HV boost circuit

AFC24-S24FIC-00

J2

L3 10uH

+3V3

Q1 SI1308

C17 4.7uF

R7 10K

R8 0.47R

C7 4.7uF

C6 4.7uF

TP1 VGH

PREVGH

D2 MBR0530

C14 4.7uF

C16 4.7uF 50V

D1 MBR0530

D3

C9 1uF

C10 1uF

C12 1uF

C11 4.7uF

C13 4.7uF

C15 4.7uF

TP3

C8 1uF

TP2 VCOM

GDR
RESE
VGL
VGH
EPD_BUSY
EPD_RST
EPD_DC
EPD_CS
EPD_CLK
EPD_MOSI
VDDIO
VCI
VSS
VDD
VPP
VSH
PREVGH
PREVGL
VCOM

Mounting

open souce hardware

H1 MountingHole
H2 MountingHole
H3 MountingHole
H4 MountingHole

QWIIC I2C

SM04B-SRSS-TB_LF__SN_

J4

SCL
SDA
VDD33

ANT1

2450AT42E0100E

GND_1
NC
GND_2
FEEDING_POINT

500mA 1nH 50mΩ

L4

2.7nH 100mΩ

L1

C18 10uF
C19 1uF
C20 0.1uF
C21 0.1uF

VDD33

ESP32-C6FH4

U1 ESP32-C6FH4

ANT
CHIP_PU
GPIO0/XTAL_32K_P/ADC1_CH0
GPIO1/XTAL_32K_N/ADC1_CH1
XTAL_N
XTAL_P
MTMS/GPIO4/FSPIHD/ADC1_CH4
MTDI/GPIO5/FSPIWP/ADC1_CH5
MTCK/GPIO6/FSPICLK/ADC1_CH6
MTDO/GPIO7/FSPID
U0TXD/GPIO16/FSPICS0
U0RXD/GPIO17/FSPICS1
GPIO13/USB_D+
GPIO12/USB_D-
GPIO2/FSPIQ/ADC1_CH2
GPIO3/ADC1_CH3
GPIO8
GPIO9
GPIO14
GPIO15
GPIO18/SDIO_CMD/FSPICS2
GPIO19/SDIO_CLK/FSPICS3
GPIO20/SDIO_DATA0/FSPICS4
GPIO21/SDIO_DATA1/FSPICS5
GPIO22/SDIO_DATA2
GPIO23/SDIO_DATA3
VDDA3P3
VDDPST1
VDDPST2
VDDA1
VDDA2
GND

ENABLE
EPD_MOSI
EPD_CLK
EPD_BUSY
EPD_RST

X1 Crystal 40 Mhz 10ppm

C4 22pF
C5 22pF

R6 0Ω
R14 5.1k
R15 5.1k
SCL
SDA

IO_TX
IO_RX
USB_D+
USB_D-
EPD_CS
EPD_DC
BOOT
RTC_INT
RTC_EVI
RTC_SQW
IO_21
IO_22
IO_23

TP9 TX
TP10 RX
SERIAL UART

USB signal
R9 5.1k

R18 10k
R19 10k
SW18
SW19

TP6
TP7
TP8

Charge and power management

GATE input voltage is LOW then P-channel MOSFET connected in the circuit will be turned ON letting VBAT flow to LDO

VBAT
P-CH MOSFET
Q2 SI2301CDS
D5 1N5817
R10 10K

TP4 COIN BAT +
TP5 COIN BAT -
VDD

VBUS

U3 TP4057-42-SOT26-R

BAT
GND
*CHRG
VCC
*STDBY
PROG

R11 5.1k
D4 RED
R12 2K2
R13 5.1k
GRE D6

C12044

USB-C JTAG / CDC Serial to MCU

J1

VBUS
USB_D-
USB_D+
SBU1
SBU2
SHIELD
USB_C_Receptacle_USB2.0

R1 5.1k
R20 5.1k

Boot / RST / Push switches

U4 K2-1806SQ-A2DW-04

SW1
SW2
SW_Push_Dual

R2 10k
R16 10k
C1 1uF
C23 22pF

U5
U6

R17 10k
EPD_RST

SW19
SW20

Battery jack

J3 SM02B-SRSS-TB(LF)(SN)

MP1
MP2
VBAT

Small 4 pin LCD connector

J5 OLED

SDA
SCL
VDD33

Buck converter 5V to 3V3

VDD

U2 SGM6029CYG/TR

GND
VOS
VIN
EN
VSEL/MODE
SW

R3 249k 1%

L2 0.47 uH

C2 10 uF
C3 10 uF

Real time clock via I2C

VDD_RTC
C24 superCAP
▲ superCAP needs ▲ to be hand-soldered

R4 10 K
R5 10 K
RTC_EVI
RTC_SQW

PWR_FLAG

Y1 RV-3032-C7

VBACKUP
SDA
INT
EVI
SCL
CLKOUT
VDD
VSS

IO10 RTC_INT
IO11 RTC_EVI

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File: H-C6-ulp.kicad_sch		
Title: ESP32C6 ULP low power		
Size: A3	Date: 2024-09-09	**Rev: 1.0**
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