

K3/K4 Radio Connector

J1
DE15_Plug_HighDensity_MountingHoles

AUXBUS 1
BAND1 2
DIGOUT1 3
BAND0 4
BAND3 5
DIGOUT0 6
INHIBIT 7
PWR_ON 8
BAND2 9
SHIELD 10
SHIELD_1 11

GND
TP2
TP1

Level Shifting

BAND0 L1 100uH D7 BAT43 R6 10K B0 +3.3V

BAND1 L6 100uH D2 BAT43 R9 10K B1 +3.3V

BAND2 L3 100uH D3 BAT43 R2 10K B2 +3.3V

BAND3 L2 100uH D4 BAT43 R4 10K B3 +3.3V

INHIBIT L4 100uH C7 .1uF +3.3V R7 10K

PWR_ON L5 100uH C3 .1uF +3.3V R1 10K

AUXBUS L7 100uH D6 BAT43 C6 .1uF R5 10K +3.3V

Pico-W Processor

U1
Raspberry Pi PicoW

GPIO0 VBUS 40
GPIO1 VSYS 39
GND GND 38
GPIO2 3V3_EN 37
GPIO3 3V3 36
GPIO4 ADC_VREF 35
GPIO5 GPIO28_ADC2 34
GND AGND 33
GPIO6 GPIO27_ADC1 32
GPIO7 GPIO26_ADC0 31
GPIO8 RUN 30
GPIO9 GPIO22 29
GND GND 28
GPIO10 GPIO21 27
GPIO11 GPIO20 26
GPIO12 GPIO19 25
GPIO13 GPIO18 24
GND GND 23
GPIO14 SWCLK 22
GPIO15 GND 21
SWDIO SWDIO 20
GPIO16 GPIO16 19
GPIO17 GPIO17 18
GPIO18 GPIO18 17
GPIO19 GPIO19 16
GPIO20 GPIO20 15
GPIO21 GPIO21 14
GPIO22 GPIO22 13
GPIO23 GPIO23 12
GPIO24 GPIO24 11
GPIO25 GPIO25 10
GPIO26 GPIO26 9
GPIO27 GPIO27 8
GPIO28 GPIO28 7
GPIO29 GPIO29 6
GPIO30 GPIO30 5
GPIO31 GPIO31 4
GPIO32 GPIO32 3
GPIO33 GPIO33 2
GPIO34 GPIO34 1

TP9 Blinky 1
TP8 2
D7 3
D6 4
D5 5
D4 6
D3 7
D2 8
D1 9
D0 10
D7 11
D6 12
D5 13
D4 14
D3 15
D2 16
D1 17
D0 18
D7 19
D6 20
D5 21
D4 22
D3 23
D2 24
D1 25
D0 26
D7 27
D6 28
D5 29
D4 30
D3 31
D2 32
D1 33
D0 34
D7 35
D6 36
D5 37
D4 38
D3 39
D2 40
D1 41
D0 42
D7 43
D6 44
D5 45
D4 46
D3 47
D2 48
D1 49
D0 50

Display Board Interface

J3
75915416LF

D7 16
D6 15
D5 14
D4 13
E 12
RW 11
RS 10
LIGHT 9
SW4 8
SW3 7
SW2 6
SW1 5

DC Power Input

U2
L7805

IN 1
OUT 3
GND 2

+12V
F1 Polyfuse
D8 1N4002
C8 220
C9 2.2
C10 2.2
D10 Red LED
R11 470
D9 Green LED
R10 330

POWER J2
SHUNT
SLEEVE
GND

Legend

- H1 MountingHole
- H2 MountingHole
- H4 MountingHole
- H3 MountingHole

Metadata

See license
N1KDO
Sheet: /
File: BandSelector.kicad_sch
Title: Band Selector
Size: A Date: 2024-10-26
KiCad E.D.A. 8.0.6
Rev: 0.0.6
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BAND2 L3 100uH D3 BAT43 R2 10K B2 +3.3V

BAND3 L2 100uH D4 BAT43 R4 10K B3 +3.3V

INHIBIT L4 100uH C7 .1uF R7 10K +3.3V

AUXBUS L7 100uH D6 BAT43 R5 10K +3.3V

PWR_ON L5 100uH C3 .1uF R1 10K +3.3V

PWRSENSE L8 100uH C4 .1uF R8 10K +3.3V

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GPIO2 3
GPIO3 4
GPIO4 5
GPIO5 6
GPIO6 7
GPIO7 8
GPIO8 9
GPIO9 10
GPIO10 11
GPIO11 12
GPIO12 13
GPIO13 14
GPIO14 15
GPIO15 16

VBUS 17
V5V3 18
GND 19
3V3_EN 20
3V3 21
ADC_VREF 22
AGND 23
GPIO28_ADC2 24
GPIO27_ADC1 25
GPIO26_ADC0 26
RUN 27
GPIO22 28
PWRSENSE 29
PWRON 30
B3 31
B2 32
B1 33
B0 34
INH 35

TP9 Blinky 1
TP8 2
D7 3
D6 4
D5 5
D4 6
E 7
RW 8
RS 9
LIGHT 10
SW4 11
SW3 12
SW2 13
SW1 14
TP10 15
TP11 16

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R10 330
R11 470

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SHUNT
SLEEVE
GND

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This is a detailed PCB schematic for a Band Selector circuit, designed to interface a Raspberry Pi Pico processor with a radio connector and a display board.

Key Components and Sections:

- K3/K4 Radio Connector (J1):** A high-density connector with pins for AUXBUS, BAND1, BAND2, BAND3, DIGOUT1, DIGOUT6, INHIBIT, PWR_ON, PWR2, SHIELD, and SHIELD_1.
- Level Shifting:** Four identical stages (B0, B1, B2, B3) using BAT43 diodes (D1-D4), 100uH inductors (L1-L4), and 0.1uF capacitors (C1-C4) to interface the radio bands with the processor's 3.3V logic.
- Pico-W Processor (U1):** A Raspberry Pi Pico processor with various pins connected for power, ground, and data. Key pins include BLINKY, TP8, TP9, TP10, TP11, TP3, TP4, TP5, TP6, TP7, and TP12.
- Display Board Interface (J3):** A 16-pin connector for the display board, including pins for D7, D6, D5, D4, E, RW, RS, LIGHT, SW4, SW3, SW2, and SW1.
- DC Power Input:** A power regulation section starting with a +12V input, passing through a polyfuse (F1), and regulated down to +5V and +3.3V using an L7805 (U2) and various capacitors (C5-C9) and diodes (D5, D6, D7, D8, D9, D10).
- Control Logic:** Two 2N7000 MOSFETs (Q1, Q2) are used to switch the power lines based on the processor's output.

Legend:

- H1: MountingHole
- H2: MountingHole
- H4: MountingHole
- H3: MountingHole

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Key Components and Sections:

- K3/K4 Radio Connector (J1):** A high-density connector with pins for AUXBUS, BAND1, BAND2, BAND3, DIGOUT1, DIGOUT6, INHIBIT, PWR_ON, PWR2, SHIELD, and SHIELD_1.
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- Pico-W Processor (U1):** A Raspberry Pi Pico processor with various pins connected for power, ground, and data. Key pins include BLINKY, TP8, TP9, TP10, TP11, TP3, TP4, TP5, TP6, TP7, and TP12.
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GND TP2

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BAND1 L6 100uH D2 BAT43 R9 10K B1 +3.3V

BAND2 L3 100uH D3 BAT43 R2 10K B2 +3.3V

BAND3 L2 100uH D4 BAT43 R4 10K B3 +3.3V

INHIBIT L4 100uH C7 .1uF GND R7 10K +5VD

PWR_ON L5 100uH C3 .1uF GND R1 100 2 1 Q1 2N7000 +3.3V

AUXBUS L7 100uH D6 BAT43 R5 10K OTP12 +3.3V

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GPIO17 GPIO17 18
GPIO18 GPIO18 17
GPIO19 GPIO19 16
GPIO20 GPIO20 15
GPIO21 GPIO21 14
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D3 23
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D1 25
D0 26
D7 27
D6 28
D5 29
D4 30
D3 31
D2 32
D1 33
D0 34
D7 35
D6 36
D5 37
D4 38
D3 39
D2 40
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