+3.3VD +5VD +5VD +5VD +5VD +5VD

R16 10K/0603   R17 10K/0603   R4 0R/0603   R2 NC/0603   R1 0R/1206

TY928_EN
Q2 BSS138

TY928_RX R5 0R/0603
TY928_TX R6 0R/0603

M2
P$1 VCC   GND P$20
P$2 VCC   GND P$19
P$3 EN   NC   P$18
P$4 NC   NC   P$17
P$5 NC   NC   P$16
P$6 NC   GPO2 P$15   R10 0R/0603
P$7 NC   GPO1 P$14   R11 0R/0603
P$8 RX   GPI2 P$13   R12 0R/0603
P$9 TX   GPI1 P$12   R18 0R/0603
P$10 BEEP   GND P$11
     NC
TY928-E310-UHF-MOUDLE

C1 100nF/50V/0603   C2 10uF/25V/0603
SGND   SGND

XL-5050RGBC-PL
B- 1   6 B B+
R- 2   5 R R+
G- 3   4 G G+
LED1
R7 1K/0603   +3.3VD
SGND

+5VD R14 0R/0603
D2 1N4007(SMD)
R15 0R/0603
R9 0R/0603   R19 0R/0603
TY928_BEEP
Buzzer
BUZZER1 HNB09A05
Q1 MMBT3904 C B E
BEEP_FROM_MCU
R13 0R/0603   R8 10K/0603
SGND   SGND

TY928_RX R23 33R/0603 UART_4_TX
TY928_TX R24 33R/0603 UART_4_RX

KEYPAD_COM
S1 GT-TCB73B-H090-L1   R55 0R/0603   KEYPAD_1
S3 GT-TCB73B-H090-L1   R56 0R/0603   KEYPAD_2

+3.3VD +5VD R21 10K/0402
R46 1K/0402
LED2 TJ-S3806SW1TG1C6FRGB-A5
P$6 P$4 P$2
R54 1K/0402
MAIN_LED_GREEN
MAIN_LED_BLUE
SGND

+5VD
C5 C6 C7 C8 C9 22uF/25V/0805
SGND

+5VD +3.3VD
U2 LM1117-3.3V
IN OUT
TAB GND/ADJ
D7 SMF5.0CA
C3 100nF/50V/0402   C14 10uF/25V/0603
C17 10uF/25V/0603   C4 100nF/50V/0402
TVS1 SMF-3.3CA
SGND

+5VD +3.3VD
LED4 R22 R/0603   LED5 R44 R/0603
10K/0402   10K/0402
SGND   SGND

FB7 GZ2012D601TF   STO1 7774
FB1 GZ2012D601TF   STO2 7774
SGND   FGND

+3.3VD +5VD
R59 10K/0603   R60 10K/0603
RGB_LED_SIG
Q3 BSS138
R3 470R/0603

LED6 VDD DIN GND DOUT SK6812-3535-HS C10 100nF/50V/0402
LED7 VDD DIN GND DOUT SK6812-3535-HS C11 100nF/50V/0402
LED8 VDD DIN GND DOUT SK6812-3535-HS C12 100nF/50V/0402
LED9 VDD DIN GND DOUT SK6812-3535-HS C13 100nF/50V/0402
LED10 VDD DIN GND DOUT SK6812-3535-HS C15 100nF/50V/0402
LED11 VDD DIN GND DOUT SK6812-3535-HS C16 100nF/50V/0402
LED12 VDD DIN GND DOUT SK6812-3535-HS C18 100nF/50V/0402

Title: PARP-01-P1-MAIN-Rev2 v4
Version:
2026-01-28 오후 5:15
Drawn By:
1/3

+5VD
D6
SS34
FB12
GZ2012D101TF
U13
1 I/O1 I/O4 6
2 GND VBUS 5
3 I/O2 I/O3 4
SRV05-4
SGND

L2
GZ2012D101TF
USB_OTG_HS_VBUS
R73 33R/0402 USB_OTG_HS_DM
R74 33R/0402 USB_OTG_HS_DP

J8
A9B4 A9B4_VBUS
B9A4 A4B9_VBUS
A5 A5_CC1 B8_SBU2 B8
A6 A6_D+ B7_D- B7
A7 A7_D- B6_D+ B6
A8 A8_SBU1 B5_CC2 B5
R70
5.1K/0402
R72
5.1K/0402
B12A1 A01B12_GND
A12B1 A12B01_GND SH SH1*4
TYPEC-304-ACP16
R71
NC/0603
SGND SGND SGND SGND

+3.3VD
+3.3VD
10K/0402 10K/0402 10K/0402 10K/0402 10K/0402 10K/0402
R25 R29 R38 R39 R40 R41

J5
4 VDD
7 DAT0 SDMMC1_D0
8 DAT1 SDMMC1_D1
1 DAT2 SDMMC1_D2
2 CD/DAT3 SDMMC1_D3
3 CMD SDMMC1_CMD
5 CLK SDMMC1_CK
6 VSS
SHIELD G1*4 R43
0R/0603 R42
CD SDMMC1_DT
10K/0402
GT-TF003-H0185-02
SGND

+5VD
D1
SS34
FB4
GZ2012D101TF
U4
1 I/O1 I/O4 6
2 GND VBUS 5
3 I/O2 I/O3 4
SRV05-4
SGND

L1
GZ2012D101TF
R50 33R/0402 USB_CDC_DM
R51 33R/0402 USB_CDC_DP

J1
A9B4 A9B4_VBUS
B9A4 A4B9_VBUS
A5 A5_CC1 B8_SBU2 B8
A6 A6_D+ B7_D- B7
A7 A7_D- B6_D+ B6
A8 A8_SBU1 B5_CC2 B5
R49
5.1K/0402
R48
5.1K/0402
B12A1 A01B12_GND
A12B1 A12B01_GND SH SH1*4
TYPEC-304-ACP16
R47
NC/0603
SGND SGND SGND SGND

+3.3VD
+3.3VD
U3
1 GND VCC 16
2 TXD R232 15
3 RXD RTS# 14
4 V3 DTR# 13
5 UD+ DCD# 12
6 UD- RI# 11
7 NC DSR# 10
8 OUT# CTS# 9
CH340C
UART_1_RX R53 33R/0603
UART_1_TX R52 33R/0603
USB_CDC_DP
USB_CDC_DM
R57 NC/0603 USB_CDC_DP
R58 NC/0603 USB_CDC_DM
SGND

Crystal Y1
XTAL-A   Y1   XTAL-B
8Mhz/5032
R26
10M/0402
C38 20pF/0402
C39 20pF/0402
SGND

S2
S2 TS-1088-AR02016   +3.3VD
BOOT0   R30 10K/0402   SGND
R31 10K/0402   PB2
SGND

Decoupling caps
+3.3VD
C49 10uF/25V/0603
C56 100nF/50V/0402
C50 100nF/50V/0402
C51 100nF/50V/0402
C52 100nF/50V/0402
C65 100nF/50V/0402
C66 100nF/50V/0402
C67 100nF/50V/0402
C68 100nF/50V/0402
C69 100nF/50V/0402
C70 100nF/50V/0402
C71 100nF/50V/0402
SGND

U5 DS3231M+
+3.3VD
R45 10K/0402
R35 10K/0402/NC
R36 10K/0402/NC
U5 DS3231M+
1 32KHZ   SCL 8
2 VCC   SDA 7   I2C4_SCL
3 INT/SQW   VBAT 6   I2C4_SDA
4 RST   GND 5
C73 100nF/50V/0402
C72 100nF/50V/0402
SGND
R37 0R/0603   BAT+

NRST / R27
+3.3VD
R27 10K/0402
C40 100nF/50V/0402
S4 TS-1088-AR02016
NRST
SGND

Y2 32.768Khz
XTAL-32-B   Y2   XTAL-32-A
32.768Khz/6pF
C41 20pF/0402
C42 20pF/0402
SGND

J4 SMW250-05
+3.3VD
J4
5 P$5   NRST
4 P$4
3 P$3   SYS_JTMS-SWDIO
2 P$2   SYS_JTCK-SWCLK
1 P$1
SMW250-05
SGND

U7 M24C64
+3.3VD
R33 10K/0402
R34 10K/0402
C53 100nF/50V/0402
U7
1 E0   VCC 8
2 E1   WC 7
3 E2   SCL 6   I2C4_SCL
4 VSS   SDA 5   I2C4_SDA
M24C64
SGND

BAT / D31 BAV70
BAT+   +3.3VD
D31
3
2   BAV70
VBAT
BT1 BS-12-B3AA011
SGND

FB2 / FB3
+3.3VD
FB2 GZ2012D101TF
FB3 GZ2012D101TF
C44 10uF/25V/0603
C47 100nF/50V/0402
C46 10uF/25V/0603
C48 100nF/50V/0402
SGND

U1 STM32H723ZG
Left side pins:
1 PE2 UART_10_RX
2 PE3 UART_10_TX
3 PE4 EXIT4_FREQ1
4 PE5 EXIT5_FREQ2
5 PE6 TEST_LED
6 VBAT
7 PC13 SPI6_CS
8 PC14-OSC32-IN XTAL-32-A
9 PC15-OSC32-OUT XTAL-32-B
10 PF0 LED_STS_2
11 PF1
12 PF2 EXIT2_PULSE1
13 PF3 EXIT3_PULSE2
14 PF4 EXT12_EN_0
15 PF5 EXT12_EN_1
16 VSS
17 VDD
18 PF6 EDCAN3_RX
19 PF7 EDCAN3_TX
20 PF8 BEEP_FROM_MCU
21 PF9 MAIN_LED_BLUE
22 PF10 MAIN_LED_GREEN
23 PH0-OSC-IN XTAL-A
24 PH1-OSC-OUT XTAL-B
25 NRST
26 PC0
27 PC1 RMII_MDC
28 PC2_C SPI2_MISO
29 PC3_C SPI2_MOSI
30 VDD
31 VSSA
32 VREF- VREF+
33 VDDA VDD
34 PA0 SPI2_CS#A
35 PA1 RMII_REF_CLK
36 PA2 RMII_MDIO

Top pins (144...109):
144 VDD
143 PDR_ON   PDR_ON
142 PE1   UART_8_TX
141 PE0   UART_8_RX
140 PB9
139 PB8   I2C4_SCL
138 BOOT0   BOOT0
137 PB7   I2C4_SDA
136 PB6   UART_5_TX
135 PB5   UART_5_RX
134 PB4
133 PB3
132 PG15   SPI2_CS#C
131 VDD
130 PG14   SPI6_MOSI
129 VSS   SPI6_CLK
128 PG13   SPI6_MISO
127 PG12   RMII_TX_EN
126 PG11
125 PG10
124 PG9   SPI1_MOSI
123 PD7   UART_2_RX
122 PD6
121 VDD   UART_2_TX
120 PD5   MUX0L_S0
119 PD4   SPI2_SCK
118 PD3   UART_4_RX
117 PD2   UART_4_TX
116 PD1   SDMMC1_CK
115 PD0   SDMMC1_CMD
114 PC12   SDMMC1_D3
113 PC11   SDMMC1_D2
112 PC10   SDMMC1_D1
111 PA15   MUX0L_S1
109 PA14   SYS_JTCK-SWCLK

Right side pins (108...73):
108 VDD
107 VSS
106 VCAP_2
105 PA13-JTMS-SWDIO   SYS_JTMS-SWDIO
104 PA12   USB_OTG_HS_DP
103 PA11   USB_OTG_HS_DM
102 PA10
101 PA9   USB_OTG_HS_VBUS
100 PA8   SDMMC1_DT
99 PC9   SDMMC1_D1
98 PC8   SDMMC1_D0
97 PC7   UART_6_RX
96 PC6   UART_6_TX
95 VDD
94 VSS
93 PG8   UART_6_RTS
92 PG7   ADC1_RST
91 PG6   ADC1_START
90 PG5   ADC2_DRDY
89 PG4   ADC2_RST
88 PG3   ADC2_START
87 PG2   RGB_LED_SIG
86 PD15   UART_9_TX
85 PD14   UART_9_RX
84 VDD
83 VSS
81 PD13   UART_3_DE
80 PD12   KEYPAD_1
79 PD11   KEYPAD_2
78 PD10   KEYPAD_3
77 PD9   KEYPAD_4
76 PD8   UART_1_RX
75 PB15   UART_1_TX
74 PB14   RMII_TXD1
73 PB13   RMII_TXD0
PB12

82 KEYPAD_COM

Bottom pins (37...72):
37 PA3
38 VSS
39 VDD
40 PA4   SPI1_SCK
41 PA5   SPI1_MISO
42 PA6   RMII_CRS_DV
43 PA7   RMII_RXD1
44 PC4   RMII_RXD0
45 PC5   ADC1_INP9
46 PB0   ADC1_INP8
47 PB1   PB2
48 PB2-BOOT1   ADC1_INP2
49 PF11   ADC1_INP6
50 PF12
51 PF13
52 VDD
53 PF14   ADC2_INP6
54 PF15   TY928_BEEP
55 PG0   TY928_EN
56 PG1   UART_7_RX
57 PE7   UART_7_TX
58 PE8
59 PE9   LCD_RST
60 VSS   SPI_CS_A
61 VSS   LCD_BL
62 PE10   LCD_A0
63 PE11   ADC1_DRDY
64 PE12   UART_3_TX
65 PE13   UART_3_RX
66 PE14
67 PE15
68 PB10
69 PB11
70 VCAP_1
71 VDD
72 VDD

U1 STM32H723ZG
C43 10uF/25V/0603
SGND
+3.3VD

LED3
LED3 W/0603
+3.3VD
1K/0402 R28
TEST_LED

LED / TEST
LED3 W/0603   1K/0402   TEST_LED
R28

C45 10uF/25V/0603
SGND
+3.3VD