USB-C

USB1
TYPE-C 16PIN 2MD(073)

Pin	Name
1	GND
2	VBUS
3	SBU2
4	CC1
5	DN2
6	DP1
7	DN1
8	DP2
9	SBU1
10	CC2
11	VBUS
12	GND
13	SHELL
14	SHELL

D1, D2
R1 5.1k
R2 5.1k
VBUS

Voltage Booster

L1 22uH
D4 SS34
5.1V
5V
C6 22uF
R9 7.5k
GND

U4 MT3608
Pin	Name	Pin	Name
6	NC	1	SW
5	IN	2	GND
4	EN	3	FB

VBAT
C5 22uF
R10 1k

LED

SW1

5V
R11 100 LED1
R12 100 LED2
R13 100 LED3
R14 100 LED4
R15 100 LED5
R16 100 LED6
R17 100 LED7
R18 100 LED8
R19 100 LED9
R20 100 LED10

Battery Charger

U1 TP4056
Pin	Name	Pin	Name
4	VCC	5	BAT
8	CE	1	TEMP
7	CHRG	2	PROG
6	STDBY	3	GND

VBUS
D3
C1 10uF
C2 1uF
VBAT
R5 1k
R4 1k
R3 2k
LEDR
LEDG

Battery Protection & Voltage Supervision

U2 DW01A
Pin	Name	Pin	Name
1	OD	6	GND
2	VM	5	VCC
3	OC	4	TD

R7 1k
C3 0.1uF
R6 100
VBAT
BAT-
BAT+

Q1 FS8205A
Pin	Name	Pin	Name
4	G2	3	S2
5	D1/D2	2	D1/D2
6	G1	1	S1

U3 TPS3823-33DBVR
Pin	Name	Pin	Name
1	RESET#	5	VDD
2	GND		
3	MR#	4	WDI

R8 1k
Q2
C4 0.1uF

USB-C Circuit
Passive USB-C 5V delivery (no data)
R_CC Pulldowns ensures 5V power

Battery Charging Circuit
Charges 3.7V Li-ion battery from 5V source
Charge Current = 580mA (I_CHRG   1100 / R_PROG)
VBAT = 4.2V

Voltage Booster Circuit
Boosts 2.93-4.2V battery to 5.1V
Vout = 5.1V   (Vout = 0.6V   (1 + R9/R10))
5V should be ~5.1V   (Testpoint 5V)

Battery Protection Cirucit
Over-charge: Detection 4.30V | Release 4.10V
Over-discharge: Detection 2.50V | Release 2.90V
DW01A pulls OD/OC low, FS8205A disconnects battery

Description:
Triggers at detection voltages 2.5V & 4.3V
Blocks until release voltages 2.9V & 4.1V

Voltage Supervisor Circuit
Threshold Voltage: 2.93V
N-Mosfet Pins: 1.Gate 2.Source 3.Drain
RESET# default pulled high by R_RST

Description:
Below 2.93V RESET# goes low for 200ms
NMOS turns off & VBAT disconnected until >2.93V

LED Lighting Circuit
10x Warm 3000K LEDs
20mA per LED - 160mA total

TITLE: USB-C Boosted LED Driver
REV: 1.0
Date: 2025-06-13
Sheet: 1/1
EasyEDA V4.7.8
Drawn By: Ben Bohan