LAMPIRAN
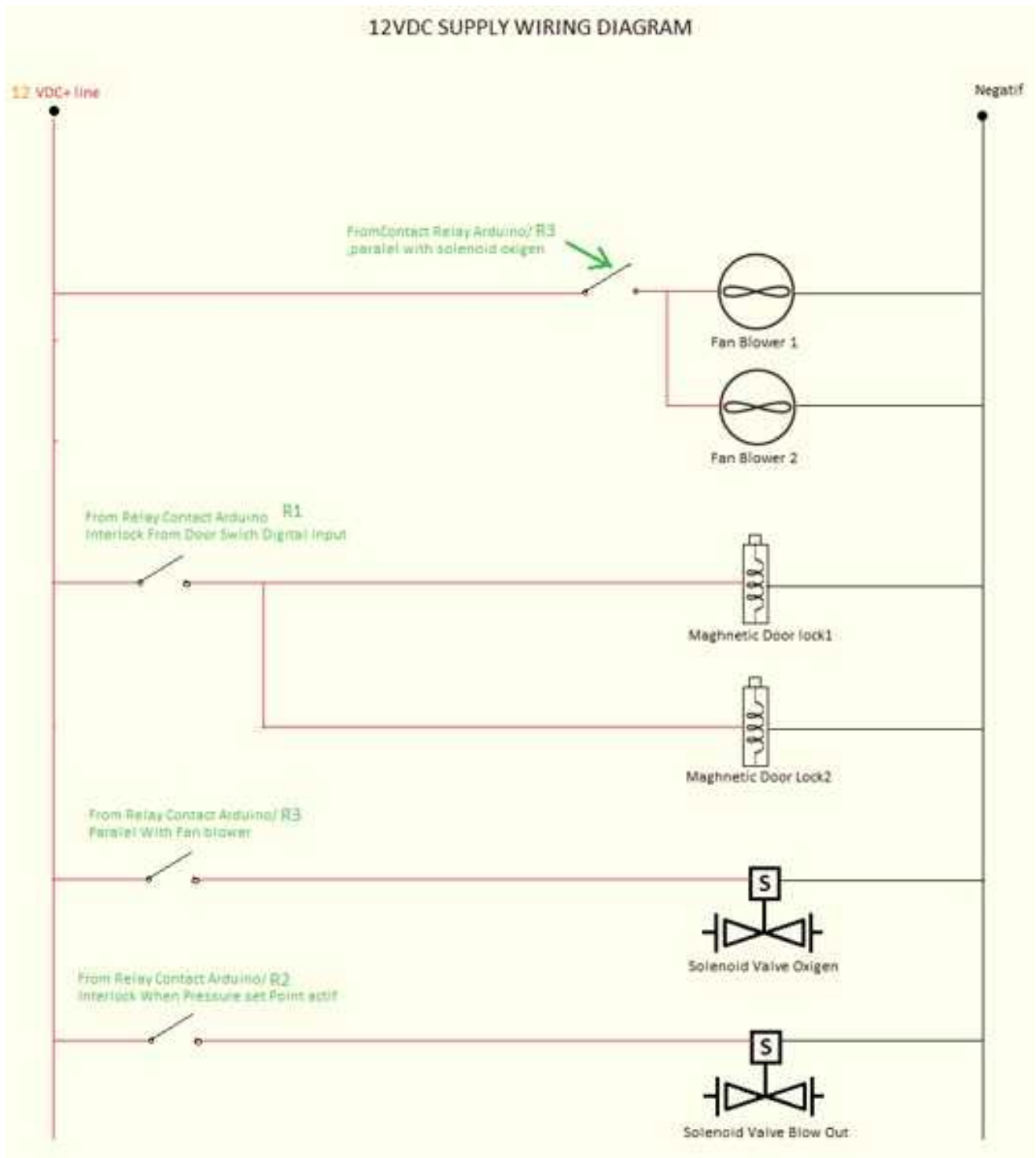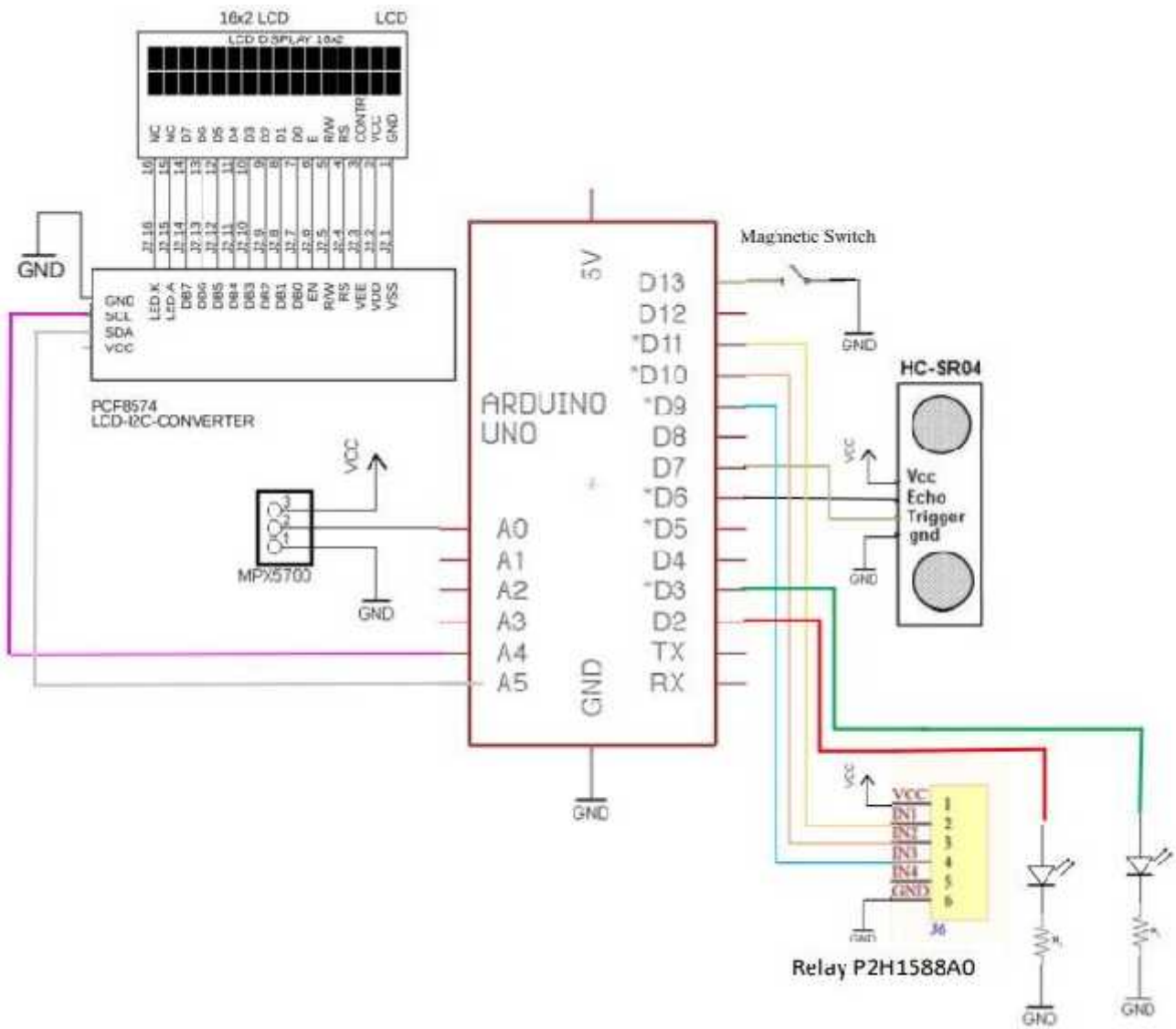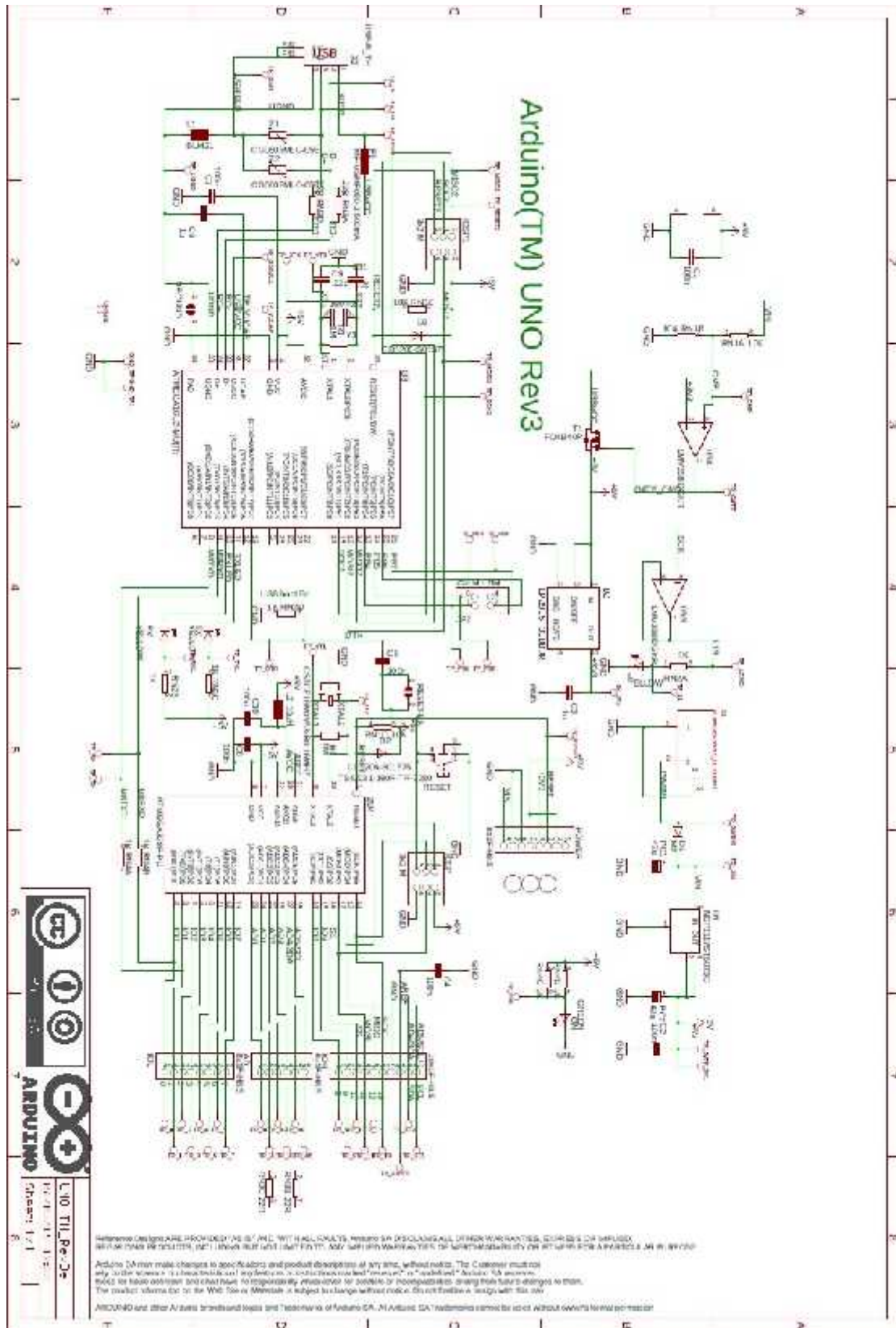
A. Code Arduino

B. *Wiring Diagram 12V Supply*

12VDC SUPPLY WIRING DIAGRAM

C. Wiring Conection Arduino

D. Wiring Diaghram Schematic Arduino Uno R3

E. Data Sheet Pressure Sensor MPX 5700

Sumber https://www.nxp.com/docs/en/data-sheet/MPX5700.pdf

Integrated Silicon Pressure Sensor On-Chip Signal Conditioned, Temperature Compensated and Calibrated

MPX5700 Series

0 to 700 kPa (0 to 101.5 psi)
15 to 700 kPa (2.18 to 101.5 psi)
0.2 to 4.7 V Output

The MPX5700 series piezoresistive transducer is a state-of-the-art monolithic silicon pressure sensor designed for a wide range of applications, but particularly those employing a microcontroller or microprocessor with A/D inputs. This patented, single element transducer combines advanced micromachining techniques, thin-film metallization, and bipolar processing to provide an accurate, high level analog output signal that is proportional to the applied pressure.

Features

- 2.5% Maximum Error over 0° to 85°C
- Ideally Suited for Microprocessor or Microcontroller-Based Systems
- Available in Absolute, Differential and Gauge Configurations
- Patented Silicon Shear Stress Strain Gauge
- Durable Epoxy Unibody Element

Device Name	Case No.	ORDERING INFORMATION						Device Name
		# of Ports			Pressure Type			
		None	Single	Dual	Gauge	Differential	Absolute	
Unibody Package (MPX5700 Series)								
MPX5700A	867	•					•	MPX5700A
MPX5700AP	867B		•				•	MPX5700AP
MPX5700AS	867E		•				•	MPX5700A
MPX5700ASX	867F		•				•	MPX5700A
MPX5700D	867	•				•		MPX5700D
MPX5700DP	867C			•		•		MPX5700DP
MPX5700GP	867B		•		•			MPX5700GP
MPX5700GP1(1)	867B		•		•			MPX5700GP
MPX5700GS	867E		•		•			MPX5700GD

1. MPX5700GP1 has 90 degree lead form.

UNIBODY PACKAGES

MPX5700A/D
CASE 867-08

MPX5700AP/GP/GP1
CASE 867B-04

MPX5700DP
CASE 867C-05
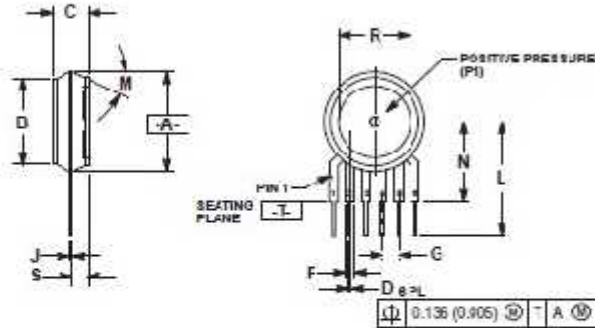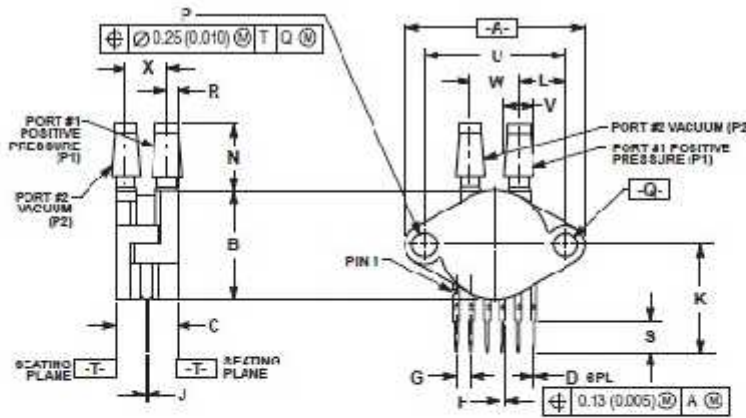
MPX5700AS/GS
CASE 867E-03

MPX5700ASX
CASE 867F-03

freescale

PACKAGE DIMENSIONS

NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION -A- IS INCLUSIVE OF THE MOLD STOP RING. MOLD STOP RING NOT TO EXCEED 16.00 (0.630).

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.595	0.600	15.11	15.00
B	0.514	0.534	13.06	13.56
C	0.200	0.220	5.08	5.59
D	0.027	0.033	0.68	0.84
F	0.040	0.064	1.02	1.63
G	0.100 BSC		2.54 BSC	
J	0.014	0.016	0.36	0.40
L	0.695	0.725	17.65	18.42
M	30° NOM		30° NOM	
N	0.475	0.495	12.07	12.57
P	0.430	0.450	10.92	11.43
S	0.090	0.105	2.29	2.66

STYLE 1:
PIN 1. VOUT
2. GROUND
3. VCC
4. V1
5. V2
6. VEX

STYLE 2:
PIN 1. OPEN
2. GROUND
3. VOUT
4. /VSUPPLY
5. /VOUT
6. OPEN

STYLE 3:
PIN 1. OPEN
2. GROUND
3. /VOUT
4. /VSUPPLY
5. VOUT
6. OPEN

CASE 867 08
ISSUE N
BASIC ELEMENT

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCH.

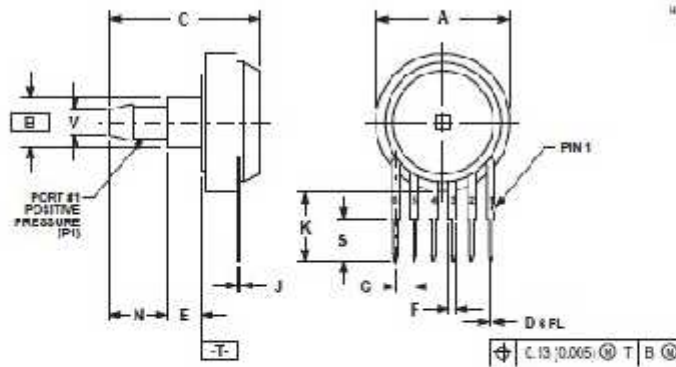| DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.145	1.075	29.08	26.55
B	0.685	0.715	17.40	18.16
C	0.405	0.435	10.29	11.05
D	0.027	0.033	0.68	0.84
F	0.048	0.064	1.22	1.63
G	0.100 BSC		2.54 BSC	
J	0.014	0.016	0.36	0.41
K	0.695	0.725	17.65	18.42
L	0.290	0.300	7.37	7.62
N	0.420	0.440	10.67	11.18
P	0.153	0.159	3.89	4.04
Q	0.153	0.159	3.89	4.04
R	0.063	0.083	1.60	2.11
S	0.220	0.240	5.59	6.10
U	0.910 BSC		23.11 BSC	
V	0.182	0.194	4.62	4.93
W	0.310	0.330	7.87	8.38
X	0.248	0.278	6.30	7.06

STYLE 1:
PIN 1. Vout
2. GROUND
3. Vcc
4. V1
5. V2
6. Vex

CASE 867C-05
ISSUE F
PRESSURE AND VACUUM SIDES PORTED (DP)

MFX5700

PACKAGE DIMENSIONS
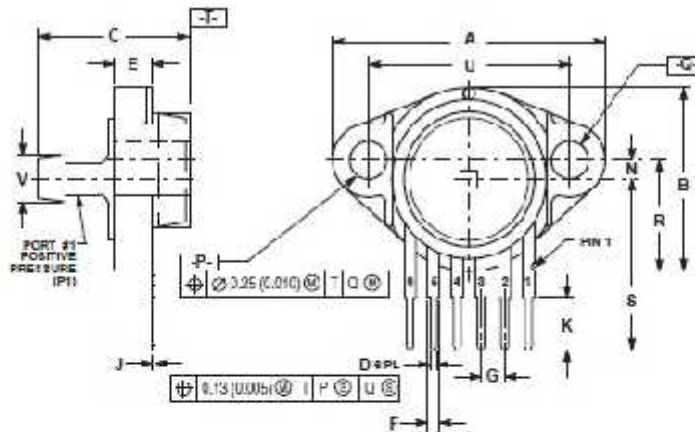

©FREESCALE SEMICONDUCTOR, INC. ALL RIGHTS RESERVED	MECHANICAL OUTLINE	PRINT VERSION NOT TO SCALE	
TITLE: SENSOR, 6 LEAD UNIBODY CELL, AP & CP 01ASB09087B		DOCUMENT NO: 98ASB42795J	REV G
		CASE NUMBER: 867J-04	28 JUL 2005
		STANDARD NON-JEDEC	

PAGE 1 OF 2

CASE 867B-04
ISSUE G
PRESSURE SIDE PORTED (AP, GP)

MPX5700

37

PACKAGE DIMENSIONS

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.690	0.720	7.46	18.28
B	0.245	0.255	3.22	6.46
C	0.300	0.500	8.61	29.82
D	0.027	0.003	3.09	5.04
E	0.175	0.188	4.83	4.78
F	0.048	0.066	1.22	1.67
G	0.100 BSC		2.54 BSC	
J	0.014	0.019	2.26	0.41
K	0.345	0.375	3.35	9.53
N	0.300	0.313	7.62	7.87
S	0.220	0.240	5.59	6.10
V	0.182	0.194	8.82	4.93

STYLE 1:
PIN 1. Vout
2. GROUND
3. Vcc
4. V1
5. V2
6. Vex

CASE 867E-03
ISSUE D
PRESSURE SIDE PORTED (AS, GS)

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.080	1.120	27.43	28.45
B	0.740	0.760	18.80	19.30
D	0.300	0.600	10.00	10.01
D	0.027	0.003	0.69	8.9
E	0.160	0.190	4.06	1.67
F	0.048	0.064	1.22	1.60
G	0.100 BSC		2.54 BSC	
J	0.014	0.016	0.36	6.4
K	0.220	0.240	5.59	6.19
N	0.070	0.080	1.78	2.03
P	0.150	0.190	0.51	4.06
M	0.150	0.190	0.51	4.06
R	0.440	0.460	11.18	11.68
S	0.660	0.700	17.00	18.40
U	0.840	0.860	21.04	21.04
V	0.188	0.194	4.28	4.90

STYLE 1
PIN 1. Vout
2. GROUND
3. Vcc
4. V1
5. V2
6. Vex

CASE 867F-03
ISSUE D
PRESSURE SIDE AXIAL PORT (ASX)

MPX5700

ELEC Freaks

Tech Support: services@elecfreaks.com

Ultrasonic Ranging Module HC - SR04

Product features:

Ultrasonic ranging module HC - SR04 provides 2cm - 400cm non-contact measurement function, the ranging accuracy can reach to 3mm. The modules includes ultrasonic transmitters, receiver and control circuit. The basic principle of work:

(1) Using IO trigger for at least 10us high level signal,

(2) The Module automatically sends eight 40 kHz and detect whether there is a pulse signal back.

(3) IF the signal back, through high level , time of high output IO duration is the time from sending ultrasonic to returning.

Test distance = (high level time×velocity of sound (340M/S) / 2,

Wire connecting direct as following:

- 5V Supply
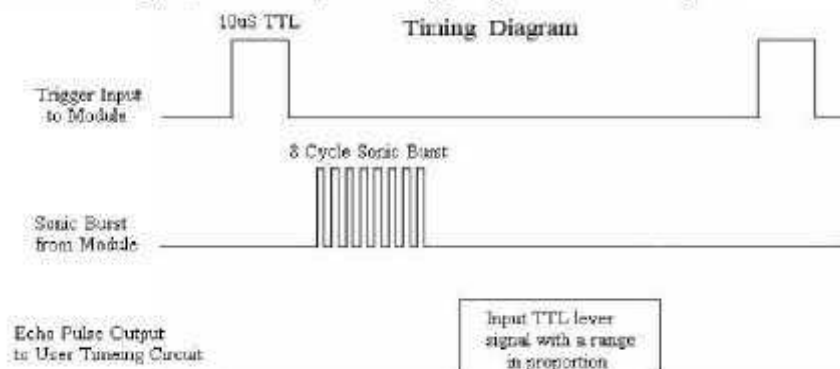- Trigger Pulse Input
- Echo Pulse Output
- 0V Ground

Electric Parameter

Working Voltage	DC 5 V
Working Current	15mA
Working Frequency	40Hz
Max Range	4m
Min Range	2cm
MeasuringAngle	15 degree
Trigger Input Signal	10uS TTL pulse
Echo Output Signal	Input TTL lever signal and the range in proportion
Dimension	45*20*15mm

Vcc   Trig   Echo   GND

Timing diagram

The Timing diagram is shown below. You only need to supply a short 10uS pulse to the trigger input to start the ranging, and then the module will send out an 8 cycle burst of ultrasound at 40 kHz and raise its echo. The Echo is a distance object that is pulse width and the range in proportion .You can calculate the range through the time interval between sending trigger signal and receiving echo signal. Formula: uS / 58 = centimeters or uS / 148 =inch; or: the range = high level time * velocity (340M/S) / 2; we suggest to use over 60ms measurement cycle, in order to prevent trigger signal to the echo signal.

Attention:

- The module is not suggested to connect directly to electric, if connected electric, the GND terminal should be connected the module first, otherwise, it will affect the normal work of the module.
- When tested objects, the range of area is not less than 0.5 square meters and the plane requests as smooth as possible, otherwise ,it will affect the results of measuring.

www.Elecfreaks.com

G. Data Sheet Module Relay 4 Channel
Sumber: https://www.handsontec.com/dataspecs/4Ch-relay.pdf

HT Handson Technology

User Guide

4 Channel 5V Optical Isolated Relay Module

This is a LOW Level 5V 4-channel relay interface board, and each channel needs a 15-20mA driver current. It can be used to control various appliances and equipment with large current. It is equipped with high-current relays that work under AC250V 10A or DC30V 10A. It has a standard interface that can be controlled directly by microcontroller. This module is optically isolated from high voltage side for safety requirement and also prevent ground loop when interface to microcontroller.
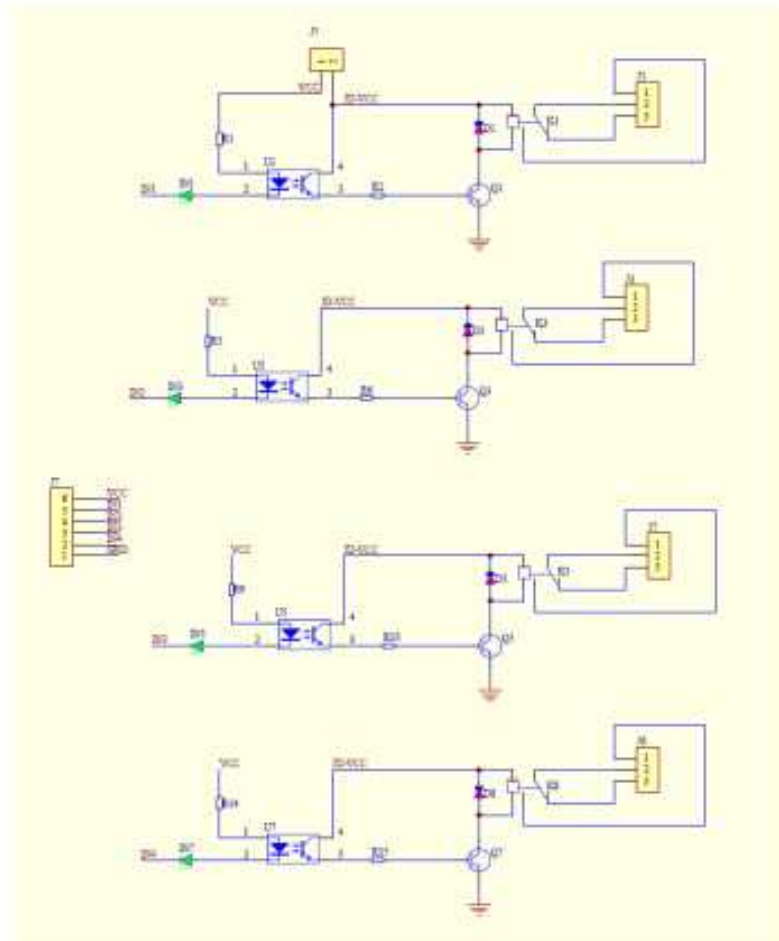
Brief Data:

- Relay Maximum output: DC 30V/10A, AC 250V/10A.
- 4 Channel Relay Module with Opto-coupler. LOW Level Trigger expansion board, which is compatible with Arduino control board.
- Standard interface that can be controlled directly by microcontroller (8051, AVR, PIC, DSP, ARM, ARM, MSP430, TTL logic).
- Relay of high quality low noise relays SPDT. A common terminal, a normally open, one normally closed terminal.
- Opto-Coupler isolation, for high voltage safety and prevent ground loop with microcontroller.

1 | www.handsontec.com

VCC and RY-VCC are also the power supply of the relay module. When you need to drive a large power load, you can take the jumper cap off and connect an extra power to RY-VCC to supply the relay; connect VCC to 5V of the MCU board to supply input signals.

NOTES: If you want complete optical isolation, connect "Vcc" to Arduino +5 volts but do NOT connect Arduino Ground. Remove the Vcc to JD-Vcc jumper. Connect a separate +5 supply to "JD-Vcc" and board Gnd. This will supply power to the transistor drivers and relay coils.

If relay isolation is enough for your application, connect Arduino +5 and Gnd, and leave Vcc to JD-Vcc jumper in place.
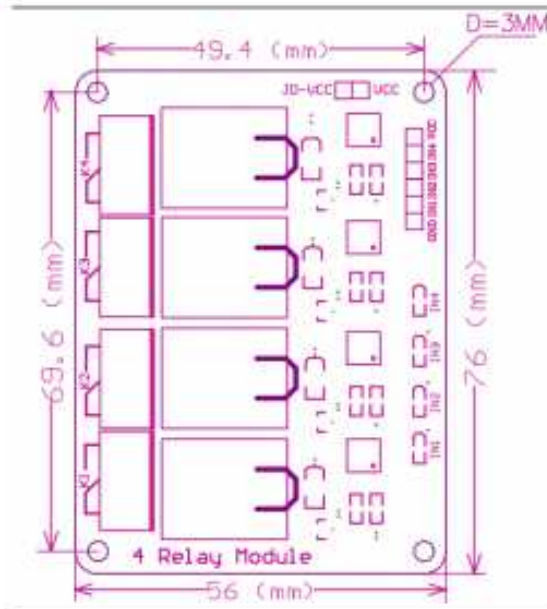

4 Channel Relay Module Schematic

It is sometimes possible to use this relay boards with 3.3V signals, if the JD-VCC (Relay Power) is provided from a +5V supply and the VCC to JD-VCC jumper is removed. That 5V relay supply could be totally isolated from the 3.3V device, or have a common ground if opto-isolation is not needed. If used with isolated 3.3V signals, VCC (To the input of the opto-isolator, next to the IN pins) should be connected to the 3.3V device's +3.3V supply.

NOTE: Some Raspberry-Pi users have found that some relays are reliable and others do not actuate sometimes. It may be necessary to change the value of R1 from 1000 ohms to something like 220 ohms, or supply +5V to the VCC connection.
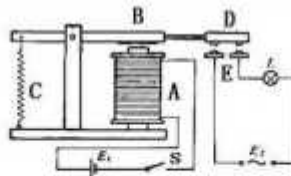
NOTE: The digital inputs from Arduino are Active LOW: The relay actuates and LED lights when the input pin is LOW, and turns off on HIGH.

Module Layout:

Operating Principle:

See the picture below: A is an electromagnet, B armature, C spring, D moving contact, and E fixed contacts. There are two fixed contacts, a normally closed one and a normally open one. When the coil is not energized, the normally open contact is the one that is off, while the normally closed one is the other that is on.

Supply voltage to the coil and some currents will pass through the coil thus generating the electromagnetic effect. So the armature overcomes the tension of the spring and is attracted to the core, thus closing the moving contact of the armature and the normally open (NO) contact or you may say releasing the former and the normally closed (NC) contact. After the coil is de-energized, the electromagnetic force disappears and the armature moves back to the original position, releasing the moving contact and normally closed contact. The closing and releasing of the contacts results in power on and off of the circuit.

Input:

VCC : Connected to positive supply voltage (supply power according to relay voltage)

GND : Connected to supply ground.

IN1: Signal triggering terminal 1 of relay module

IN2: Signal triggering terminal 2 of relay module

IN3: Signal triggering terminal 3 of relay module

IN4: Signal triggering terminal 4 of relay module

Output:

Each module of the relay has one NC (normally close), one NO (normally open) and one COM (Common) terminal. So there are 4 NC, 4 NO and 4 COM of the channel relay in total. NC stands for the normal close port contact and the state without power. NO stands for the normal open port contact and the state with power. COM means the common port. You can choose NC port or NO port according to whether power or not.

H. Spesifikasi *Air Shower* Esco

General Specifications, Cleanroom Air Shower, Model EAS (A-Series)				
Note to customer: Insert electrical voltage number into last model number digit _ when ordering.				
Model		EAS-1A_	EAS-2A_	EAS-3A_
External Dimensions (W x D x H)		1260 x 1000 x 2050 mm (49.7" x 39.4" x 80.7")	1260 x 2000 x 2050 mm (49.7" x 78.7" x 80.7")	1260 x 3000 x 2050 mm (49.7" x 118.1" x 80.7")
Internal Work Area, Dimensions (W x D x H)		790 x 920 x 1930 mm (31.1" x 36.2" x 76.0")	790 x 1920 x 1930 mm (31.1" x 75.5" x 76.0")	790 x 2920 x 1930 mm (31.1" x 115" x 76.0")
Air Change		371/u	356/u	351/u
Initial Airflow Velocity		20-22 m/s (3,937-4,330 fpm)		
Number of Nozzles		6	12	18
Air Shower Duration		Factory set at 12 seconds (adjustable up to 3 min)		
Persons Per Cycle		1	2-3	4-6
Personnel Flow (Persons / Min.)		4	8-12	15-23
		Above figures based on Total Cycle Time of 16 seconds (12 seconds of Air Shower + 4 seconds for buffer time / personnel entrance and exit)		
Filtration Efficiency		Main Filter: > 99.99% at 0.3 µm Prefilter: Arrestance 85%, efficiency 20%		
Filtration Elements		Main Filter: HEPA filter Prefilter: Disposable and non-washable polyester filters		
Fluorescent Lamp		17 W x 2	17 W x 4	17 W x 6
Air Shower Construction		1.5 mm / 0.06"/ 18 electro-galvanised steel / White over-baked epoxy-polyester Isocide™ antimicrobial powder coated finish		
Max. Power Consumption Current, BTU/hr	During Operation	245 W, 1.2 A, 500 BTU/hr	490 W, 2.4 A, 1000 BTU/hr	735 W, 3.5 A, 1499 BTU/hr
	During Standby	113 W, 0.5 A, 231 BTU/hr	226 W, 1 A, 461 BTU/hr	339 W, 1.5 A, 692 BTU/hr
Electrical	220-240V, AC, 50Hz, 1Ø	EAS-1A1	EAS-2A1	EAS-3A1
	110-130V, AC, 60Hz, 1Ø	EAS-1A2	EAS-2A2	EAS-3A2
	220-240V, AC, 60Hz, 1Ø	EAS-1A3	EAS-2A3	EAS-3A3
	Note: Customer must provide isolator switch on site.			
Gross Weight		390 kg (858 lbs)	660 kg (1452 lbs)	980 kg (2156 lbs)
Shipping Dimensions, Maximum (W x D x H)	Assembled (W x D x H)	1450 x 1250 x 2152 mm (57.1" x 49.2" x 84.7")	1450 x 1250 x 2152 mm (57.1" x 49.2" x 84.7")	NA
	Module Form (W x D x H) Pallet A	NA	1450 x 1250 x 2152 mm (57.1" x 49.2" x 84.7")	1450 x 1250 x 2152 mm (57.1" x 49.2" x 84.7")
	Pallet B	N/A	1450 x 1250 x 2152 mm (57.1" x 49.2" x 84.7")	1450 x 1250 x 2152 mm (57.1" x 49.2" x 84.7")
	Pallet C	N/A	NA	1450 x 1250 x 2152 mm (57.1" x 49.2" x 84.7")
	Unassembled (W x D x H) Pallet A	2100 x 1300 x 778 mm 82.7" x 51.2" x 30.6"	2100 x 1300 x 924 mm 82.7" x 51.2" x 36.4"	2100 x 1300 x 1296 mm (82.7" x 51.2" x 51.0")
	Pallet B	NA	2100 x 1300 x 632 mm (82.7" x 51.2" x 24.9")	2100 x 1300 x 781 mm (82.7" x 51.2" x 30.7")
Shipping Volume, Maximum	Assembled	3.90 m³ (138 ft³)	7.80 m³ (276 ft³)	NA
	Module Form	NA	7.80 m³ (276 ft³)	11.70 m³ (414 ft³)
	Unassembled	2.12 m³ (75 ft³)	4.24 m³ (150 ft³)	5.66 m³ (200 ft³)