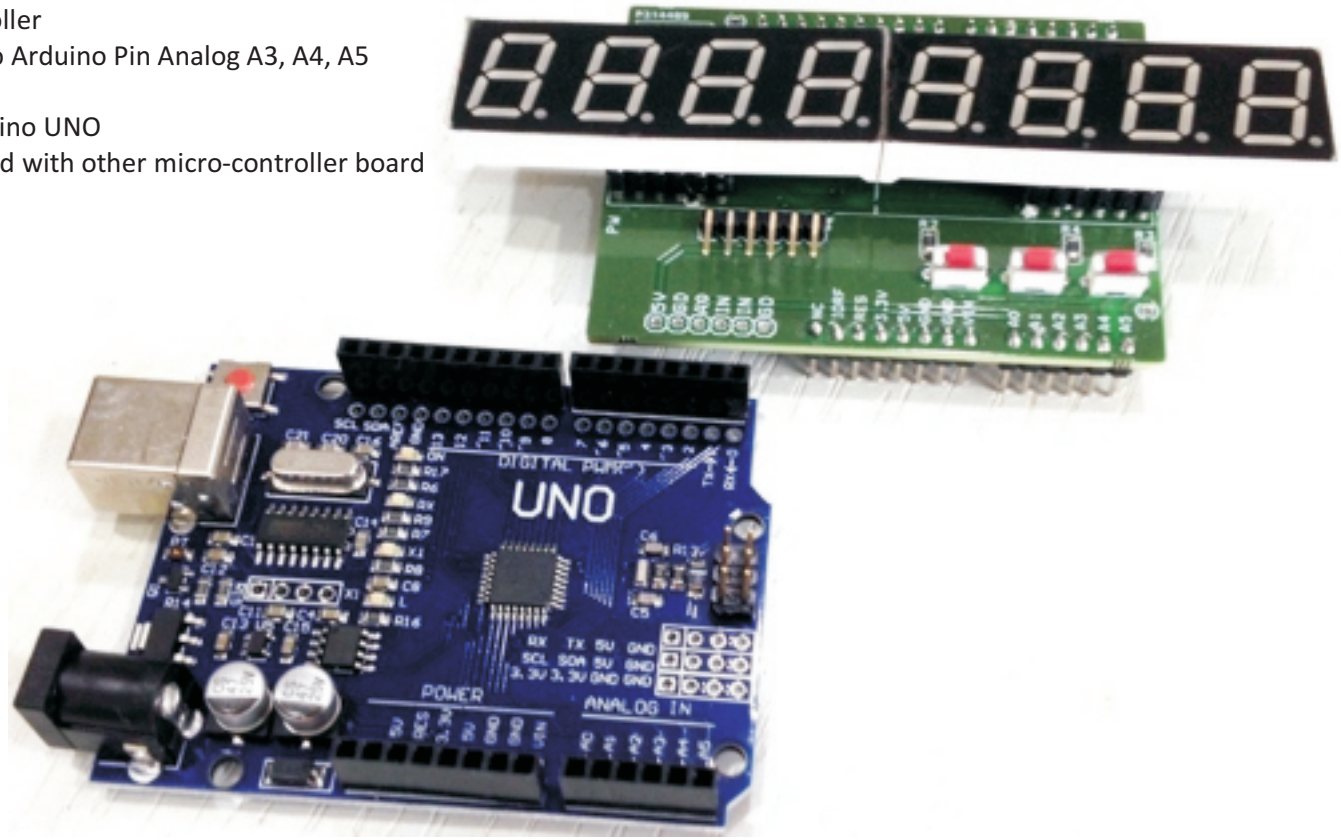
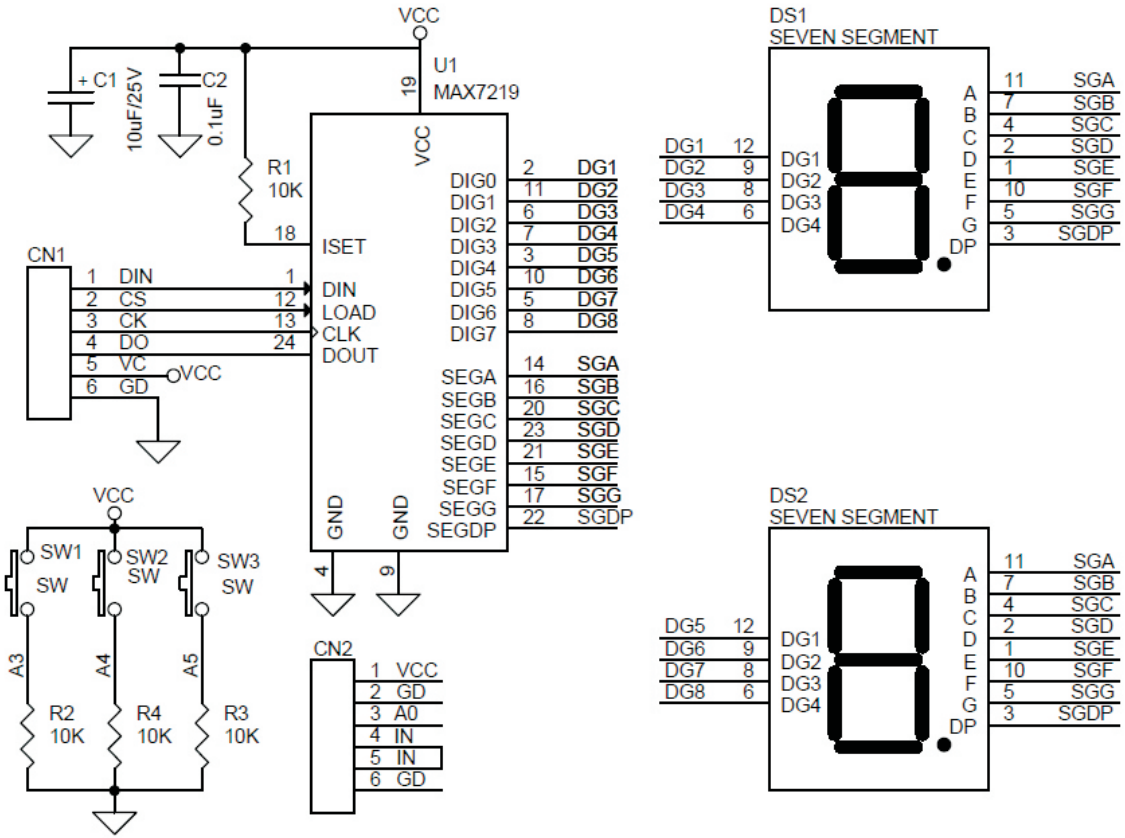
# 8 Digit Numerical 7 Segment SPI Display Shield for Arduino UNO Using MAX7219

8 Digit serial numerical display shield for Arduino has been designed for various applications like digital clock, stop watch, score display, temperature meter, frequency counter, digital meters, the circuit uses popular MAX7219 IC and two common cathode 0.5inch red seven segment displays. The MAX7219 is compact, serial input/output common-cathode display drivers that interface Arduino UNO to 7-segment numeric LED displays of up to 8 digits. Included on-chip are a BCD code-B decoder, multiplex scan circuitry, segment and digit drivers, and an 8x8 static RAM that stores each digit. Only one external resistor R1 provided to set the segment current for all LEDs. A convenient 3-wire serial interface connects to all Arduino UNO. Individual digits may be addressed and updated without rewriting the entire display. The MAX7219 also allow the user to select code-B decoding or no-decode for each digit. The devices include a 150µA low-power shutdown mode, analog and digital brightness control, a scan-limit register that allows the user to display from 1 to 8 digits, and a test mode that forces all LEDs on. The project works with 5V DC and SPI interface connected to Arduino Digital pins D4, D5 and D6.

**Key Features**

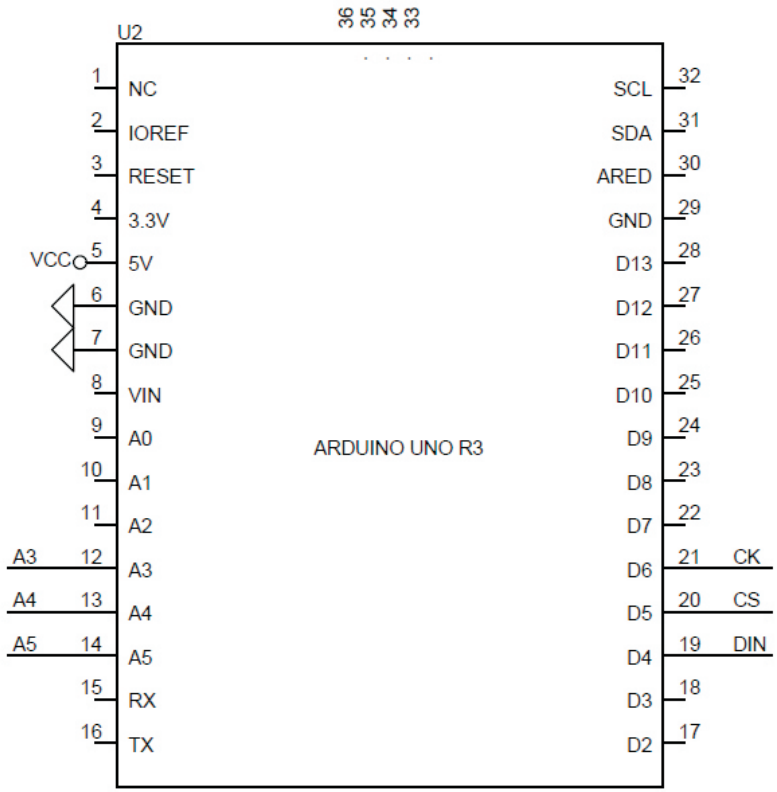
SUPPLY 5V DC
Additional CN1 provided for external micro-controller
Switches S1, S2, S3 for development, connected to Arduino Pin Analog A3, A4, A5
CN2 for analog input to Arduino Analog pin A0
SPI Serial Pin connected to D4, D5, and D6 of Arduino UNO
Additional SPI Connector provided to use the board with other micro-controller board
10MHz Serial Interface
Individual LED Segment Control
Decode/No-Decode Digit Selection
150µA Low-Power Shutdown (Data Retained)
Digital and Analog Brightness Control
Display Blanked on Power-Up
8 Digit Common-Cathode LED Display

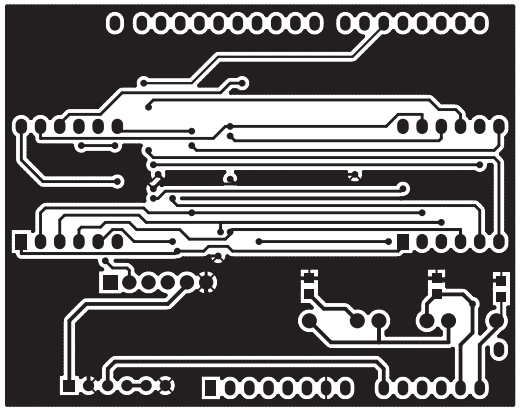


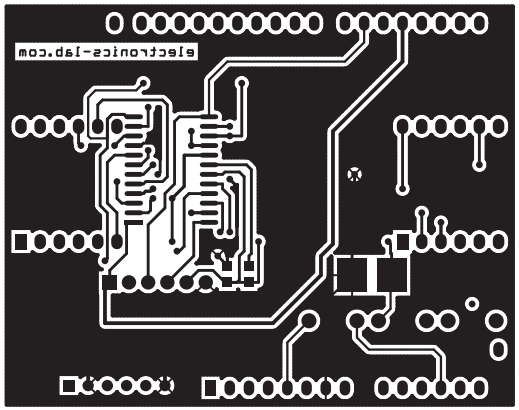

VCC
U1
MAX7219
+ C1
10uF/25V
C2
0.1uF
R1
10K
ISET
CN1
1 DIN
2 CS
3 CK
4 DO
5 VC
6 GD
VCC
DIN
LOAD
CLK
DOUT
DIG0
DIG1
DIG2
DIG3
DIG4
DIG5
DIG6
DIG7
SEGA
SEGB
SEGC
SEGD
SEGE
SEGF
SEGG
SEGDP
GND
GND
SW1
SW2
SW3
SW
A3
A4
A5
R2
10K
R4
10K
R3
10K
CN2
1 VCC
2 GD
3 A0
4 IN
5 IN
6 GD

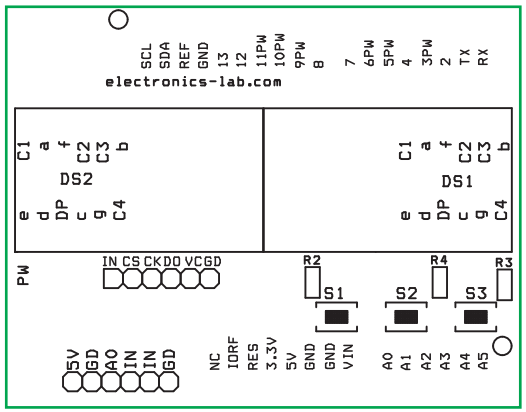

DS1
SEVEN SEGMENT
DG1
DG2
DG3
DG4
A
B
C
D
E
F
G
DP
SGA
SGB
SGC
SGD
SGE
SGF
SGG
SGDP

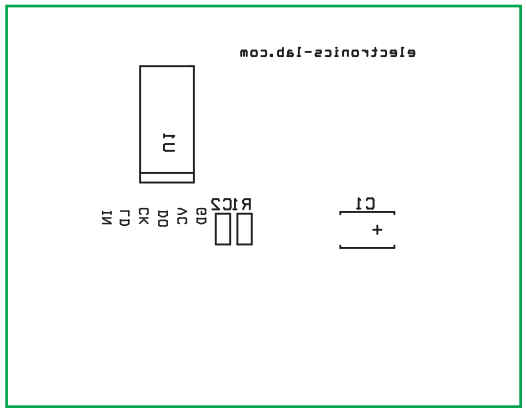

DS2
SEVEN SEGMENT
DG5
DG6
DG7
DG8
DG1
DG2
DG3
DG4
A
B
C
D
E
F
G
DP
SGA
SGB
SGC
SGD
SGE
SGF
SGG
SGDP


U2
NC
IOREF
RESET
3.3V
5V
GND
GND
VIN
A0
A1
A2
A3
A4
A5
RX
TX
SCL
SDA
ARED
GND
D13
D12
D11
D10
D9
D8
D7
D6
D5
D4
D3
D2
CK
CS
DIN
ARDUINO UNO R3






| BOM | | | |
|---|---|---|---|
| ***SR.*** | ***QNTY.*** | ***REF.*** | ***DESC.*** |
| 1 | 2 | CN1,CN2 | 6 PIN HEADER CONNECTOR |
| 2 | 1 | C1 | 10uF/25V SMD 1210 |
| 3 | 1 | C2 | 0.1uF SMD 0805 |
| 4 | 2 | DS1,DS2 | 4 DIGIT 7 SEGMENT 0.5 INCH DISPLAY |
| 5 | 4 | R1,R2,R3,R4 | 10K |
| 6 | 3 | SW1,SW2,SW3 | SW |
| 7 | 1 | U1 | MAX7219 SMD |
| 8 | 1 | U2 | ARDUINO UNO R3 |
| 9 | 4 | Female Header | 4 PIN FEMALE HEADER |