PYRITE+
MEC172x Modular EC Card
Mates with Intel RVP TigerLake/Alder Lake Platforms

BLOCK DIAGRAM

Description	Sheet
Title Page	1
MEC1723	2
EC Connector, SPI Flash	3
H1 Controller, Keyboard Scan, Trace FIFO, JTAG	4
Servo Header	5
C2D2 Muxing, UART Switches	6
TBD	7
TBD	8
TBD	9
TBD	10
TBD	11
TBD	12
TBD	13
TBD	14

Revision History

Rev 1.0:
Initial Release

Microchip Technology Inc.
www.microchip.com

EVB Number: TBD				
Page Title: MEC1723 Modular EC Card				
Size:	Engineer: T.T.	Assembly Number: 6930	PCB Rev: A	Sch. Rev: 1.0
Date: Monday, March 29, 2021		Sheet 1 of 6		

MEC1723 (RVP) / MEC1727 (Chrome) Controller

NOTE:
VTR3 jumper on pg3

Voltage Regulator

VR2 MCP1826S-33 1A SOT223_4 — +3.3V_LDO → 3.3_EC_CORE
C10 4.7uF 16V 10%
C11 4.7uF 16V 10%
F1 2A FUSE_SMF
D4 MBR0520L
MCP2200_VBUS
R98 2.00K

VR3 MCP1826S-18 1A SOT223_4 — +3.3V_LDO → 1.8V_ESPI
C50 4.7uF 16V 10%
C49 10uF 16V 20%

3.3_EC_CORE
C44 0.1uF 16V 10%
C46 0.1uF 16V 10%

P1 USB PD Micro AB
VBUS, D-, D+, ID, GND
SHLD1–SHLD6
C12 0.1uF 16V 10%
R100 332
MCP_USB_SHLD
TP76
MCP2200_USBDn
MCP2200_USBDp

U9 MCP2200
VDD, VUSB, D-, D+, nRTS, nCTS, GP0/SSPND, GP1/USBCFG, GP2 GP7/TXLED, GP3 GP6/RXLED, GP4, GP5, nRST, NC_EP, VSS, OSC1, OSC2
GPIO171/UART1_RX
GPIO170/UART1_TX
UART1_nRTS
UART1_nCTS
TP77
TP79
Y2 12MHz
R99 3.09K 1/10W 1%
C47 0.1uF 16V 10%

R386 0
C28 0.1uF 10V 10%
R164 DNP
R133 0
R387 0
R388 0
R389 0
V_SHD_SPI
1.8V_ESPI
3.3_EC_CORE
C22 0.1uF 10V 10%
C30 0.1uF 10V 10%
C26 0.1uF 10V 10%
C3 0.1uF 16V 10%
C2 22uF 3.3V 20% DNP

3.3A_RTC
R385 0 DNP
V_BATT_SEL R384 0
D5 RB751S40 SOD523F
C20 0.1uF 10V 10%
VBAT_CHIP

U10 — VBAT, VTR1, VTR2, VTR3, VTR_PLL, VTR_REG

PS2 Interface
KSO05 K13 — GPIO112/KSO05/DSW_PWRGD
KSO06 J11 — GPIO113/KSO06/ICT9
MECH_PWR_BTN_IN_ODL H9 — GPIO114/PS2_CLK0A/nEC_SCI
MECH_PWR_BTN_ODL N12 — GPIO115/PS2_DAT0A

JTAG Interface
JTAG_CLK C7 — GPIO147/I2C15_SDA/JM_TCLK
JTAG_nRST G11 — JTAG_nRST
JTAG_TDI A8 — GPIO145/I2C09_SDA/JM_TDI
JTAG_TDO G8 — GPIO146/I2C09_SCL/TMUM_TDO
JTAG_TMS F8 — GPIO150/I2C15_SCL/JM_TMS

FAN PWM & TACH
TP30
CPU_TACHO_FAN F3 — GPIO050/ICT0_TACH0/GTACH0
SMC_WAKE_SCI_N_MECC B1 — GPIO051/ICT1_TACH1/GTACH1
CPU_FAN_MECC M13 — GPIO053/PWM0/SLV_SPI_MSTR_INT/GPWM0
PM_RSMRST_N L12 — GPIO054/PWM1/SLV_SPI_SCLK/GPWM1
R408 33.2 — SHD_nCS N4 — GPIO055/PWM2/SHD_nCS0/BSS_STRAP
R409 33.2 — SHD_CLK N5 — GPIO056/PWM3/SHD_CLK

PROCHOT_EC_N M8 — GPIO002/PWM5/SHD_nCS1
EC_WP_ODL M9 — GPIO014/PWM6/SLV_SPI_IO1/GPTP-IN2
USBC_TCPC_CC1_P1 J7 — GPIO015/PWM7/ICT10
EC_H1_PACKET_MODE E13 — GPIO035/PWM8/CTOUT1/ICT15/LED3

PLT_RST_L L8 — GPIO052/ICT2_TACH2

BC-LINK
KSO10 E12 — GPIO123/PVT_IO2/KSO10
KSO09 E11 — GPIO122/PVT_IO1/KSO09
KSO03 F13 — GPIO047/KSO03/PWM3_ALT/ICT13/BCM1_CLK
EC_KSO_02_INV E9 — GPIO046/KSO02/ICT11/BCM1_DAT

Host Interface
ESPI_CS1_N J6 — GPIO011/nSMI_ALT/PWM4/ICT7
KSO04 L13 — GPIO107/nSMI/KSO04/I2C10_SCL
LPC_ESPI_RST_N N1 — GPIO061/ESPI_nRESET
ESPI_ALERT0_N M4 — GPIO063/ESPI_nALERT/PWM6_ALT/ICT8
LPC_ESPI_CLK M2 — GPIO065/ESPI_CLK/I2C13_SCL/ICT5_ALT
LPC_FRAME_ESPI_CS0_N M1 — GPIO066/ESPI_nCS/I2C13_SDA
LPC_AD0_ESPI_IO_0 L3 — GPIO070/ESPI_IO0/I2C14_SDA
LPC_AD1_ESPI_IO_1 N2 — GPIO071/ESPI_IO1/I2C14_SCL
LPC_AD2_ESPI_IO_2 M3 — GPIO072/ESPI_IO2/I2C01_SDA_ALT
LPC_AD3_ESPI_IO_3 L4 — GPIO073/ESPI_IO3/I2C01_SCL_ALT
TP162 GPIO100 H7 — GPIO100/nEC_SCI_ALT/ICT6

VCI Interface
EC_SPI_OE_N A5 — BGPO0
SLP_S0_CS_N E6 — nVCI_IN0/EMDRST_IN
PM_SLP_S4_N A6 — nVCI_IN1/GPIO162
PM_SLP_S3_N C4 — nVCI_IN2/GPIO161
USBC_TCPC_ALRT_P2 F1 — VCI_OVRD_IN
USBC_TCPC_PPC_ALRT_P1 A4 — BGPO1/GPIO101
EC_ENTERING_RW B5 — BGPO2/GPIO102

GPIO & Pass Through
EDP_BKLT_EN_MECC E2 — GPIO022/GPSPI_IO3/GPTP_IN4/32kHz_OUT_ALT
CPU_C10_GATE_MECC C3 — GPIO023/GPSPI_CLK/GPTP_IN7
SUSWARN C2 — GPIO024/GPSPI_nCS/GPTP_IN6/I2C07_SCL_ALT
RSMRST_PWRGD C1 — GPIO221/32kHz_OUT/GPTP_IN3/CMP_VIN1/nSYS_SHDN_FW
SHD_IO1 M5 — GPIO224/GPTP_IN0/SHD_IO1
KSI00 J8 — GPIO017/KSI0/UART0_nDCD/GPTP_IN5
PM_PWRBTN_N N3 — GPIO016/GPTP_IN1/SHD_IO3/ICT3/DSW_PWROK
KSI07 L10 — GPIO032/KSI7/GPTP_OUT0/UART0_nRI
KSI06 M11 — GPIO031/KSI6/GPTP_OUT1
KSO00/UART1_nCTS M10 — GPIO040/GPTP_OUT2/KSO00/UART1_NCTS
KSO14 N10 — GPIO152/KSO14/GPTP_OUT3/I2C07_SDA_ALT
KSO12 D11 — GPIO125/PVT_CLK/KSO12/GPTP_OUT5
KSO11 C11 — GPIO124/PVT_nCS/KSO11/ICT12/GPTP_OUT6
EC_KSI02 N9 — GPIO021/KSI2
SLATE_MODE_INDICATION L5 — GPIO222/nPROCHOT_IN_ALT
R64 0, R65 0 DNP — UART1_nCTS ↔ KSO00
R456 2 33.2 — EC_SPI_FLASH_CS_L, EC_SPI_FLASH_CLK, EC_SPI_FLASH_MISO

VTR3 — R156 20.0K — J5 — GPIO064/nSLP_S0
BATT_DISABLE_EC L2 — GPIO067/VREF2_ADC

SUS_CLK — R20 0 DNP — A3 XTAL1; R21 0 — A1 XTAL2
Y1 32.768kHz 9pF; R438 0; C5 10pF 50V 5% DNP; C4 10pF 50V 5% DNP
MEC172x-SZ
VSS1, VSS2, VSS3 (F6, G3, H5); VR_CAP (H1) — C24 1.0uF 6.3V 10%
VSS_ADC K1; VSS_ANALOG B4

Misc. Interface
GPIO165/32KHZ_IN/CTOUT0 A9
GPIO171/UART1_RX/TFDP_DATA G9 — GPIO171/UART1_RX 3 — CPU_CAT_ERR_MECC 3
SYSPWR_PRES/nVCI_IN3/GPIO000/I2C11_SDA B3
GPIO127/A20M/UART1_nRTS/UART0_nCTS_ALT D13 — GPIO127/UART1_nRTS — R92 0 — EC_PCH_MKBP_INT_ODL 3; R83 0 DNP — UART1_nRTS
GPIO156/LED0 A13 — BC_ACOK_EC 3
GPIO157/LED1 B13
GPIO153/LED2 C12
GPIO226/PWRGD_S0IX/CMP_VREF0 F2 — SMC_LID 3,5
GPIO045/KSO01/PWM2_ALT/ICT14/CR_STRAP E8 — KSO01 4
GPIO126/PVT_IO3/KSO13/UART_BSTRAP D12 — EC_KSO13 5
GPIO033/TACH3/RC_ID0 B2 — ME_G3_TO_M3_N 3
GPIO020/KSI1 L7 — KSI01 4
GPIO175/CMP_VOUT1/PWM8_ALT C13 — CCD_MODE_ODL 3,4
GPIO121/PVT_IO0/KSO08 F12 — KSO08 4
GPIO057/VCC_PWRGD/CMP_VIN0 D1 — ALL_SYS_PWRGD 3
GPIO106/PWROK/CMP_VREF1 E3 — PCH_PWROK_EC 3
GPIO104/UART0_TX F11 — UART_SERVO_RX_EC_TX 4,6
GPIO105/UART0_RX F9 — UART_SERVO_TX_EC_RX 4,6
GPIO060/KBRST/TST_CLK_OUT/UART1_nDCD/SPI0_nCS1 D2 — SYS_RST_ODL 3,4,5
GPIO030/KSI5/I2C10_SDA/TIN3 J9 — KSI05 4
GPIO170/UART1_TX/TFDP_CLK/JTAG_STRAP G12 — GPIO170/UART1_TX/JTAG_STRAP 4
GPIO223/SHD_IO0 M6 — SHD_IO0 1 R403 2 33.2 — EC_SPI_FLASH_MOSI 3,5
GPIO034/GPSPI_IO2/RC_ID1/SPI0_CLK H12 — EC_DSW_PWROK 3
GPIO044/VREF_VTT H11 — VREF_VTT
GPIO043/SB_TSI_CLK J13 — STD_ADP_PRSNT 3
GPIO036/RC_ID2/SPI0_MISO H13 — VOLUME_UP 3
GPIO042/PECI_DAT/SB_TSI_DAT J12 — EC_PECI 3
GPIO227/SHD_IO2/PWRGD_STRAP L6 — SHD_IO2/PWRGD_STRAP — PM_SLP_SUS_EC_N 3
GPIO151/ICT4/KSO15 L9 — KSO15 4
GPIO027/KSI4/UART0_nDSR/I2C12_SCL/TIN2 K11 — KSI04 4
GPIO120/KSO07/UART1_nDTR K12 — KSO07 4
GPIO026/KSI3/UART0_nDTR/I2C12_SDA/TIN1 N13 — KSI03 4
GPIO025/nEMI_INT/UART_CLK/UART1_nRI/TIN0 M12 — SMB_PCH_ALRT 3

SMBus & GPIO
GPIO004/I2C00_SCL/SPI0_MOSI C6 — SMB_BS_CLK 3
SMB_BS_DATA F5 — SMB_BS_DATA 3
USBC_TCPC_I2C_CLK_P3 C9 — USBC_TCPC_I2C_CLK_P3 3
USBC_TCPC_I2C_DATA_P3 A12 — USBC_TCPC_I2C_DATA_P3 3
SMB03_CLK C10 — USBC_TCPC_I2C_CLK_P2 3
SMB03_DATA B12 — USBC_TCPC_I2C_DATA_P2 3
USBC_TCPC_PPC_ALRT_P2 E7 — USBC_TCPC_PPC_ALRT_P2 3
USBC_TCPC_ALRT_P0 A7 — USBC_TCPC_ALRT_P0 3
USBC_TCPC_PPC_ALRT_P3 F7 — USBC_TCPC_PPC_ALRT_P3 3
THERM_SEN_MECC B7 — THERM_SEN_MECC 3
L11 — USBC_TCPC_I2C_CLK_P0 3
N11 — USBC_TCPC_I2C_DATA_P0 3
GPIO132/I2C06_SDA/KSO16 M7 — USBC_TCPC_I2C_CLK_P1 3
GPIO013/I2C07_SCL/SLV_SPI_IO3/TOUT2 N6 — USBC_TCPC_I2C_DATA_P1 3
GPIO012/I2C07_SDA/SLV_SPI_IO2/TOUT3 N7 — SML1_CLK_MECC 3
GPIO131/I2C01_SCL/SLV_SPI_NCS/TOUT0 N8 — SML1_DATA_MECC 3
GPIO130/I2C01_SDA/SLV_SPI_IO0/TOUT1
GPIO062/I2C11_SCL/nRESETO A2 — USBC_TCPC_CC1_P0 3,5
GPIO240 G13 — USBC_TCPC_PPC_ALRT_P0 3
GPIO241/CMP_VOUT0/PWM0_ALT B8 — USBC_TCPC_ALRT_P1 3
GPIO242/VCC_PWRGD_ALT A10 — USBC_TCPC_ALRT_P3 3
GPIO243/GPSPI_IO1 C8 — PCH_SLP_S0_N 3
GPIO244/UART_CLK_ALT/PWROK_ALT A11 — STD_ADPT_CNTRL_GPIO 3
GPIO245/GPSPI_IO0 B11 — USBC_TCPC_CC2_P0 3,5
GPIO246/PWRGD_S0IX_ALT2/CTOUT1_ALT B10 — SMC_ONOFF_N 3,5
GPIO254 B9 — VOL_DN_EC 3
GPIO255/UART1_RX_ALT/UART1_nDSR B6 — SMC_SDOWN_MECC 3
nRESET_IN D3 — EC_RST_ODL_EC 3
VCI_OUT2 C5 — EC_DS3 3 — +VCCPDSW_3P3

ADC Interface
VTR_ANALOG G6 — R390 0 — R391 0 — 3.3_EC_CORE
VREF_ADC G2 — VREF_ADC_CHIP — R420 10.0K
GPIO200/ADC00 H3 — VR_TMP/V_1P05 3
GPIO201/ADC01 J3
GPIO202/ADC02 J2 — SYS_PWROK 3
GPIO203/ADC03 J1 — AMBIENT_TEMP 3
GPIO204/ADC04 H2 — SKIN_THERM_IN_EC 3
GPIO205/ADC05 K3 — DDR_TEMP/EC_5V 3
GPIO206/ADC06 L1 — BAT_DET 3,4
GPIO207/ADC07/CMP_STRAP K2 — VCCST_PWRGD_MECC — VCCST_PWRGD_MECC 3
C29 0.1uF 10V 10%; C25 0.1uF 10V 10%

V_PEVREF
R33 0; R137 0 DNP
C23 0.1uF 10V 10%

TP40

Power LED
3.3_EC_CORE
R109 301 1/10W 1%
LED1 Green LED LED_0805

LED2 / LED1
3.3_EC_CORE
R2 301 1/10W 1%
LED3 Green LED LED_0805
LED_1_L
LED_2_L
3.3_EC_CORE
R1 301 1/10W 1%
LED2 Green LED LED_0805

CMP_STRAP
3.3_EC_CORE
VCCST_PWRGD_MECC
R76 DNP 10.0K; R77 10.0K

32 KHz Clock (Default Internal ROSC)

UART_BSTRAP
EC_KSO13
3.3_EC_CORE
R14 10.0K
JP23

JP23 IN - Enable UART Crisis Recovery Flash Programming

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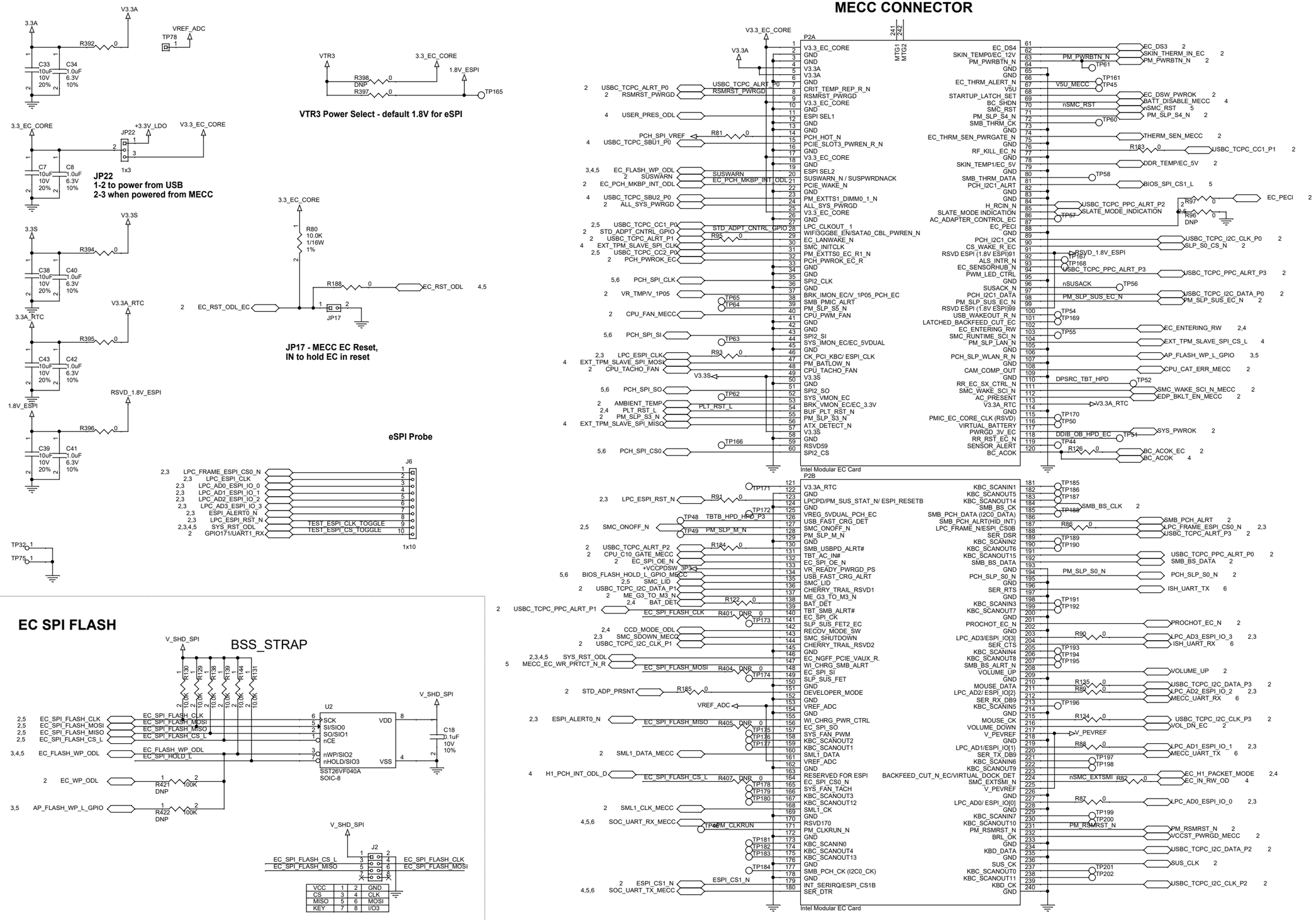
EVB Number: TBD				
Page Title: MEC1723 Modular EC Card				
Size:	Engineer: T.T.	Assembly Number: 6930	PCB Rev: A	Sch. Rev: 1.0
Date: Monday, March 29, 2021		Sheet 2 of 6		

MECC CONNECTOR



VTR3 Power Select - default 1.8V for eSPI

**JP17 - MECC EC Reset,
IN to hold EC in reset**

eSPI Probe

EC SPI FLASH

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Page Title: MEC1723 Modular EC Card				
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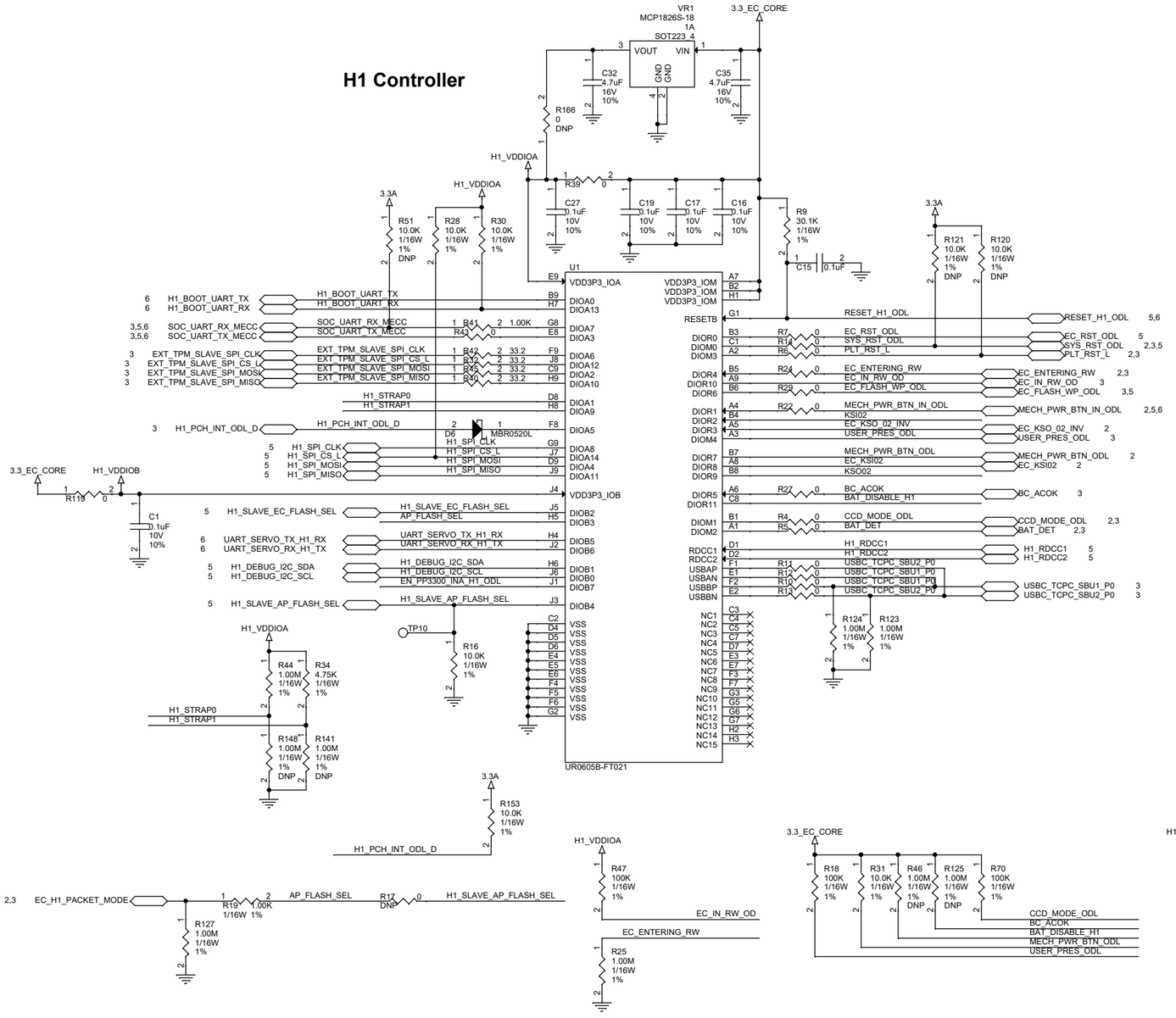
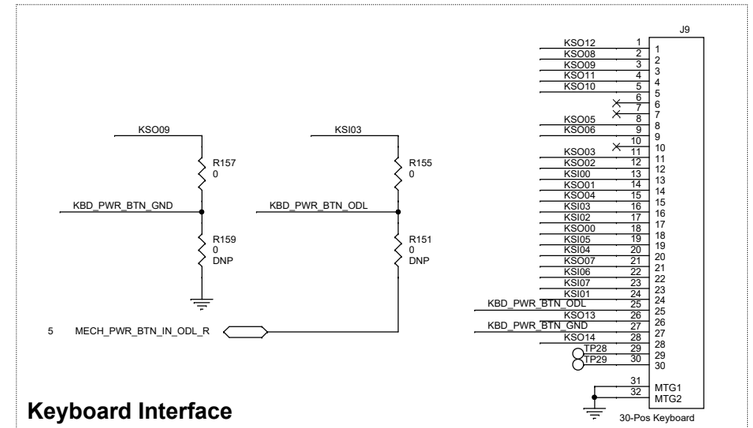
Date: Monday, March 29, 2021		Sheet 3 of 6		

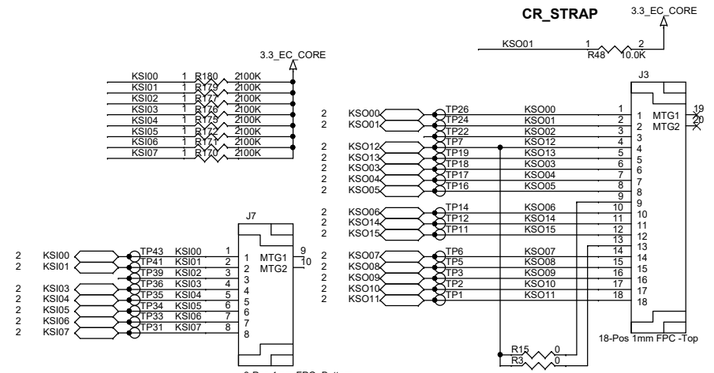
H1 Controller

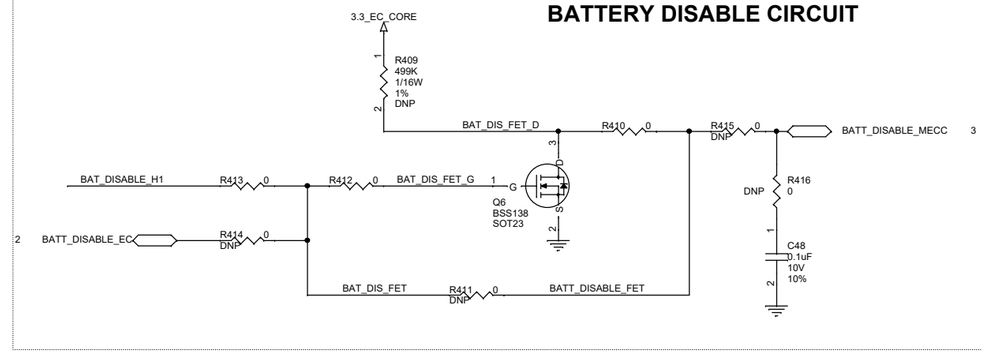


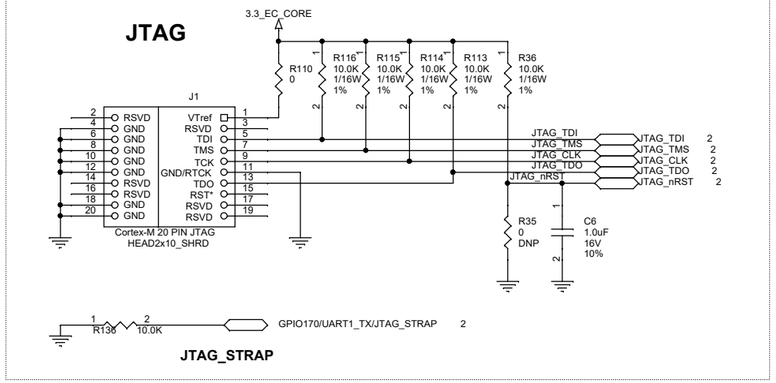


Keyboard Interface

J9 - Chromebook Keyboard (Default)
J3/J7 - Microchip Keyboard (Reserved Test Only)







Software Developers Debug Interface

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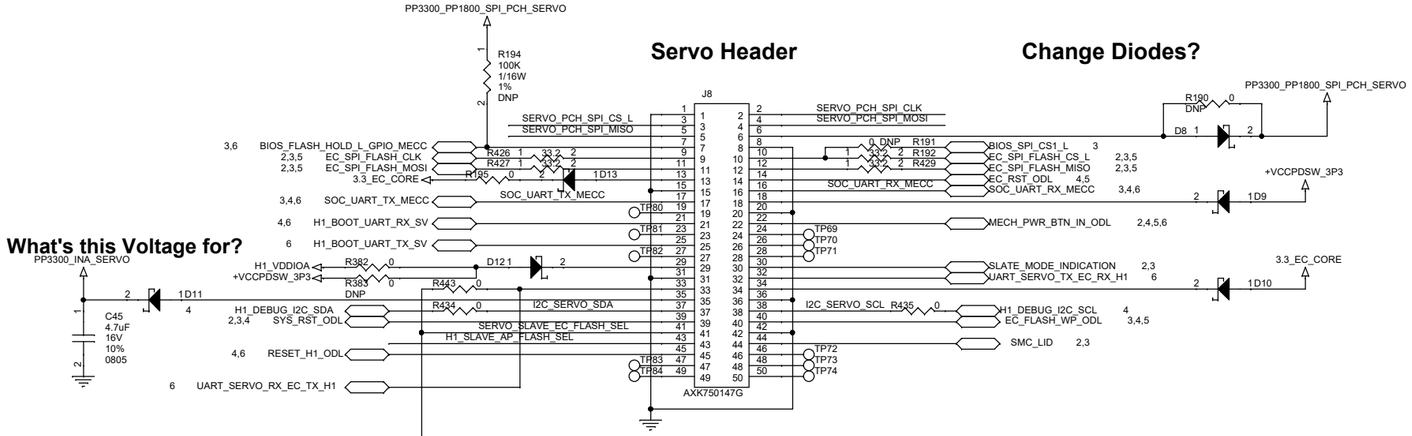
EVB Number: TBD				
Page Title: MEC1723 Modular EC Card Plus				
Size: C	Engineer: T.T.	Assembly Number: 6930	PCB Rev: A	Sch. Rev: 1.0
Date: Monday, March 29, 2021		Sheet 4 of 6		

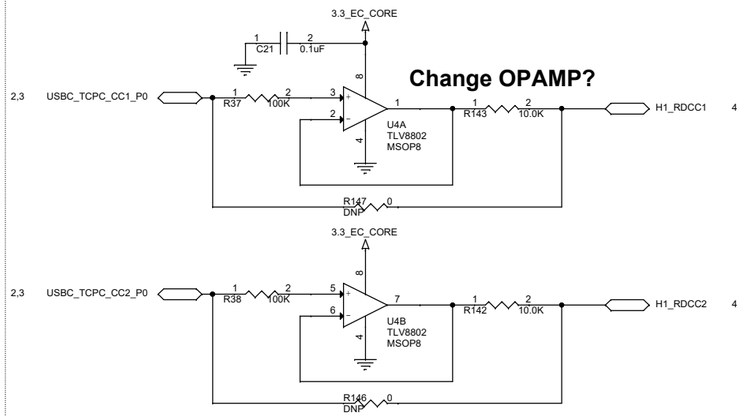
Servo Header

Change Diodes?

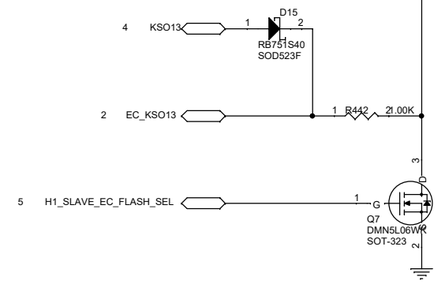


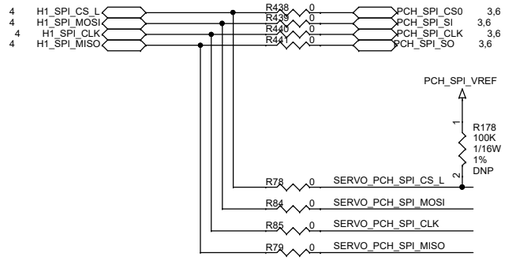
What's this Voltage for?

AMPLIFIER CIRCUIT FOR CC SIGNALS



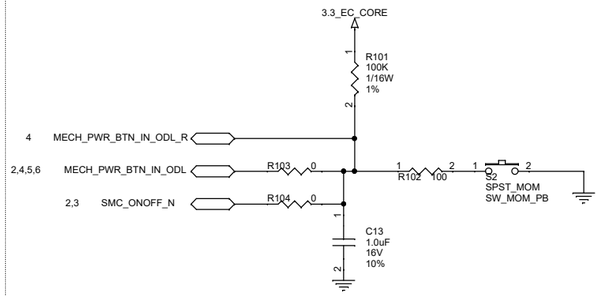
H1 MASTER SPI STUFFING to PCH SPI & EC SPI FLASH SEL





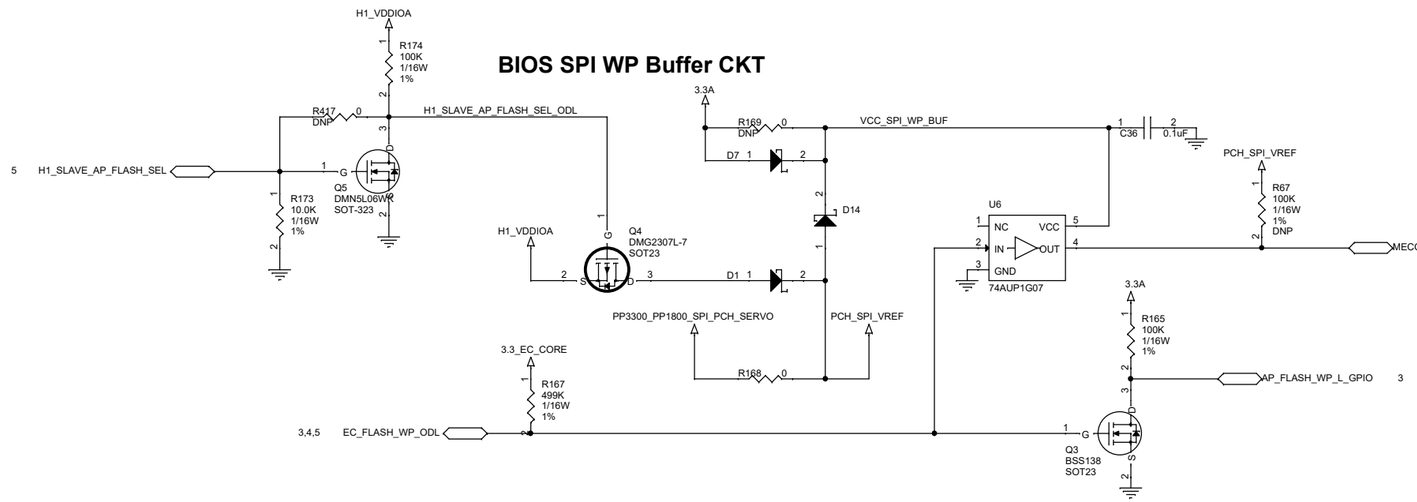
STUFFING OPTION FOR PCH SPI

POWER BUTTON

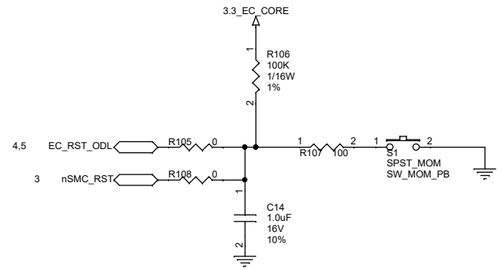


SOC FLASH ENABLE SWITCH

BIOS SPI WP Buffer CKT



RESET CIRCUIT



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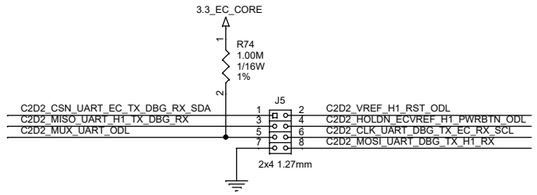
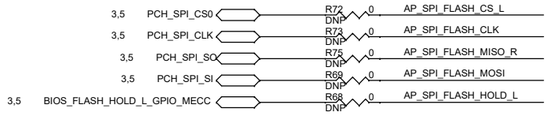
Date: Tuesday, March 30, 2021			Sheet 5 of 6	

C2D2 HEADER

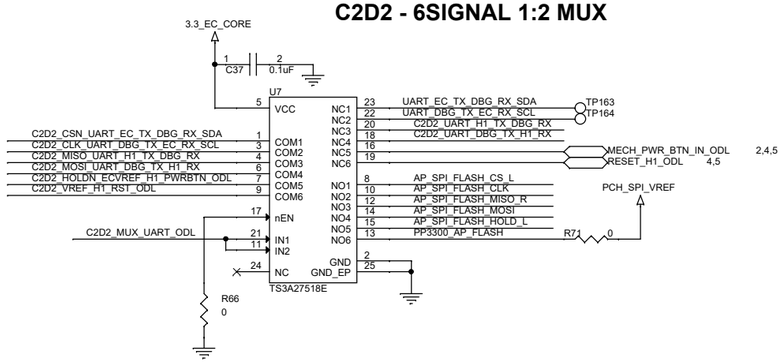


C2D2 TO PCH SPI STUFFING OPTION

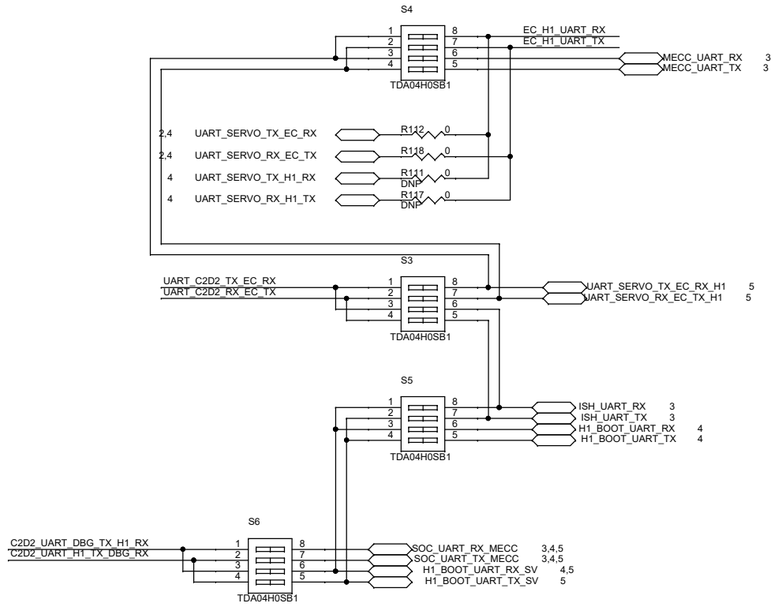


S.NO.	C2D2 MUX INPUT	C2D2 MUX OUTPUT	NC/NO	FUNCTION
1	C2D2_CSN_UART_EC_TX_DBG_RX_SDA	UART_EC_TX_DBG_RX_SDA	NC1	EC
		AP_SPI_FLASH_CS_L	NO1	SPI ROM
2	C2D2_CLK_UART_DBG_TX_EC_RX_SCL	UART_DBG_TX_EC_RX_SCL	NC2	EC
		AP_SPI_FLASH_CLK	NO2	SPI ROM
3	C2D2_MISO_UART_H1_TX_DBG_RX	C2D2_UART_H1_TX_DBG_RX	NC3	H1
		AP_SPI_FLASH_MISO_R	NO3	SPI ROM
4	C2D2_MOSI_UART_DBG_TX_H1_RX	C2D2_UART_DBG_TX_H1_RX	NC4	H1
		AP_SPI_FLASH_MOSI	NO4	SPI ROM
5	C2D2_HOLDN_ECVREF_H1_PWRBTN_ODL	MECH_PWR_BTN_IN_ODL	NC5	PWR BTN
		AP_SPI_FLASH_HOLD_L	NO5	SPI ROM
6	C2D2_VREF_H1_RST_ODL	RESET_H1_ODL	NC6	H1
		PP3300_AP_FLASH	NO6	POWER
7	GROUND	GROUND		GND
8	C2D2_MUX_UART_ODL	MUX SWITCH	IN1	SEL1
			IN2	SEL2

C2D2 - 6SIGNAL 1:2 MUX



UART SELECTION SWITCH CIRCUIT



Switch	Switch Position	Servo Config				
		EC UART		SOC UART	ISH UART	H1 UART
		Mica EC	RVP EC			
S6	On					
	Off					
S5	On				1-8, 2- 7	3-6, 4-5
	Off				3-X, 4-X	1-X, 2-X
S4	On	1-8, 2-7	3-6, 4-5			
	Off	3-X, 4-X	1-X, 2-X			
S3	On					
	Off					

Switch	Switch Position	C2D2 Config					
		EC UART		EC UART	SOC UART	ISH UART	H1 UART
		Mica EC	RVP EC				
S6	On				1-8, 2-7		3-6, 4-5
	Off				3-X, 4-X		1-X, 2-X
S5	On						
	Off						
S4	On	1-8, 2-7	3-6, 4-5				
	Off	3-X, 4-X	1-X, 2-X				
S3	On			1-8, 2-7		3-6, 4-5	
	Off			3-X, 4-X		1-X, 2-X	

MICROCHIP

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EVB Number: TBD				
Page Title: MEC1723 Modular EC Card				
Size: C	Engineer: T.T.	Assembly Number: 6930	PCB Rev: A	Sch. Rev: 1.0
Date: Monday, March 29, 2021		Sheet 6 of 6		