



Allegro Microsystems, Inc.  
955 Perimeter Rd.  
Manchester, NH  
03062

April 28, 2006

Enclosed in the ACS712 demo-board for your evaluation. Included is the schematic and layout for the demo-board. The demo-board has connection options for testing. Either the Molex connector or the Test Points can be used to power and monitor the ACS712. RJ is a  $0\Omega$  jumper connected to AGND to simplify oscilloscope probe ground connections.

#### Connector Description

Name	Description
IP+ (JB1)	Lead-frame current +. Positive current flowing into this connection will cause Vout to rise in proportion to the current measured in the lead-frame. Internally IP+ and IP- are connected via the copper lead-frame.
IP- (JB2)	Lead-frame current -. The layout for the demo boards supports 1.6kV <sub>RMS</sub> isolation between IP $\pm$ and the low voltage signals.
Vout (TP4, J1.4)	Voltage proportional to the current measured in the lead-frame
+Vin (TP1, J1.1)	External power supply voltage. Connect a +6-15V supply to this pin to power the ACS712. An on board regulator creates the 5V rail to power the ACS712. The +5.0 pin should be left floating when this option is used.
+5.0 (TP2, J1.2)	External 5V Supply connection. If a 5V rail is available, this can be used in place of +Vin.
AGND (TP3, J1.3)	Ground return for external power supply
CF (C5, TP5, J1.5)	Filter Capacitor. A capacitor connected to this pin will further attenuate noise on the output. Optionally, there is a capacitor pad C5 which has the same function.
GND (JB3, JB4)	IP Ground return. This connection is strictly optional and intended to be used in applications where lead inductance needs to be minimized. The layout supports 1.6kV <sub>RMS</sub> isolation between this ground and the low voltage signals.

Sincerely,

John Cummings  
Strategic Marketing Manager  
Allegro Microsystems, Inc.

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603-626-2454

ITEM	QTY	S	Manufacturer	P/N	DESCRIPTION	REF
1	2	6	Panasonic	ECJ-HVB1C106M	capacitor, monolythic, 1206, X5R, 10uF, 16V	C1, C2
2	1	6	Panasonic	ECJ-1VB1C104K	capacitor, monolythic, 0603, X5R, 0.1uF, 16V	C3
3					Do Not Install	C4, C5
4	1	6	Panasonic	ERJ-3GEY0R00V	resistor, metal film, 0603, 5%, zero ohm	R1
5	1	6	Murata	BLM18BB471SN1D	inductor, 0603	L1
6	1	10	National Semi	LP2980AIM5-5.0	IC, voltage regulator, 5V, SOT-23-5	U2
7	4	10	Johnson Components	111-2223-001	connector, banana plug	IP+, IP-, IPGND, IPGND
8	5	10	Keystone Electronics	5005K	testpoint, 0.063 inch diameter, red	TP1 through TP5
9	4				screw, zinc metal plated, 4-40, 0.5 inch, Philips	see construction notes
10	4	6	Keystone Electronics	1450C	standoff, male/male, zinc metal plated, 4-40, 0.5 inch long, hex shaped	see construction notes
11	1	10	Molex	22-11-2062	connector, friction lock header, 6 pin	J1
12	1				buss wire, tinned, 22 or 24 gauge 0.5 inch long. See construction notes	RJ
13	1	10			PCB, as from gerber files marked "85-0322 Rev 2"	
14					This line left blank intentionally	

This BOM does not require Lead-Free components.

**BOM Explanation**

Item: each distinct component has a "line item" (but may span multiple lines). When questions arise to a component parameter/designation/etc, please refer to line item number first when inquiring.

QTY: the quantity of items to be ordered per finished assembly. Note: higher level documents may call this BOM multiple times

S: BOM Substitution Instructions. See below

Manufacturer: Recommended (or required) Manufacturer for the part(s). Note: multiple manufacturers may be listed per line item.

Note: if no manufacturer part number is given, the the item is considered generic enough that that any manufacturer should work. Ie, 1N4001 in a DO-41

P/N: The manufacturers part number. Note: if multiple manufacturers are listed, this P/N will correspond only to the manufacturer to the immediate left of the P/N

Note: Manufacturer part number may be incomplete; if not enough information is given, see below.

Description: this is a generic description of the part. Package size, part type, minimum/maximum requirements are listed.

Ref: This is the list of component designators.

If "see construction notes" is listed, the construction notes must be used to determine component location (not marked on board etc)

Note: surface mount components may have a designator listed but not marked on PCB silkscreen; if so then refer to -CPG (or similar) drawing for location and/or the pick and place file (as found in the gerber files)

If a line item has multiple part numbers, they are not to be interpreted as any order of preference

If a line item has multiple part numbers, and the substitution code is 10, then only use parts as listed. Mixing is allowed (for example, if 2 manufacturers are listed, and qty is 5, then 2 parts may be from vendor A and 3 parts from vendor B)

**BOM Substitution Notes:**

The third column nomenclature is to be used for second sourcing components as follows:

1. Any substitution allowed, as long as mechanically identical
2. Any substitution allowed, as long as mechanically and electrically identical
3. Any substitution, as long as mechanically, electrically and visually identical.
4. Any substitution allowed, as long as mechanically and visually identical and electrically similar
5. Any substitution allowed, as long as mechanically and visually similar and electrically identical
6. Any substitution allowed, as long as mechanically, electrically and visually similar
10. No substitution allowed.

"Identical" is to be interpreted as "meeting the same specifications" with no deviation from the stated specifications.

"Similar" is to be interpreted as "meeting or exceeding the stated specifications, in regards to electrical and/or mechanical parameters (see Substitution code).

"Similar" as applied to visual means different colors may be used, unless otherwise noted. For example, an item with Substitution code 6 can typically be any color.

However, if the description states "red" and the substitution code is 4, 6 or similar, then a red item must be used--but it may be any shade of red.

For example, if a capacitor is to be "identical", it must have the same voltage and tempco etc ratings as stated in the description.

If a capacitor is to be similar, the voltage rating may be higher, the tempco lower, etc.

Unless if the Substitution code is 10, "identical" parts may be sourced from different manufacturers and may have slight differences in appearance.

**Substituting for "Similar" parts:**

Capacitors:

-tempco must be same or go down. Alternately, go up in this order: Z5U, X5R, X7R, NP0, C0G

-tolerance must be same or go down

-voltage rating must be same or go up

- unless otherwise stated, capacitance value must be identical
- unless otherwise stated, lead spacing and external dimensions must be the same
- unless otherwise stated, height must be the same.

**Resistors:**

- tempco must same or go down
- tolerance must be same or go down
- unless otherwise stated, resistance value must be identical  
    Note: when going from 5% to 1%, use nearest value size
- power dissipation must be same or greater
- unless otherwise stated, package size must be the same
- unless otherwise stated, coloring and marking can vary

**Diodes and Transistors:**

- unless otherwise stated, package size must be the same

**IC's, Connectors, and all other parts::**

- unless otherwise stated, package size must be the same (DIP16, SOIC-8, etc)

**Manufacturer Part Number Discrepancies**

Every attempt will be made to provide a workable part number. However, prefixes and suffixes can vary over time.  
If second sourcing from a different manufacturer, make sure that the requirements as noted under the Description column are met.  
In general, if temperature option(s) are not noted, parts specified to work from 0-85C will be sufficient.  
If package information is not given, please check the description for package type.

**Any and all discrepancies should be reported to Allegro MicroSystems for correction and updates.**

A

A

B

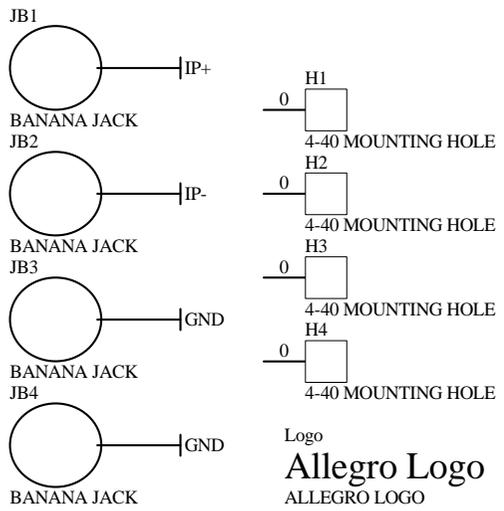
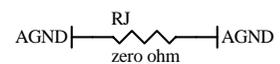
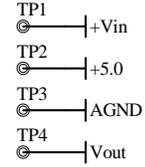
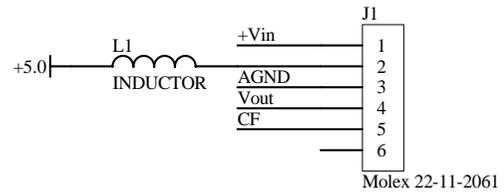
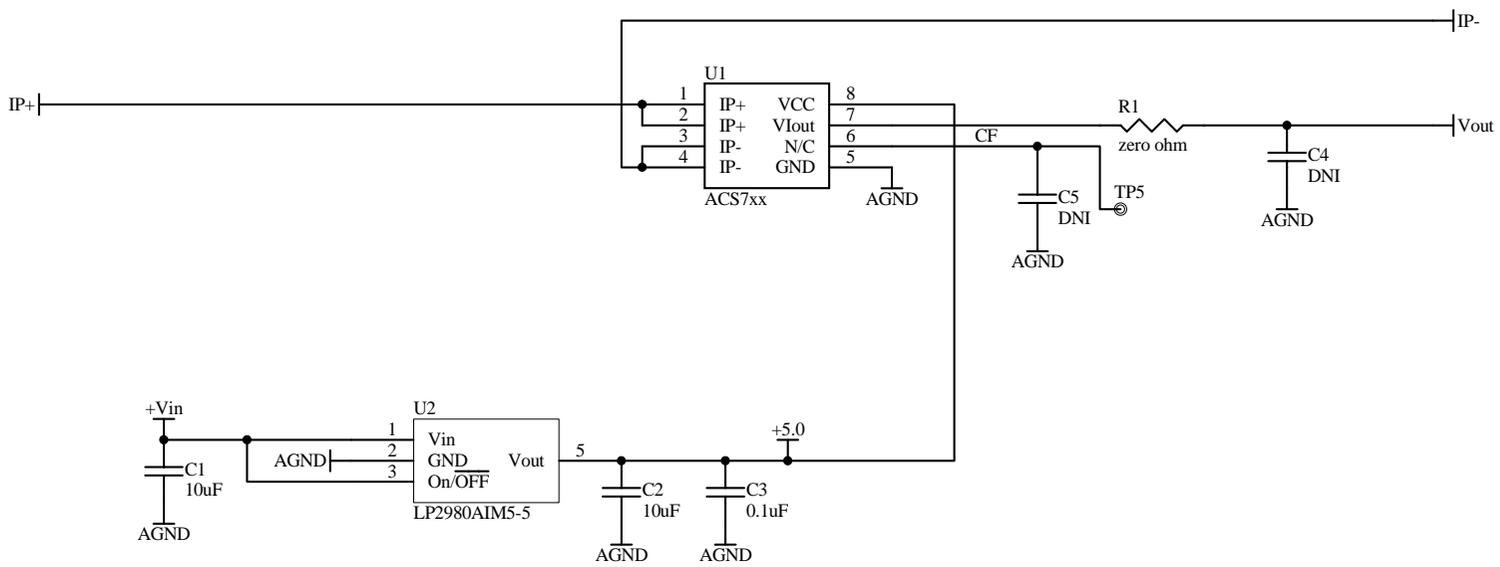
B

C

C

D

D



TP1 - TP4: Testpoints for 0.063 hole: Keystone Electronics 5005 or equivalent  
 JB1 - JB4: use Johnson Components 111-2223-001 Banana jack  
 C1, C2: 1206 16V 10uF: Panasonic ECJ-HVB1C106M  
 C3: 0603 16V 0.1uF: Panasonic ECJ-1VB1C104K  
 L1: 0603 Murata BLM18BB471SN1D  
 R1: 0603 zero ohm: Panasonic ERJ-3GEY0R00V  
 RJ: Use buss wire, 0.5inch long and 0.25inch above PCB

Title <b>ACS7xx Demo Board</b>		Allegro MicroSystems, Inc 955 Perimeter Rd Manchester NH 03103	
Size: A	Number: 85-0322-000-SCH	Revision: 1	
Date: 3/8/2006	Time: 11:22:12 AM	Sheet 1 of 1	
File: C:\DXP\85-0322\85-0322 Rev 1.SchDoc			

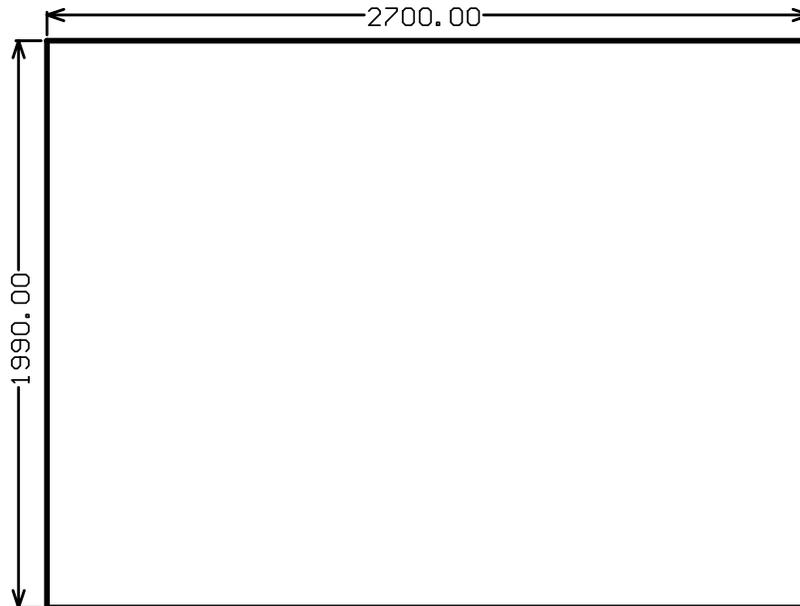
ACS7xx Demo Board  
85-0322-000-BD1

PCB Outline  
Page 1 of 1  
FR4, 0.062, 2 Layers  
4oz Finished Copper top/bottom  
No Gold Plating  
Top/bottom side silkscreen  
Top/bottom soldermask

Rev 2  
4/25/2006

SCALE: 1.48  
4/25/2006

Min trace = 10mil, min trace spacing = 10mils, min hole size 15mil



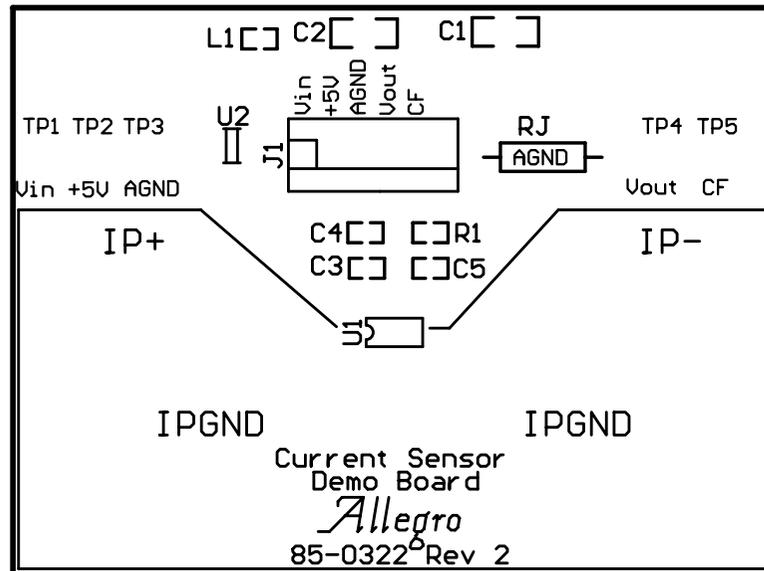
ACS7xx Demo Board  
85-0322-000-SS1

Silkscreen Component Side  
Page 1 of 1  
FR4, 0.062, 2 Layers  
4oz Finished Copper top/bottom  
No Gold Plating  
Top/bottom side silkscreen  
Top/bottom soldermask

Rev 2  
4/25/2006

SCALE: 1.48  
4/25/2006

Min trace = 10mil, min trace spacing = 10mils, min hole size 15mil



ACS7xx Demo Board  
85-0322-000- SM1

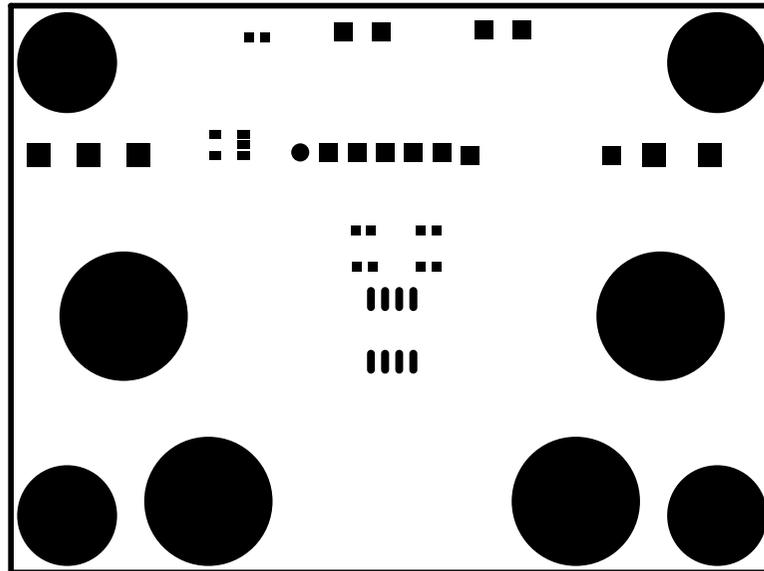
Top Soldermask  
Page 1 of 1  
FR4, 0.062, 2 Layers  
4oz Finished Copper top/bottom  
No Gold Plating  
Top/bottom side silkscreen  
Top/bottom soldermask

Rev 2  
4/25/2006

SCALE: 1.48

4/25/2006

Min trace = 10mil, min trace spacing = 10mils, min hole size 15mil

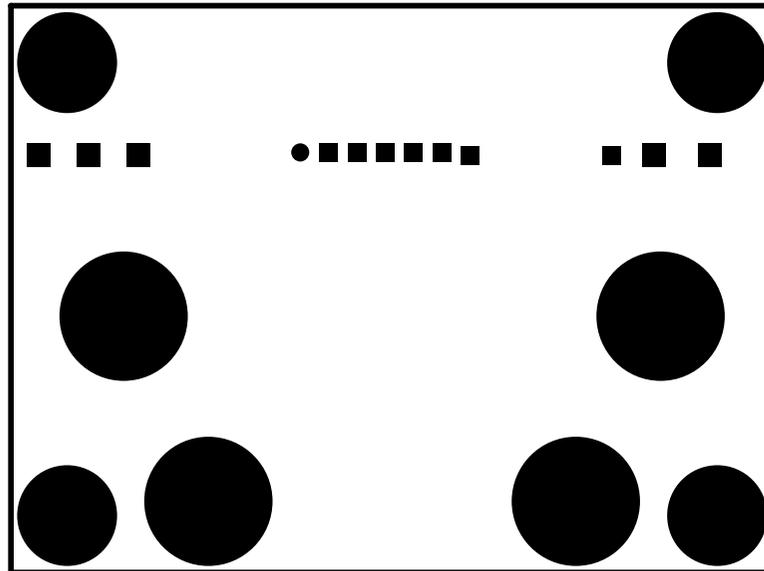


ACS7xx Demo Board  
85-0322-000-SM2

Bottom Soldermask  
Page 1 of 1  
FR4, 0.062, 2 Layers  
4oz Finished Copper top/bottom  
No Gold Plating  
Top/bottom side silkscreen  
Top/bottom soldermask

Rev 2  
4/25/2006

SCALE: 1.48  
4/25/2006  
Min trace = 10mil, min trace spacing = 10mils, min hole size 15mil



ACS7xx Demo Board  
85-0322-000- CU1

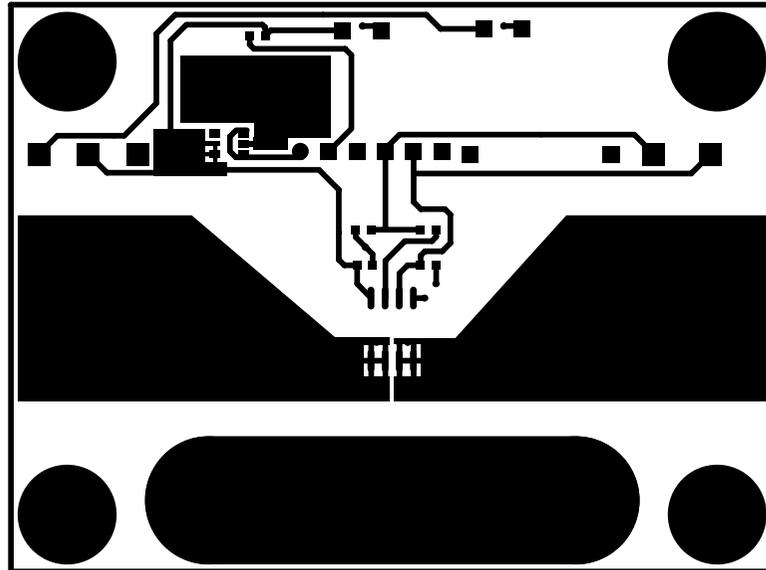
Copper Component Side  
Page 1 of 1  
FR4, 0.062, 2 Layers  
4oz Finished Copper top/bottom  
No Gold Plating  
Top/bottom side silkscreen  
Top/bottom soldermask

Rev 2  
4/25/2006

SCALE: 1.48

4/25/2006

Min trace = 10mil, min trace spacing = 10mils, min hole size 15mil



ACS7xx Demo Board  
85-0322-000- CU2

Copper Solder Side  
Page 1 of 1  
FR4, 0.062, 2 Layers  
4oz Finished Copper top/bottom  
No Gold Plating  
Top/bottom side silkscreen  
Top/bottom soldermask

Rev 2  
4/25/2006

SCALE: 1.48

4/25/2006

Min trace = 10mil, min trace spacing = 10mils, min hole size 15mil

