

## **Product Specification File**

**PN: AFN901**

**Product Type : ADSL Micro Filter**

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Head Office  
Build-B, 5F, No. 248-39, Hsing-Shen Rd., Cheng-Jeng Dist.,  
Lin-Kung Proc. Zone, Kaohsiung, Taiwan, R.O.C.  
TEL:886-7-8153618 Fax:886-7-8150747

(02/2007) Rev A

Revision	Realized By	Modification Description	Date	Last Pages
A01	Kelvin Huang	New Release	Feb-1-2007	9

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2

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(02/2007) Rev A

## Table of contents

<b>1 Preliminary</b> .....	<b>4</b>
<b>2 Customer reference documents</b> .....	<b>4</b>
<b>3 Standard reference documents</b> .....	<b>4</b>
<b>4 Features</b> .....	<b>4</b>
<b>5 Design requirements</b> .....	<b>5</b>
5.1 Schematic.....	5
5.2 Electrical Performance .....	5
5.3 Mechanical.....	7
5.4 Pin Assignments .....	7
<b>6 Environmental conditions:</b> .....	<b>8</b>
6.1 Resistibility to over voltages and over currents:.....	8
6.2 Climatic conditions:.....	8
<b>7 Reliability conditions:</b> .....	<b>9</b>
7.1 Thermal shock:.....	9
7.2. Temperature humidity exposure:.....	9
7.3. Vibration test:.....	9
<b>8 Note</b> .....	<b>9</b>

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3

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(02/2007) Rev A

**1 Preliminary:**

**This is a POTS Micro Filter that has been specifically designed to implement the functionality of low pass filter in ADSL over POTS application.**

**2 Customer reference documents:**

**None**

**3 Standard reference documents:**

- ETS 300 001
- ITU-T K21
- ANSI T1E1.4 G.992.2
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**4 Features**

- Compact package, includes connectors for ease of installation
- Design for ADSL over POTS Application
- 100 mA DC Loop Current Capacity

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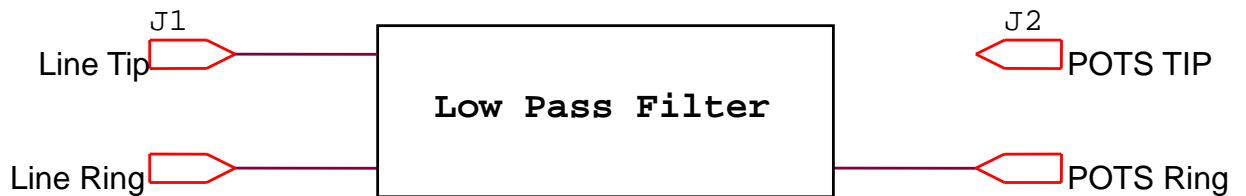
4

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(02/2007) Rev A

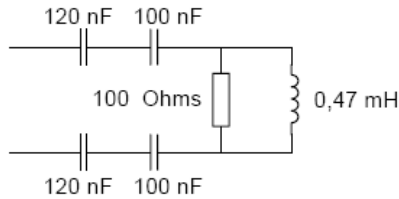
## 5 Design Requirement

### 5.1 Schematic



## 5.2 Electrical Performance

### 5.2.1 General conditions

General conditions		
	Conditions	Values
Splitter bandwidth		DC-4.0KHz
Voice band		0.3-3.4KHz
Ringing frequency		15.3 Hz to 68 Hz
ADSL band		30KHz ~ 1104KHz
Line Impedance ZL	300 Hz to 3.4 kHz	600 ohms
Modem impedance	30 kHz to 1104KHz	100 ohms
ZADSL	0Hz ~ 4KHz	
Max. operating voltage to ground		250VDC
DC Loop current		<100mA

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5

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(02/2007) Rev A

**5.2.2 Electrical Requirement**

<b>Electrical Requirement(Reference ETSI Standard)</b>		
<b>DC requirements</b>		
	<b>Conditions</b>	<b>Values</b>
TIP and RING to Earth	100VDC	> 20 MΩ
TIP to RING	100VDC	> 5 MΩ
TIP to RING	POTS port shorted	<50Ω
<b>Voice band loss requirements</b>		
Insertion loss (W/ and W/O Z <sub>ADSL</sub> )	Z <sub>R</sub> / @1004Hz	<1.0 dB
Insertion loss (W/ and W/O Z <sub>ADSL</sub> )	600Ω/ @1004Hz	<1.0 dB
Return loss (POTS and LINE port W/ Z <sub>ADSL</sub> )	300 Hz to 500Hz	>14+(4/200)(f-300) dB
	500Hz to 2.0 kHz	>18 dB
	2kHz to 3.4 kHz	>18-(4/1.4K)(f-2K) dB
Group delay distortion Z <sub>R</sub> & 600 Ω(W/ and W/O Z <sub>ADSL</sub> )	0.6 kHz to 3.2 kHz	< 200 us
	0.2 kHz to 4.0 kHz	< 250 us
Intermodulation distortion Z <sub>R</sub>	2 <sup>nd</sup>	> 57 dB
	3 <sup>rd</sup>	> 60 dB
Unbalance about Earth	50Hz to 600Hz	> 40 dB
	600Hz to 3400Hz	> 46 dB
	3400Hz to 4KHz	>40 dB
	4KHz to 30KHz	> 40 dB
	30KHz to 1104KHz	> 45 dB
	1104K to 2.2MHz	> 30 dB
POTS transient effects		< 2Vp-p, <15KHz
<b>ADSL band requirements</b>		
Stop band attenuation Z <sub>RHF</sub>	30kHz~200kHz	>30dB
	200kHz~2.2MHz	>50dB

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6

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(02/2007) Rev A

<b>Electrical Requirement(Reference ITU Standard)</b>		
<b>DC requirements</b>		
	<b>Conditions</b>	<b>Values</b>
TIP and RING to Earth	100VDC	> 5 MΩ
TIP to RING	100VDC	> 5 MΩ
TIP to RING	POTS port shorted	<25Ω
<b>Voice band loss requirements</b>		
Insertion loss	Short Loop/ @1004Hz	<1.0 dB
	Long Loop/ @1004Hz	<0.75 dB
Attenuation distortion	Short Loop/ 0.2-3.4 kHz	+1.5 to -1.5 dB
	Short Loop/ 3.4-4.0 kHz	+2.0 to -2.0 dB
	Long Loop/ 0.2-3.4 kHz	+0.5 to -1.5 dB
	Long Loop/ 3.4-4.0 kHz	+1.0 to -1.5 dB
Return loss	ERL	>6dB
	SRL-L	>3dB
	SRL-H	>3dB
Delay distortion	Short Loop/ 0.6-3.2 kHz	<200 μs
	Short Loop/ 0.2-4.0 kHz	<250 μs
	Long Loop/ 0.6-3.2 kHz	<200 μs
	Long Loop/ 0.2-4.0 kHz	<250 μs
	0.2 kHz to 4.0 kHz	< 250 us
Intermodulation distortion	2 <sup>nd</sup>	> 57 dB
	3 <sup>nd</sup>	> 60 dB
Unbalance about Earth	200 Hz-1 kHz	< 58 dB
	3 kHz	< 53 dB
	4KHz to 30KHz	< 40 dB
	30KHz to 1104KHz	< 45 dB
	1104K to 2.2MHz	< 38 dB
POTS transient effects		< 2Vp-p, <15kHz
<b>ADSL band requirements</b>		
Stop band attenuation	30kHz~200kHz	>30dB
	200kHz~2.2MHz	>50dB
Input impedance	32kHz~2.2MHz	<0.25dB

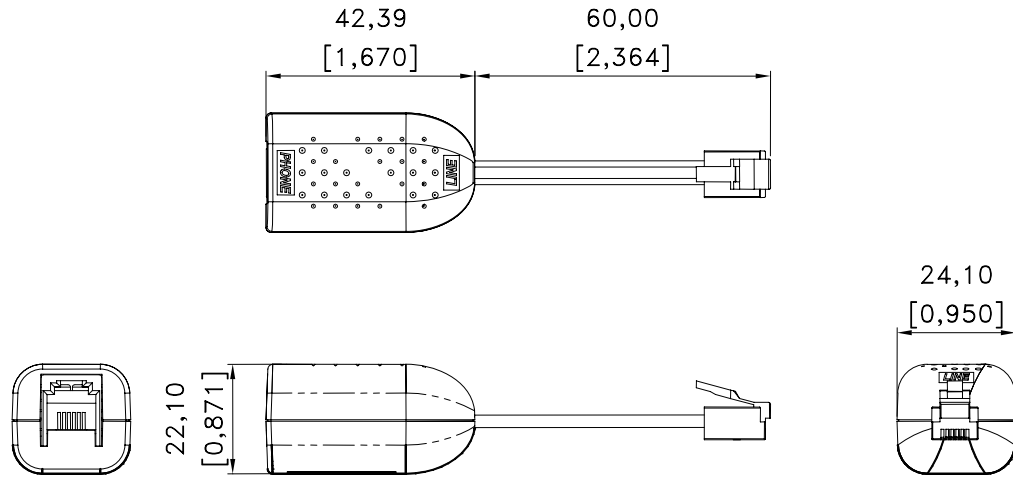
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7

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(02/2007) Rev A

### 5.3 Mechanical



### 5.4 Pin Assignments

Connector	Function	Style	Tip	Ring
J1	Line	RJ11 Plug	Pin3	Pin4
J2	Phone	RJ11 Jack	Pin3	Pin4

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(02/2007) Rev A

**6 Environmental conditions:**

## 6.1 Resistibility to over voltages and over currents:

Comply with the resistibility requirements per ITU-T Recommendation K.21 electrical safety requirements

## 6.2 Climatic conditions:

## 6.2a. Operating temperature:

-20 °C to +60 °C

## 6.2b. Storage and transportation:

Low ambient temperature - 40 °C

High ambient temperature +80 °C

## 6.2c. Operation humidity:

0 to 95% (non-condensing)

**7 Reliability conditions:**

## 7.1 Thermal shock:

Temperature from -20 °C to +85 °C for 5 cycles

## 7.2. Temperature humidity exposure:

+50 °C / 95 RH, 96hrs

## 7.3. Vibration test:

Random vibration / Overall: 1.15 g rms

Freq. (Hz): 1 → 4 → 100 → 200

PSD (g<sub>2</sub>/ Hz): 0.0001 → 0.01 → 0.01 → 0.001

Test Axis / Time: Top / 30 mins Bottom / 10 mins

X axis / 10 mins Y axis / 10 mins

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