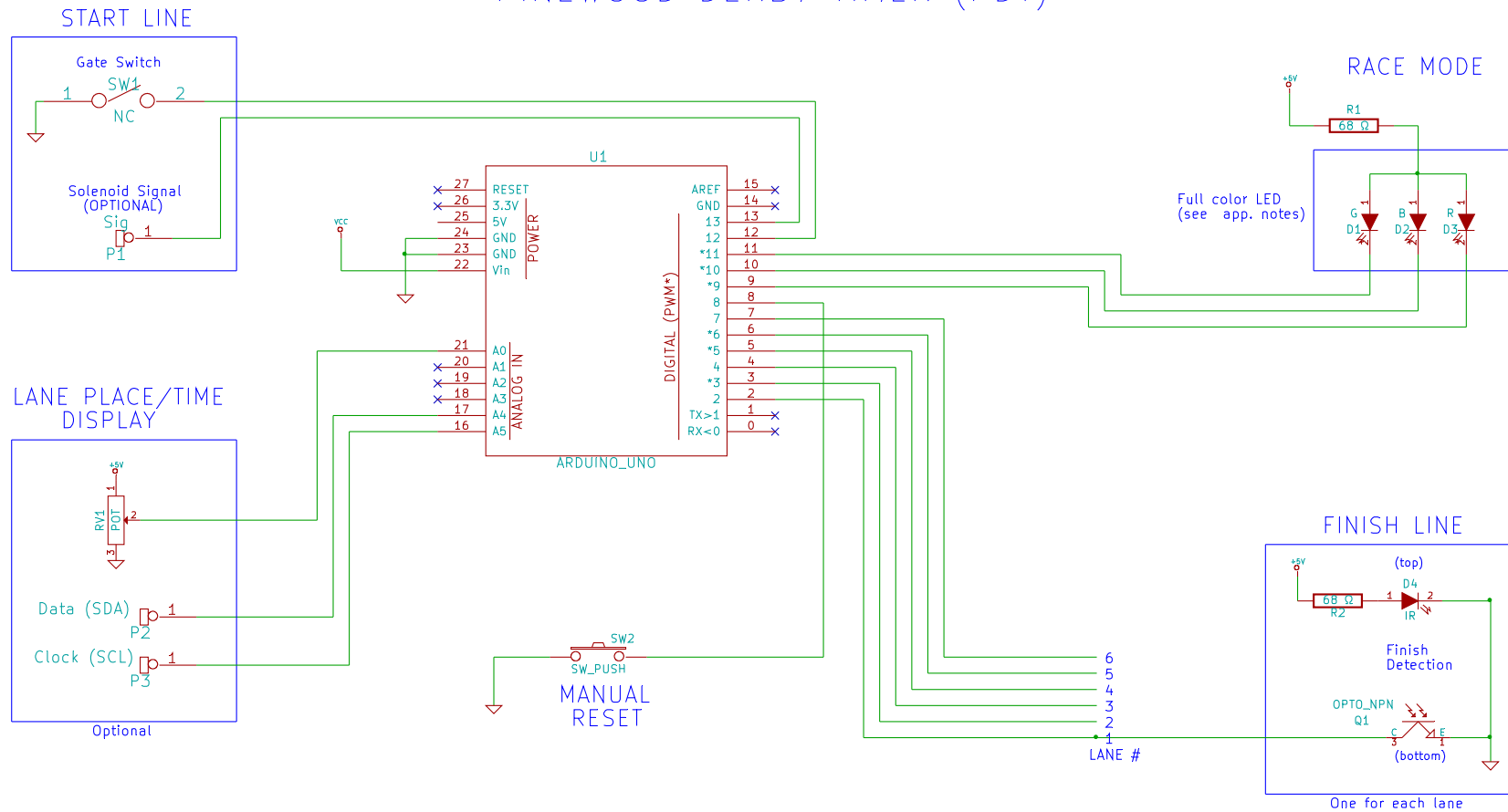


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http://www.miscjunk.org/mj/pg_pdt.html

PINEWOOD DERBY TIMER (PDT)



APPLICATION NOTES:

- 1) The Pinewood Derby Timer (PDT) utilizing the Arduino Uno will support up to 6 lanes.
- 2) Vcc can be USB voltage if not utilizing the place/lane displays, otherwise an external power supply is suggested.
- 3) Three individual LEDs can be used instead of the full color LED for the Race Mode Indicator but the corresponding resistor values would need to be re-calculated.
- 4) The start switch SW1 uses the normally closed (NC) terminals and should be setup so that the switch is open when the start gate is closed (and the switch is closed when the start gate is released).
- 5) The start gate switch (pin 12), the manual reset switch (pin 8) and the lane finish detecting circuits (pins 2-7) all utilize pull-up resistors that are internal to the Arduino.

PARTS LIST:

- R1-R2 68 Ω resistor (RS# 271-1106)
D1-D3 Full color LED (RS# 276-028)
D4 High brightness white LED (RS# 276-0017)
Q1 Infrared NPN phototransistor (RS# 276-0145)
U1 Arduino Uno
SW1 Snap switch with NC terminals (J# 483284 or similar)
SW2 Mini SPST NO momentary switch (RS# 275-1547)
RV1 3 terminal potentiometer, linear taper, any resistance value

(RS – Radio Shack, J – Jameco)

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File: timer.sch

Sheet: /

Title: Pinewood Derby Timer (PDT)

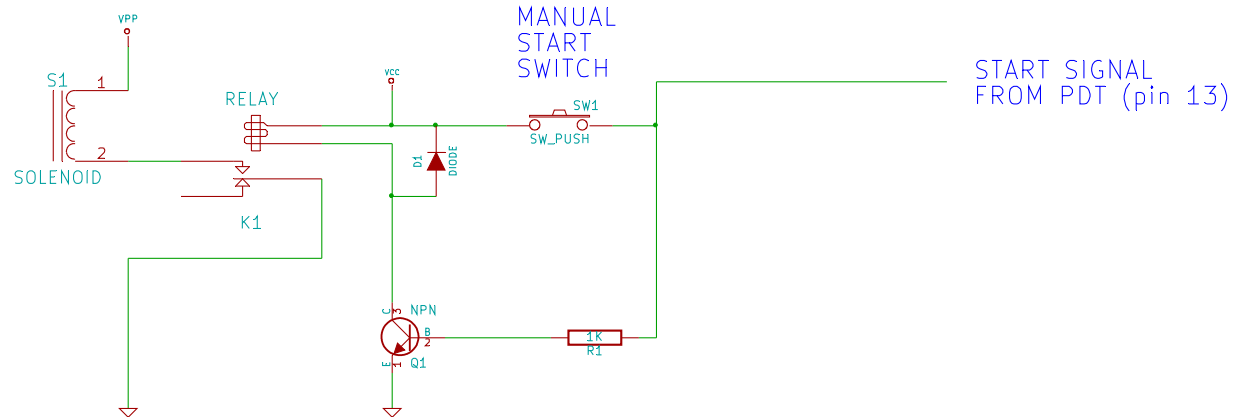
Size: A4 Date: 25 feb 2013

Rev: 2.0

KiCad E.D.A. eeschema (2012-01-19 BZR 3256)-stable

Id: 1/1

PDT SOLENOID START MODULE



APPLICATION NOTES:

- 1) This is an optional solenoid start module for the Pinewood Derby Timer (PDT). The PDT is already configured to use this module, if present.
- 2) Vcc should be 5v DC, it can be supplied from the PDT. The signal side of the circuit must share a common ground with the PDT.
- 3) Vpp is an independent DC voltage for the solenoid. It should not share a common ground with the PDT.

PARTS LIST:

- D1 1A diode (RS# 276-1102)
 K1 2A 5V relay (J# 139977)
 Q1 2N2222 NPN transistor (J# 38236)
 R1 1 KΩ resistor (RS# 271-1321)
 S1 24 VDC solenoid (J# 1919191)
 SW1 Mini SPST NO momentary switch (RS# 275-1547)

(RS - Radio Shack, J - Jameco)

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File: start.sch

Sheet: /

Title: PDT Solenoid Start Module

Size: A4

Date: 4 dec 2012

Rev: 2.0

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Id: 1/1

PDT LANE TIME/PLACE DISPLAY MODULE

Power/Gnd in from supply
or previous display

Data in from PDT
or previous display

P1
1

P2
1

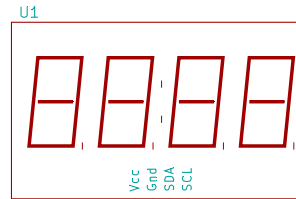
Gnd

P5
1

SDA

P6
1

SCL



Adafruit_878

Vcc

Gnd

SDA

SCL

Power/Gnd out to
next display

Data out to next
display

V
1

P3
1

Gnd

P4
1

SDA
1

P7
1

SCL
1

P8
1

APPLICATION NOTES:

- 1) This is an optional lane time/place display for the Pinewood Derby Timer (PDT). To utilize display module(s) the PDT source must have a flag "set" and be uploaded to the Arduino board – please refer to the instructions for the PDT.
- 2) One display module per lane, multiple modules are daisy chained together with only the first one being attached to the PDT.
- 3) Each display module can draw up to 100 mA. If utilizing 3 or more modules the maximum brightness of each display should be limited and/or a separate power supply is needed (maintain a common ground with the PDT). Please refer to the website for additional information.
- 4) Keep I²C wiring (SDA and SCL lines) as short as possible.
- 5) The address of each module needs to be set (starting at 0) utilizing the jumpers on the back of the driver board – refer to the Adafruit documentation.

PARTS LIST:

U1 4 digit 7 segment LED display and driver board (A# 878)

(A – Adafruit)

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http://www.miscjunk.org/mj/pg_pdt.html

File: display.sch

Sheet: /

Title: PDT Lane Time/Place Display Module

Size: A4

Date: 25 feb 2013

Rev: 2.0

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Id: 1/1