	-	D4/custom

Product Description

This model is an ultra-low noise cryogenic amplifier operating in the frequency range which is designed for cryogenic applications down to 4K with an industry low Noise Temperature of 55K at +23°C case temperature. The LNA has a low gain flatness and VSWR across the entire band. Lower Noise options are also available in smaller sub-bands. Compact AmpliTech D-series gold-plated package with SMA female connectors for easy installation.

Applications

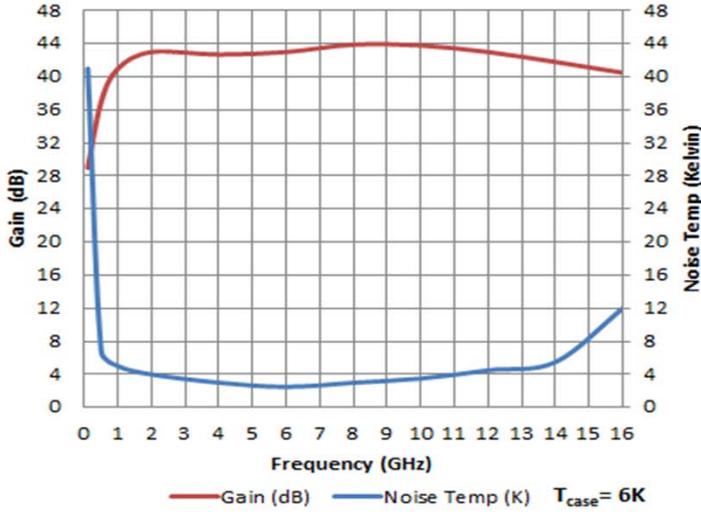
- Radiometers
- Nanophysics (Electron spin resonance)
- Astronomy/Observatory Receivers
- Superconductor Research Labs
- Satellite Earth Stations

Absolute Maximum Ratings*

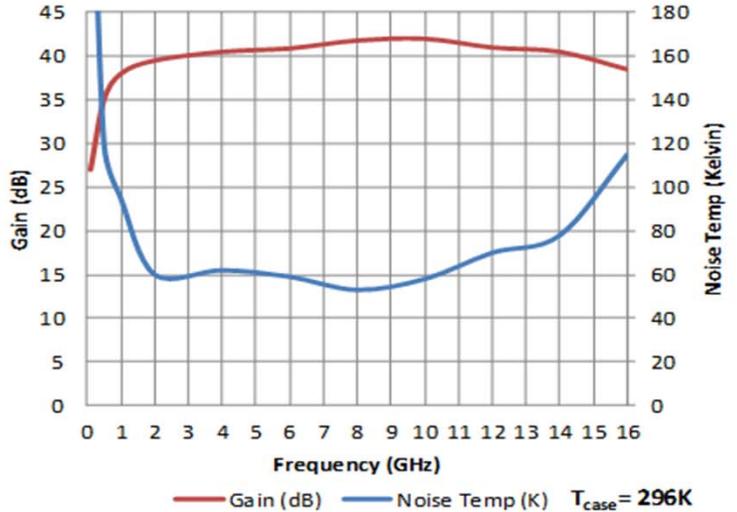
Parameters	Unit	Min.	Max.	Notes
Operating Temperature (Case)	K	-	+350	95% humidity, non-condensing
Storage Temperature (Case)	K	-	+300	95% humidity, non-condensing
RF Input Power	dBm	-	-5	CW
Die Junction Temp (Tj)	°C	-	+150	For GaAs devices
Positive Supply Voltage	V	+0.5	+3.5	At +V DC terminal
Negative Voltage	V	N/A	N/A	Reverse Voltage

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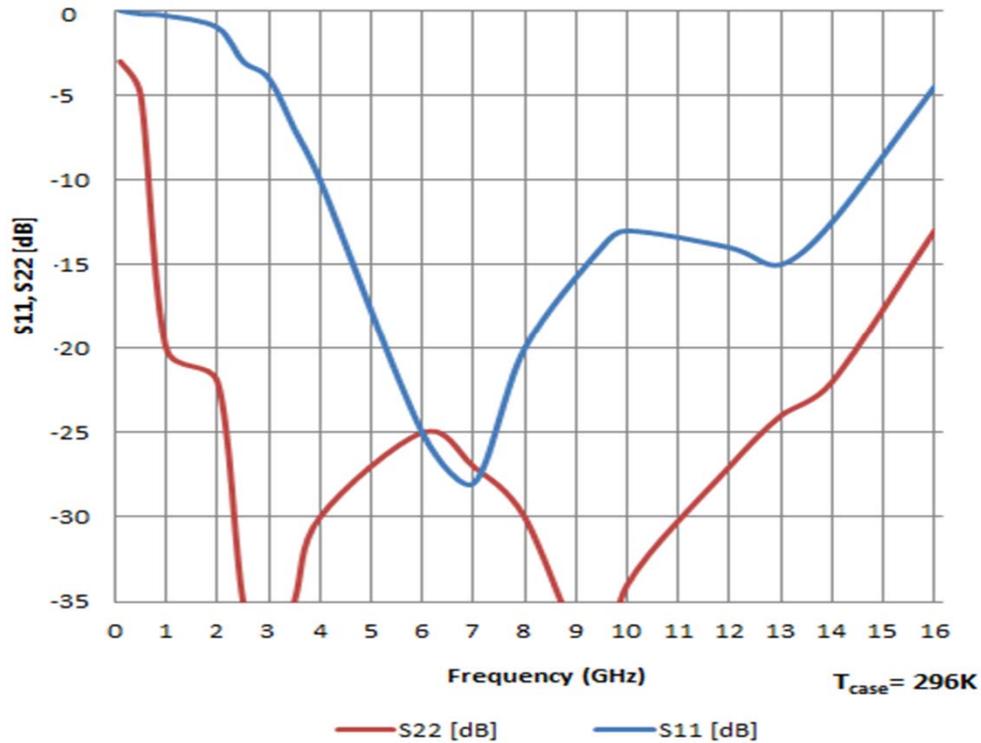
Gain and Noise



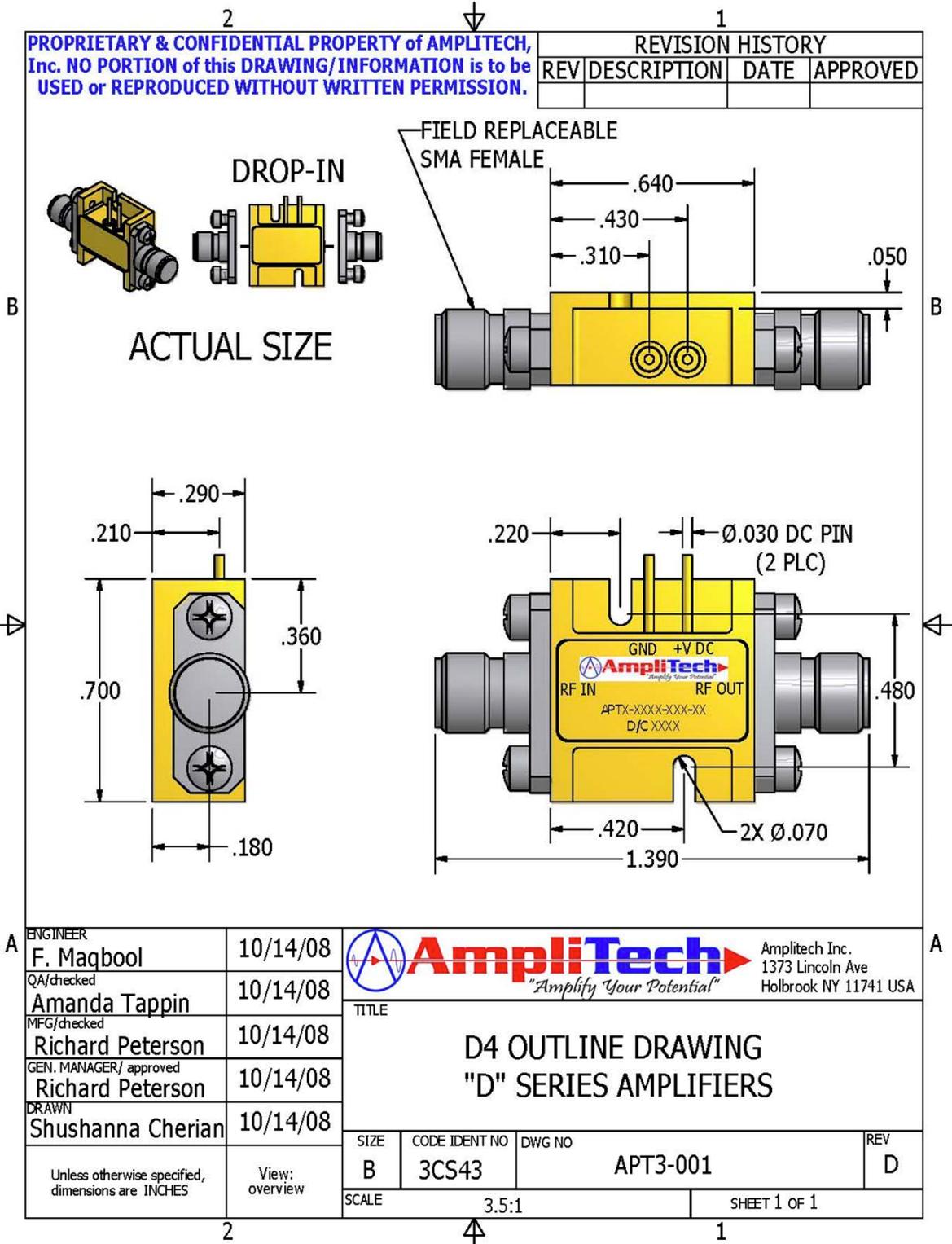
Gain and Noise



In/Out Return Loss



Outline Drawing





Product Features

- Frequency Range = 1 to 12 GHz
- Typical Noise Temp = 5.5K at 12K case temp
- Typical Gain = 39 dB
- State-of-the-Art PHEMT Technology
- MIL-883, MIL-45208 construction and reliability
- Single +1.0V Biasing @~12 mA
- No dual power supply or connector needed
- SMA female connectors
- 0.030" diameter pins for DC and GND
- Custom gain and frequency options available

Typical Key Parameters at 23°C

Parameter	Unit	Min.	Typical	Max.	Notes
Frequency	GHz	1	-	12	Customizable
Gain	dB	-	39	-	Customizable
Gain Flatness	dB	-	±1.2	-	Customizable
In/Out VSWR	-	-	1.7:1/1.5:1	-	4-12/1-12 GHz
Output P1dB	dBm	-	0	-	-
DC Power	V@mA	-	+1	+1.1	12 mA typ.
Noise Figure	dB	-	0.6	-	@23°C
Outline/Package	-	-	-	-	D6

Product Description

This model is an octave band LNA which is designed for cryogenic applications down to 1.2K with an industry low Noise Temperature of 40K at +23°C case temperature across the band. The LNA has a low gain flatness and VSWR across the entire band. The design features our compact CR-series gold-plated package with SMA female connectors for easy installation.

Application

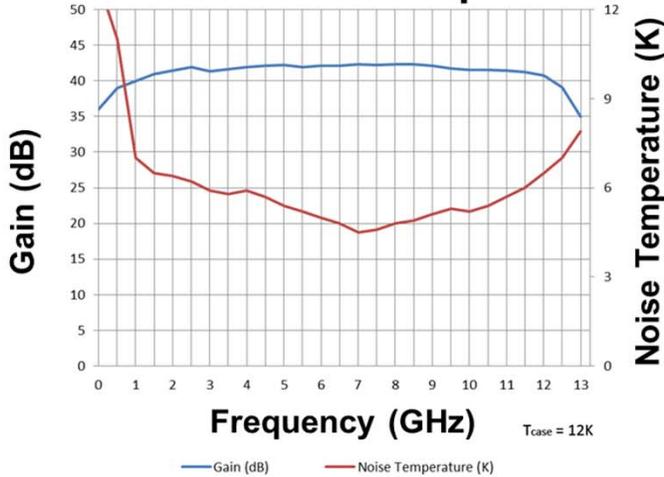
- Radiometers
- Nanophysics
- Astronomy/Observatory Receivers
- Superconductor Research Labs

Absolute Maximum Ratings*

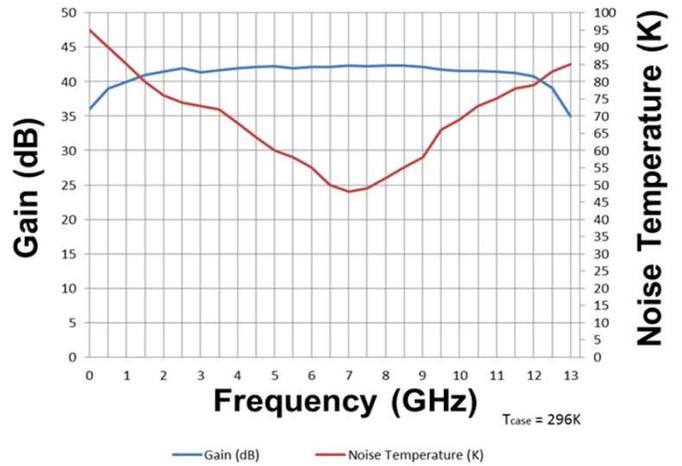
Parameters	Unit	Min.	Max.	Notes
Operating Temperature (Case)	K	+4	+350	95% humidity, non-condensing
Storage Temperature (Case)	K	-	+300	95% humidity, non-condensing
RF Input Power	dBm	-	-10	CW
Die Junction Temp (Tj)	°C	-	+150	For GaAs devices
Positive Supply Voltage	V	+1.0	+1.1	At +V DC terminal
Negative Voltage	V	N/A	N/A	Reverse Voltage

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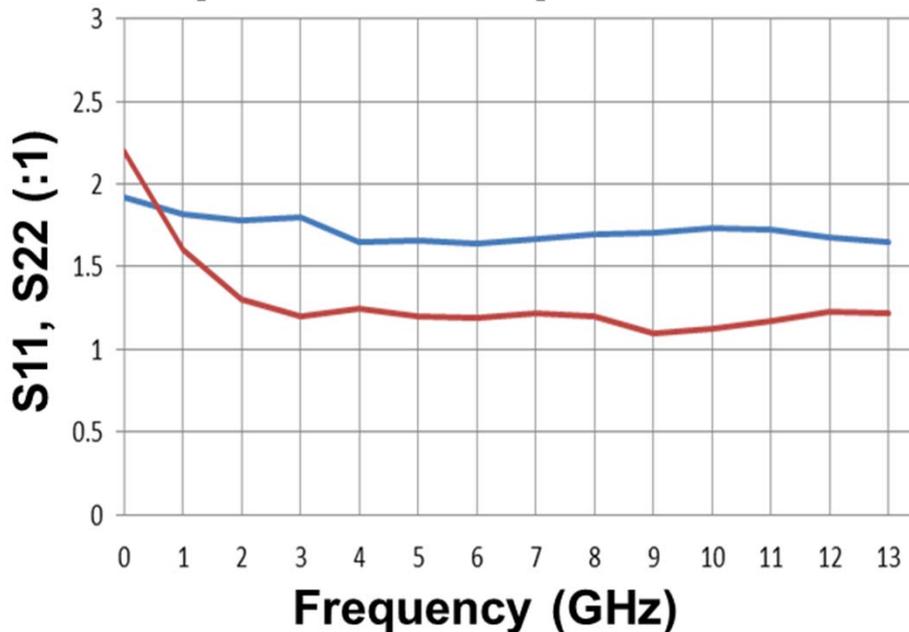
Gain and Noise Temperature



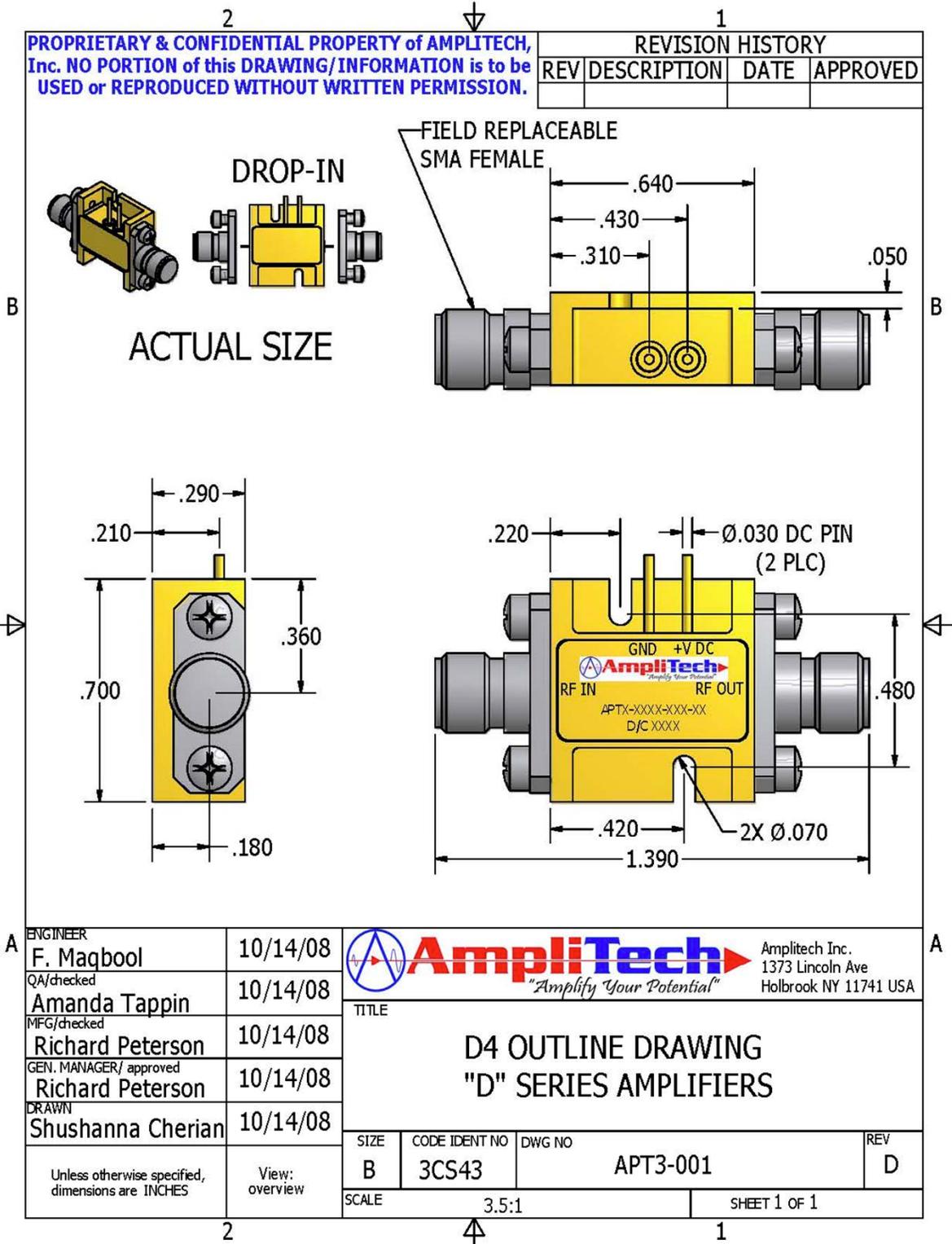
Gain and Noise Temperature



Input and Output VSWR



Outline Drawing





Product Features

- Frequency Range = 2.0 to 4.0 GHz
- Typical Noise Temp = 1.2K at 6K case temp
- Typical Gain = 38 dB
- State-of-the-Art PHEMT Technology
- MIL-883, MIL-45208 construction and reliability
- Single +0.6V Biasing @~15 mA
- No dual power supply or connector needed
- SMA female connectors
- 0.030" diameter pins for DC and GND
- Custom gain and frequency options available

Typical Key Parameters at 23°C

Parameter	Unit	Min.	Typical	Max.	Notes
Frequency	GHz	2.0	-	4.0	Customizable
Gain	dB	-	38	-	Customizable
Gain Flatness	dB	-	±3.0	-	T _{COLD}
In/Out VSWR	-	-	3.0:1/1:1	-	Customizable
Output P1dB	dBm	-	-10	-	@3GHz
DC Power	V@mA	-	+0.6	+0.7	15 mA typ.
Noise Figure	dB	-	0.6	-	@23°C
Outline/Package	-	-	-	-	D6

Product Description

This model is an octave band LNA which is designed for cryogenic applications down to 1.2K with an industry low Noise Temperature of 40K at +23°C case temperature across the band. The LNA has a low gain flatness and VSWR across the entire band. The design features our compact CR-series gold-plated package with SMA female connectors for easy installation.

Application

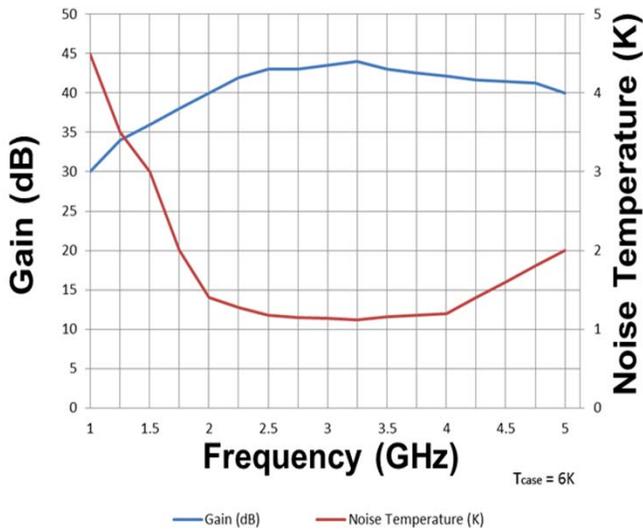
- Radiometers
- Nanophysics
- Astronomy/Observatory Receivers
- Superconductor Research Labs

Absolute Maximum Ratings*

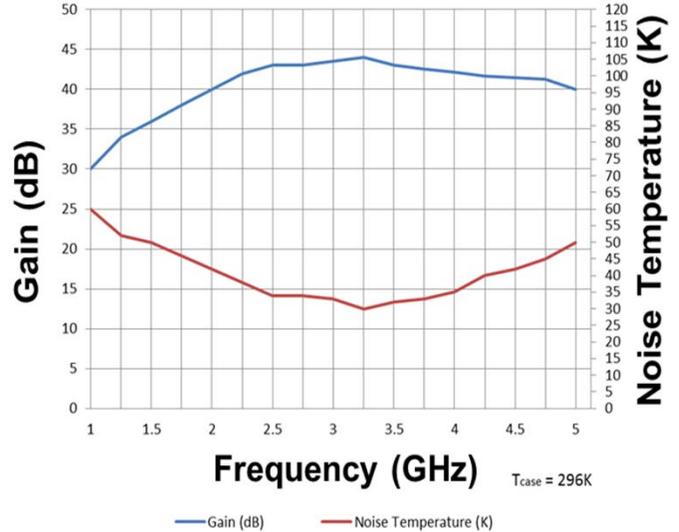
Parameters	Unit	Min.	Max.	Notes
Operating Temperature (Case)	K	+4	+350	95% humidity, non-condensing
Storage Temperature (Case)	K	-	+300	95% humidity, non-condensing
RF Input Power	dBm	-	-10	CW
Die Junction Temp (Tj)	°C	-	+150	For GaAs devices
Positive Supply Voltage	V	-	+0.7	At +V DC terminal
Negative Voltage	V	N/A	N/A	Reverse Voltage

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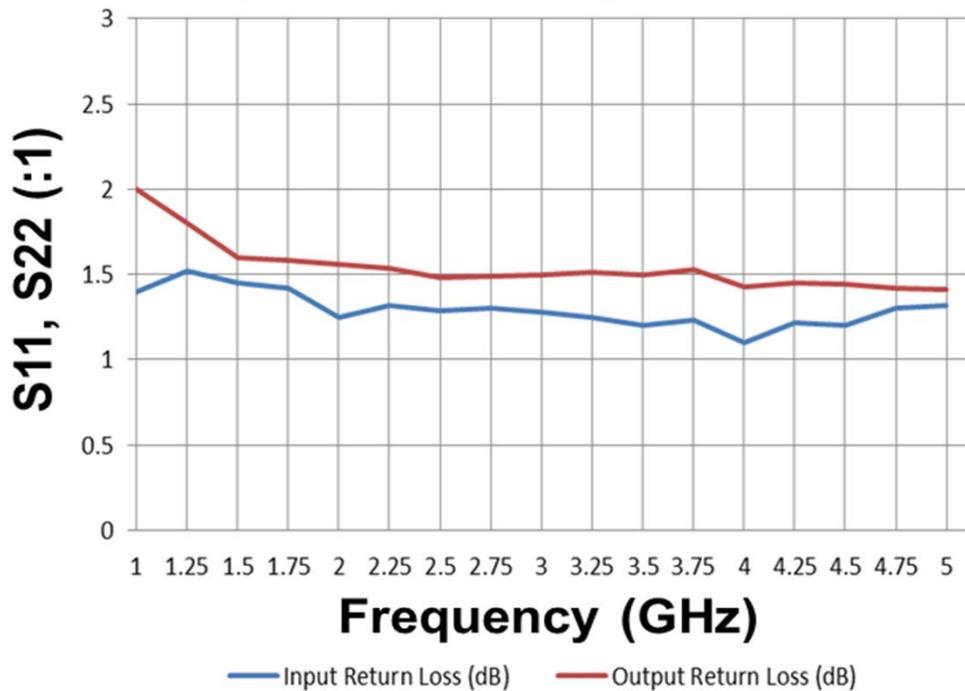
Gain and Noise Temperature



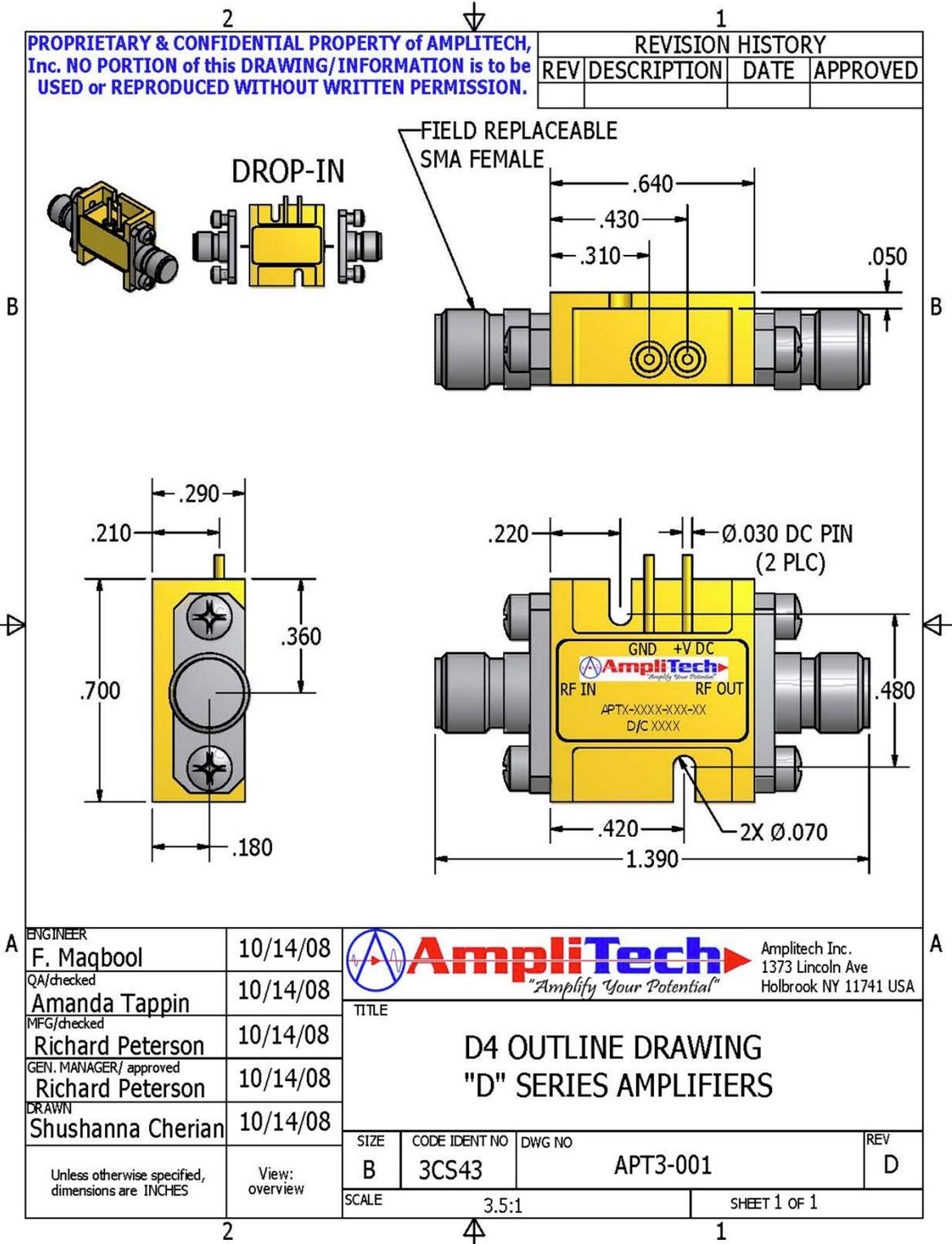
Gain and Noise Temperature



Input and Output VSWR



Outline Drawing





Typical Key Parameters at 23°C

Parameter	Unit	Min.	Typical	Max.	Notes
Frequency	GHz	4	-	8	Customizable
Gain	dB	-	24	-	Customizable
Gain Flatness	dB	-	±1	-	Customizable
In/Out VSWR	-	-	1.5:1	-	Customizable
Output P1dB	dBm	-6	0	-	Customizable
DC Power	V@mA	-	+0.5	+0.6	6 mA typ.
Noise Figure	dB	-	0.6	-	@23°C
Outline/Package	-	-	-	-	D4/custom

Absolute Maximum Ratings*

Parameters	Unit	Min.	Max.	Notes
Operating Temperature (Case)	K	+4	+350	95% humidity, non-condensing
Storage Temperature (Case)	K	-	+300	95% humidity, non-condensing
RF Input Power	dBm	-	-10	CW
Die Junction Temp (Tj)	°C	-	+150	For GaAs devices
Positive Supply Voltage	V	+0.5	+0.6	At +V DC terminal
Negative Voltage	V	N/A	N/A	Reverse Voltage

Product Features

- Frequency Range = 4 to 8 GHz
- Typical Noise Temp = 1.5K at 4K case temp
- Typical Gain = 24 dB
- State-of-the-Art PHEMT Technology
- MIL-883, MIL-45208 construction and reliability
- Single +0.5V Biasing @~3 mA at 4K
- No dual power supply or connector needed
- SMA female connectors
- 0.030" diameter pins for DC and GND
- Custom gain and frequency options available

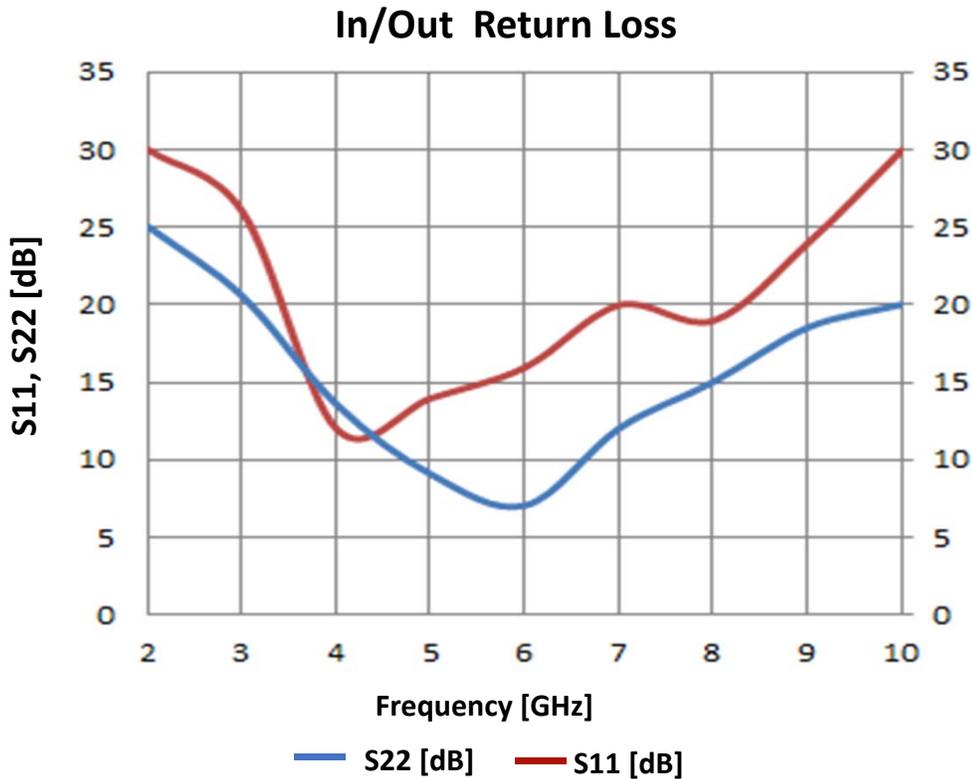
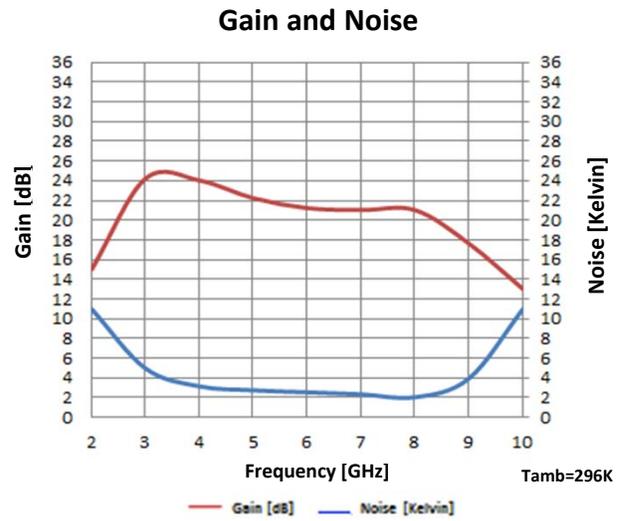
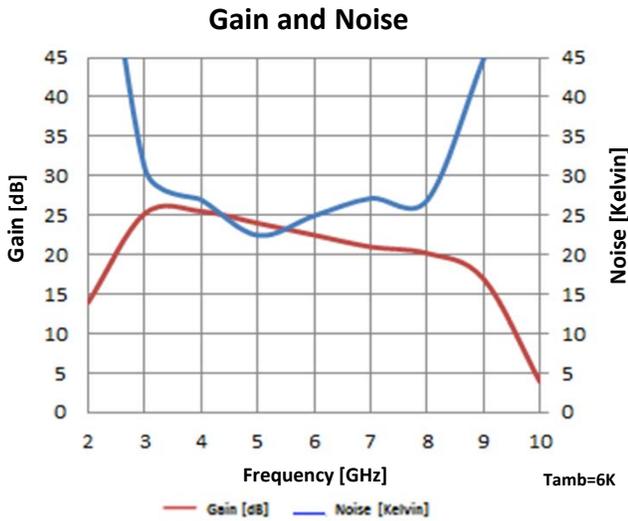
Product Description

This model is an octave band LNA which is designed for cryogenic applications down to 2.1K with an industry low Noise Figure of 40K at +23 °C case temperature across the band. The LNA has a low gain flatness and VSWR across the entire band. The stackable ultra-slim CR-series gold-plated package also features SMP-S connectors for high integrity interconnects.

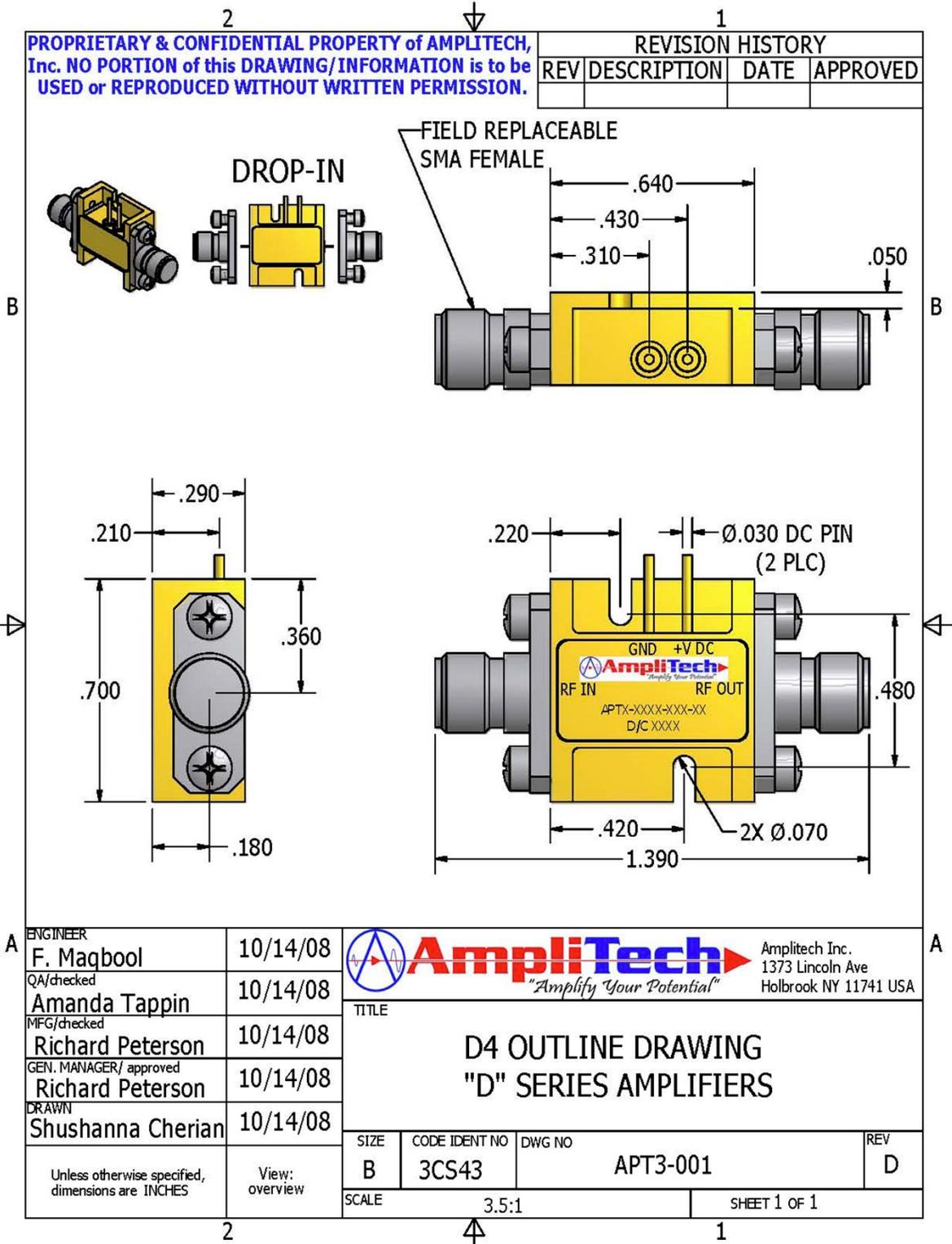
Applications

- Radiometers
- Nanophysics (Electron spin resonance)
- Astronomy/Observatory Receivers
- Superconductor Research Labs
- Satellite Earth Stations

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Outline Drawing





Product Features

- Frequency Range = 4 to 8 GHz
- Typical Noise Temp = 2.1K at 6K case temp
- Typical Gain = 39 dB
- State-of-the-Art PHEMT Technology
- MIL-883, MIL-45208 construction and reliability
- Single +0.5V Biasing @~10 mA
- No dual power supply or connector needed
- SMA female connectors
- 0.030" diameter pins for DC and GND
- Custom gain and frequency options available

Typical Key Parameters at 23°C

Parameter	Unit	Min.	Typical	Max.	Notes
Frequency	GHz	4.0	-	8.0	Customizable
Gain	dB	-	39	-	Customizable
Gain Flatness	dB	-	±0.5	-	T _{COLD}
In/Out VSWR	-	-	1.3:1	-	Customizable
Output P1dB	dBm	-	-6	-	@4-6GHz, 6K _{case}
DC Power	V@mA	-	+0.5	+0.6	10 mA typ.
Noise Figure	dB	-	0.6	-	@23°C
Outline/Package	-	-	-	-	D6

Product Description

This model is an octave band LNA which is designed for cryogenic applications down to 2.1K with an industry low Noise Figure of 40K at +23°C case temperature across the band. The LNA has a low gain flatness and VSWR across the entire band. The stackable ultra-slim CR-series gold-plated package also features SMP-S connectors for high integrity interconnects.

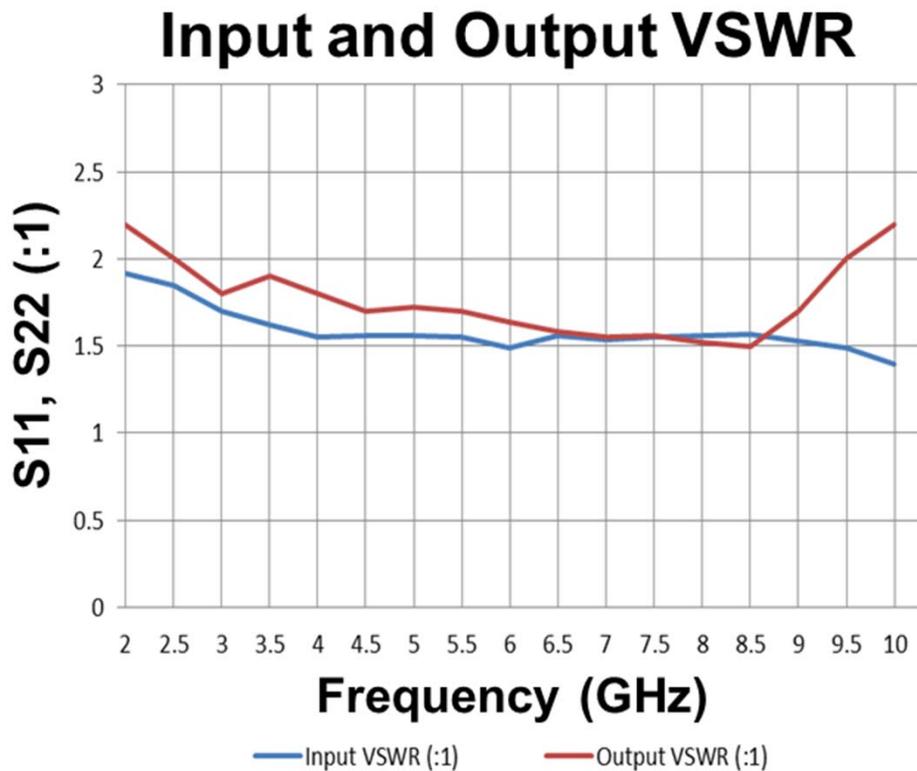
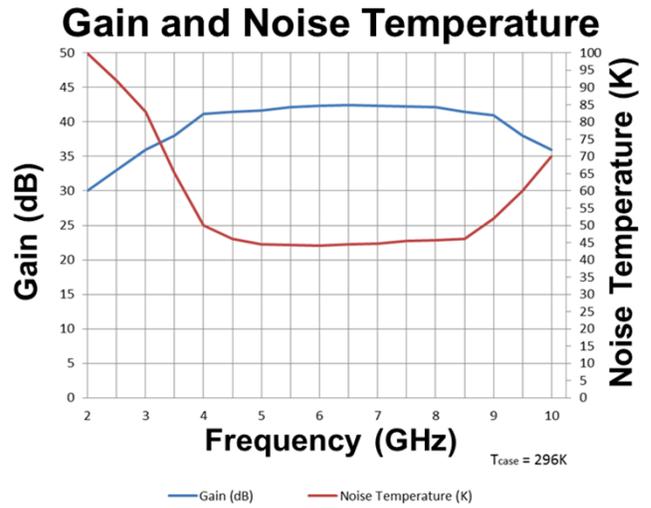
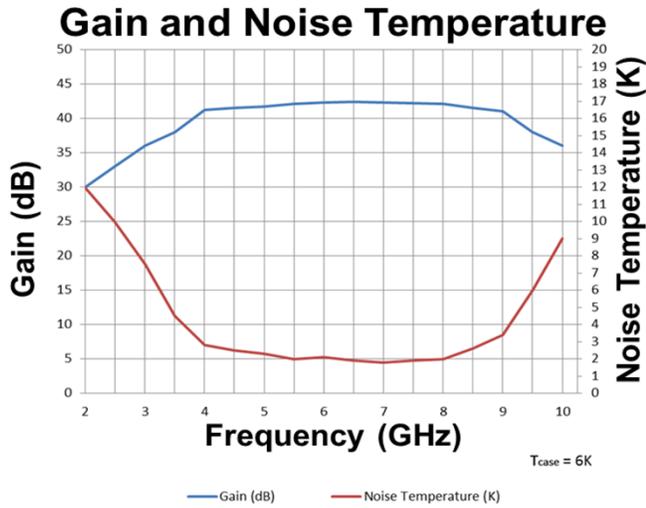
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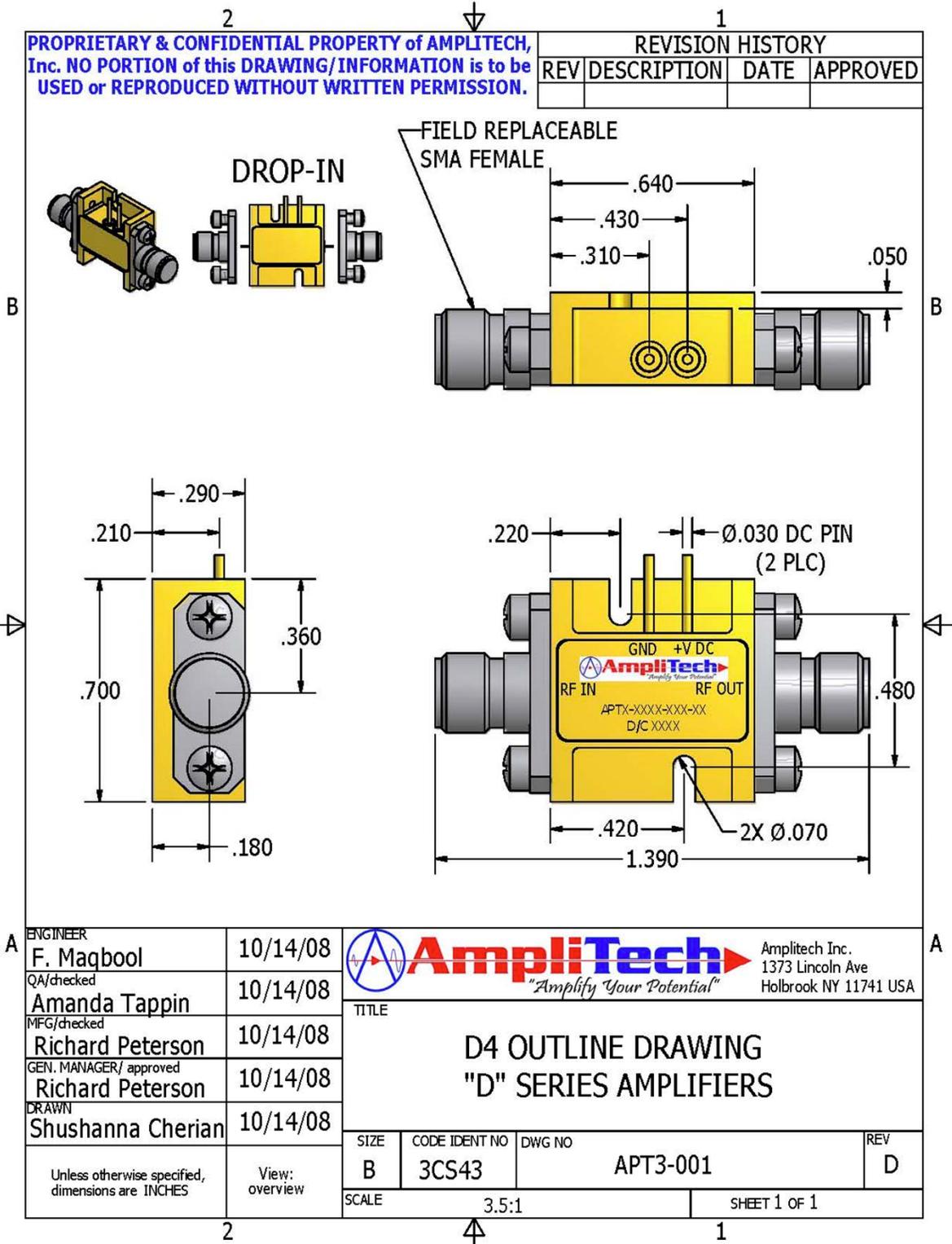
Absolute Maximum Ratings*

Parameters	Unit	Min.	Max.	Notes
Operating Temperature (Case)	K	+4	+350	95% humidity, non-condensing
Storage Temperature (Case)	K	-	+300	95% humidity, non-condensing
RF Input Power	dBm	-	-10	CW
Die Junction Temp (T _j)	°C	-	+150	For GaAs devices
Positive Supply Voltage	V	+0.5	+0.6	At +V DC terminal
Negative Voltage	V	N/A	N/A	Reverse Voltage

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Outline Drawing





Typical Key Parameters at 23°C

Parameter	Unit	Min.	Typical	Max.	Notes
Frequency	GHz	4	-	16	Customizable
Gain	dB	39	40	-	Customizable
Gain Flatness	dB	-	±0.5	±1.0	Customizable
In/Out VSWR	-	-	1.5:1	-	Customizable
Output P1dB	dBm	+0	+1	-	Customizable
DC Power	V@mA	+0.9	+1	+1.1	15 mA typ
Noise Figure	dB	-	0.8	0.9	@23°C
Outline/Package	-	-	-	-	Custom/D6

Absolute Maximum Ratings*

Parameters	Unit	Min.	Max.	Notes
Operating Temperature (Case)	°C	+4	+350	95% humidity, non-condensing
Storage Temperature (Case)	°C	77	+300	95% humidity, non-condensing
RF Input Power	dBm	-	+10	CW
Die Junction Temp (Tj)	°C	-	+150	For GaAs devices
Positive Supply Voltage	V	-	+3.5	At +V DC terminal
Negative Voltage	V	N/A	N/A	Reverse Voltage

Product Features

- Frequency Range = 4 to 16 GHz
- Typical Noise Temperature = 5.5K at 12K case temperature
- Gain (typical) = 40 dB
- Gain Flatness <±0.5 dB typical
- Single +1V Biasing @~15 mA
- State-of-the-Art PHEMT Technology
- MIL-883, MIL-45208 construction and reliability
- Hermertc Seal Option
- No dual power supply or connector needed
- SMA female connectors
- 0.030" diameter pins for DC and GND
- Custom gain and frequency options available

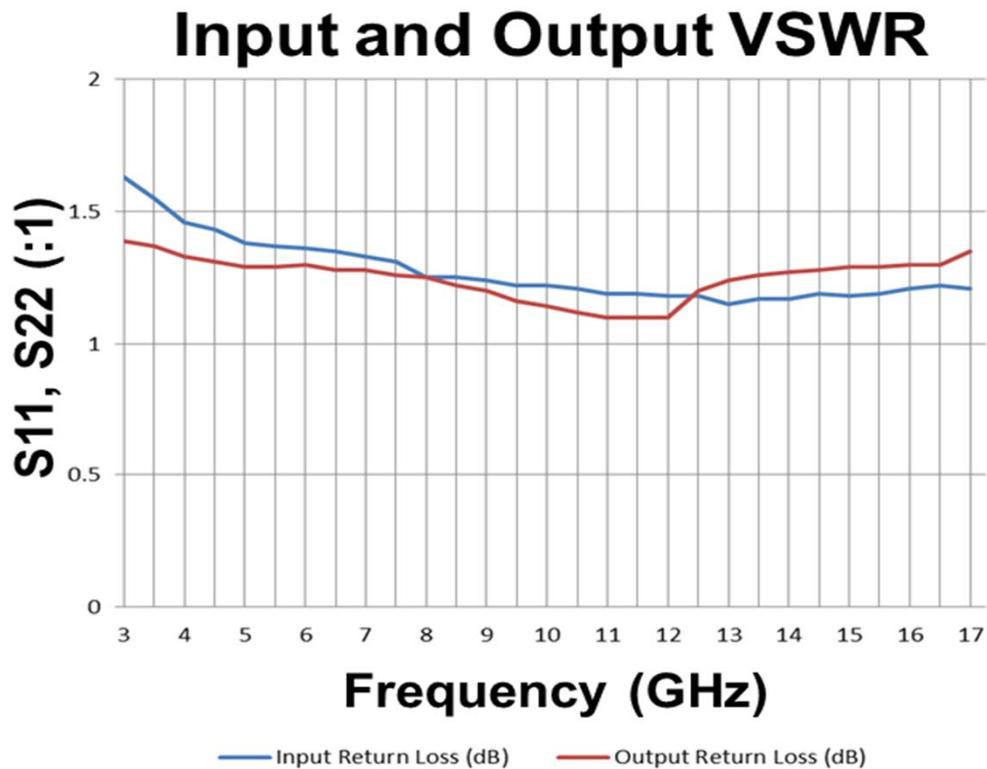
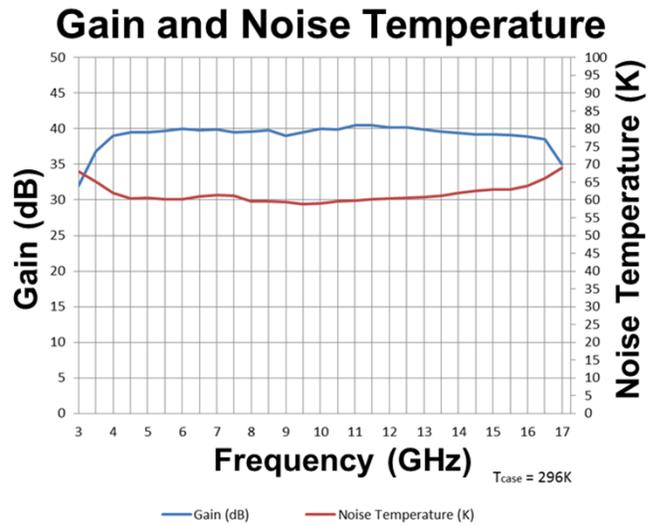
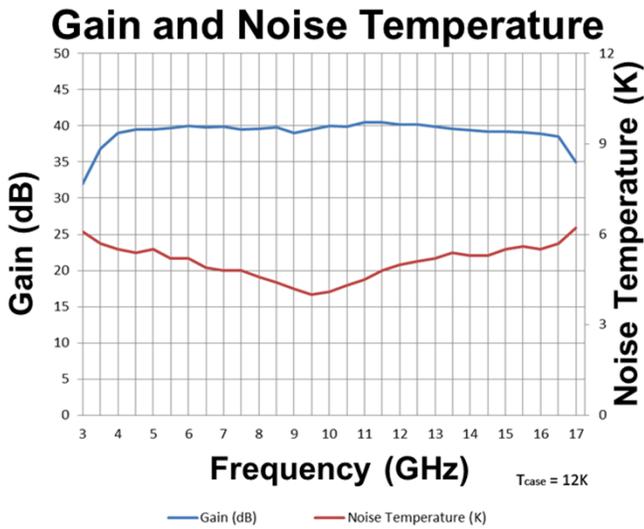
Product Description

This model is a wideband medium-gain LNA which is designed for cryogenic applications down to 4K with an industry low Noise Temperature of 60K at +23°C case temperature. The LNA has a low gain flatness and VSWR across the entire band. Lower Noise options are also available in smaller sub-bands. Compact AmpliTech D-series gold-plated package with SMA female connectors for easy installation.

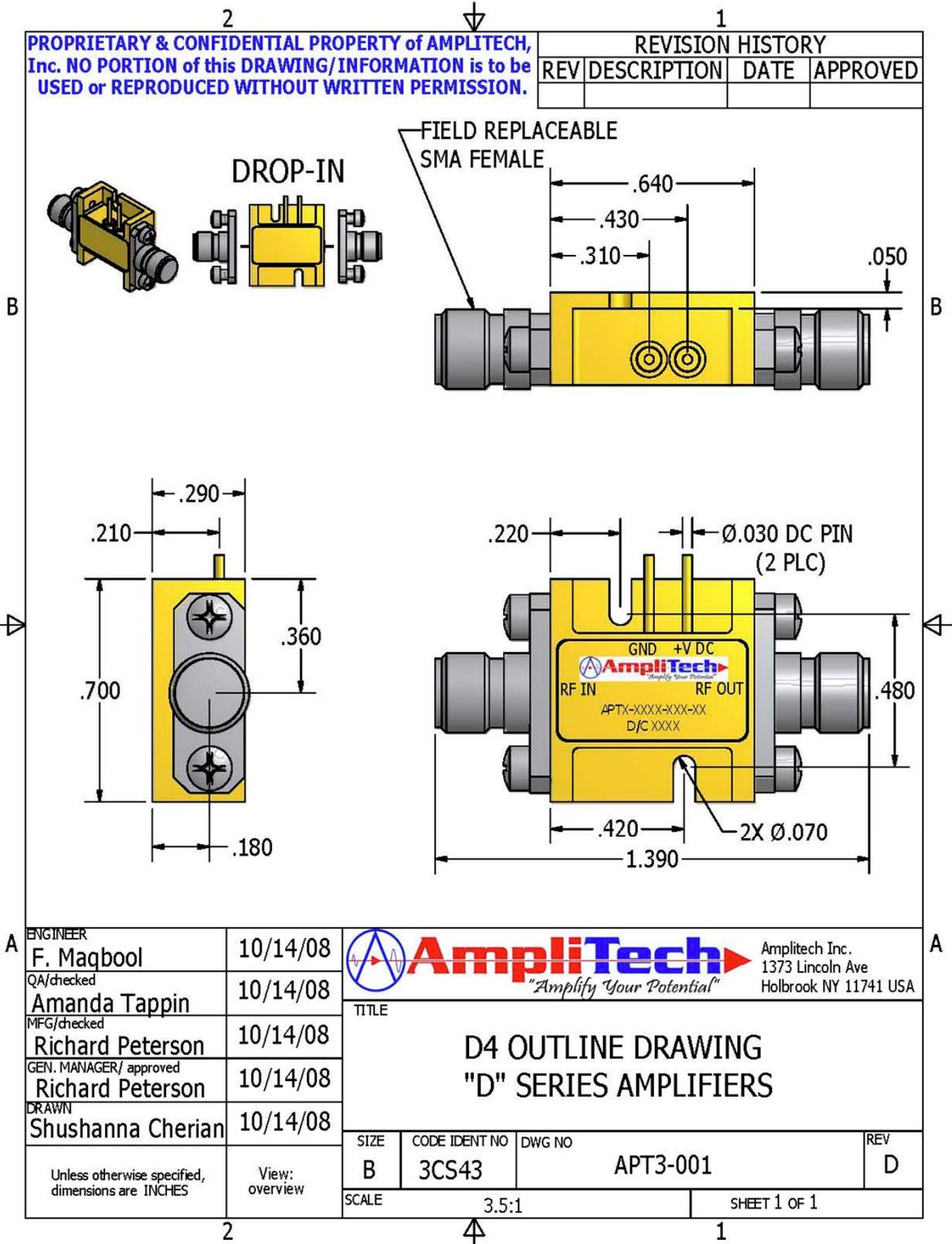
Application

- Radiometers
- Nanophysics
- Astronomy/Observatory Receivers
- Superconductor Research Labs

** Stresses above those listed under "Absolute Maximum Rating" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability. All STANDARD units are packaged in Aluminum housings that are layered with electroless Nickel and then plated with Gold to eliminate contamination of other adjacent electronic components.*



Outline Drawing





Typical Key Parameters at 23°C

Parameter	Unit	Min.	Typical	Max.	Notes
Frequency	GHz	6.0	-	8.0	Customizable
Gain	dB	-	32	-	Customizable
Gain Flatness	dB	-	±0.5	-	Customizable
In/Out VSWR	-	-	1.5:1	-	Customizable
Output P1dB	dBm	+0	-11	-	Customizable
DC Power	V@mA	-	+0.5	+0.6	8 mA typ.
Noise Figure	dB	-	0.6	-	@23°C
Outline/Package	-	-	-	-	D4

Absolute Maximum Ratings*

Parameters	Unit	Min.	Max.	Notes
Operating Temperature (Case)	K	+4	+350	95% humidity, non-condensing
Storage Temperature (Case)	K	-	+300	95% humidity, non-condensing
RF Input Power	dBm	-	-10	CW
Die Junction Temp (Tj)	°C	-	+150	For GaAs devices
Positive Supply Voltage	V	+0.5	+0.6	At +V DC terminal
Negative Voltage	V	N/A	N/A	Reverse Voltage

Product Features

- Frequency Range = 6 to 8 GHz
- Typical Noise Temp = 1.2K at 4K case temp
- Typical Gain = 32 dB
- State-of-the-Art PHEMT Technology
- MIL-883, MIL-45208 construction and reliability
- Single +0.5V Biasing @~8 mA
- No dual power supply or connector needed
- SMA female connectors
- 0.030" diameter pins for DC and GND
- Custom gain and frequency options available

Product Description

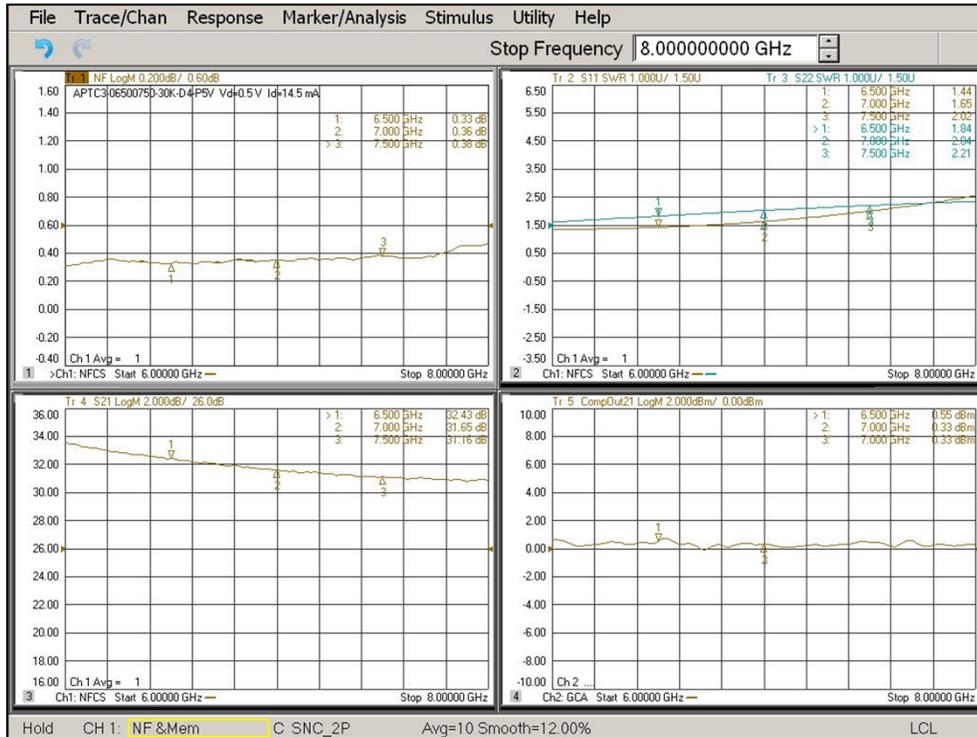
This model is an octave band LNA which is designed for cryogenic applications down to 1.2K with an industry low Noise Figure of 40K at +23°C case temperature across the band. The LNA has a low gain flatness and VSWR across the entire band. The stackable ultra-slim CR-series gold-plated package also features SMP-S connectors for high integrity interconnects.

Application

- Radiometers
- Nanophysics (Electron spin resonance)
- Astronomy/Observatory Receivers
- Superconductor Research Labs
- Satellite Earth Stations

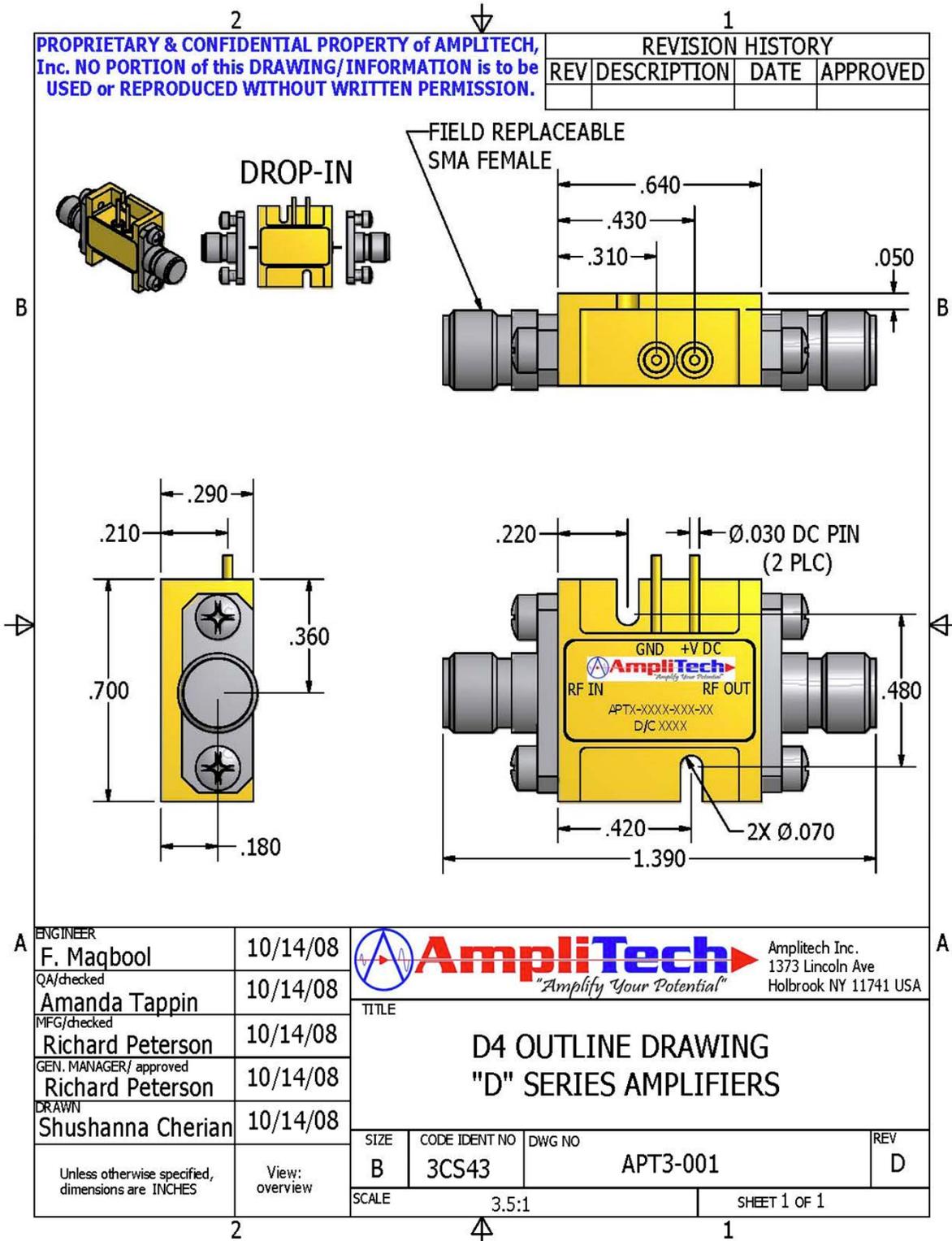
* Stresses above those listed under "Absolute Maximum Rating" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability. All STANDARD units are packaged in Aluminum housings that are layered with electroless Nickel and then plated with Gold to eliminate contamination of other adjacent electronic components.

Typical Data



Data taken with Agilent N5242 PNA-X Vector Network Analyzer

Outline Drawing





Typical Key Parameters at 23°C

Parameter	Unit	Min.	Typical	Max.	Notes
Frequency	GHz	6	-	20	Customizable
Gain	dB	-	36	-	Customizable
Gain Flatness	dB	-	±1	-	Customizable
In/Out VSWR	-	-	1.4:1/1.2:1	-	Customizable
Output P1dB	dBm	-	0	-	Customizable
DC Power	V@mA	-	+1.1	+1.2	15 mA typ.
Noise Figure	dB	-	0.9	-	@23°C
Outline/Package	-	-	-	-	CR6

Absolute Maximum Ratings*

Parameters	Unit	Min.	Max.	Notes
Operating Temperature (Case)	K	+4	+350	95% humidity, non-condensing
Storage Temperature (Case)	K	-	+350	95% humidity, non-condensing
RF Input Power	dBm	-	-10	CW
Die Junction Temp (Tj)	°C	-	+150	For GaAs devices
Positive Supply Voltage	V	+1.1	+1.2	At +V DC terminal
Negative Voltage	V	N/A	N/A	Reverse Voltage

Product Features

- Frequency Range = 6 to 20 GHz
- Typical Noise Temp = 5.9K at 8K case temp
- Gain (typical) = 36 dB
- State-of-the-Art PHEMT Technology
- MIL-883, MIL-45208 construction and reliability
- Single +1.1V Biasing @~15 mA
- No dual power supply or connector needed
- SMA female connectors
- 0.030" diameter pins for DC and GND
- Custom gain and frequency options available

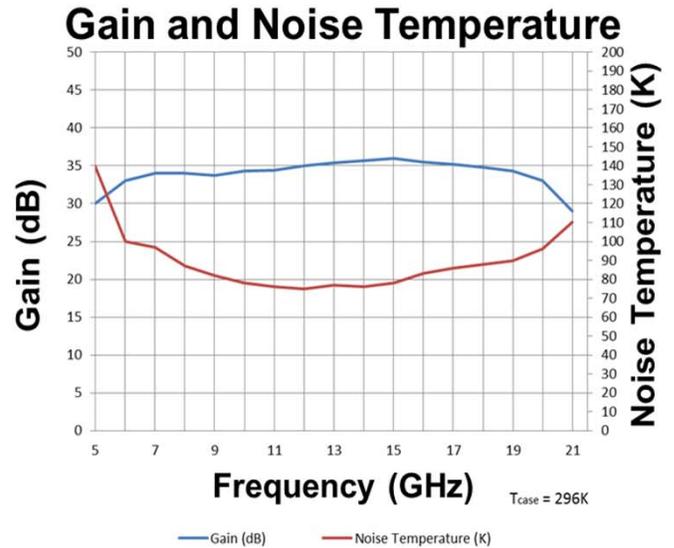
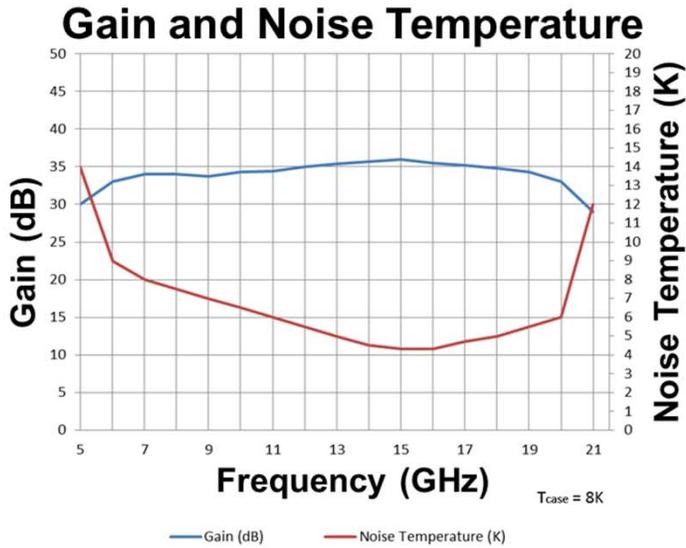
Product Description

This model is an is a wideband LNA which is designed for cryogenic applications down to 5.9K with an industry low Noise Temperature of 65K at +23°C case temperature across the band. The LNA has a low gain flatness and VSWR across the entire band. The design features our compact CR-series gold-plated package with SMA female connectors for easy installation.

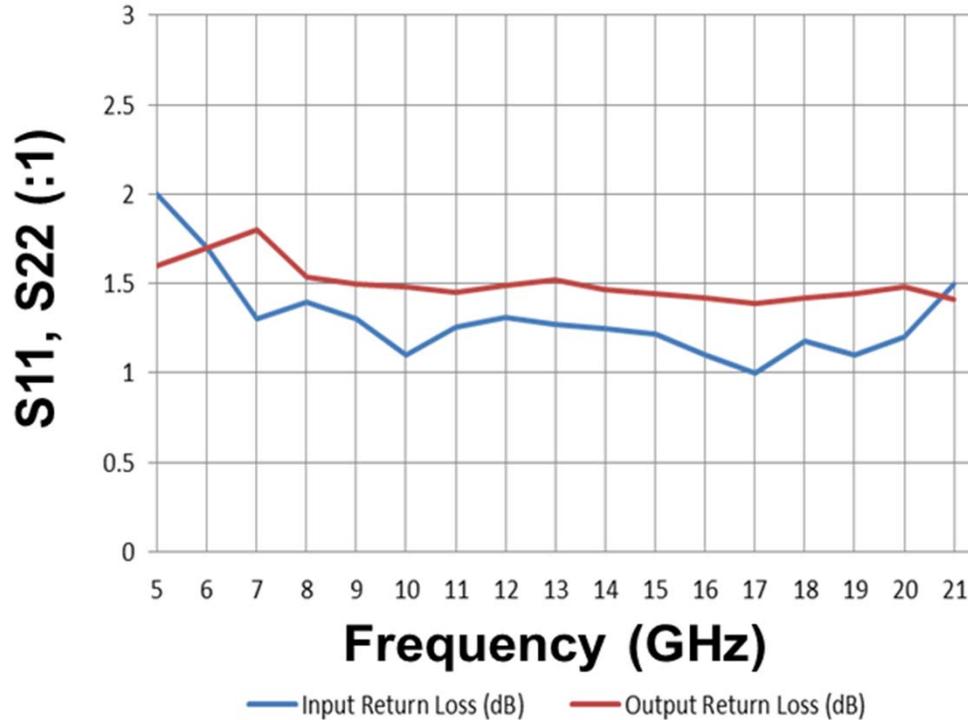
Application

- Radiometers
- Nanophysics
- Astronomy/Observatory Receivers
- Superconductor Research Labs

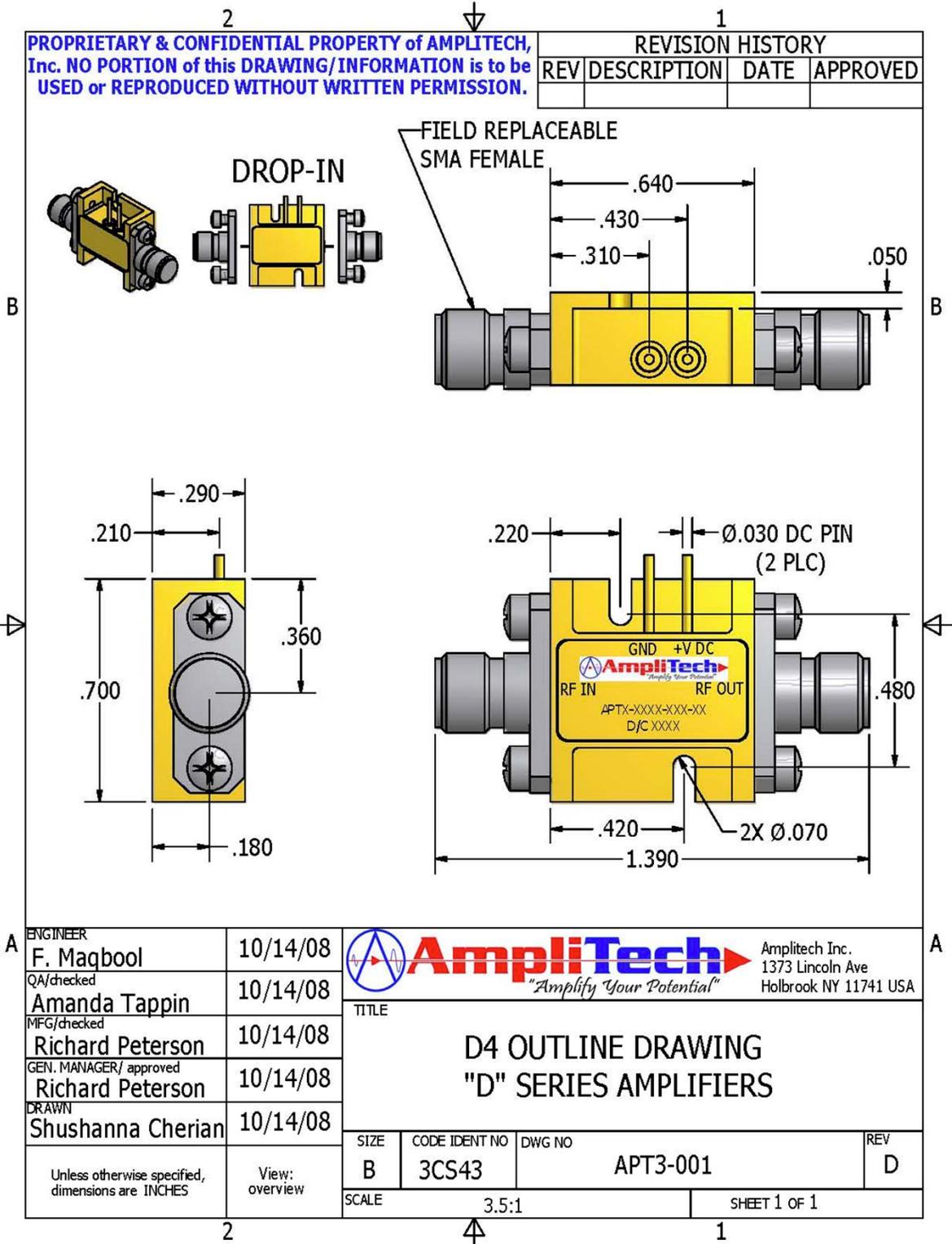
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Input and Output VSWR



Outline Drawing





Product Features

- Frequency Range = 16 to 28 GHz
- Typical Noise Temp = 6.3K at 6K case temp
- Gain (typical) = 32 dB
- State-of-the-Art PHEMT Technology
- MIL-883, MIL-45208 construction and reliability
- Single +0.5V Biasing @~10 mA
- No dual power supply or connector needed
- WR42 / K female connectors
- 0.030" diameter pins for DC and GND
- Custom gain and frequency options available

Typical Key Parameters at 23°C

Parameter	Unit	Min.	Typical	Max.	Notes
Frequency	GHz	16	-	28	Customizable
Gain	dB	-	32	-	Customizable
Gain Flatness	dB	-	±2	-	Customizable
In/Out VSWR	-	-	1.3:1	-	Customizable
Output P1dB	dBm	-	-11	-	Customizable
DC Power	V@mA	+0.4	+0.5	+0.6	10 mA typ
Noise Figure	dB	-	0.7	-	@23°C
Outline/Package	-	-	-	-	WR42CR6

Product Description

This model is a wideband medium-gain LNA which is designed for cryogenic applications down to 4K with an industry low Noise Temperature of 60K at +23°C case temperature. The LNA has a low gain flatness and VSWR across the entire band. Lower Noise options are also available in smaller sub-bands. Compact AmpliTech D-series gold-plated package with SMA female connectors for easy installation.

Application

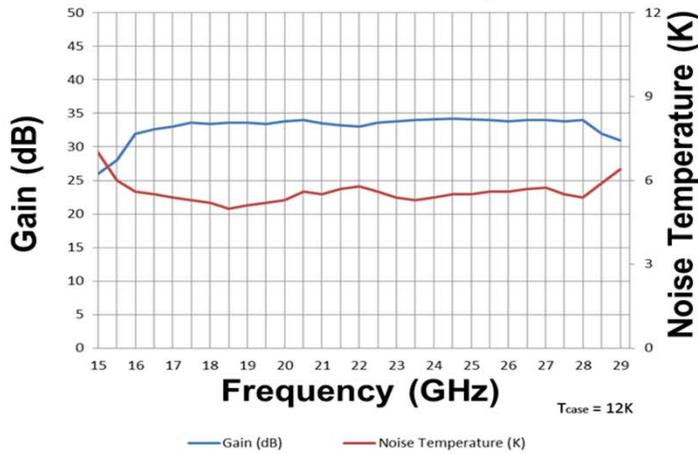
- Radiometers
- Nanophysics
- Astronomy/Observatory Receivers
- Superconductor Research Labs

Absolute Maximum Ratings*

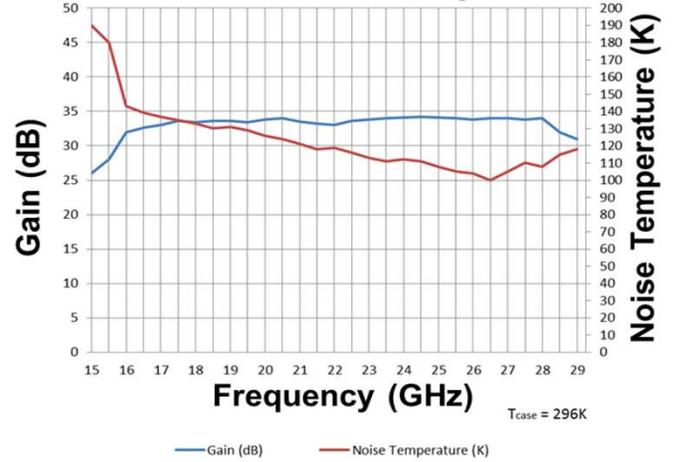
Parameters	Unit	Min.	Max.	Notes
Operating Temperature (Case)	K	+4	+350	95% humidity, non-condensing
Storage Temperature (Case)	K	77	+300	95% humidity, non-condensing
RF Input Power	dBm	-	+10	CW
Die Junction Temp (Tj)	°C	-	+150	For GaAs devices
Positive Supply Voltage	V	+0.5	+0.6	At +V DC terminal
Negative Voltage	V	N/A	-10	Reverse Voltage

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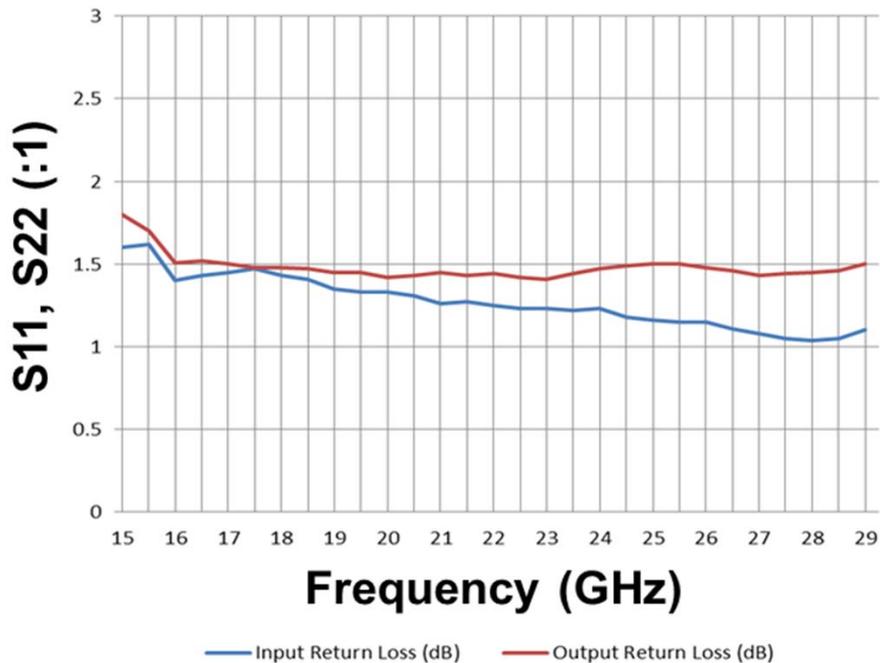
Gain and Noise Temperature



Gain and Noise Temperature



Input and Output VSWR



Outline Drawing

