

# AAP600

## Automotive Electret Condenser Microphone Pre-Amplifier

*PRELIMINARY DATA*

### DESCRIPTION

The AAP600 is part of AAI's new family of specialty products for Portable Electronics applications, in this case aimed at two terminal ECMs requiring integrated pre-amplifiers. The AAP600 ECM pre-amplifier offers ultra low noise, require low current and feature ultra low input capacitance.

The AAP600 is offered with a fixed gain of 32dB and an output operating voltage of 3.5V.

The AAP600 will be offered in a chip scale SMD package. The package size is 1.09mm x 1.12mm, with an overall height of 350µm including solder bumps. This extremely small package size and aspect ratio is optimum for use in small diameter microphones.

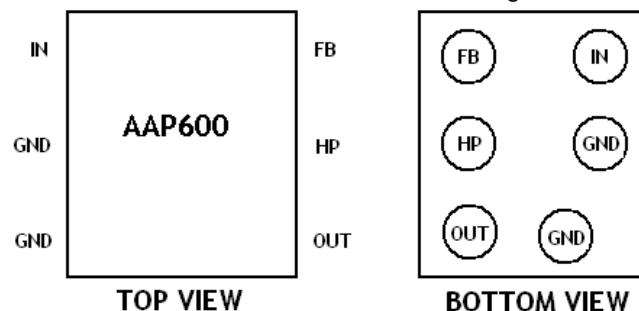
Available for purchase in either waffle pack for low volume orders or in tape & reel for larger quantities.

### FEATURES

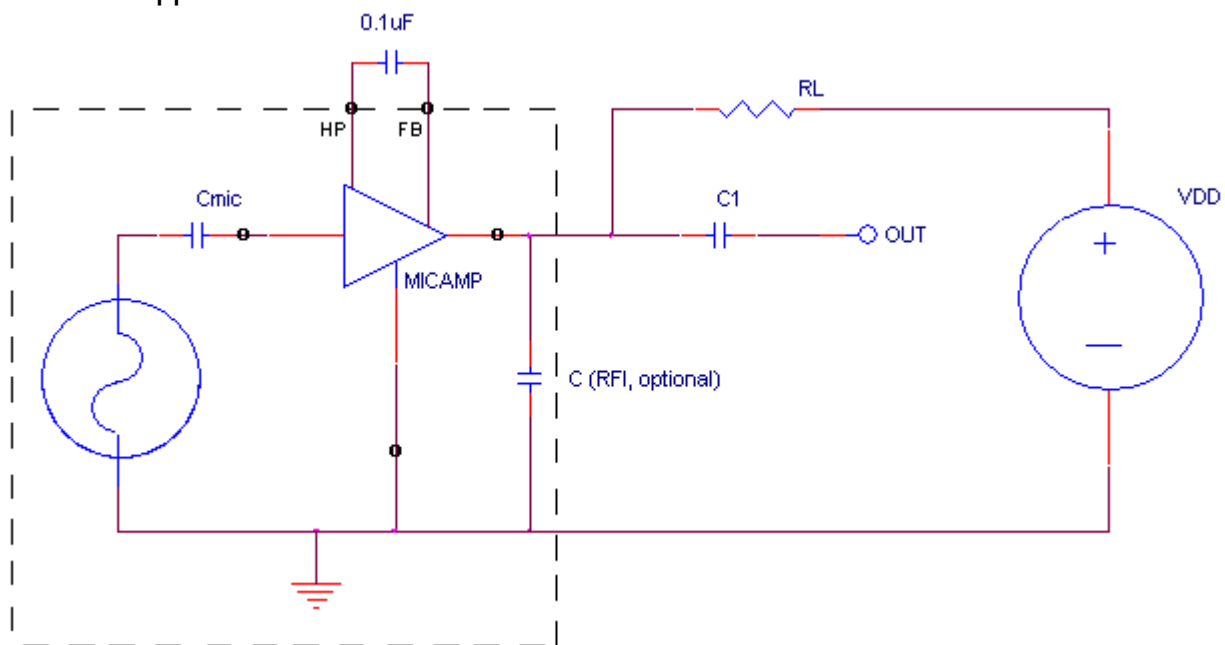
- High tolerance to RFI, 8kV ESD tolerance
- 1.8µV RMS equivalent input noise (A-weighted values) Cmic = shorted.
- 0.25% THD typical for output swing = 200mV peak to peak.
- 7.2V – 12V supply voltage range
- 3.5V output operating voltage
- 32dB gain
- Suitable for small microphones down to 3mm diameter
- High pass filter

### PIN CONFIGURATION: 5-Lead Micro SMD

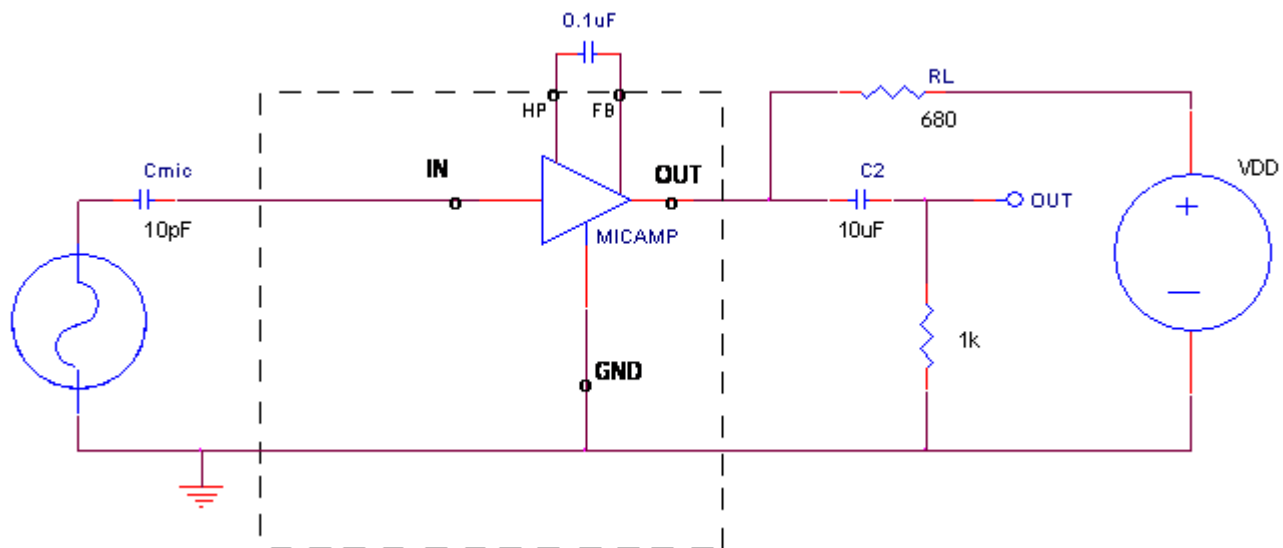
AAP600 shown from the top and bottom.  
Numbers indicate batch ID and gain.



## Typical Circuit Application



## Typical Test Conditions



**MAXIMUM RATINGS**

PARAMETER	SYMBOL	PARAMETERS		UNITS	CONDITIONS
		MIN.	MAX.		
Applied Voltage (all pins)			5.5	V	Max voltage between pin and GND
ESD	$V_{\text{esd,out}}$	8000		V	OUT terminal
	$V_{\text{esd}}$	2000			Other terminals
Operating Ambient Temp		-40	85	°C	
Storage Temp Range		-40	100	°C	
Performance Operating Temp Range		-10	60	°C	

**ELECTRICAL CHARACTERISTICS**

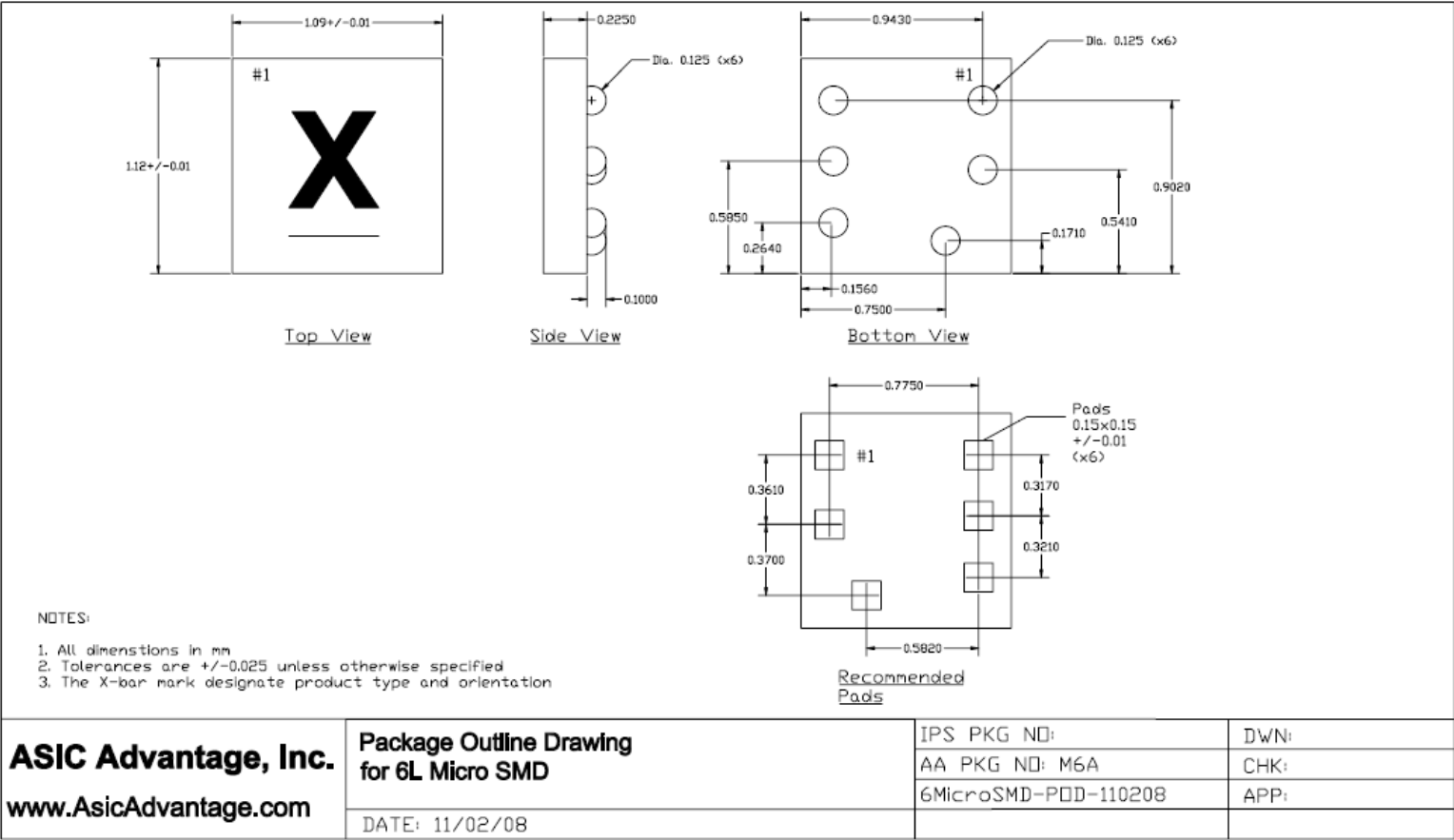
Unless otherwise stated:  $T=25^{\circ}\text{C}$ ,  $V_{\text{DD}}=10\text{V}$ ,  $V_{\text{in}}=-50\text{dBV}_{\text{rms}} / 9\text{mV}_{\text{pp}}$ ,  $R_{\text{L}}=680\Omega$ ,  $C_{\text{mic}}=10\text{pF}$

PARAMETER	SYMBOL	PARAMETERS			UNITS	CONDITIONS
		MIN	TYP	MAX		
OPERATING SUPPLY						
Supply Voltage	VDD	7.2	10	12	V	
Operating Output Voltage	V <sub>op</sub>	3.35	3.45	3.55	V	
Supply Current	IDD	5.7	9.7	12.5	mA	
PSRR			-50		dB	
AC CHARACTERISTICS						
Transfer Function	TF	31.5	32.5	33.5	dB	
Input Referred Noise	e <sub>n</sub>		1.8		μV RMS	Input shorted to GND, A-weighted values
LF Cutoff	f <sub>LOW</sub>		200		Hz	
HF Cutoff	f <sub>HIGH</sub>		20		kHz	
Total Harmonic Distortion	THD		0.25		%	Output signal=200mVpp
Input Capacitance	C <sub>IN</sub>		1		pF	Vin(dc) = 0V
Input Impedance	Z <sub>IN</sub>	1			GΩ	
Output Impedance	Z <sub>OUT</sub>		25		Ω	

ORDERING INFORMATION

Ordering PN	Subgroup	Description	Temp. Range	Package	Packing Type	Packing Qty
AAP600 S-M6A-G-LF-W	Microphone ECM Interface	Pre-Amplifier, 32dB gain	S - Special -10°C to +60°C	6-pin Micro SMD	Waffle-Pack	400
AAP600 S-M6A-G-LF-TR	Microphone ECM Interface	Pre-Amplifier, 32dB gain	S - Special -10°C to +60°C	6-pin Micro SMD	T&R	3500

PACKAGE DIMENSIONS AND MARKING



**The following is a brief overview of certain terms and conditions of sale of product. For a full and complete copy of all the General Terms and Conditions of Sale, visit our webpage <http://www.asicadvantage.com/terms.htm>.**

#### **LIMITED WARRANTY**

The product is warranted that it will conform to the applicable specifications and be free of defects for one year. Buyer is responsible for selection of, use of and results obtained from use of the product. Buyer indemnifies and holds ASIC Advantage, Inc. harmless for claims arising out of the application of ASIC Advantage, Inc.'s products to Buyer's designs. Applications described herein or in any catalogs, advertisements or other documents are for illustrative purposes only.

#### **CRITICAL APPLICATIONS**

Products are not authorized for use in critical applications including aerospace and life support applications. Use of products in these applications is fully at the risk of the Buyer. Critical applications include any system or device whose failure to perform can result in significant injury to the user.

#### **LETHAL VOLTAGES**

Lethal voltages could be present in the applications. Please comply with all applicable safety regulations.

#### **INTELLECTUAL PROPERTY RIGHTS AND PROPRIETARY DATA**

ASIC Advantage, Inc. retains all intellectual property rights in the products. Sale of products does not confer on Buyer any license to the intellectual property. ASIC Advantage, Inc. reserves the right to make changes without notice to the products at any time. Buyer agrees not to use or disclose ASIC Advantage Inc.'s proprietary information without written consent.

#### **TRADEMARKS AND PATENTS**

- IN-PLUG® is a registered trademark of ASIC Advantage, Inc.
- AAI's modified snubber network is patented under the US Patent # 6,233,165

#### **PROTECTION FOR CUSTOM SOLUTIONS**

When AAI accepts to design and manufacture products to Buyer's designs or specifications, buyer has certain obligations to provide defense in a suit or proceeding claiming infringement of a patent, copyright or trademark or for misappropriation of use of any trade secrets or for unfair competition.

#### **COMPLIANCE WITH LAWS**

Buyer agrees that at all times it will comply with all applicable federal, state, municipal, and local laws, orders and regulations. Buyer agrees to comply with all applicable restrictions on exports and re-exports including obtaining any required U.S. Government license, authorization, or approval. Buyer shall pay any duties, levies, taxes, brokerage fees, or customs fees imposed on the products.

#### **TITLE AND DELIVERY**

All shipments of goods shall be delivered ExWorks, Sunnyvale, CA, U.S.A. Title in the goods shall not pass to Buyer until ASIC Advantage, Inc. has received in full all amounts owed by Buyer.

#### **LATEST DATASHEET UPDATES**

For the latest datasheet updates, visit our web page: <http://www.asicadvantage.com>.

#### **WORLDWIDE REPRESENTATIVES**

To access AAI's list of worldwide representatives, visit our web page <http://www.asicadvantage.com>.

#### **COPYRIGHTS**

Copyrights and all other proprietary rights in the Content rests with ASIC Advantage Inc. (AAI) or its licensors. All rights in the Content not expressly granted herein are reserved. Except as otherwise provided, the Content published on this document may be reproduced or distributed in unmodified form for personal non-commercial use only. Any other use of the Content, including without limitation distribution, reproduction, modification, display or transmission without the prior written consent of AAI is strictly prohibited. All copyright and other proprietary notices shall be retained on all reproductions.

**ASIC Advantage INC.**

1290-B Reamwood Ave, Sunnyvale California 94089, USA

Tel: (1) 408-541-8686 Fax: (1) 408-541-8675

Website: <http://www.asicadvantage.com>