PurePath™ Console MotherBoard

Self-Boot Capability

+5V-USB
USB Detect
IR Control
Spy-Bi-Wire Debugging
nINT-EXPANDER
nRST-SYS
LED Driver
LEDs
I2C Expander
User Interface
MSP430F5510
MSP-ACTIVE
Local Storage
nRST-SYS
4Mbit SPI Flash
microSD
512 kbit EEPROM
SPI-MSP
I2C-M-MSP
I2C-S-MSP
I2C SWITCH
MSP-ACTIVE
I2C SWITCH
I2C-USB
I2C-USB
I2C SWITCH
MSP-ACTIVE
I2C Debug Header
TAS1020 EEPROM (0xA0)

POWER SUPPLY DISTRIBUTION

PVDD to 4V BUCK (2 A)
4V to 5V BOOST (0.9 A)
4V to 3.3V LDO (0.6 A)
4V to 1.8V LDO (0.4 A)
PVDD
5.0V
3.3V
1.8V
POWER SUPPLY IO
5.0V
3.3V
1.8V
PurePath Console Board Power
+5V-USB
5V to 3.3V LDO (0.4 A)
+3.3V-USB

RESET
SYSTEM RESET
nRST-SYS
nRST-EXP

nINT-EXPANDER
MCLK-MUX-CTRL
I2S-MUX-CTRL
DOUT-MUX-CTRL
ANA-MUX-CTRL
GPIO-EXP00 to GPIO-EXP10
EVM GPIO
IO EXPANDER
nRST-EXP
PGOOD-PVDD
nRST-SYS

I2C
I2C
EVM I2C

+5V-USB
USB INPUT
TAS1020B
DOUT(EVM)
DOUT(OUT)
DOUT-MUX-CTRL
DOUT(EVM)
DOUT(OUT)
SDOUT(EVM)
EVM BOARD CONNECTOR

I2S-PSIA
I2C
AIC3262
MCLK2
SCLK2
LCLK2
DIN2
MCLK1
SCLK1
LCLK1
DIN1
DIN3
IN2(MIC)
IN3
ADC
SCLK3
LRCLK3
DOUT1
DOUT2
DOUT3
DOUT4
HPL/R
Headphone
DOUT1-DSP
DOUT2-DSP
DOUT3-DSP
DOUT4-DSP

MCLK-MUX-CTRL
MCLK-3262
MCLK-PSIA
MCLK(OUT)
SCLK-PSIA
SCLK-DSP
LRCLK-PSIA
LRCLK-DSP
DOUT-PSIA
DOUT1-DSP
I2S(OUT)
USB-GPIO2
I2S-MUX-CTRL
MSP-ACTIVE

I2C
TAS5548
nRST-SYS
EMO1
LED
PSVC
HDR
DOUT2-DSP
DOUT3-DSP
DOUT4-DSP
I2S(OUT)
DIN2
DIN3
DIN4
I2S-IN
PWM1-4
PWM7/8
I2SOUT
HDR
EVM PWM
I2S(OUT)
DOUT2-DSP
DOUT3-DSP
DOUT4-DSP
EVM I2S IN

nRST-SYS
I2S-IN
I2C
SPDIF1
I2S-OUT
SPDIF2
PCM9211
I2S(9211)
BUFFER
I2C
SPDIF COAX
SPDIF OPTO
EXT I2S
I2S(PSIA)
I2S-3262

StereoMini (MIC)
2xHDR
ANALOG INPUTS
4xRCA
2
2
4
2xDualHeaders
to PCM3168
2
OUT
EVM ANALOG
IN

I2S(3168A)
DOUT1-DSP
SDOUT-5548
nRST-SYS
I2S
I2C
DOUT
DIN2
DIN3
PCM3168A
8
DIFF TO SE CONVERTERS
MSP-ACTIVE
4
4
USB-GPIO1
ANA-MUX-CTRL
4
ANALOG BYPASS
4
4

Texas Instruments	PAGE INFO: CONTROLLER BOARD BLOCK DIAGRAM	DATE JULY 20, 2015	SCH REV G
	DESIGN LEAD JORGE ARBONA	FILENAME PP-CMBEVM_RevG.sbk	PCB REV G
			SHEET 1 OF 13
			DRAWN BY LDN

PurePath™ Console MotherBoard

FROM MSP430 — SCL-M-MSP, SDA-M-MSP

FROM MSP430 — MSP-ACTIVE

TAS1020B EEPROM (0xA0)

EP1 — 24LC512-I/ST
A0, A1, A2, Vss, Vcc, WP, SCL, SDA
+3.3V-USB
R10 4.70K DNP
R128 4.70K
GND
SCL-USB
SDA-USB

SCL, SDA
J3
GND

INV1 — SN74LVC1G14DRL
NC, A, GND, VCC, Y
+3.3V

SCL-M-MSP
SDA-M-MSP
MSP-ACTIVE

I2C MUX

SW1, SW2, SW3 — TCA9406DCUR
VCCB, VCCA, SCL_B, SCL_A, SDA_B, SDA_A, OE, GND
+3.3V, +3.3V-USB, GND
SCL-USB, SDA-USB
SCL, SDA

R33 10.0K DNP
R34 10.0K DNP
+3.3V, +3.3V

I2C BUS

SCL
SDA

TO MSP430

SCL-S-MSP
SDA-S-MSP

USB INPUT

J2
Case, GND, ID_NC, Data+, Data-, 5v
FB1 220ohms/2A
FB2 220ohms/2A
GND

+5V-USB
R101 15.0K
Q1 MMBT2222A 40V,1A
B, C, E
R102 1.50K
PUR
DP
DM
R103 27.4
R104 27.4
C101 47pfd/50V
C102 47pfd/50V
GND

USB POWER SUPPLY

+5V-USB
D1 ES2AA 50V 2A
D2 ES2AA 50V 2A
+5V
VR1 TPS73633DBVT 3.3V/400mA
IN, GND, EN, OUT, NR
C108 10ufd/10V
C109 0.1ufd/16V
C110 10ufd/10V
C111 1.0ufd/10V
+3.3V-USB
GND

DECOUPLING

+3.3V-USB
C112, C113, C114, C115, C117, C118, C51, C58
0.1ufd/16V
GND

OSC1 — 6.0MHz/3.3V
OE, Vcc, GND, OUT
+3.3V-USB
C103 0.1ufd/16V
GND

C105 100pfd/50V
C106 1000pfd/50V
R105 3.09K

R114 4.70K
R115 4.70K
+3.3V-USB

C24 0.1ufd/16V
+3.3V
GND

MCLKO1
CDATO
CSCLK
CDATI
CSYNC
+3.3V-USB

U2 TAS1020BPFB

PLLFILO, AVDD, MCLKI, DVSS, PUR, DP, DM, DVDD, MRESET, TEST, EXTEN, RSTO
P3.0, P3.1, P3.2/XINT, DVSS, P3.3, P3.4, P3.5, NC, DVDD, NC, P1.0, P1.1
P1.7, P1.6, P1.5, DVSS, P1.4, P1.3, P1.2
PLLFILI, XTALI, XTALO, AVSS, SCL, SDA, VREN, RESET, MCLKO2, MCLKO1, CDATO, CSCLK, CDATI, CSYNC, CRESET, DVDD, CSCHNE

R106 100K
C107 0.1ufd/16V
R107 360 USB-LOCK Blue/2.9V
R110 4.99K

DECOUPLING

+3.3V
C20, C21, C22, C23
0.1ufd/16V
GND

U12, U13, U14, U15, U16 — SN74LVC1G125DRL
OE, A, GND, VCC, Y
+3.3V
R116 47.0
R117 47.0
R118 47.0
R120 47.0

I2S (USB)

MCLK-USB
SDOUT-USB
SCLK-USB
LRCLK-USB

TO I2S BYPASS MUX

USB-GPIO2

TO ANALOG BYPASS MUX

USB-GPIO1

FROM AIC3262 — SDOUT-MUX

SDOUT-MUX

TEXAS INSTRUMENTS		SCH REV	G
		PCB REV	G
PAGE INFO: USB	DATE JULY 20, 2015	SHEET 2 OF 13	
DESIGN LEAD JORGE ARBONA	FILENAME PP-CMBEVM_RevG.sbk	DRAWN BY LDN	

PurePath™ Console MotherBoard

I2S(USB)

SDOUT-USB
LRCLK-USB
SCLK-USB
MCLK-USB

OPTICAL SPDIF IN

OPTO-IN
+3.3V
VCC
GND
Case
OUT
PLR135/T10
GND

RESET

nRST-SYS

COAX SPDIF IN

COAX
Shield
FB5
220ohms/2A
GND

OPTICAL SPDIF OUT

OPTO-OUT
+3.3V
VCC
GND
SHIELD
INPUT
PLT133/T10W
R140
10.0K
GND

SPDIF

U3
PCM9211PT

I2C Add = 0x80

RXIN0 GNDRX XTI XTO AGND VCC FILT VCOM AGNDAD VCCAD VINL VINR
VDDRX RXIN1 RST RXIN2 RXIN3 RXIN4/ASCKIO RSIN5/ABCKIO RXIN6/ALRCKIO RXIN7/ADIN0 MODE MS/ADR1 MC/SCL
MDI/SDA MDO/ADR0 DVDD DGND SCKO BCK LRCK DOUT MPO1 MPO0 MPIO_B3 MPIO_B2
ERROR/INT0 NPCM/INT1 MPIO_A0 MPIO_A1 MPIO_A2 MPIO_A3 MPIO_C0 MPIO_C1 MPIO_C2 MPIO_C3 MPIO_B0 MPIO_B1

C120 0.1ufd/16V
R141 75
C121 27pfd/50V
C122 27pfd/50V
Y1 24.576 MHz
R142 1.0
C123 10ufd/10V
C124 0.1ufd/16V
C126 4700pfd/25V
R143 680
C125 0.068ufd/50V
C127 10ufd/10V
C128 0.1ufd/16V

R147 4.99K
R148 4.99K
C130 0.1ufd/16V
C129 10ufd/10V

nRST-SYS
SCKO-9211
BCK-9211
LRCK-9211
DOUT-9211

INV2
SN74LVC1G14DRL
PCM9211-INT0
SPDIF-LOCK
R144 360
Blue/2.9V

I2C BUS

SCL
SDA

BUF1 BUF2 BUF3 BUF4
SN74LVC2G34DRL
R153 R154 R155 R156 R157 R158 R159 R160 47.0

I2S(3168A)

MCLK-3168
SCLK-3168
LRCLK-3168
SDIN1-3168

I2S(3262)

MCLK-3262
SCLK-3262
LRCLK-3262
SDIN-3262

TO EXPANDER

PCM9211-INT0

DECOUPLING

+3.3V
C131 C132 C133 C134 C135 C136 C137 C138 C139 C145 C146 C147
0.1ufd/16V
GND

DECOUPLING

+3.3V
C140 C141 C142 C143
0.1ufd/16V
GND

Texas Instruments			SCH REV G
PAGE INFO: SPDIF		DATE JULY 20, 2015	PCB REV G
DESIGN LEAD JORGE ARBONA		FILENAME PP-CMBEVM_RevG.sbk	SHEET 3 OF 13
			DRAWN BY LDN

PurePath™ Console MotherBoard

FROM TAS5548 — SDOUT-5548

I2C BUS — SCL, SDA

I2S (3168A) — LRCLK-3168, SCLK-3168, SDIN1-3168, MCLK-3168

FROM AIC3262 — DIN2-3168

R200 0.0 → BCKAD-3168

R201 0.0 → LRCKAD-3168

SCL, SDA, LRCKDA-3168, BCKDA-3168, SDIN1-3168, MCLK-3168, DIN2-3168

ADC

DAC

U4 PCM3168APAP (PowerPad) — AGND

I2C Add = 0x88

ANALOG INPUTS

AIN1 (Shield, LEFT 2, RIGHT 3, 1 AGND)

AIN2 (Shield, LEFT 2, RIGHT 3, 1 AGND)

C200 10ufd/10V — ANA-IN1L

C207 10ufd/10V — ANA-IN1R

C214 10ufd/10V — ANA-IN2L

C221 10ufd/10V — ANA-IN2R

R16 200K, R17 200K, R18 200K, R19 200K — AGND

ANA-IN1L → R1 3.09k → OA1 (OPA4134UA SOP14-D) → R2 1.50k, R3 47.0, C25 2200pfd/50V, C18 0.1ufd/16V, VCOMAD

ANA-IN1R → R4 3.09k → OA1 (OPA4134UA-ND SOP14-D) → R5 1.50k, R6 47.0, C28 2200pfd/50V, C19 0.1ufd/16V, VCOMAD

ANA-IN2L → R7 3.09k → OA1 (OPA4134UA-ND SOP14-D) → R11 1.50k, R12 47.0, C31 2200pfd/50V, C40 0.1ufd/16V, VCOMAD

ANA-IN2R → R13 3.09k → OA1 (OPA4134UA-ND SOP14-D) → R14 1.50k, R15 47.0, C34 2200pfd/50V, C41 0.1ufd/16V, VCOMAD

C26, C29, C32, C35 0.022ufd/16V — AGND

C27 VIN1-, C30 VIN2-, C33 VIN3-, C36 VIN4-, C32 VIN3+, C35 VIN4+, VIN1+, VIN2+

U4 PCM3168APAP

Pin	Name	Pin	Name
48	MODE	32	VOUT1-
47	DGND1	31	VOUT1+
46	VDD1	30	VOUT2-
45	MS/ADR0/M00	29	VOUT2+
44	M01/ADR1/M01	28	VOUT3-
43	M02/SDA/DEMP	27	VOUT3+
42	M03/SCL/FMT	26	VOUT4-
41	SCK1	25	VOUT4+
40	DIN4	24	VOUT5-
39	DIN3	23	VOUT5+
38	DIN2	22	VOUT6-
37	DIN1	21	VOUT6+
36	BCKDA	20	VOUT7-
35	LRCKDA	19	VOUT7+
34	VCCDA2	18	VOUT8-
33	AGNDDA2	17	VOUT8+
49	VCCAD1	16	AGNDDA1
50	AGNDAD1	15	VCCDA1
51	VIN1-	14	ZERO
52	VIN1+	13	VDD2
53	VIN2-	12	DGND2
54	VIN2+	11	DOUT3
55	VIN3-	10	DOUT2
56	VIN3+	9	DOUT1
57	VIN4-	8	BCKAD
58	VIN4+	7	LRCKAD
59	AREFAD1	6	OVF
60	VREFAD2	5	RST
61	VIN5-	4	VCCAD2
62	VIN5+	3	AGNDAD2
63	VIN6-	2	VCOMAD
64	VIN6+	1	AGNDAD1

+3.3V, +5VA-1, +5VA-2, GND

C237 10ufd/10V, C238 10ufd/10V, C307 0.47ufd/25V, C308 0.47ufd/25V, C239 10ufd/10V, C240 10ufd/10V — AGND

AOUT1-EVM, AOUT2-EVM

nRST-SYS

LRCKAD-3168, BCKAD-3168

R279 47.0 — DIN3-3262

TO EVM CONNECTOR

AOUT1+_3168, AOUT1-_3168 → C241 10ufd/10V, C242 10ufd/10V, R253 7.50K, R254 7.50K, R255 5.60K, R256 360, R257 360, R258 5.60K, C248 3300pfd/50V, C249 680pfd/50V, C250 680pfd/50V, OA2 (OPA4134UA-ND SOP14-D), R259 47.0 → AOUT1

AOUT2+_3168, AOUT2-_3168 → C246 10ufd/10V, C247 10ufd/10V, R246 7.50K, R247 7.50K, R248 5.60K, R249 360, R250 360, R251 5.60K, C243 3300pfd/50V, C244 680pfd/50V, C245 680pfd/50V, OA2 (OPA4134UA-ND SOP14-D), R252 47.0 → AOUT2

AOUT3+_3168, AOUT3-_3168 → C251 10ufd/10V, C252 10ufd/10V, R260 7.50K, R261 7.50K, R262 5.60K, R263 360, R264 360, R265 5.60K, C253 3300pfd/50V, C254 680pfd/50V, C255 680pfd/50V, OA2 (OPA4134UA-ND SOP14-D), R266 47.0 → AOUT3

AOUT4+_3168, AOUT4-_3168 → C256 10ufd/10V, C257 10ufd/10V, R267 7.50K, R268 7.50K, R269 5.60K, R270 360, R271 360, R272 5.60K, C258 3300pfd/50V, C259 680pfd/50V, C260 680pfd/50V, OA2 (OPA4134UA-ND SOP14-D), R273 47.0 → AOUT4

ANALOG BYPASS MUX

MUX2A LMS4684LD — ANA-IN1 (AOUT1) → VOUT1-3168; ANA-IN2 (AOUT3) → VOUT3-3168; R20 +5V, C274 0.1ufd/16V

MUX2B LMS4684LD — ANA-IN1R (AOUT2) → VOUT2-3168; ANA-IN2R (AOUT4) → VOUT4-3168; R21 +5V, C37 0.1ufd/16V

VOUT1-3168, VOUT2-3168, VOUT3-3168, VOUT4-3168 → TO EVM CONNECTOR

DNP: +3.3V, R276 4.99K, R277 0.0, R278 10.0K — AGND

FROM EVM CONNECTOR

AOUT1-EVM, AOUT2-EVM

RESET

nRST-SYS

FROM TAS1020

USB-GPIO1

FROM MSP430

ANA-MUX-CTRL, MSP-ACTIVE

MUX1 SN74LVC2G157DCU — +3.3V, GND

OPAMPS DECOUPLING

+5VA-1: C229 10ufd/10V, C230 0.1ufd/16V, OA1 (OPA4134UA SOP14-D); C231 10ufd/10V, C232 0.1ufd/16V, OA2 (OPA4134UA SOP14-D) — AGND

PCM3168A DECOUPLING

+5V R275 0.0 → +5VA-2: C271 10ufd/10V, C272 0.1ufd/16V, C273 0.1ufd/16V — AGND

+5V R274 0.0 → +5VA-1: C268 10ufd/10V, C269 0.1ufd/16V, C270 0.1ufd/16V — AGND

+3.3V: C265 10ufd/10V, C266 0.1ufd/16V, C116 0.1ufd/16V — GND

+3.3V: C267 0.1ufd/16V — AGND

LED DRIVER

BUF5 SN74LVC2G34DRL — AGND, VCC, +3.3V, C275 0.1ufd/16V

ZERO Green2.1V, R280 360 — AGND

OVF Yellow2.1V, R281 360 — AGND

DIN3-3262 → TO AIC3262

TEXAS INSTRUMENTS		SCH REV	G
PAGE INFO:	ANALOG I/O	PCB REV	G
DESIGN LEAD	JORGE ARBONA	SHEET	4 OF 13
DATE	JULY 20, 2015	DRAWN BY	LDN
FILENAME	PP-CMBEVM_RevG.sbk		

PurePath™ Console MotherBoard

FROM IO EXPANDER — MCLK_MUX-CTRL

I2S (3262) — MCLK-3262, SCLK-3262, LRCLK-3262, SDIN-3262

I2S (EXT) — J4 header; R301 27.4 MCLK-PSIA → MCLK; R302 27.4 SCLK-PSIA → BCLK; R303 27.4 LRCLK-PSIA → LRCK; R304 27.4 SDIN-PSIA → DIN; R305 27.4 SDOUT-MUX → DOUT; GND

I2C Add = 0x30

I2C BUS — SCL, SDA

RESET — nRST-SYS → nRST-SYS

FROM PCM3168A — DIN3-3262

FROM TAS1020 — USB-GPIO2

FROM MSP430 — I2S-MUX-CTRL, MSP-ACTIVE

FROM EVM — SDOUT-DUT

FROM IO EXPANDER — DOUT_MUX-CTRL

MIC INPUT — MIC-IN (Shield, LEFT, RIGHT); R22 200K, R23 200K; R325 2.21K, R324 2.21K; C312 0.47ufd/25V; C311 0.47ufd/25V

USER ANALOG INPUTS — AIN3, AIN4; C309 0.47ufd/25V; C310 0.47ufd/25V

I2S-IO

U5 — TLV320AIC3262IYZF

MCLK-3262	G1 MCLK1	DOUT1 H2	DOUT1-3262
SCLK-3262	H1 BCLK1		
LRCLK-3262	J2 WCLK1		
SDIN-3262	J1 DIN1		
MCLK-PSIA	G9 MCLK2	DOUT2 J6	DOUT2-3262
SCLK-PSIA	G2 BCLK2	BCLK3 H7	BCLK3-3262
LRCLK-PSIA	G4 WCLK2	WCLK3 G5	WCLK3-3262
SDIN-PSIA	G3 DIN2	DIN3 G6	DIN3-3262
		DOUT3 J7	DOUT3-3262
	J5 GPI1		
	F6 GPI2		
	F5 GPI3		
	F7 GPI4		
	J8 GPIO1	GPO1 H6	DOUT4-3262
	H8 GPIO2		
	H4 SCL		
	H5 SDA		
	G7 SPI_SELECT		
nRST-SYS	G8 RESET		

I2S MUX

MUX3 — MCLK-3262, MCLK-PSIA, MCLK_MUX-CTRL → R326 0.0 → MCLK-MUXOUT
MUX4 — SCLK-PSIA, BCLK3-3262 → R309 47.0 → SCLK-MUXOUT
MUX5 — LRCLK-PSIA, WCLK3-3262 → R310 47.0 → LRCLK-MUXOUT
MUX6 — SDIN-PSIA, DOUT1-3262 → R308 33.0 → SDIN1-MUXOUT
MUX7 — DOUT_MUX-CTRL → SDOUT-MUX
MUX8 — MSP-ACTIVE, I2S-MUX-CTRL

SN74LVC2G157DCU; +3.3V; C301, C304, C305, C306 0.1ufd/16V; R311 4.99K; R327 DNP; R312 0.0; R323 27.4; GND

HP-OUT — LEFT, RIGHT, Shield; R24 200K, R25 200K

HEAD PHONE OUT

miniDSP

DOUT1-3262 → R307 33.0 → DIN2-3168 → **TO PCM3168A**

TO EVM CONNECTOR

MCLK-MUXOUT	R306 47.0	MCLK-EVM
SCLK-MUXOUT	R313 33.0	SCLK-EVM
LRCLK-MUXOUT	R314 33.0	LRCLK-EVM
SDIN1-MUXOUT	R315 27.4	SDIN1-EVM
DOUT2-3262	R316 33.0	SDIN2-EVM
DOUT3-3262	R317 33.0	SDIN3-EVM
DOUT4-3262	R329 33.0	SDIN4-EVM

DNP

TO TAS5548

MCLK-MUXOUT	R328 33.0	MCLK-5548
SCLK-MUXOUT	R320 33.0	SCLK-5548
LRCLK-MUXOUT	R321 33.0	LRCLK-5548
SDIN1-MUXOUT	R322 27.4	SDIN1-5548
DOUT2-3262	R318 33.0	SDIN2-5548
DOUT3-3262	R319 33.0	SDIN3-5548
DOUT4-3262	R330 33.0	SDIN4-5548

SDOUT-MUX → **TO TAS1020B**

U5 — TLV320AIC3262IYZF; +1.8V, +3.3V, +5V; C313–C324 0.1ufd/16V, 10ufd/10V; R332 221; GND

C48 0.1ufd/16V; C333 2.2ufd/10V; C334 2.2ufd/10V; C331 10ufd/10V; C332 0.1ufd/16V; C335 1.0ufd/10V; C336 1.0ufd/10V; C337 10ufd/10V; C338 0.1ufd/16V; C300 0.1ufd/16V

SCH REV	G	
PCB REV	G	
PAGE INFO:	ANALOG I/O	
DESIGN LEAD	JORGE ARBONA	
DATE	JULY 20, 2015	
FILENAME	PP-CMBEVM_RevG.sbk	
SHEET	5 OF 13	
DRAWN BY	LDN	

PurePath™ Console MotherBoard

ENERGY THRESHOLD

+3.3V — R401 360 — ET Yellow/2.1V — Q2 DDTC114TCA (C, B, E) — R 4.7K — GND

RESET

nRST-SYS

FROM IO EXPANDER

nPDN-5548
nMUTE-5548

I2C BUS

SDA
SCL

FROM AIC3262

MCLK-5548
LRCLK-5548
SCLK-5548
SDIN1-5548
SDIN2-5548
SDIN3-5548
SDIN4-5548

I2C Add = 0x34

U6 TAS5548DCA

1	PWM_HPM_L	PWM_P_6	56 — P6+
2	PWM_HPP_L	PWM_M_6	55
3	PWM_HPM_R	PWM_P_5	54 — P5+
4	PWM_HPP_R	PWM_M_5	53
5	AVSS	VR_PWM	52 — C413 0.1ufd/16V — +3.3V — C414 0.1ufd/16V — GND
6	PLL_FLTM	AVSS_PWM	51 — GND
7	PLL_FLTP	AVDD_PWM	50
8	VR_ANA	PWM_P_8	49 — PWM_P_8 — R409 47.0 — PWM_8+ — P8+
9	AVDD	PWM_M_8	48 — PWM_M_8 — R410 47.0 — PWM_8- — P8-
10	ASEL_EMO2	PWM_P_7	47 — PWM_P_7 — R411 47.0 — PWM_7+ — P7+
11	XTALI	PWM_M_7	46 — PWM_M_7 — R412 47.0 — PWM_7- — P7-
12	XTALO	PWM_P_4	45 — PWM_P_4 — R413 47.0 — PWM_4+ — P4+
13	DVSS2_CORE	PWM_M_4	44 — PWM_M_4 — R414 47.0 — PWM_4- — P4-
14	DVDD2_CORE	PWM_P_3	43 — PWM_P_3 — R415 47.0 — PWM_3+ — P3+
15	EMO1	PWM_M_3	42 — PWM_M_3 — R416 47.0 — PWM_3- — P3-
16	RESET	PWM_P_2	41 — PWM_P_2 — R417 47.0 — PWM_2+ — P2+
17	HP_SEL	PWM_M_2	40 — PWM_M_2 — R418 47.0 — PWM_2- — P2-
18	PDN	PWM_P_1	39 — PWM_P_1 — R419 47.0 — PWM_1+ — P1+
19	MUTE	PWM_M_1	38 — PWM_M_1 — R420 47.0 — PWM_1- — P1-
20	SDA	VALID	37 — R421 47.0 — VALID — VLD
21	SCL	DVSS1_CORE	36 — GND
22	LRCLK	DVDD1_CORE	35 — R422 10.0K — C416 0.1ufd/16V — +3.3V — C415 10ufd/10V — GND
23	SCLK	BKND_ERR	34
24	SDIN1	PSVC/MCLK	33 — MCLKO
25	SDIN2	TEST	32 — GND
26	SDIN2_1(SDIN3)	LRCLKO(LRCK#2)	31 — LRCLKO — LRCKO
27	SDIN2_2(SDIN4)	SCLKO(SCLK#2)	30 — SCLKO — SCKO
28	VR_DIG	SDOUT(SDIN5)	29 — SDOUT — SDOUT-5548 — R426 47.0

TAS5548DCA

C402 4700pfd/25V — C403 0.047ufd/16V — R402 470 — GND
C404 4700pfd/25V — C405 0.047ufd/16V — R403 470 — GND
HPL+ HPR+ GND

AVDD — R404 0.0 — +3.3V — C406 10ufd/10V — GND — C407 0.1ufd/16V — GND
R405 15.0K — GND

MCLK-5548 — C408 33pF/50V — Y2 12.288 MHz — R406 1.0M — C409 33pF/50V — GND
GND

+3.3V — C410 0.1ufd/16V — GND

nRST-SYS

+3.3V — R407 10.0K

C411 10ufd/10V — GND
C412 0.1ufd/16V — GND

U6 TAS5548DCA PowerPad — GND

GND — C417 DNP — C418 DNP — C419 DNP — C420 DNP — C421 DNP — C422 DNP — C423 DNP

GND — C424 DNP — C425 DNP — C426 DNP — C427 DNP — C428 DNP

TO EVM CONNECTOR

PWM_8+
PWM_8-
PWM_7+
PWM_7-
PWM_4+
PWM_4-
PWM_3+
PWM_3-
PWM_2+
PWM_2-
PWM_1+
PWM_1-
VALID

VALID

VALID — R427 360 — +3.3V — Q3 DDTC114TCA (C, B, E) — Blue/2.9V — R 4.7K — GND

TO PCM3168A

SDOUT-5548

TEXAS INSTRUMENTS	PAGE INFO: TAS5548DCA	DATE JULY 20, 2015	SCH REV G
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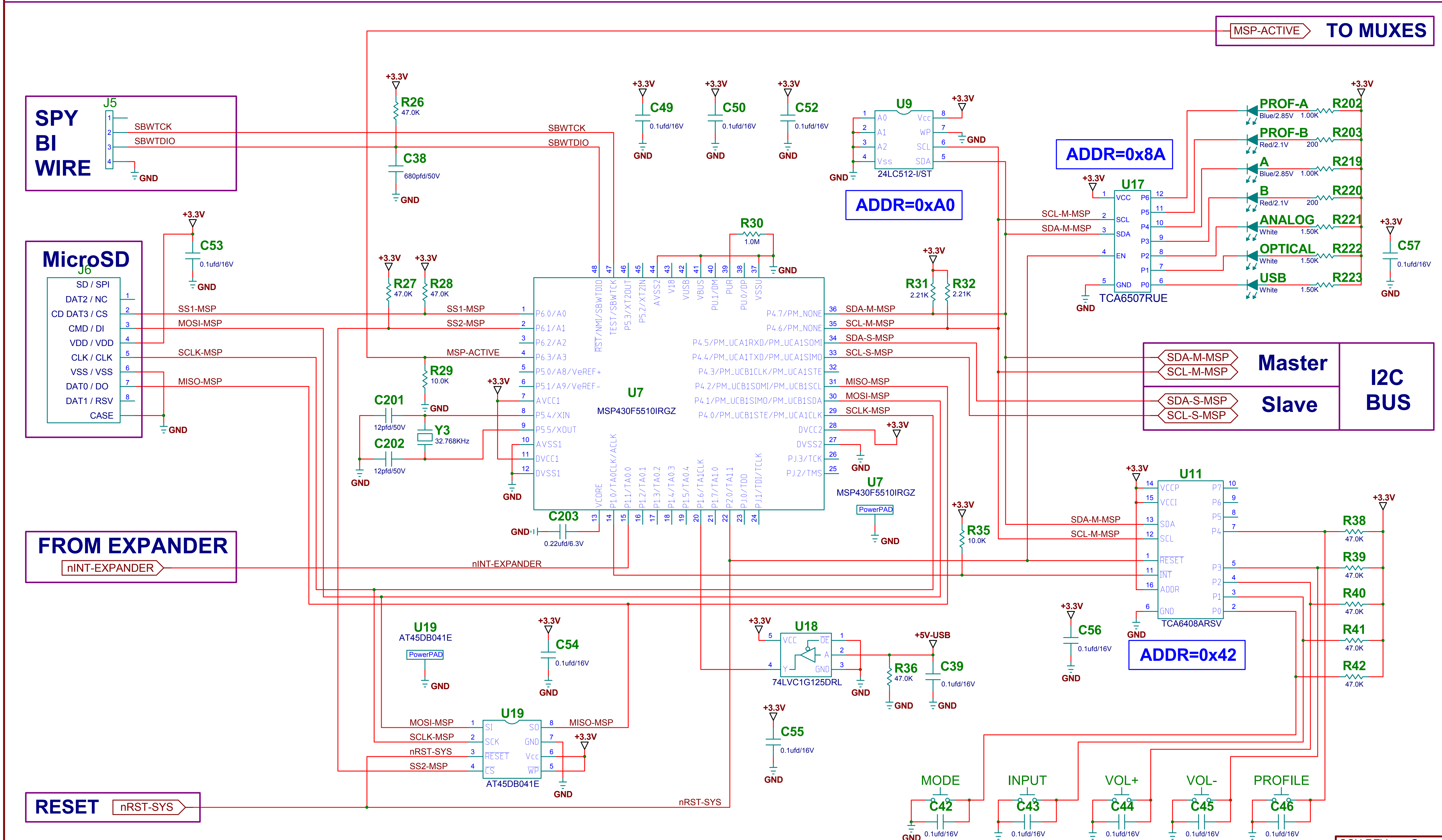
			DRAWN BY LDN

PurePath™ Console MotherBoard



MSP-ACTIVE
TO MUXES
SPY BI WIRE
J5
SBWTCK
SBWTDIO
GND
+3.3V
R26
47.0K
C38
680pfd/50V
C49
C50
C52
0.1ufd/16V
U9
24LC512-I/ST
ADDR=0xA0
ADDR=0x8A
U17
TCA6507RUE
SCL-M-MSP
SDA-M-MSP
PROF-A
PROF-B
A
B
ANALOG
OPTICAL
USB
R202
R203
R219
R220
R221
R222
R223
C57
MicroSD
J6
SD / SPI
DAT2 / NC
CD DAT3 / CS
CMD / DI
VDD / VDD
CLK / CLK
VSS / VSS
DAT0 / DO
DAT1 / RSV
CASE
SS1-MSP
MOSI-MSP
SCLK-MSP
MISO-MSP
SS2-MSP
C53
R27
R28
R29
R30
1.0M
R31
R32
2.21K
C201
C202
12pfd/50V
Y3
32.768KHz
U7
MSP430F5510IRGZ
PowerPAD
C203
0.22ufd/6.3V
Master
Slave
I2C BUS
SDA-M-MSP
SCL-M-MSP
SDA-S-MSP
SCL-S-MSP
U11
TCA6408ARSV
ADDR=0x42
R35
10.0K
R38
R39
R40
R41
R42
47.0K
C56
FROM EXPANDER
nINT-EXPANDER
U19
AT45DB041E
C54
U18
74LVC1G125DRL
+5V-USB
R36
C39
C55
MODE
INPUT
VOL+
VOL-
PROFILE
C42
C43
C44
C45
C46
RESET
nRST-SYS

PAGE INFO: MCU	DATE JULY 20, 2015	SCH REV G	PCB REV G
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PurePath™ Console MotherBoard

FROM PCM9211 PCM9211-INT0

+3.3V — C701 0.1ufd/16V — GND

+3.3V — C702 0.1ufd/16V — GND

I2C Add = 0x44

U8 TCA6424ARGJ

27	VCCP	P27	24 DOUT_MUX-CTRL
		P26	23 MCLK_MUX-CTRL
		P25	22 nPDN-5548
		P24	21 nMUTE-5548
		P23	20 nRST-EXP
		P22	19 I2S-MUX-CTRL
		P21	18 ANA-MUX-CTRL
		P20	17 PGOOD-PVDD
		P17	16 PCM9211-INT0
		P16	15
		P15	14
		P14	13
		P13	12
		P12	11 GPIO-EXP10
		P11	10 GPIO-EXP09
		P10	9 GPIO-EXP08
		P07	8 GPIO-EXP07
		P06	7 GPIO-EXP06
		P05	6 GPIO-EXP05
		P04	5 GPIO-EXP04
		P03	4 GPIO-EXP03
		P02	3 GPIO-EXP02
		P01	2 GPIO-EXP01
		P00	1 GPIO-EXP00
31	VCCI		
30	SDA		
29	SCL		
28	RESET		
32	INT		
26	ADDR		
25	GND		

I2C BUS: SDA, SCL

RESET: nRST-SYS

nRST-SYS — **R710** 0.0

GND

U8 TCA6424ARGJ

PowerPad — GND

DOUT_MUX-CTRL → **TO DOUT MUX**

MCLK_MUX-CTRL → **TO MCLK MUX**

nPDN-5548, nMUTE-5548 → **TO TAS5548**

nRST-EXP → **TO SYSTEM RESET**

I2S-MUX-CTRL → **TO AIC3262**

ANA-MUX-CTRL → **TO ANALOG BYPASS MUX**

PGOOD-PVDD → **FROM 3.3V LDO**

GPIO-EXP10, GPIO-EXP09, GPIO-EXP08, GPIO-EXP07, GPIO-EXP06, GPIO-EXP05, GPIO-EXP04, GPIO-EXP03, GPIO-EXP02, GPIO-EXP01, GPIO-EXP00 → **TO EVM CONNECTOR**

nINT-EXPANDER → **TO MSP430**

Texas Instruments

PAGE INFO:	IO EXPANDER	DATE	JULY 20, 2015
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PurePath™ Console MotherBoard

EVM CONNECTOR 'A'

FROM TAS5548

PWM_8+, PWM_8-, PWM_7+, PWM_7-, PWM_4+, PWM_4-, PWM_3+, PWM_3-, PWM_2+, PWM_2-, PWM_1+, PWM_1-, VALID

RESET

nRST-SYS

FROM IO EXPANDER

GPIO-EXP00, GPIO-EXP01, GPIO-EXP02, GPIO-EXP03, GPIO-EXP04, GPIO-EXP05

FROM AIC3262

MCLK-EVM, SCLK-EVM, LRCLK-EVM, SDIN1-EVM, SDIN2-EVM, SDIN3-EVM, SDIN4-EVM

C705 DNP, C706 DNP, C707 DNP, C708 DNP, C703 DNP, C709 DNP, C710 DNP → GND

J1

1	PWM_8+	2	PVDD
3	PWM_8-	4	
5	GND	6	
7	PWM_7+	8	
9	PWM_7-	10	
11	GND	12	
13	PWM_4+	14	
15	PWM_4-	16	
17	GND	18	+5V
19	PWM_3+	20	GND
21	PWM_3-	22	GPIO-EXP00
23	GND	24	GPIO-EXP01
25	PWM_2+	26	nRST-SYS
27	PWM_2-	28	GPIO-EXP02
29	GND	30	GPIO-EXP03
31	PWM_1+	32	GPIO-EXP04
33	PWM_1-	34	GPIO-EXP05
35	GND	36	
37	VALID	38	
39	GND	40	
41	MCLK-EVM	42	
43	GND	44	SDIN4-EVM
45	SCLK-EVM	46	SDOUT-DUT
47	LRCLK-EVM	48	SDIN2-EVM
49	SDIN1-EVM	50	SDIN3-EVM
L-GND	GND		

SDOUT-DUT → **TO DOUT MUX**

EVM CONNECTOR 'B'

I2C BUS

SCL, SDA

SYSTEM RESET

nRST-SYS

TO PCM3168A

AOUT2-EVM, AOUT1-EVM

EVM ANALOG OUTPUTS

AOUT1: 1 AOUT1-EVM, 2

AOUT2: 1 AOUT2-EVM, 2 → AGND

FROM IO EXPANDER

GPIO-EXP06, GPIO-EXP07, GPIO-EXP08, GPIO-EXP09, GPIO-EXP10

FROM PCM3168A

AOUT1+_3168, AOUT1-_3168, AOUT2+_3168, AOUT2-_3168, AOUT3+_3168, AOUT3-_3168, AOUT4+_3168, AOUT4-_3168

VOUT4-3168, VOUT3-3168, VOUT2-3168, VOUT1-3168

J1

51	SCL	52	+1.8V
53	SDA	54	
55	GND	56	
57	+3.3V	58	
59		60	
61		62	
63		64	
65	GND	66	nRST-SYS
67	AOUT1-EVM	68	
69	AOUT2-EVM	70	
71	GND	72	
73	AOUT1+_3168	74	
75	AOUT1-_3168	76	
77	AOUT2+_3168	78	GPIO-EXP06
79	AOUT2-_3168	80	
81	AOUT3+_3168	82	GPIO-EXP07
83	AOUT3-_3168	84	
85	AOUT4+_3168	86	GPIO-EXP08
87	AOUT4-_3168	88	
89		90	GPIO-EXP09
91		92	
93	VOUT4-3168	94	
95	VOUT3-3168	96	
97	VOUT2-3168	98	GPIO-EXP10
99	VOUT1-3168	100	R-GND

FB3 220ohms/2A, FB4 220ohms/2A → AGND, GND

TEXAS INSTRUMENTS		SCH REV	G
		PCB REV	G
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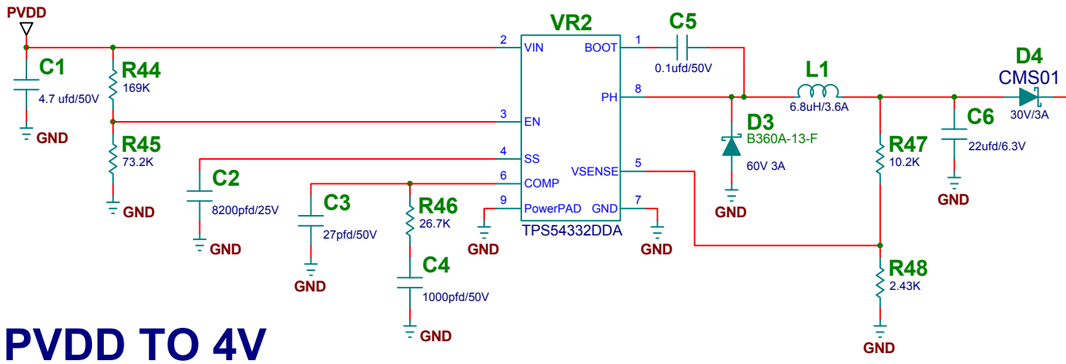
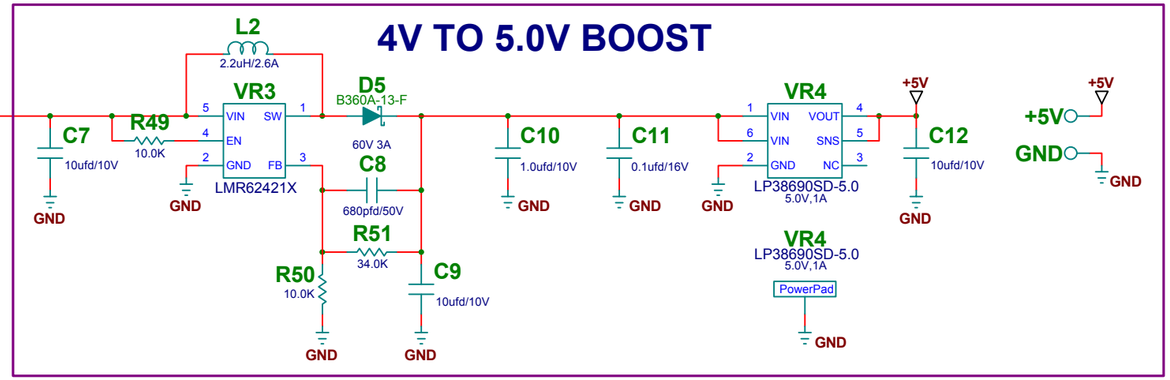
PurePath™ Console MotherBoard

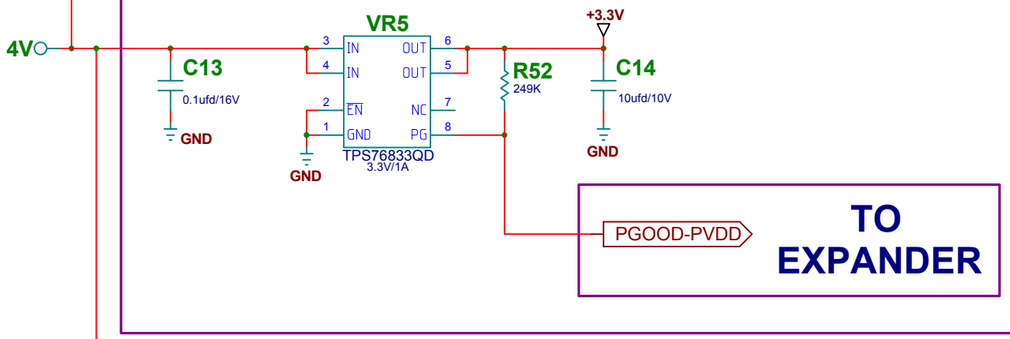
PVDD TO 4V



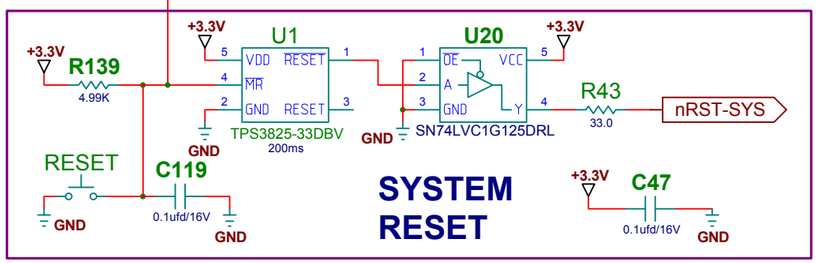
4V TO 5.0V BOOST

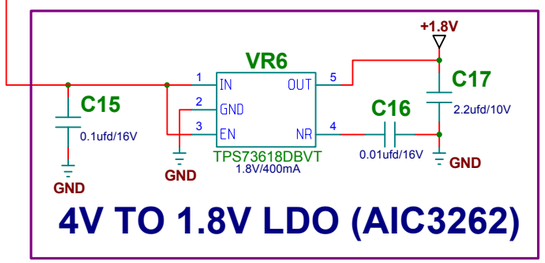


4V TO 3.3V LDO



FROM EXPANDER





Texas Instruments			SCH REV G
			PCB REV G
PAGE INFO: POWER SUPPLIES		DATE JULY 20, 2015	SHEET 10 OF 13
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PurePath™ Console MotherBoard

STANDOFF HARDWARE

(J1 CONNECTOR)

THUMBNUTS

M3-0.5 M3-0.5

STANDOFFS

GND GND

M3x0.5x5mm M3x0.5x5mm

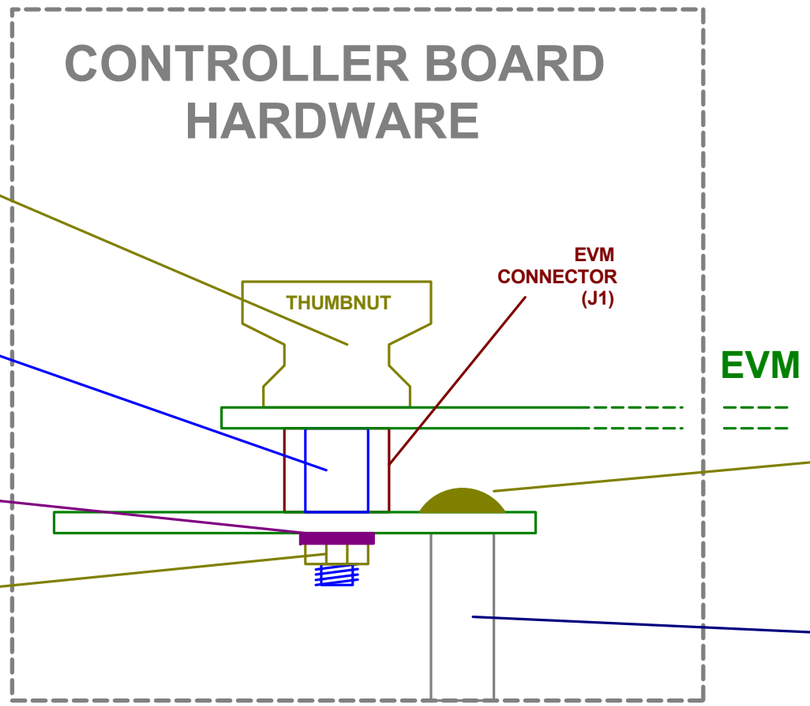
WASHERS

#4 #4

NUTS

M3 M3

CONTROLLER BOARD HARDWARE



CORNERS HARDWARE

SCREWS

M3x8 M3x8 M3x8 M3x8

STANDOFFS

GND GND GND GND

M3x25 M3x25 M3x25 M3x25

TEXAS INSTRUMENTS			SCH REV G
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	PAGE INFO: STANDOFF HARDWARE	DESIGN LEAD JORGE ARBONA	SHEET 11 OF 13
	FILENAME PP-CMBEVM_RevG.sbk	DATE JULY 20, 2015	DRAWN BY LDN

PurePath™ Console MotherBoard

REVISION HISTORY

REVISION	DESCRIPTION	DATE	APPROVAL
A	RELEASE	JULY 11, 2012	TL
B	1. CHANGED J1 FROM RIGHT ANGLE TO VERTICLE MOUNT. (QSS-050-01-F-D-A) 2. CHANGED ALL LEDS TO 0402 EXCEPT LEDS 1-5. 3. CHANGE R5 VALUE TO 61.9K OHMS. 4. ADDED 3.3V TO J1-58,60, 62,64. 5. ADDED RESET TO J1-66. 6. DELETED LED6 AND R513. 7. DELETED R245. 8. POPULATED R426, VALUE = 0402-47 OHMS. 9. CONNECTED R426 TO U4-39. 10. ADDED R513 (0402-10K) TO 3.3V AND MCU-19. 11. CONNECTED U8-32 TO MCU-19. 12. ADD CR2 BETWEEN C7 AND C8. 13. ADDED THUMBNUT PADS FOR J1.	AUGUST 20, 2012	TL
C	1. DELETED AND SHORTED ACROSS R149 TO R152, 2. DELETED NAND1, R127, R131, R145, R146, R423, R424, R425. 3. RENAMED LED7-LED15 TO LED6-LED14. 4. RENAMED AND6 TO AND2. 5. RENAMED AND7 TO AND3. 6. RENAMED EEPROM1 TO EP1. 7. CHANGED EP1 TO 24LC512. 8. RENAMED EEPROM2 TO EP2. 9. CHANGED EP2 TO 24LC512. 10. CHANGE U7-26 TO 3.3V PULLUP. 11. MOVE C200, C207, C214 AND C221 TO OUTPUT SIDE OF AIN1 AND AIN2. 12. CHANGED EPROM1/2 TO 512K. 13. ADD AND GATE(AND4) TO SYSTEM RESET. 14. NETS = PB-RESET AND USB-RESET. 15. ADDED RESET NET TO U8-28. 16. ADDED TESTPOINT TO MUX4/5/6 A/B CONTROL PINS. 17. ADDED TESTPOINTS TO PWM OUTPUTS.DELETE S6, R501 AND NET TO MCU-15. 18. ADDED TESTPOINTS TO PWM I2S OUTS MCLK, SCLKO, LRCLKO, SDOUT. 19. ADDED 10K PULLDOWN (R278) TO MUX2-IN1/2. 20. ADDED ZERO OHM RESISTOR MUX3-6. 21. ADDED DNP PULLDOWN RESISTOR TO MUX4/5/6 INA/B CONTROL. 22. ADDED VALID LED AND DRIVER. 23. ADDED I2C ADDRESSES.	DECEMBER 11, 2012	TL
D	1. DELETED 1.8V LED, R10, FB10, FB12. 2. CONVERTED PSIA 2 PIN HEADER TO 3 PIN I2S BYPASS HEADERS. 3. CONNECTED I2S-3262 TO PIN 1 OF BYPASS HEADERS. 4. GROUNDED U3-27. 5. CHANGED OPTO-IN PART TO PLR135/T10. 6. CHANGED R133/R134 TO 0402/2.00K OHMS. 7. REPLACED Q3 WITH NPN TRANSISTOR AND REMAPPED LED DRIVER. 8. ON PCB: RECONNECTED ISOLATED 3.3V POWER PLANE ON LAYER 3.	MAY 29, 2013	TL
E	1. CHANGED SW1/SW2/SW3 TO PCA9515BDGKR	JANUARY 16, 2015	JA
F	1. FIXED ANALOG INPUT NOISE ISSUE. 2. RENUMBERED NUMEROUS REFERENCE DESIGNATORS. 3. ADDED I2S AND I2C HEADERS AND TESTPOINTS. 4. CHANGED I2C MUX CIRCUITRY. 5. MOVED I2C HEADER TO USB VOLTAGE DOMAIN. 6. ADDED SELF BOOTING CAPABILITY. 7. REROUTED MOST OF PCB TO ALLOW FOR NEW CIRCUITS. 8. CHANGED CLOCKING SCHEME. 9. UPDATED POWERPAD FOOTPRINTS. 10. FIXED I2S SWITCH ISSUES. 11. PP-CMB OPERATING VOLTAGE RANGE IS NOW 4.5V TO 26VDC. 12. REDESIGNED POWER SUPPLY CIRCUITS.	FEBRUARY 3, 2015	JA
G	1. ADDED LVC1G125 ON SYSTEM RESET. 2. CHANGE R43 TO 33 OHMS AND MOVE TO SYSTEM RESET.	JULY 20, 2015	JA

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