Terminal
1{DCC}   2{POW}

{DCC}   {POW}
DCC   POWER
DCC_TTL   coilVoltage

mosfets8   mosfets1
DCC_TTL   coilVoltage

{COIL}   8{COIL}   1{COIL}   {COIL}

uController

mosfets7   mosfets2
{COIL}   7{COIL}   2{COIL}   {COIL}

mosfets6   mosfets3
{COIL}   6{COIL}   3{COIL}   {COIL}

mosfets5   mosfets4
{COIL}   5{COIL}   4{COIL}   {COIL}

CS

CS
currentSense

LED_BLUE LED +5V

R1 R6
10k 6k2 C3
100nF

D2 D4 GND
LED LED

GND GND

+5V GND

SW1
SW_SPST
VCC AVCC 18 8
20 AREF PB0 12 GPIO1 1.A 9 tie to GPIO1 due to PWM
PB1 13 GPIO6 3.B 10
CSD 19 ADC6 PB2 14 MOSI 4.A 11 MOSI
coilVoltage 22 ADC7 PB3 15 MISO 4.B 12 MISO
PB4 16 SCK_LED 13 SCK
Y1 PB5 17
Crystal_GND2 XTAL1/PB6 7 X1
X1 1 3 X2 XTAL2/PB7 8 X2

8{COIL} 8.B C1 C2 1{COIL} 1.A
8.A 1.B

PC0 23 GPIO16 8.B A0
7{COIL} 7.B 12pF 12pF PC1 24 GPIO15 8.A A1 2{COIL} 2.A
7.A PC2 25 GPIO14 7.B A2 2.B
GND PC3 26 GPIO13 7.A A3
6{COIL} 6.B PC4 27 GPIO12 6.B A4 3{COIL} 3.A
6.A +5V PC5 28 GPIO11 6.A A5 3.B
RESET/PC6 29 RESET
5{COIL} 5.B 4{COIL} 4.A
5.A R2 4.B
10k PD0 30 GPIO10 5.B 0
J3 PD1 31 GPIO9 5.A 1
ICSP PD2 32 2
6 RESET PD3 1 GPIO2 1.B 3
5 MOSI PD4 2 LED_BLUE 4 pin 4 can become 2nd status LED
4 MISO PD5 9 GPIO3 2.A 5
3 SCK PD6 10 GPIO4 2.B 6
2 PD7 11 GPIO5 3.A 7
1
GND U1
GND ATmega328-A

GND

{DCC}

R5
1k5

D1

U3
6N137

VCC
EN
VO
GND

A

C

+5V

R3
10k

R4
10k

DCC_TTL

GND

A
B

U301
L78L12_SOT89

IN   OUT
GND

+5V

D301
MB10S

C301
330nF

C302
100nF

C303
100uF

GND

Sheet: /DCC/
File: DCC.kicad_sch
Title:
Size: A4   Date:
KiCad E.D.A. 8.0.8   Rev:
Id: 3/14

VCC

{COIL}

R21
22R

R22
22R

R23
10k

R24
10k

Q21
AO3400A

Q22
AO3400A

D21

SS34

D22

J21

TP1

TP2

GND_COIL

Sheet: /mosfets2/
File: mosfets.kicad_sch

Title:
Size: A4   Date:
KiCad E.D.A. 8.0.8

Rev:
Id: 4/14

{POW}

A
B

PWR_FLAG VCC

D504   D503

A   B

D501   D502

PWR_FLAG GND

R501
47k

coilVoltage

R502
10k

VCC

C501

100nF

GND

{COIL}

VCC

R11
22R

R12
22R

R13
10k

R14
10k

Q11
AO3400A

Q12
AO3400A

D11

SS34

D12

J11

TP3

TP4

GND_COIL

Sheet: /mosfets1/
File: mosfets.kicad_sch
Title:
Size: A4   Date:
KiCad E.D.A. 8.0.8   Rev:
Id: 6/14

{COIL}

VCC

R31
22R

R32
22R

R33
10k

R34
10k

Q31
AO3400A

Q32
AO3400A

D31

SS34

D32

J31

TP5

TP6

GND_COIL

Sheet: /mosfets3/
File: mosfets.kicad_sch
Title:
Size: A4   Date:
KiCad E.D.A. 8.0.8   Rev:
Id: 7/14

{COIL}

R41
22R

R42
22R

R43
10k

R44
10k

Q41
AO3400A

Q42
AO3400A

VCC

TP7

D41

SS34

D42

J41

TP8

GND_COIL

{COIL}

VCC

TP9

R51
22R

D51

SS34
D52

J51

Q51
AO3400A

TP10

R52
22R

Q52
AO3400A

R53
10k

R54
10k

GND_COIL

{COIL}

R61
22R

R62
22R

R63
10k

R64
10k

Q61
AO3400A

Q62
AO3400A

VCC

TP11

D61

SS34

D62

J61

TP12

GND_COIL

VCC

TP13

{COIL}

R71
22R

R72
22R

R73
10k

R74
10k

Q71
AO3400A

Q72
AO3400A

D71

SS34

D72

J71

TP14

GND_COIL

VCC

{COIL}

R81
22R

R82
22R

R83
10k

R84
10k

Q81
AO3400A

Q82
AO3400A

D81
SS34
D82

J81

TP15

TP16

GND_COIL

J62

TP17
1.A
1.B

TP19
2.A
2.B

TP18

TP20

1{DCC}

2{POW}

GND_COIL

C101
100nF

CS

R101 R102   R103 R104
0R1 0R1   0R1 0R1

GND