FEATURES

- **1 GHz Gallium Arsenide Technology**
- **2.5 dB Noise Figure**
- **Patented Auto-Seize P-Series F-Connector**
- **One, Two or Four Port Versions**
- **Two-Way Capable**
- **LED Power Verification**
- **Local or Remote Powering**
- **Environmentally Hardened Design**
- **6 kV Surge Resistant**
- **Current limited power supply**

PRODUCTS

- **BDA-S1/PS – One port, power supply included**
- **BDA-S2/PS – Two port, power supply included**
- **BDA-S4/PS – Four port, power supply included**
- **BDA-A1-R – Four port, power supply sold separately, RoHS Compliant**
- **BDA-A4-R – Four port, power supply sold separately, RoHS Compliant**
- **BDA-K1/PS/RA – One port, power supply and active return included**
- **BDA-K4/PS/RA – Four port, power supply and active return included**
- **Passive return amplifier models are also available with power inserters included (BDA-S*/PS/PI)**

INTRODUCTION

The BDA Broadband Telecommunications Drop Amplifier is a two-way 1 GHz amplifier designed for customer premise amplification. These amplifiers can be used to compensate for long drops and excessive splitting losses. Each BDA is housed within a robust aluminum die cast housing and utilizes Motorola's P-Series Auto-Seize F-Connector for maximum reliability.

GALLIUM ARSENIDE TECHNOLOGY

The BDA amplifier uses advanced Gallium Arsenide technology for improved distortion and noise performance. This technology provides improved distortion performance for both CTB and CSO distortions. Compared to silicon-based amplifiers, GaAs distortion performance remains linear at significantly higher output levels.

TWO-WAY CAPABLE

The BDA amplifier has built-in diplex filters for two-way operation. A passive return path is provided for return path continuity and enables use of multiple broadband devices such as set-top terminals and cable modems. An active return path is provided for the BDA-K*/PS/RA to overcome external splitting losses. The BDA is available with extended return S-split (42/52 MHz). and A-split (65/85) diplex filters for the passive return models, and traditional K-split diplex filters (42/54 MHz) for the active return models. *Please note the S-split return frequency for the BDA passive return models differs slightly from the traditional S-split offered in other Motorola products that use a 5-40 MHz return path.* Please contact your Motorola Account Representative for specific details.

LOCAL OR REMOTE POWERING

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The BDA can be powered locally or remotely via a UL approved AC to DC power supply. Both 120-volt and 220-volt power supplies are available. A power inserter (BDP-100/PI) is available for remote powering applications. The passive return BDA may be purchased in combination with a BDP-100/PI, and all BDA models include a power supply for easier distribution during installation.

SURGE TOLERANT

The BDA amplifier is designed to meet the 6 kV IEEE C62.41-1991 Category B-3 Combination Wave at the input port. It is also designed to meet both 6 kV IEEE C62.41-1991 Category A-3 Ring Wave and 1 kV Combination Wave surge for all output ports, power supply transformer port, and power inserter ports. This surge tolerance enhances system reliability.

INDOOR OR OUTDOOR APPLICATIONS

A weather seal and protective coating are provided so that the BDA amplifier may be used for indoor or outdoor applications.

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BDA-S*/PS Specifications

Forward Specifications		**Passband: 52-1000 MHz**						
Specification	**Freq.** (MHz)	S1 or A1		BDA-S2		S4 or A4		**Comments**
		Min	**Nom**	**Min**	**Nom**	**Min**	**Nom**	
Gain (dB)	*-1000	14.0	15.0	10.2	11.0	6.4	7.0	*S Split 42-1000MHz, A Split 85-1000MHz
Input Return Loss (dB)	*-1000	18	23	18	23	18	23	*S Split 42-1000MHz, A Split 85-1000MHz
Output Return Loss (dB)	*-1000	18	23	18	23	18	23	*S Split 42-1000MHz, A Split 85-1000MHz
Output Port to Port Isolation (dB)	*-1000	-	-	24	28	24	30	*S Split 42-1000MHz, A Split 85-1000MHz *S Split 42-1000MHz, A Split 85-1000MHz
Flatness, (+/- dB max)	*-1000	0.8						*S Split 42-1000MHz, A Split 85-1000MHz
Distortions (dB min)								
Channel loading output levels:								
77 channels (550 MHz)		27		23		19		
110 channels (750 MHz)		24		20		16		
CTB (dBc min)		70						
XM (dB min)		70						
CSO (dBc min)		60						
Noise Figure (dB max)		2.5		3.0		3.0		
RFI Shielding (dB min)		100						
Hum Modulation (dBc)		70						

Return Specifications		**Passband: S Split 5-42 MHz, A Split 5-65MHz**						
Specification	**Freq.** (MHz)	BDA-S1		BDA-S2		BDA-S4		**Comments**
		Max	**Nom**	**Max**	**Nom**	**Max**	**Nom**	
Insertion Loss (dB)	5-*	1.6	1.0	4.8	4.4	8.5	8	*S Split 5-42 MHz, A Split 5-65MHz
Input Return Loss (dB)	5-*	18	25	18	25	18	25	*S Split 5-42 MHz, A Split 5-65MHz
Output Return Loss (dB)	5-*	18	25	18	25	18	25	*S Split 5-42 MHz, A Split 5-65MHz
Output Port to Port Isolation (dB)	5-*	-	-	28	30	26	30	*S Split 5-42 MHz, A Split 5-65MHz

General Specifications		
Parameter	**Specification**	**Comments**
Input and Output Connector(s)	F-Connector	*SCTE compliant. P-Series auto-seize.*
AC Power Supply Input Voltage	120 VAC nominal	*Other power supply voltages available.*
DC Amplifier Input Voltage	12 VDC nominal	
Power Consumption	3 watts	
Surge Withstand	6000 volts	*BDA input port: 6 kV - IEEE C62.41-1991 Cat. B-3 Combination Wave, 3 kA.* *BDA output port(s): IEEE C62.41-1991 Cat. A-3 Ring Wave, 6 kV, 200 A and 1 kV Combination Wave (10x).*
Operating Temperature	-40° to +60° C (-40° to +140° F)	
Housing	Aluminum 360 Die Cast	
Housing Dimensions	4.0 x 4.9 x 1.1 inch (102 x 124 x 28 mm)	*Height x Width x Depth*
Weight	1.1 lb (0.5 kg)	*Add 0.5 lb (0.2 kg) for power supply and cable*

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One-Way BDA with Active Return Specifications

Model Number		BDA-K1/PS/RA		
Forward Specification	**Freq. (MHz)**	**Max.**	**Min.**	**Unit**
Typical Gain	54 - 1003	–	15 ± 1.0	dB
Return Loss - Typical	54 - 1003	–	23	dB
Return Loss - Minimum	54 - 1003	–	18	dB
Flatness	54 - 1003	± 1.0	–	dB
Noise Figure	54 - 1003	3.5	-	dB
RFI Isolation	5 – 1003	–	120	dB
AC/RF Input Isolation	5 – 1003	–	100	dB
Forward Distortion				
CTB	54 - 1003	–	- 75	dB
CSO	54 - 1003	–	- 62	dB
XMOD	54 - 1003	–	- 75	dB
Hum Mod	54 - 1003	–	- 60	dB
Return Specification	**Freq. (MHz)**	**Max.**	**Min.**	**Unit**
Typical Gain	5 - 42	–	10 ± 1.0	dB
Noise Figure[1]	5 - 42	5.5	-	dB
Return Loss	5 - 42	–	18	dB

1. Noise figure of return gain block.

General Specifications

Nominal Impedance 75 Ω
Surge withstand 6 kV Ring Wave (IEEE C62.41-1991 Cat. A3, unused ports terminated)
Power Adaptor 18 VDC output, UL Listed, PTC short-circuit protected, self-resetting
Dimensions 4.9” x 4.0” x 1.0”

Environmental Specifications

Pressure Seal 15 psi
Operating Temperature -40 °C to +60 °C

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Four-Way BDA with Active Return Specifications

Preliminary

Model Number		BDA-K4/PS/RA		
Forward Specification	**Freq. (MHz)**	**Max.**	**Min.**	**Unit**
Typical Gain	54 - 1003	–	7.5 ± 1.0	dB
Return Loss - Typical	54 - 1003	–	23	dB
Return Loss – Minimum	54 - 1003	–	18	dB
Flatness	54 - 1003	± 1.0	–	dB
Noise Figure	54 - 1003	3.5	-	dB
RFI Isolation	5 – 1003	–	120	dB
AC/RF Input Isolation	5 – 1003	–	100	dB
Forward Distortion				
CTB	54 - 1003	–	- 75	dB
CSO	54 - 1003	–	- 62	dB
XMOD	54 - 1003	–	- 75	dB
Hum Mod	54 - 1003	–	- 60	dB
Return Specification	**Freq. (MHz)**	**Max.**	**Min.**	**Unit**
Typical Gain	5 - 42	–	2.5 ± 1.0	dB
Noise Figure[1]	5 - 42	5.5	-	dB
Return Loss	5 - 42	–	18	dB

1. Noise figure of return gain block.

General Specifications

Nominal Impedance 75 Ω
Surge withstand 6 kV Ring Wave (IEEE C62.41-1991 Cat. A3, unused ports terminated)
Power Adaptor 18 VDC output, UL Listed, PTC short-circuit protected, self-resetting
Dimensions 4.9” x 4.0” x 1.0”

Environmental Specifications

Pressure Seal 15 psi
Operating Temperature -40 °C to +60 °C

Specifications subject to change without notice. BDA-K4/PS/RA specifications are preliminary as product is under development.

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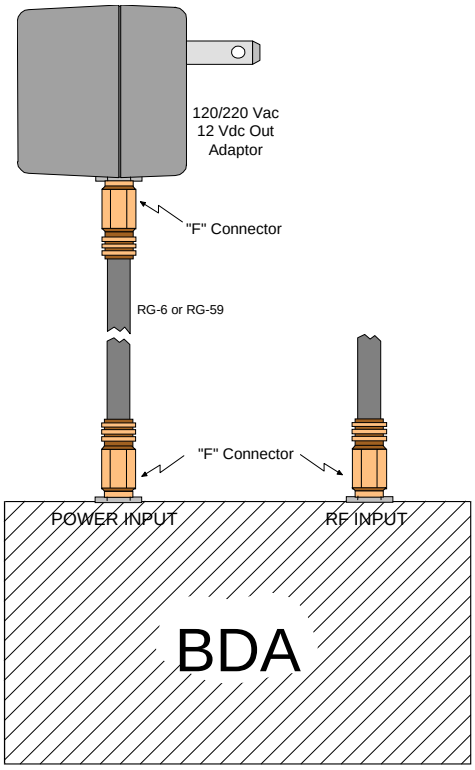

Figure 1: BDA Local Powering Configurations

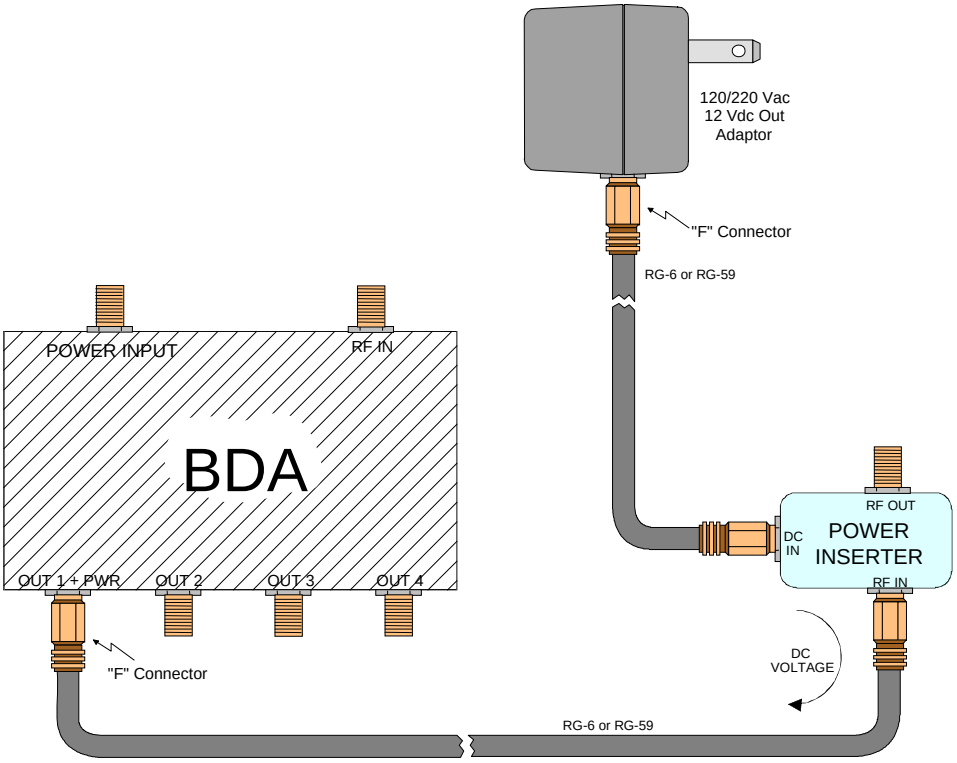

Figure 2: BDA Remote Powering Configuration

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