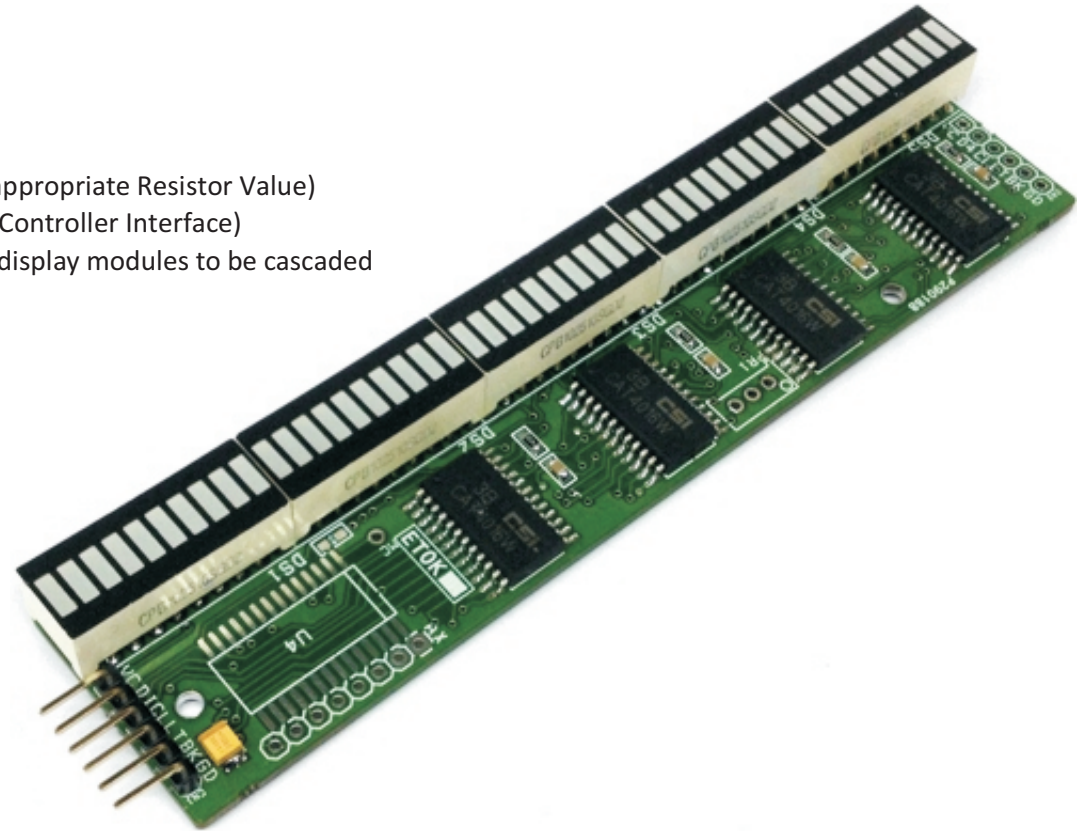The serial controlled 50 Segment Bar-Graph Display built using CAT4016 IC. Very useful projects for development Bar-Graph based, Temperature Meter, Interactive Games, Voltage Display, Current Display., Pressure Sensor, Magnetic field meter and PH Meter. Tilt meter, LUX meter.
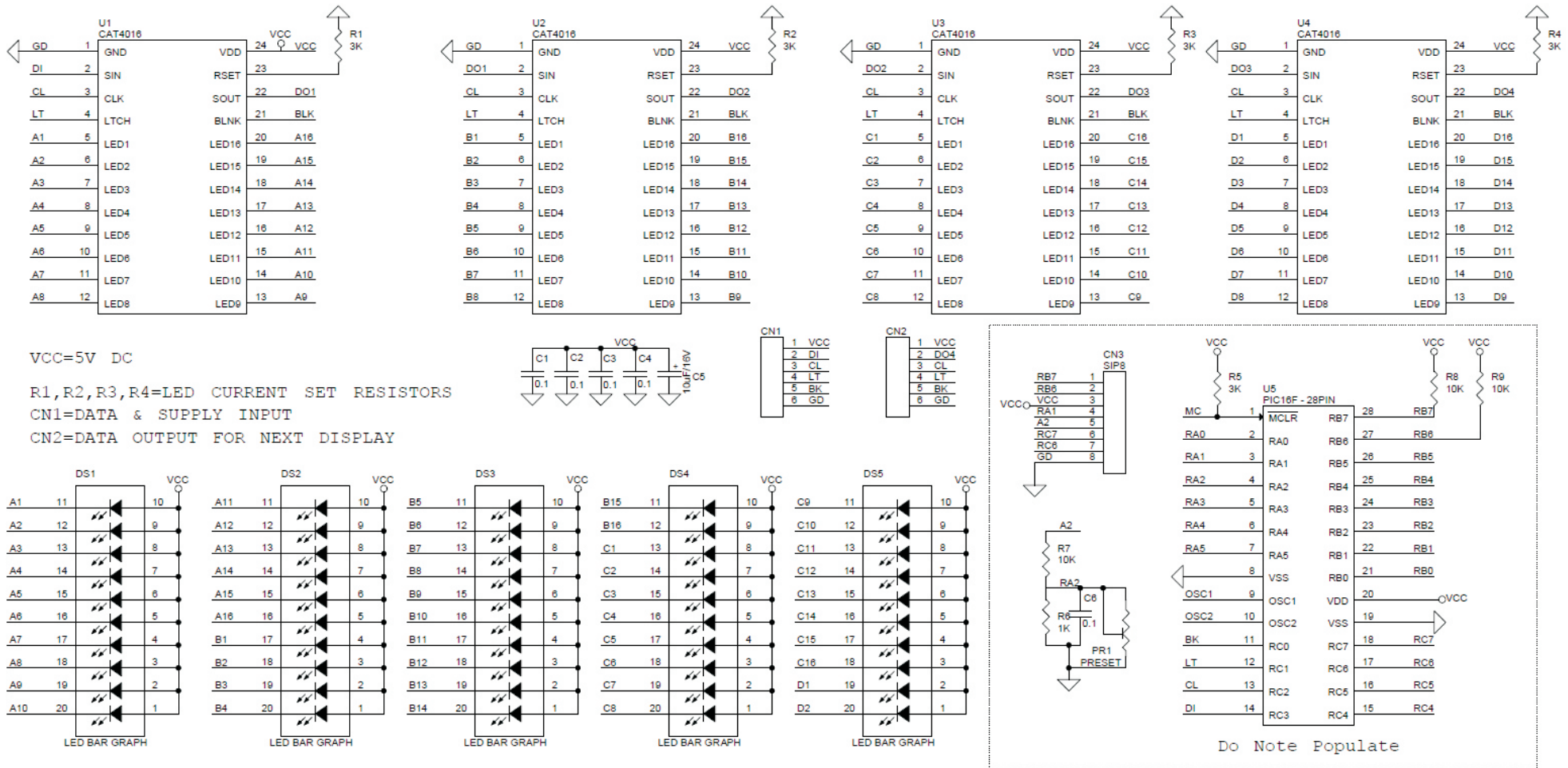
The CAT4016 is a 16 channel constant current driver for LED billboard and other general display applications. LED channel currents are programmed together via an external RSET resistor. Low output voltage operation on the LED channels as low as 0.4 V (for 2 to 100 mA LED current) allows for more power efficient designs. A high- speed 4- wire serial interface of up to 25 MHz clock frequency controls each individual channel using a shift register and latch configuration.

A serial output data pin (SOUT) allows multiple display board to be cascaded and programmed via one serial interface. The device also includes a blanking control pin (BLANK) that can be used to disable all channels independently of the interface. Thermal shutdown protection is incorporated in the device to disable the LED outputs if the die temperature exceeds a set limit.

Feature

- Supply 5V DC
- Current consumption depend on Current Resistors R1, R2, R3, R4
- R1, R2, R3, R4 provided to set the LED current (Refer Data sheet for appropriate Resistor Value)
- CN1 6 Pin Header connector for serial input and supply input (Micro-Controller Interface)
- CN2 6 Pin Header connector for serial output, which allows multiple display modules to be cascaded
- 20 Pin 10 Segment Each X Red LED Display

VCC=5V DC

R1,R2,R3,R4=LED CURRENT SET RESISTORS
CN1=DATA & SUPPLY INPUT
CN2=DATA OUTPUT FOR NEXT DISPLAY

U1 CAT4016

GD	1	GND	VDD	24	VCC
DI	2	SIN	RSET	23	
CL	3	CLK	SOUT	22	DO1
LT	4	LTCH	BLNK	21	BLK
A1	5	LED1	LED16	20	A16
A2	6	LED2	LED15	19	A15
A3	7	LED3	LED14	18	A14
A4	8	LED4	LED13	17	A13
A5	9	LED5	LED12	16	A12
A6	10	LED6	LED11	15	A11
A7	11	LED7	LED10	14	A10
A8	12	LED8	LED9	13	A9

R1 3K

U2 CAT4016

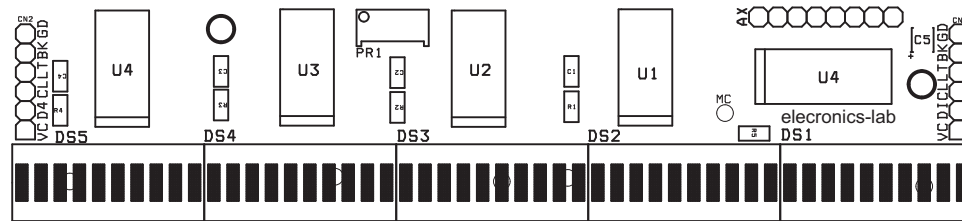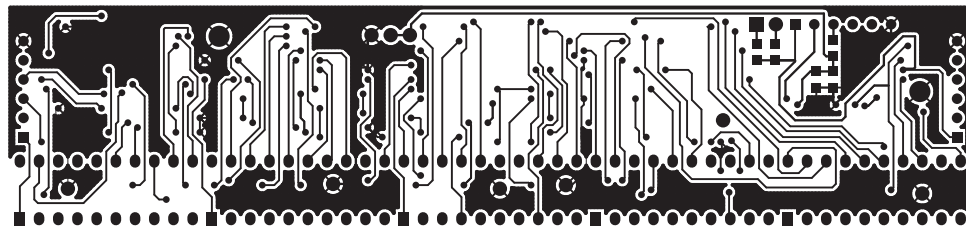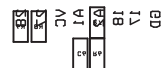|					
GD	1	GND	VDD	24	VCC
DO1	2	SIN	RSET	23	
CL	3	CLK	SOUT	22	DO2
LT	4	LTCH	BLNK	21	BLK
B1	5	LED1	LED16	20	B16
B2	6	LED2	LED15	19	B15
B3	7	LED3	LED14	18	B14
B4	8	LED4	LED13	17	B13
B5	9	LED5	LED12	16	B12
B6	10	LED6	LED11	15	B11
B7	11	LED7	LED10	14	B10
B8	12	LED8	LED9	13	B9

R2 3K

U3 CAT4016

GD	1	GND	VDD	24	VCC
DO2	2	SIN	RSET	23	
CL	3	CLK	SOUT	22	DO3
LT	4	LTCH	BLNK	21	BLK
C1	5	LED1	LED16	20	C16
C2	6	LED2	LED15	19	C15
C3	7	LED3	LED14	18	C14
C4	8	LED4	LED13	17	C13
C5	9	LED5	LED12	16	C12
C6	10	LED6	LED11	15	C11
C7	11	LED7	LED10	14	C10
C8	12	LED8	LED9	13	C9

R3 3K

U4 CAT4016

GD	1	GND	VDD	24	VCC
DO3	2	SIN	RSET	23	
CL	3	CLK	SOUT	22	DO4
LT	4	LTCH	BLNK	21	BLK
D1	5	LED1	LED16	20	D16
D2	6	LED2	LED15	19	D15
D3	7	LED3	LED14	18	D14
D4	8	LED4	LED13	17	D13
D5	9	LED5	LED12	16	D12
D6	10	LED6	LED11	15	D11
D7	11	LED7	LED10	14	D10
D8	12	LED8	LED9	13	D9

R4 3K

VCC

C1 0.1 C2 0.1 C3 0.1 C4 0.1 C5 10uF/16V

CN1

1	VCC
2	DI
3	CL
4	LT
5	BK
6	GD

CN2

1	VCC
2	DO4
3	CL
4	LT
5	BK
6	GD

CN3 SIP8

RB7	1
RB6	2
VCC	3
RA1	4
A2	5
RC7	6
RC6	7
GD	8

VCCO

U5 PIC16F - 28PIN

R5 3K

MC	1	MCLR	RB7	28	RB7
RA0	2	RA0	RB6	27	RB6
RA1	3	RA1	RB5	26	RB5
RA2	4	RA2	RB4	25	RB4
RA3	5	RA3	RB3	24	RB3
RA4	6	RA4	RB2	23	RB2
RA5	7	RA5	RB1	22	RB1
	8	VSS	RB0	21	RB0
OSC1	9	OSC1	VDD	20	OVCC
OSC2	10	OSC2	VSS	19	
BK	11	RC0	RC7	18	RC7
LT	12	RC1	RC6	17	RC6
CL	13	RC2	RC5	16	RC5
DI	14	RC3	RC4	15	RC4

R8 10K R9 10K

A2

R7 10K

RA2

R6 1K C6 0.1

PR1 PRESET

Do Note Populate

DS1 LED BAR GRAPH

A1	11		10	
A2	12		9	
A3	13		8	
A4	14		7	
A5	15		6	
A6	16		5	
A7	17		4	
A8	18		3	
A9	19		2	
A10	20		1	

VCC

DS2 LED BAR GRAPH

A11	11		10	
A12	12		9	
A13	13		8	
A14	14		7	
A15	15		6	
A16	16		5	
B1	17		4	
B2	18		3	
B3	19		2	
B4	20		1	

VCC

DS3 LED BAR GRAPH

B5	11		10	
B6	12		9	
B7	13		8	
B8	14		7	
B9	15		6	
B10	16		5	
B11	17		4	
B12	18		3	
B13	19		2	
B14	20		1	

VCC

DS4 LED BAR GRAPH

B15	11		10	
B16	12		9	
C1	13		8	
C2	14		7	
C3	15		6	
C4	16		5	
C5	17		4	
C6	18		3	
C7	19		2	
C8	20		1	

VCC

DS5 LED BAR GRAPH

C9	11		10	
C10	12		9	
C11	13		8	
C12	14		7	
C13	15		6	
C14	16		5	
C15	17		4	
C16	18		3	
D1	19		2	
D2	20		1	

VCC

07005

126.93

29.43

Top

CN2
VC D4 CL LT BK GD

U4

C3

C3

R4

DS5

DS4

PR1

U3

C2

R2

DS3

U2

C1

R1

DS2

AX

U4

C5
+

MC

elecronics-lab

DS1

CN1
VC DI CL LT BK GD

Silk Screen Top

Bottom

BK
TC
VC
A1
SA
IB
I1
I1
GD

Silk Screen Bottom

BOM			
SR.	QNTY.	REF.	DESC.
1	2	CN1,CN2	6 PIN HEADER
2	1	CN3	OMIT
3	5	C1,C2,C3,C4,C6	0.1uF SMD 0805
4	1	C5	10uF/16V
5	5	DS1,DS2,DS3,DS4,DS5	20 PIN 10 SEGMENT BARGRAPH DISPLAY
6	1	PR1	OMIT
7	5	R1,R2,R3,R4,R5	3K
8	1	R6	OMIT
9	3	R7,R8,R9	OMIT
10	4	U1,U2,U3,U4	CAT4016
11	1	U5	OMIT