Schematic: Expansion Accessory

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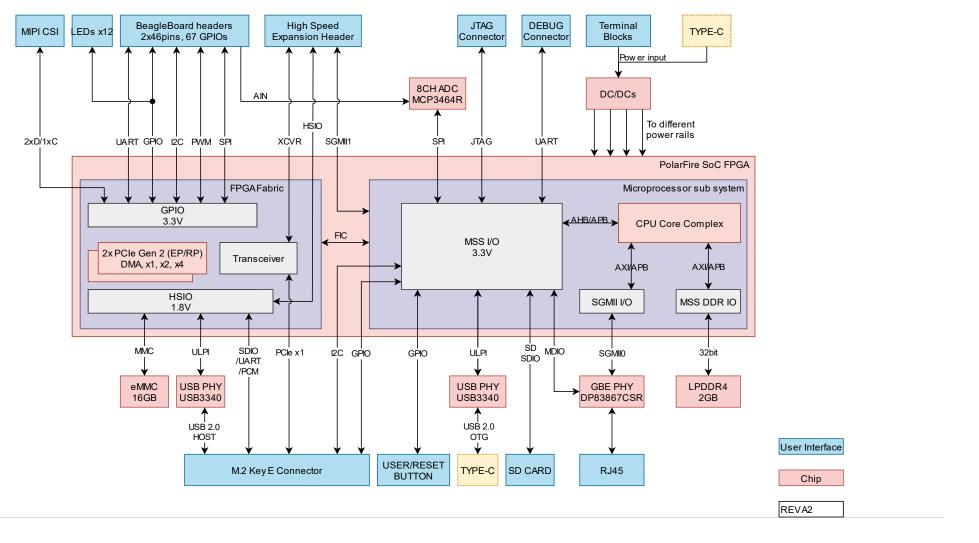
Revision History

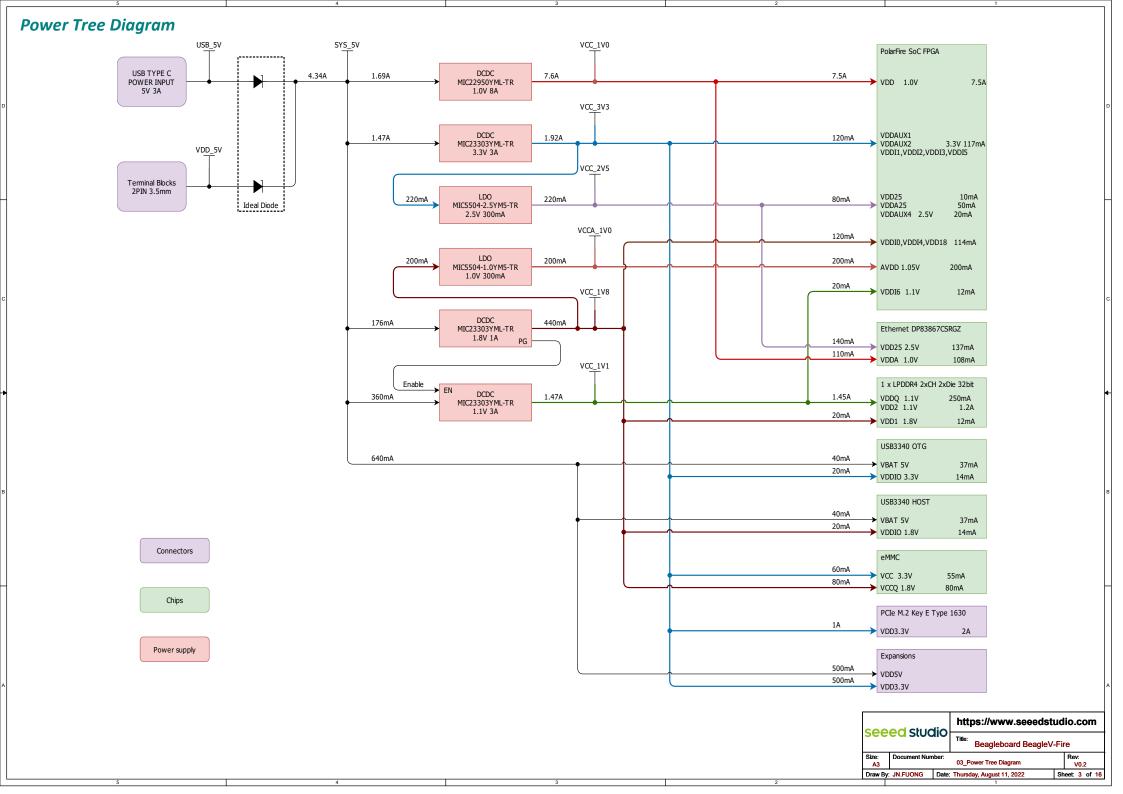
DATE	REVISION	DESCRIPTION
May. 21 2021	v0.1	1. Initial
Aug. 9 2022	v0.2	1.Change MPU From MPFS250 to MPFS025. 2.Change Ethernet PHY From TI_DP83867CSRGZ to Realtek_RTL8211FS-CG. 3.Change High Speed Connector to QSH-020-01-F-D-DP-A. 4.P8,P9,CSI and High Speed Connector Some Pins Re-assignment. 5.SD Card is connected to the same SPI bus as the ADC. 6.Change User Button and Reset Signals GPIO. 7.Connect eMMC directly to MSS eMMC controller . 8.Change J4 to LPJG0933H11NL. 9.Change LPDDR4 to Samsung_K4F6E3S4HM-MGCJ.

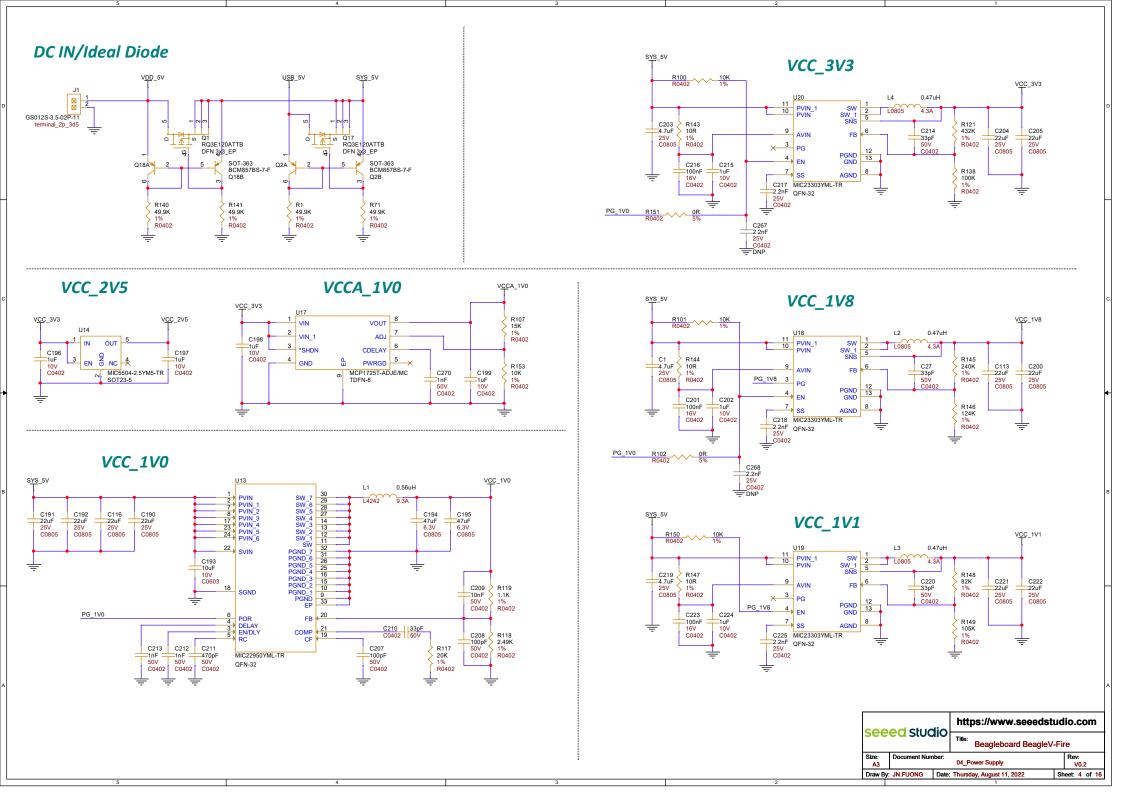


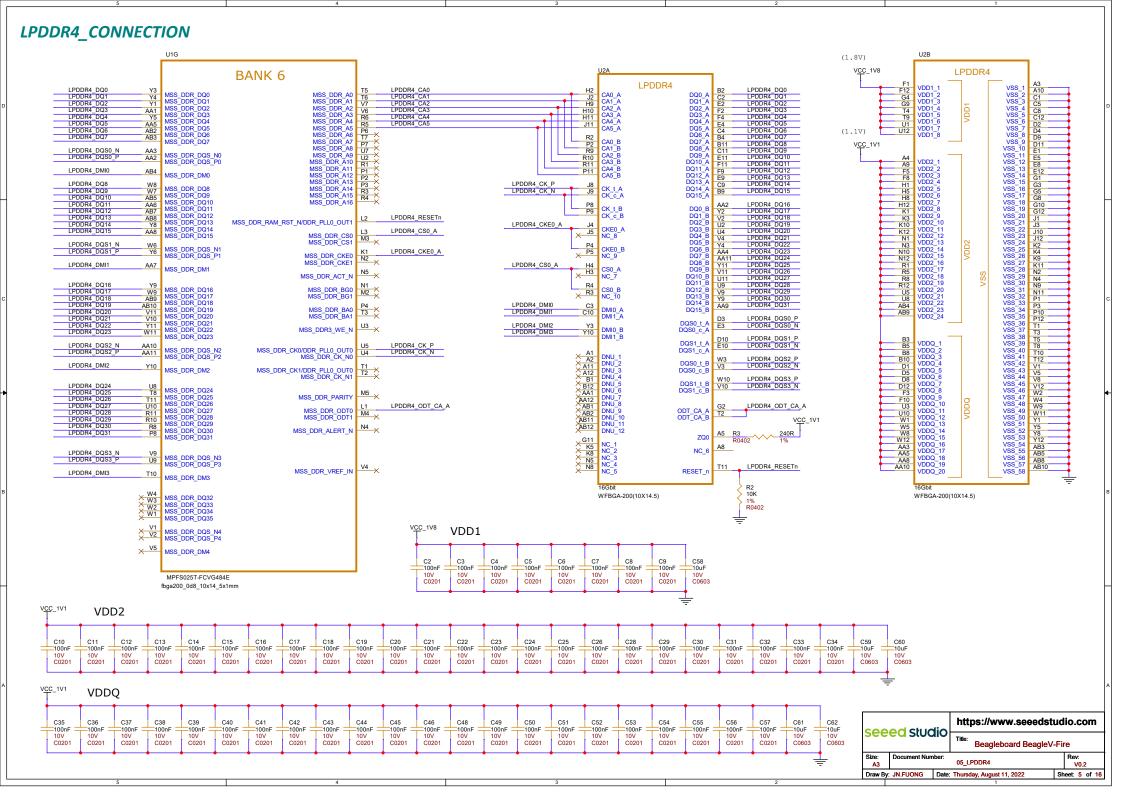
System Block Diagram

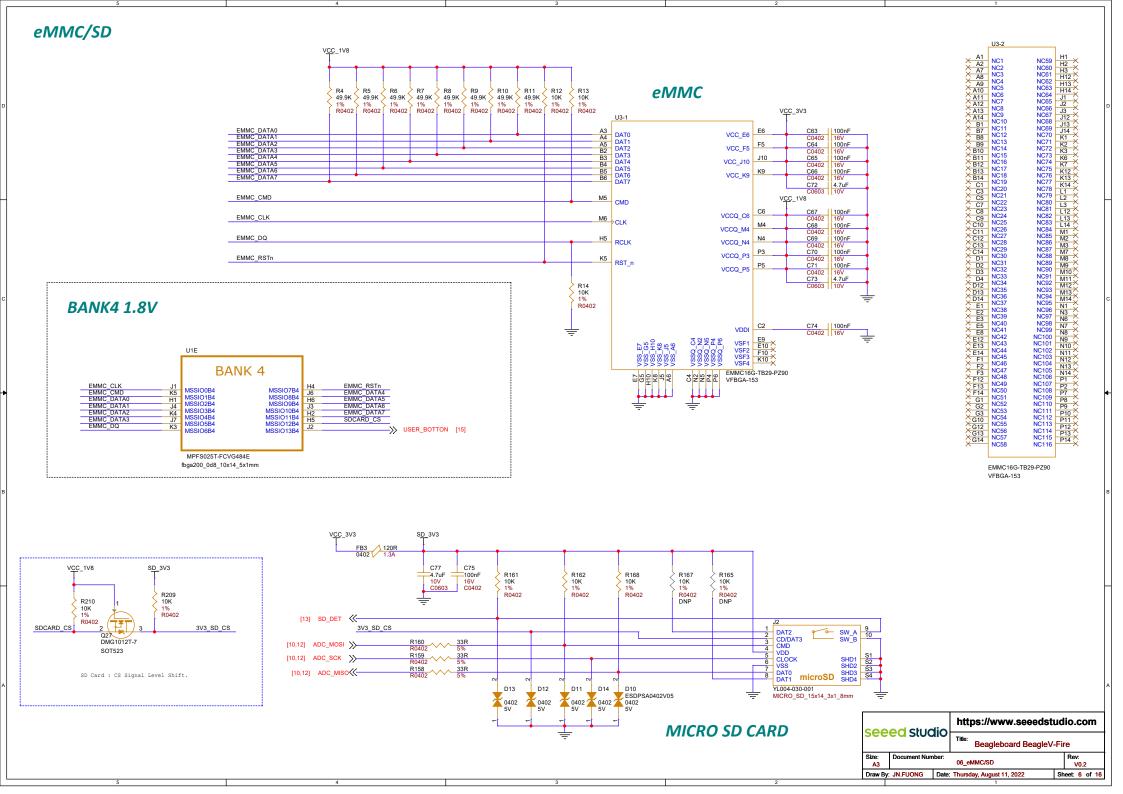
System Block Diagram



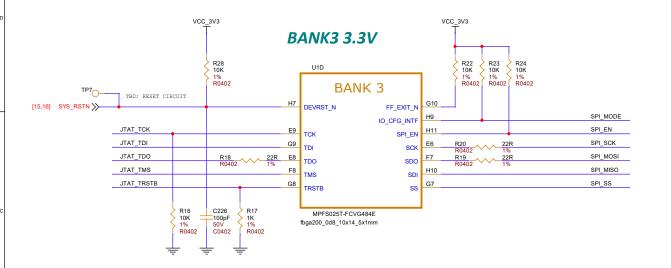


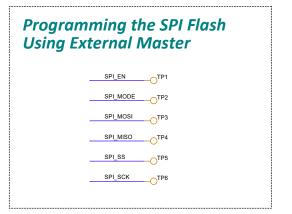






JTAG/SPI Flash



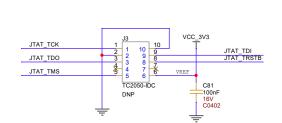


07_JTAG/SPI Flash

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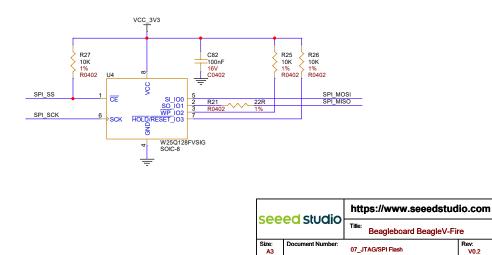
Draw By: JN.FUONG Date: Thursday, August 11, 2022

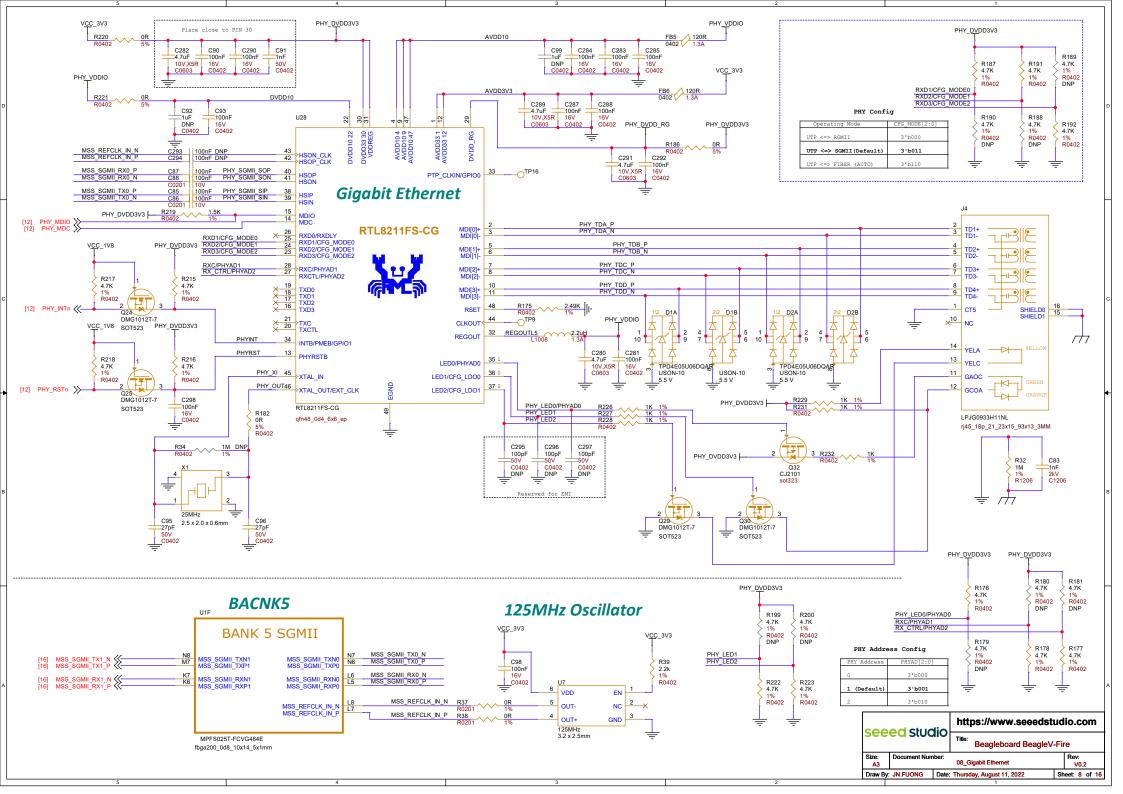
JTAG for Tag-Connect cable

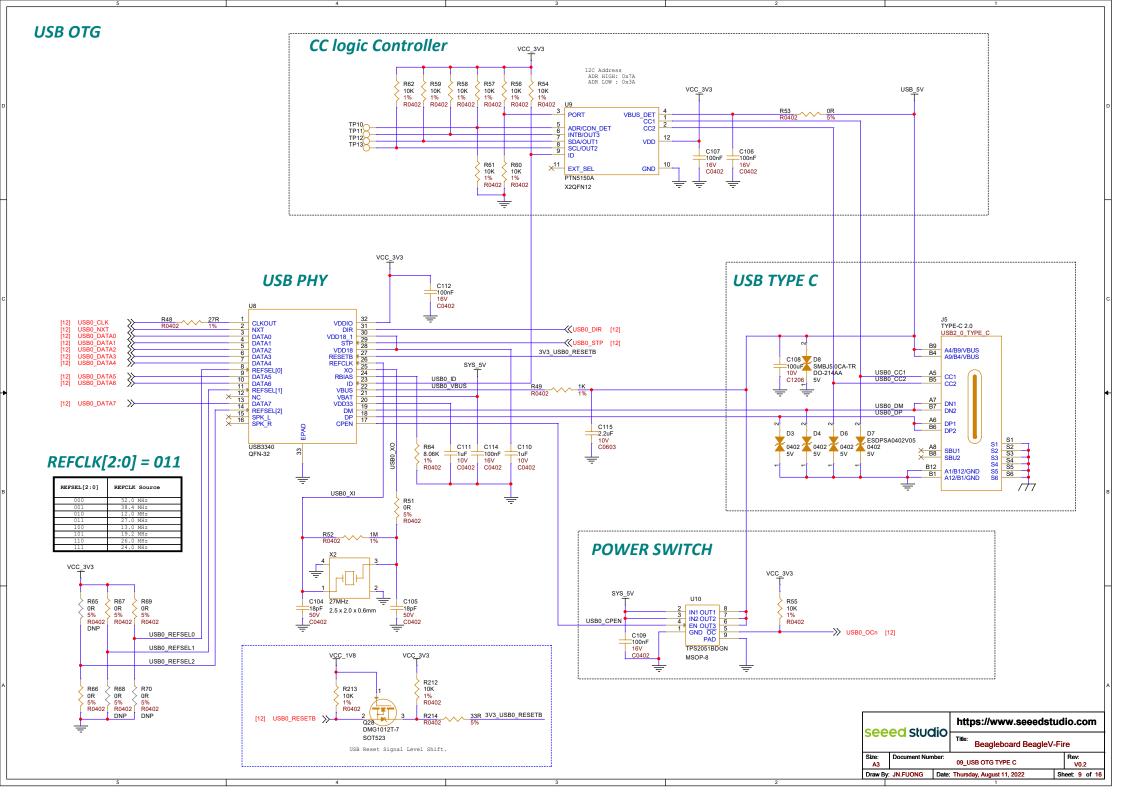


TBD: USE OTHER CONNECTOR

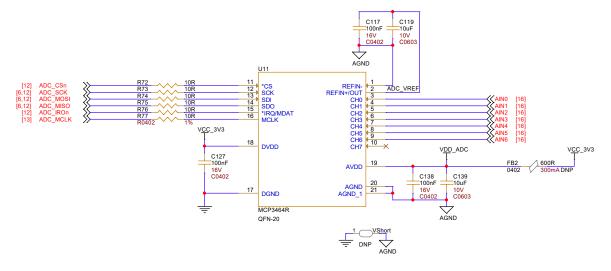
SPI Flash



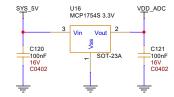




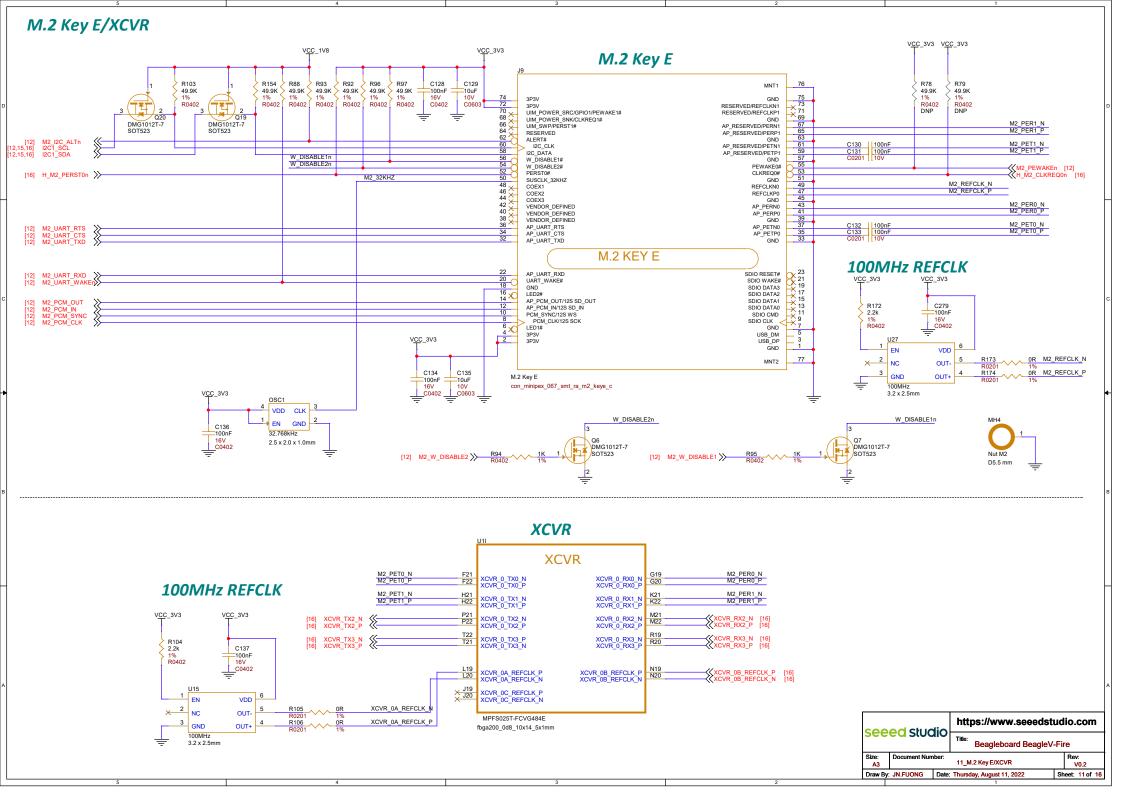
16-bit Delta-Sigma ADC



High PSRR LDO

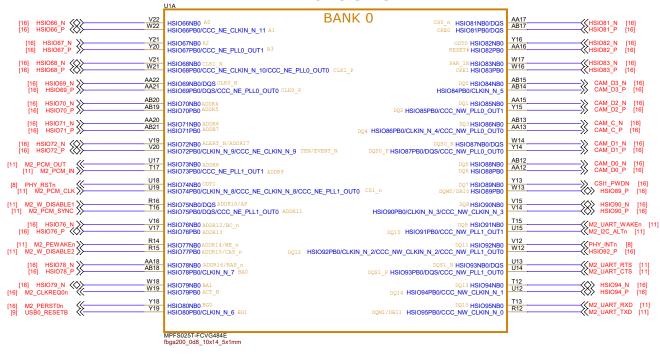


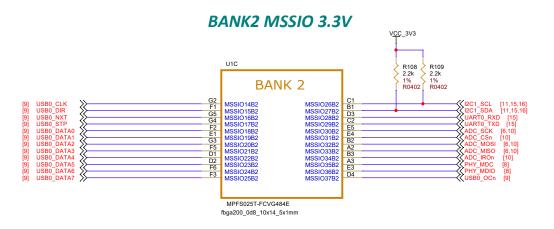
seeed studio		<u>:</u>	https://www.seeedstudio.com		
			Title: Beagleboard BeagleV-Fire		
Size: A3	Document Num	10_USB HOST/ADC		Rev: V0.2	
Draw By: JN.FUONG Date:		Date:	: Thursday, August 11, 2022 Sh		neet: 10 of 16





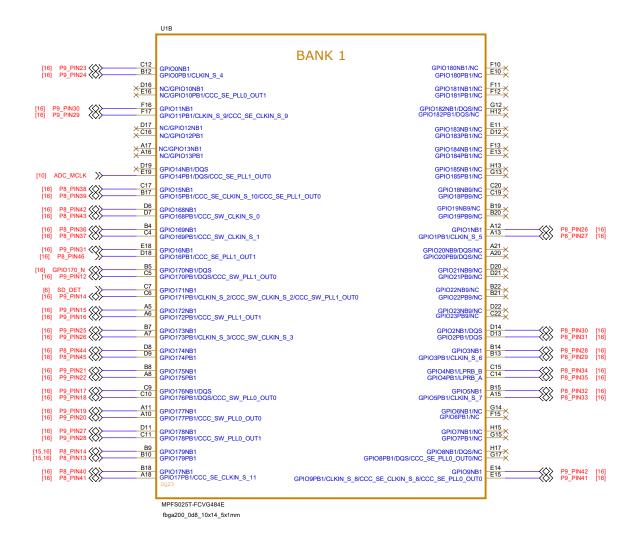
BANKO HSIO 1.8V



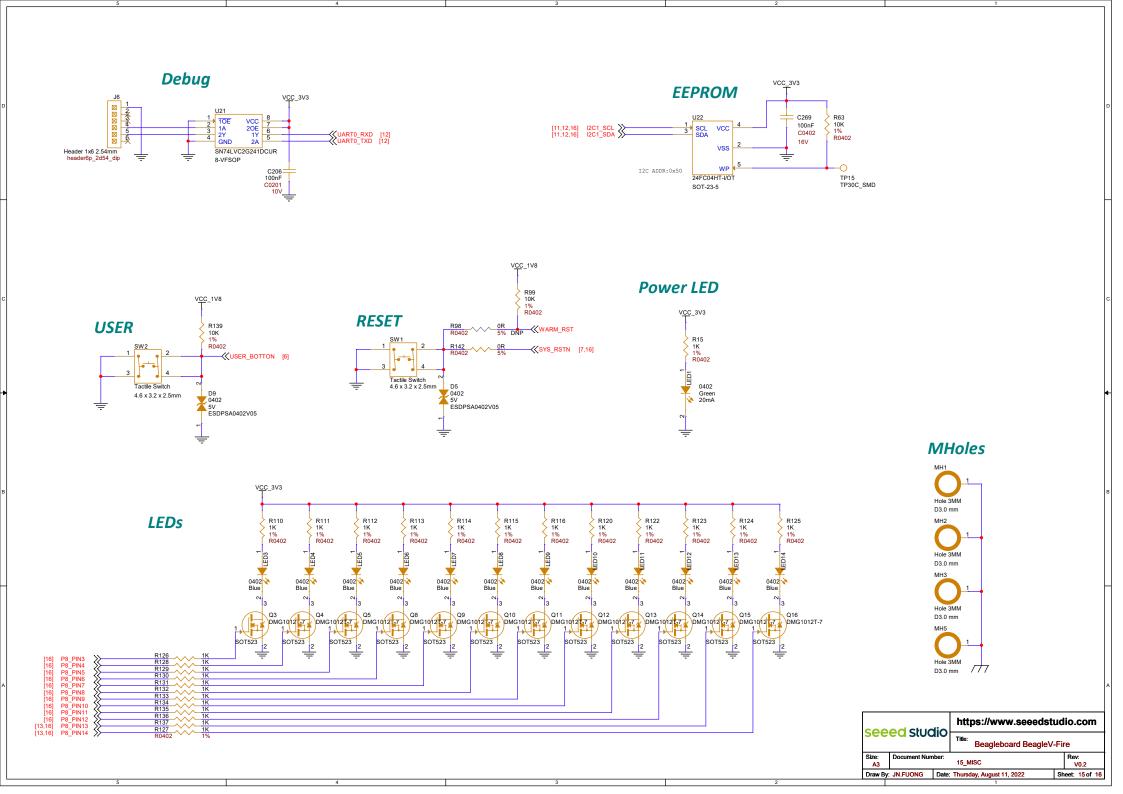


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			Title: Beagleboard BeagleV-Fire		
Size: A3	Document Num	nber:	12_SoC BANK0/BANK2		Rev: V0.2
Draw By: JN.FUONG Date:		Date:	: Thursday, August 11, 2022 S		eet: 12 of 16

SoC BANK1



SoC Power U1H VSS POWER Y17 VCC_1V8 VCC_3V3 **POWER** VDDI0_1 VDDI5_1 VDDI5_2 VCC_1V0 VCCA_1V0 VDDI0_1 VDDI0_2 VDDI0_3 VDDI0_4 VDDI0_5 VDDI0_6 VDDI0_7 BANK-V18 W15 Y12 Y22 G21 J21 K19 L21 N21 P19 R21 VDD 1 VDDA K12 K14 VDD_1 VDD_3 VDD_4 VDDA_ BANK-K14 VDD_2 K16 VDD_4 L11 VDD_4 L13 VDD_6 L17 VDD_7 M12 VDD_7 M14 VDD_9 M11 VDD_10 N13 VDD_11 VDD_12 VDD_12 VDD_13 VDD_14 VDDA_ VDDA_ VCC_1V1 VDDA VDDA_S VDDA_S VDDA_S VDD VDDI6 VCC_3V3 AB6 N3 R7 T4 U1 U11 V8 W5 VDDI6 VDDI6_2 VDDI6_3 VDDI6_4 VDDI6_5 VDDI6_6 VDDI6_7 VDDI6_8 VDDI6_9 VDDI1 1 VCC_2V5 A9 B16 C13 C21 D10 E17 F14 VDDI1_1 VDDI1_2 VDDI1_3 VDDI1_4 BANK-6 VDDA25 VDDA25_ VDDI1_5 VDDI1_6 VDDA25_ BANK-VDDI1_7 VDDI1_8 VDDI6 10 VCC_1V8 VCC_3V3 VDDI1_9 VDDI1_10 G11 VDD18 1 P12 H14 H16 VDD18_2 VDD18_3 VDD18_4 VDD 18 VDDAUX1_ VDDAUX1 P16 J13 VDDAUX1_ VDDAUX1 R13 VCC_3V3 VCC_2V5 VDD18_5 VDDAUX1_ VDDSREF VDDI2 1 VDD XCVR CLK 1 F4 G1 BANK-2 P18 VDDI2_2 VDD_XCVR_CLK_2 VCC_2V5 VDDI2_3 VCC_3V3 VDD25 1 J17 VDD25_1 VDD25_2 VDD25_3 VDD25_4 /DD25 VDDAUX2_ L15 R17 V<u>CC_</u>3V3 VDDAUX2_2 R9 VDDI3_1 VDDI3_2 VREF BANK-VCC 2V5 -_O^{TP14} M10 VREF_XCVR VDDAUX4_2 VDDAUX4_2 XCVR_VREF_1 XCVR_VREF_2 N9 H19 VCC_1V8 SERDES C252 R152 C260 100nF 10V =100nF 10V 10K VDDI4 BANK-4 MPFS025T-FCVG484E VDDI4_2 R0402 MPES025T-ECVG484F C0201 C0201 fbga200_0d8_10x14_5x1mm fbga200_0d8_10x14_5x1mm ÷ ÷ MPFS025T-FCVG484E fbga200_0d8_10x14_5x1mm VCC_3V3 VDDAUX2 VCC_2V5 VDDAUX4 VCC_1V0 VDD VCC_3V3 VDDAUX1 VCC_2V5 VDD_XCVR_CLK C161 C160 C148 C149 C150 C151 C152 C153 C154 C155 C156 C157 C182 C180 C250 C164 C163 C158 C159 C181 C183 C179 C184 C185 C186 C187 C188 C249 C251 =10nF 6.3V =10nF: 6.3V 47nF= 6.3V 47nF 47nF: =100nE =100nE =100nE 10V =1uF = 6.3V =1uF = 6.3V 1uF 6.3V 47uF 6.3V 330uF 2.5V 330uF 2.5V 4.7nF =10nF 6.3V 100nE 47uF 6.3V =100nF 10V =10uF 10V =100nF 10V 100nE =100nE =10uF 10V 1nF 16V 1nF 16V 10uF 10V 6.3V 6.3V 6.3V C0201 C0201 C0201 C0201 C0201 C0201 C0201 C0201 VCC_1V8 Bank0 VDDI0 VCC_3V3 Bank1 VDDI1 VCC_3V3 Bank2 VDDI2 VCC_3V3 Bank3 VDDI3 VCC_1V8 Bank4 VDDI4 VCC_3V3 Bank5 VDDI5 VCC_1V1 Bank6 VDDI6 C247 C248 100nE 10uF 10V 10V C232 C227 C228 C229 C230 100nF 47uF C231 C233 C234 =100nE C235 C236 100nF 47uF C239 C237 C238 C240 100nE C241 100nE C242 10uF C243 C244 100nE C245 =10uF C246 C253 C254 3.3nF C255 4.7nF C256 10nF C257 100nE C258 C259 4.7nF 100nE 100nE 1nF 10V C0201 16V 10V 10V 16V 10V 10V C0201 10V C0201 10V C0201 10V 10V 10V 10V 10V 10V C0201 10V 10V C0201 16V 25V 10V C0201 6.3V 10V 10V C0201 C0201 C0201 C0805 C0201 C0201 C0201 C0603 C0603 VCCA_1V0 VDDA VCC_2V5 VDD25 VCC_1V8 VDD18 VCC_2V5 VDDA25 C140 C141 C142 C143 C144 C145 C146 C147 C165 C166 C167 C168 C169 C170 C171 C172 C173 C174 C175 C176 C177 C178 2.2nF 10V 2.2nF 10V =10nF: 6.3V =10nF 6.3V =100nE 10V =100nF= 10V 47uF= 6.3V 47uF 6.3V 4.7nF 10V =10nF= 6.3V 100nE 47uF 6.3V 47uF 6.3V =100n**E** 10V 47uF 6.3V =10nF =10nF= 6.3V =100n**E** 10V =100n**E** 10V 47uF 6.3V 1nF 16V 1nF 16V C0201 https://www.seeedstudio.com seeed studio Beagleboard BeagleV-Fire 14_SoC Power V0.2 Sheet: 14 of 16 Draw By: JN.FUONG Date: Thursday, August 11, 2022



3.3V To 1V8 Level translator 3.3V To 1V8 Level translator C274 | 100nF | [100nF | 25V,X7R | P8_PIN3 r[C273 | 100nF C0402 | 25V,X7R C276 100nF 100nF 25V,X7R P8_PIN11 P8_PIN12 VCCA VCCA VCCB HSIO66_N HSIO66_P HSIO72_N HSIO72_P HSIO90_N HSIO90_P HSIO68_N HSIO68_P [12] [12] [12] [12] [12] [12] [12] [12] P8_PIN4 P8_PIN5 [12] [12] [12] [12] [12] [12] [12] [12] B1 B2 B2 B3 B4 B5 B6 B7 B8 A1 A2 A3 A4 A5 A6 A7 A8 | HSIO67_N | HSIO67_P | HSIO94_N | HSIO94_P | HSIO89_P | HSIO79_N | M2_PERST0| | M2_CLKREQ P8_PIN15 P8_PIN16 B3 B4 B5 B6 B7 B8 P8 PIN7 P8_PIN18 P8 PING P8 PIN10 H_M2_PERST0n [11] H_M2_CLKREQ0n [11] VCC_1V8 10 OE GND 11 Ť GND GPAD TXB0108RGYR TXB0108RGYR VQFN-20 VQFN-20 BeagleBoard Header P8_PIN3 P8_PIN5 P8_PIN7 P8_PIN9 P8_PIN4 P8_PIN6 P8_PIN8 P8_PIN10 Issue: The PWR_BUT PIN is NC, this means that hardware shutdown is not supported VCC 3V3 P8_PIN5 P8_PIN7 P8_PIN6 P8_PIN8 VDD_5V SYS_5V 9 11 13 15 17 × 19 × 21 × 25 × 27 29 31 33 35 37 39 41 43 P8_PIN9 P8_PIN11 P8_PIN13 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 44 P8_PIN10 [15] P8_PIN12 [15] P8_PIN14 [13,15] P8_PIN11 P8_PIN12 [12] [13] [13] [13] [13] [13] [13] [13] [10] [10] [10] [10] [10] HSIO76_N HSIO76_N P9_PIN15 P9_PIN17 P9_PIN21 P9_PIN23 P9_PIN27 P9_PIN27 P9_PIN29 P9_PIN31 AIN4 AIN6 AIN2 AIN0 P9_PIN41 P9_PIN12 P9_PIN14 P8_PIN15 P8_PIN16 P8_PIN18 13 15 17 19 21 23 25 27 29 31 33 35 37 39 P9_PIN14 P9_PIN16 P9_PIN18 P9_PIN20 P9_PIN22 P9_PIN24 P9_PIN26 P9_PIN28 P9_PIN30 P8_PIN27 P8_PIN29 P8_PIN31 P8_PIN33 P8_PIN35 P8_PIN37 P8_PIN39 P8_PIN41 P8_PIN43 P8_PIN45 P8_PIN26 P8_PIN28 P8_PIN30 P8_PIN32 P8_PIN34 P8_PIN36 P8_PIN38 P8_PIN40 P8_PIN42 P8_PIN44 P8_PIN46 VDD_ADC AIN5 [10] AIN3 [10] AIN1 [10] P9_PIN42 [13] \triangleleft 2.54mm 2x23 2.54mm AGND 2.54mm 2x23 2.54mm HEADER23X2 MIPI CSI High Speed Exp Conn VCC_3V3 VCC_1V8 SYS_5V 10 11 12 13 R208 R207 [11.12.15.16] P2.1 SCL [11.12.15.16] P2.1 SDA [11] XCVR_RX2_P [11] XCVR_RX2_N [11] XCVR_RX3_N [11] XCVR_RX3_N [11] XCVR_RX3_N [11] XCVR_DB_REFCLL_F [11] XCVR_DB_REFCLL_F [12] MSS_SGMIL_RX1_P [13] MSS_SGMIL_RX1_P [14] HSIOB1_P [12] HSIOB1_P [12] HSIOB1_P [12] HSIOB2_P [12] HSIOP2_P CAM_D2_N [12] CAM_D2_P [12] 10K 1% R0402 10K 1% R0402 XCVR_TX2_P XCVR_TX2_N XCVR_TX3_P XCVR_TX3_N HSIO70_N [12 HSIO71_N [12 HSIO71_N [12 HSIO71_P [12 HSIO71_P [12 CAM_D3_N [12] CAM_D3_P [12] 14 15 16 17 18 19 20 21 22 7 5 7 9 7 9 9 7 9 11 11 13 11 15 13 17 15 19 17 19 17 22 1 22 5 23 27 25 27 25 27 29 27 31 33 33 33 37 35 33 37 35 37 35 37 34 MP1 43 MP1 MP3 15 16 17 18 19 20 21 10 12 14 16 18 PWDN CSI1_PWDN [12] DMG1012T-7 NO71_P [1: HSIO83_N HSIO83_P ISIO78_N HSIO78_P HSIO69_N HSIO69_P 20 22 24 26 28 30 32 34 36 38 40 MP2 MP4 VCC_3V3 C189 36 38 40 42 44 ST-FPC-W052022-2H 100nF C0402 VCC_3V3 https://www.seeedstudio.com seeed studio QSH-020-01-F-D-DP-A QSH40p_0d5_21d3x7d24mm Beagleboard BeagleV-Fire 16_Exp Conn V0.2 Draw By: JN.FUONG Date: Thursday, August 11, 2022 Sheet: 16 of 16