Xilinx FPGA Evaluation Board

AmP8XEB1

Features

- 2 x AmP8D6QF65 platform 5x5 mm^2 package on board
- Demonstrates the "Performance Optimized" SKU belonging to Xilinx's Zynq Ultrascale MPSOC (ZU+)
- WebAmP R.D - Provides ready to use reference files with optimum flexibility.
- WebAmP Tool Downloads Configuration File
  - .HEX file (Intel HEX) to program on board Flash

Description

The AmP8XEB1 is a ready-to-use Evaluation board which covers SKUs belonging to Xilinx Zynq UltraScale+. Test data for each SKU is available on the AnDAPT website (test_data.pdf). This Evaluation board incorporates two PMIC's. Each PMIC incorporates a single or two phase DrMOS controller (up to 70 A), multiple buck converters (10 A/6 A), high current LDOs (up to 2 A) or load switches (LDSW), 4 general purpose LDOs (200 mA) and power management features including fault protection and sequencing.

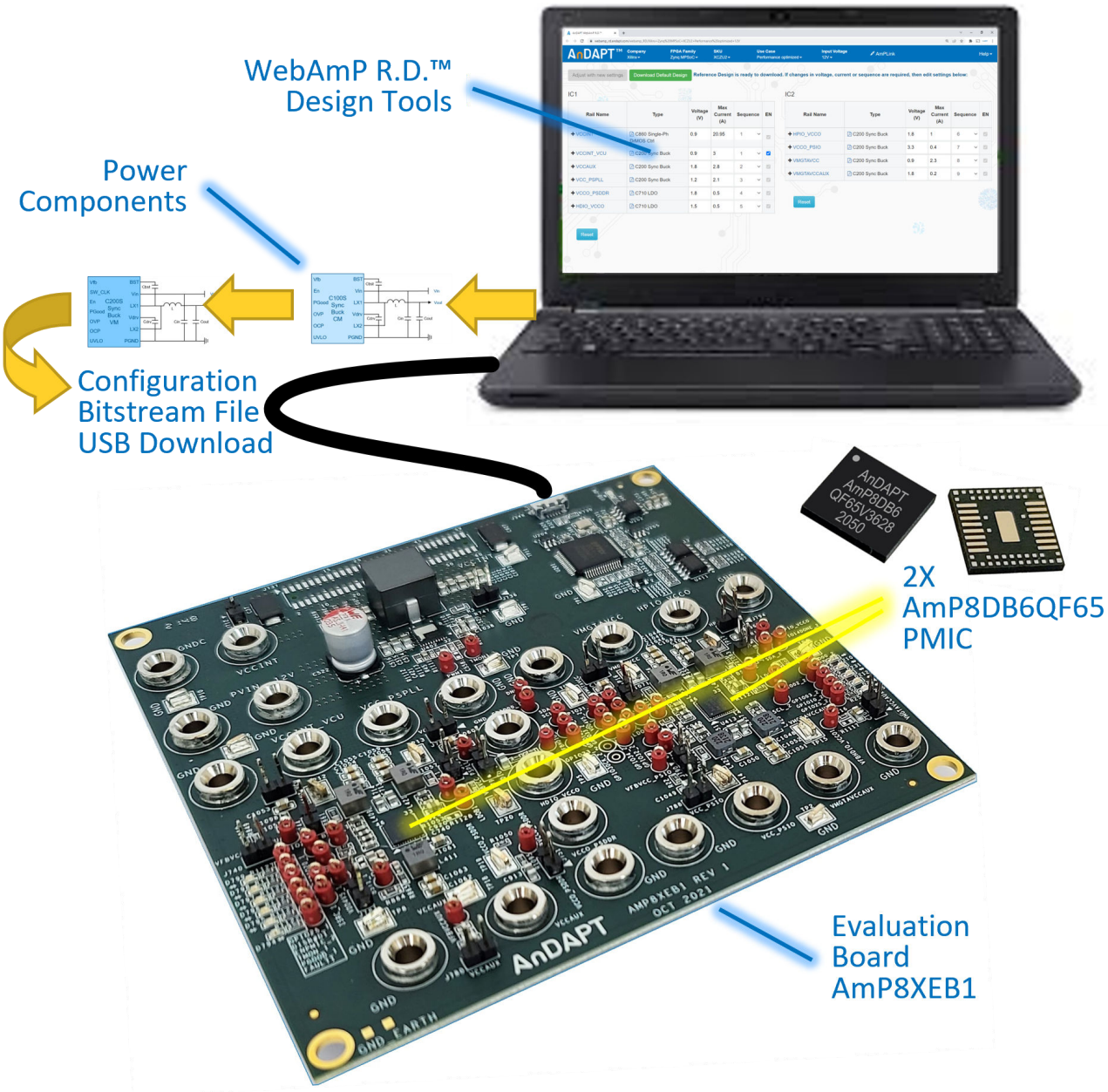


Figure 1. AmP8XEB1 Evaluation Board

Quick Start Example

The AmP8XEB1 board is pre-programmed with the *"Performance Optimized"* power tree mapping.

Connect a 12V bench supply to PVIN_+12V. Once powered up, the board automatically configures the outputs as noted by Table 1. The micro USB should be left unconnected.

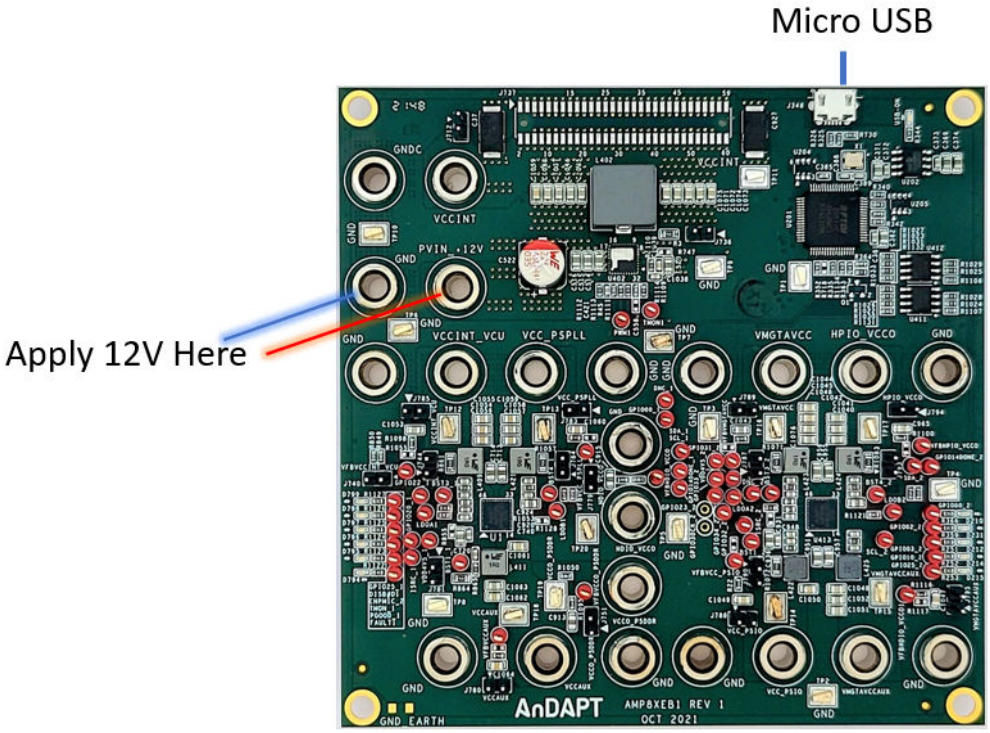


Figure 2. Setting up the AmP8XEB1 Evaluation Board

Output	***Output Supply (Volts)***	***Max current***	***Power Component***
VCCINT	0.9	20.95	C860
VCCINT_VCU	0.9	3	C200
VCC_PSPLL	1.2	2.1	C200
VCCAUX	1.8	1.34	C200
VCC_PSIO	3.3	0.4	C200
VMGTAVCCAUX	1.8	0.2	C200
VMGTAVCC	0.9	2.3	C200
VCCO_PSDDR	1.5	0.5	C710
HDIO_VCCO	1.5	0.5	C710
HPIO_VCCO	1.8	1	C200

Table 1. Default Outputs (Performance Optimized Mapping)

Examining and Modifying the Design

STEP 1: The design can be modified by visiting WebAmP R.D via the AnDAPT website. WebAmP R.D. allows users to select from an array of reference designs. The user can modify the output voltage, max output current and the rail power up sequence.

If any changes have been made to the settings, click the “Adjust with new settings” button. The current design may be downloaded by clicking the “Download Default Design” button. This includes “.hex” files which will be used to modify the output supplies of the Evaluation board.

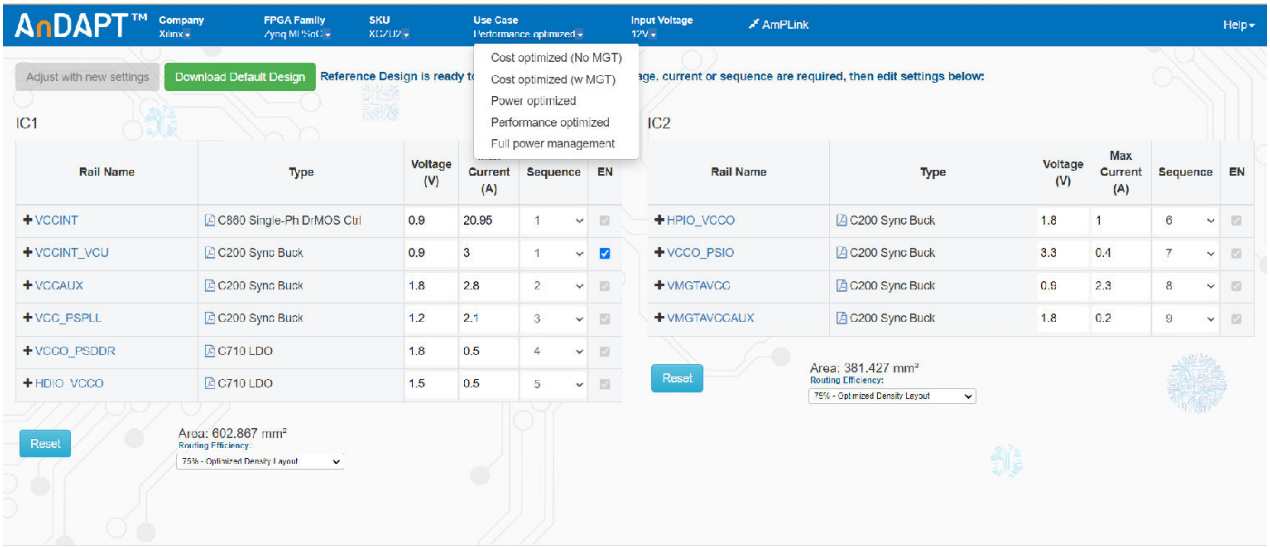


Figure 3. WebAmP R.D web page

STEP 2: Select the “AmPLink” button. This opens the AmPLink Programming controls page and allows the user to upload the hex files to the Evaluation board’s onboard flash (Adesto AT25DF512C).
Connect the board to the PC via USB and power-up the board with the +12V supply. Select the “Program & Verify Button”. If the buttons turn green, programming is successful. Otherwise, refresh the page, power cycle the board and ensure that the correct “.hex” file and flash are selected and retry.

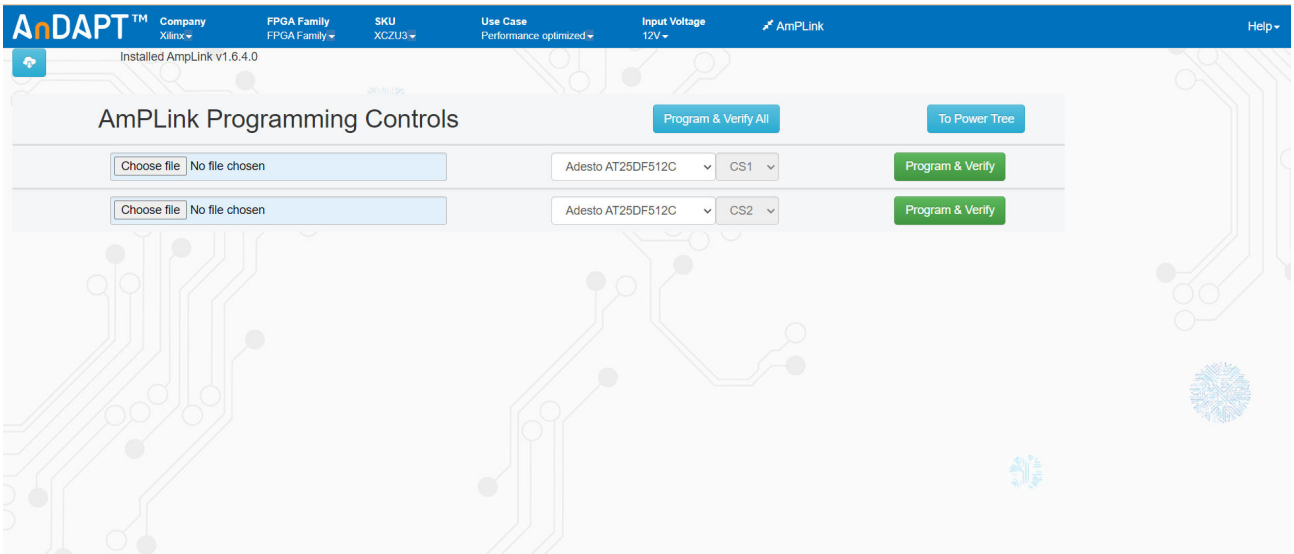


Figure 4. AmPLink Programming Controls

STEP 3: Once programming is successful, disconnect the USB from the board and power cycle the board (please wait at least 5 seconds before powering on). The board will enable the outputs with the new desired settings.

Connection Points

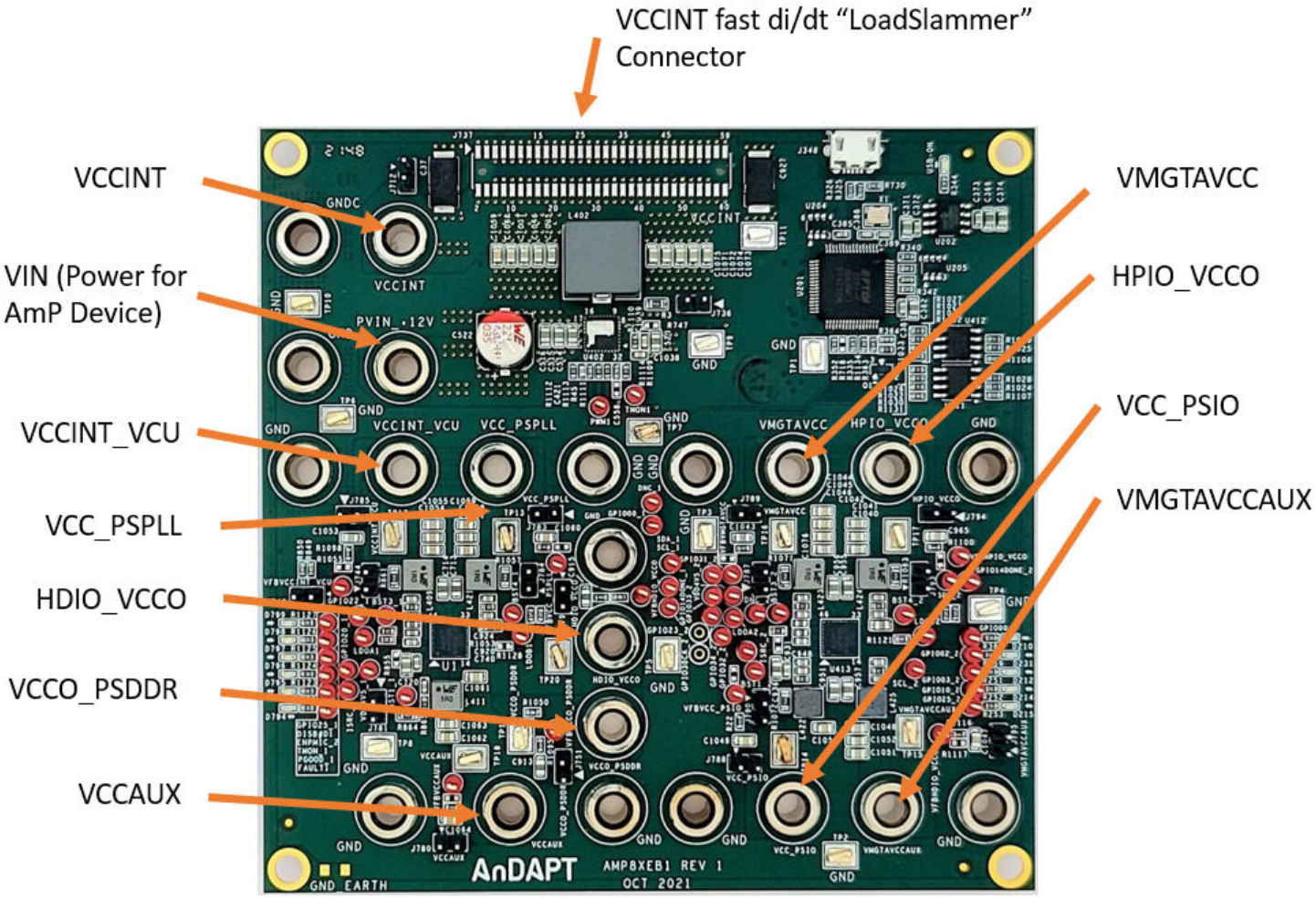


Figure 5. AmP8XEB1 board showing power input, output banana jacks and fast di/dt connector

Power inputs and outputs

Output	*IC*	*Converter topology*	*Output Supply (Volts)*	*Max current*	*Power Component*
VCCINT	IC1	1-phase DrMOS	0.9	20.95	C860
VCCINT_VCU	IC1	Synchronous buck	0.9	3	C200
VCC_PSPLL	IC1	Synchronous buck	1.2	2.1	C200
VCCAUX	IC1	Synchronous buck	1.8	1.34	C200
VCC_PSIO	IC2	Synchronous buck	3.3	0.4	C200
VMGTAVCCAUX	IC2	Synchronous buck	1.8	0.2	C200
VMGTAVCC	IC2	Synchronous buck	0.9	2.3	C200
VCCO_PSDDR	IC1	LDO	1.5	0.5	C710
HDIO_VCCO	IC1	LDO	1.5	0.5	C710
HPIO_VCCO	IC2	Synchronous buck	1.8	1	C200

Table 2. List of available converters on the AmP8XEB1 board

Major Components

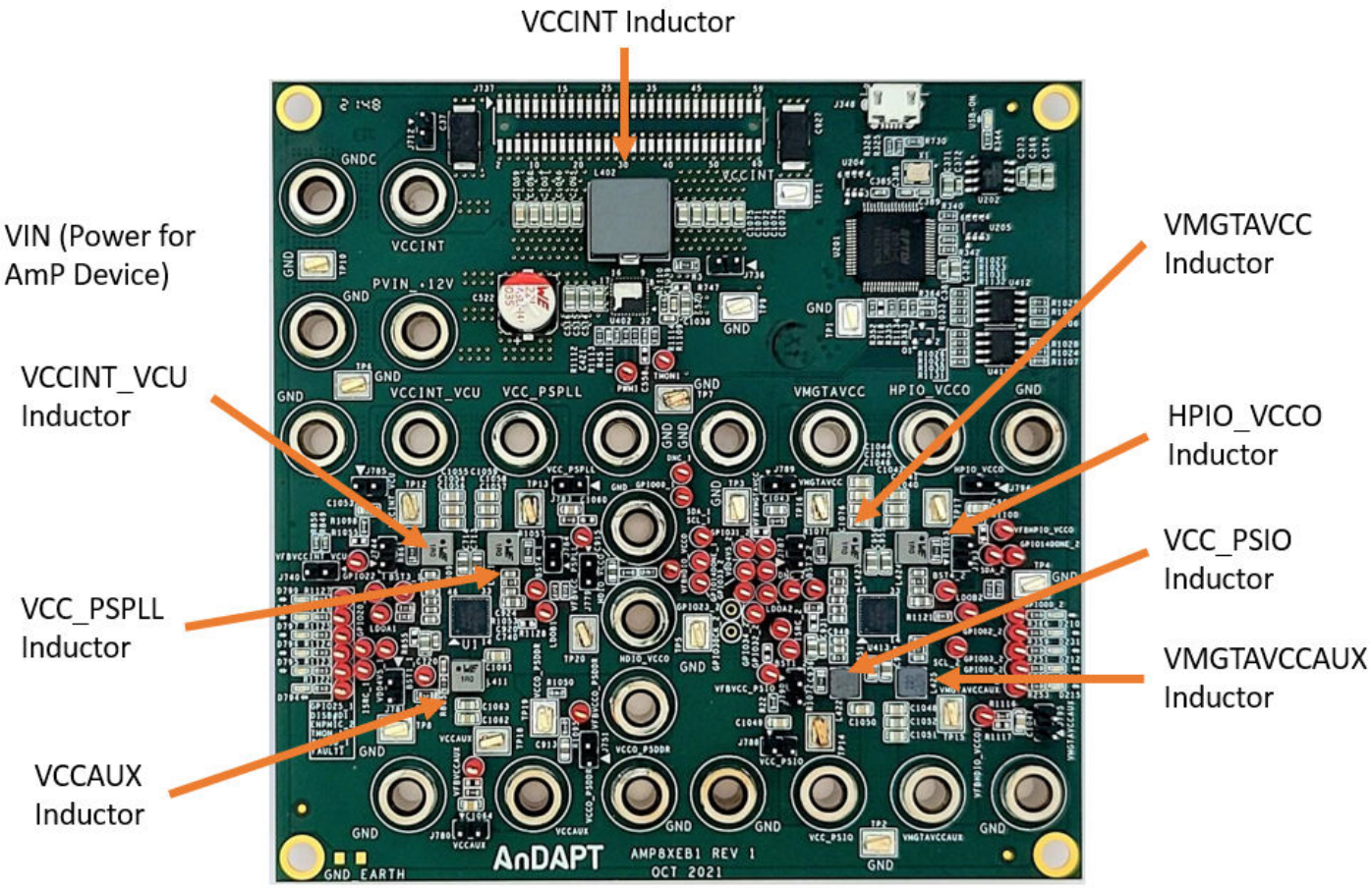


Figure 6. AmP8XEB1 board major components

Grab Points for Oscilloscope Probe Ground Clips

Several grab points are provided for oscilloscope ground clips. Take care to clip firmly because a ground clip coming loose and touching a part of the circuit can damage the AmP device.

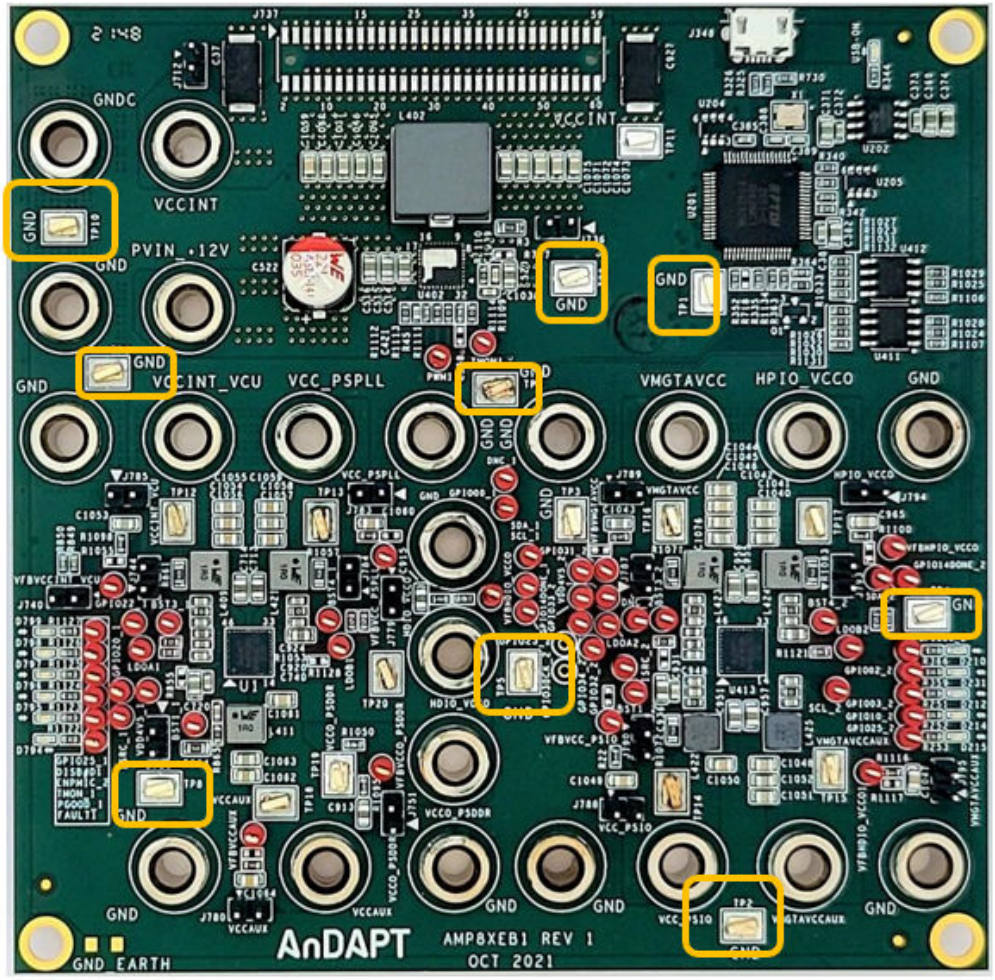


Figure 7. Scope ground clip grab points

Proper Test Points for Measuring Board Performance

There are various performance measurements that are made on an evaluation board. Many of these measurements require careful connection to the proper points that are often different for various measurements. For example, the best place to sense Vout for ripple or transient testing is different from the point used to measure efficiency. The next few sections will go over the proper test points.

Voltage Measurement Points

To measure efficiency or regulation on the AmP8XEB1 Demo Board accurately, care must be taken to sense the voltages appropriately. The Evaluation Board has included test points to measure efficiency for each of the switching regulators (Figure 5). Sense points are available for multiple PVIN inputs and outputs.

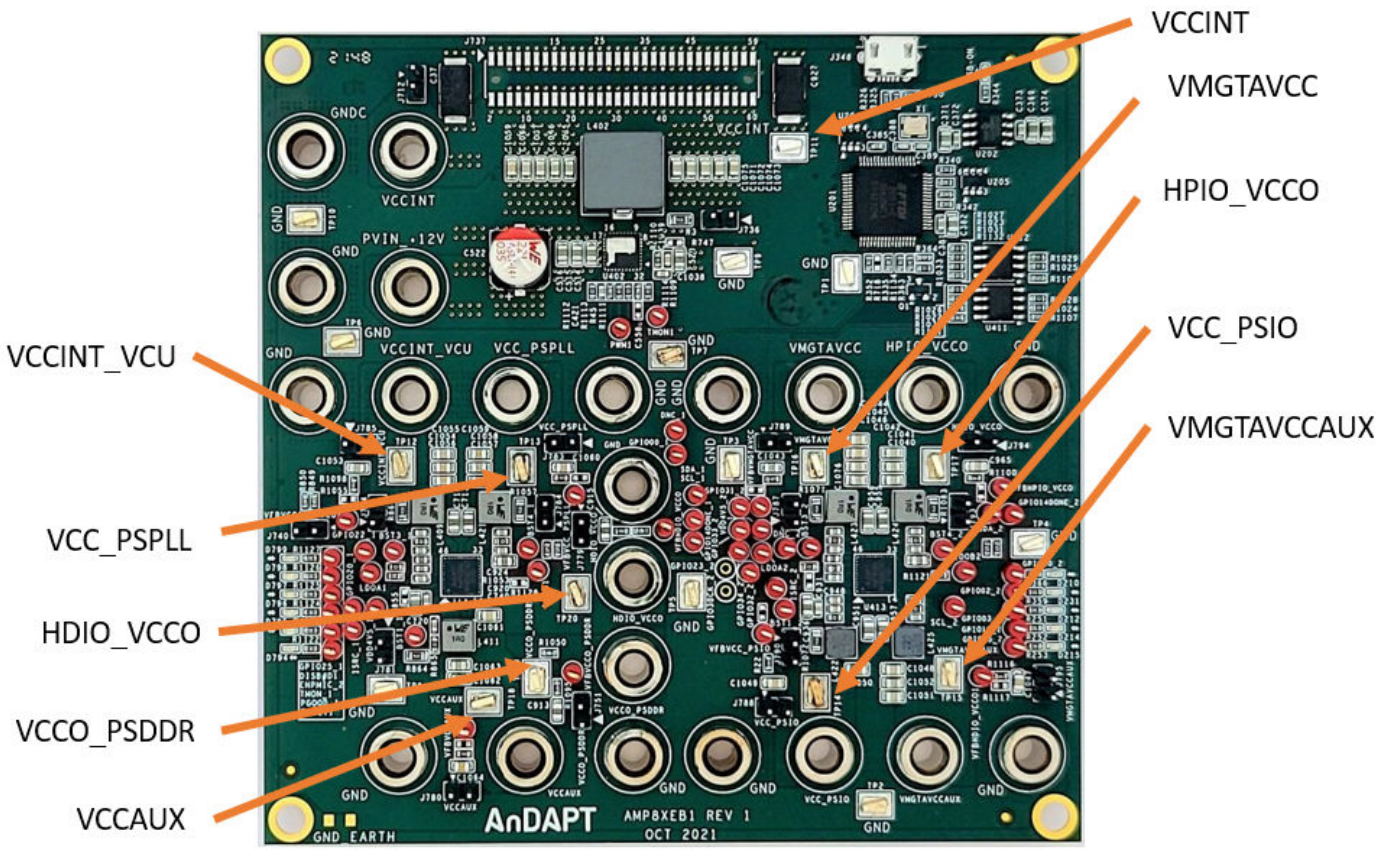


Figure 8. Eyelet clip sense points for Kelvin connections to measure voltages accurately for calculating regulation and efficiency

Ripple and Transient Response Measurement Points

To measure the output ripple and load transient response voltages, several 2-pin 100-mil header placeholders are provided on the board to enable high frequency measurements with low noise. After soldering in a standard 2-pin header, these can be used to connect directly to an oscilloscope using a standard BNC to female header pin cable. Alternatively, a 2-prong header can be plugged into the cable and inserted into the holes without soldering. The headers for each of the switching regulators are shown below. The negative side is marked with "◂". Use care to insert them with the correct polarity otherwise an output can be short circuited through the oscilloscope ground.

Please note that for load transient tests on the VCCINT rail, load should be applied to the loadslammer adapter (J737).

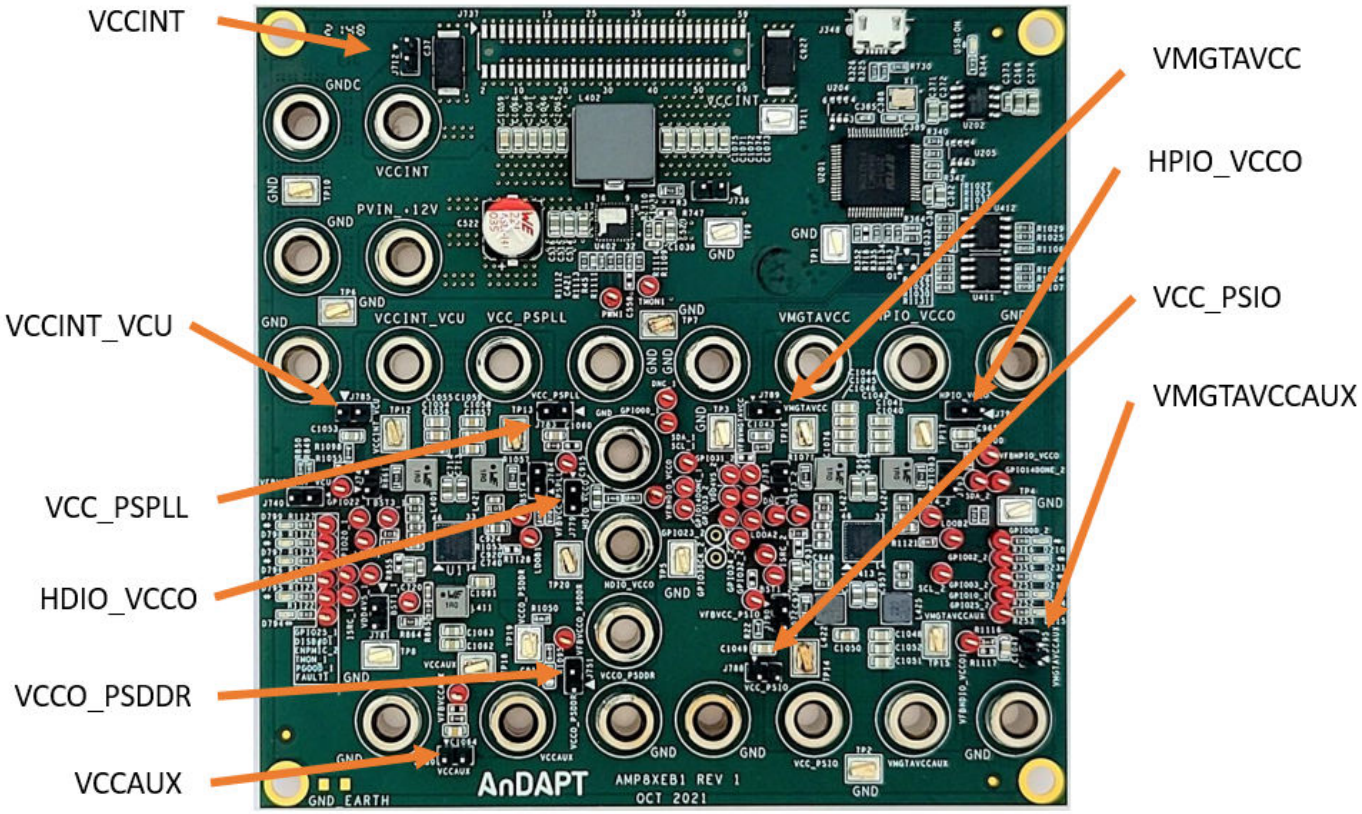


Figure 9. 2-pin headers for measuring output ripple or transient response

Getting Started with WebAmP: Install AmPLink

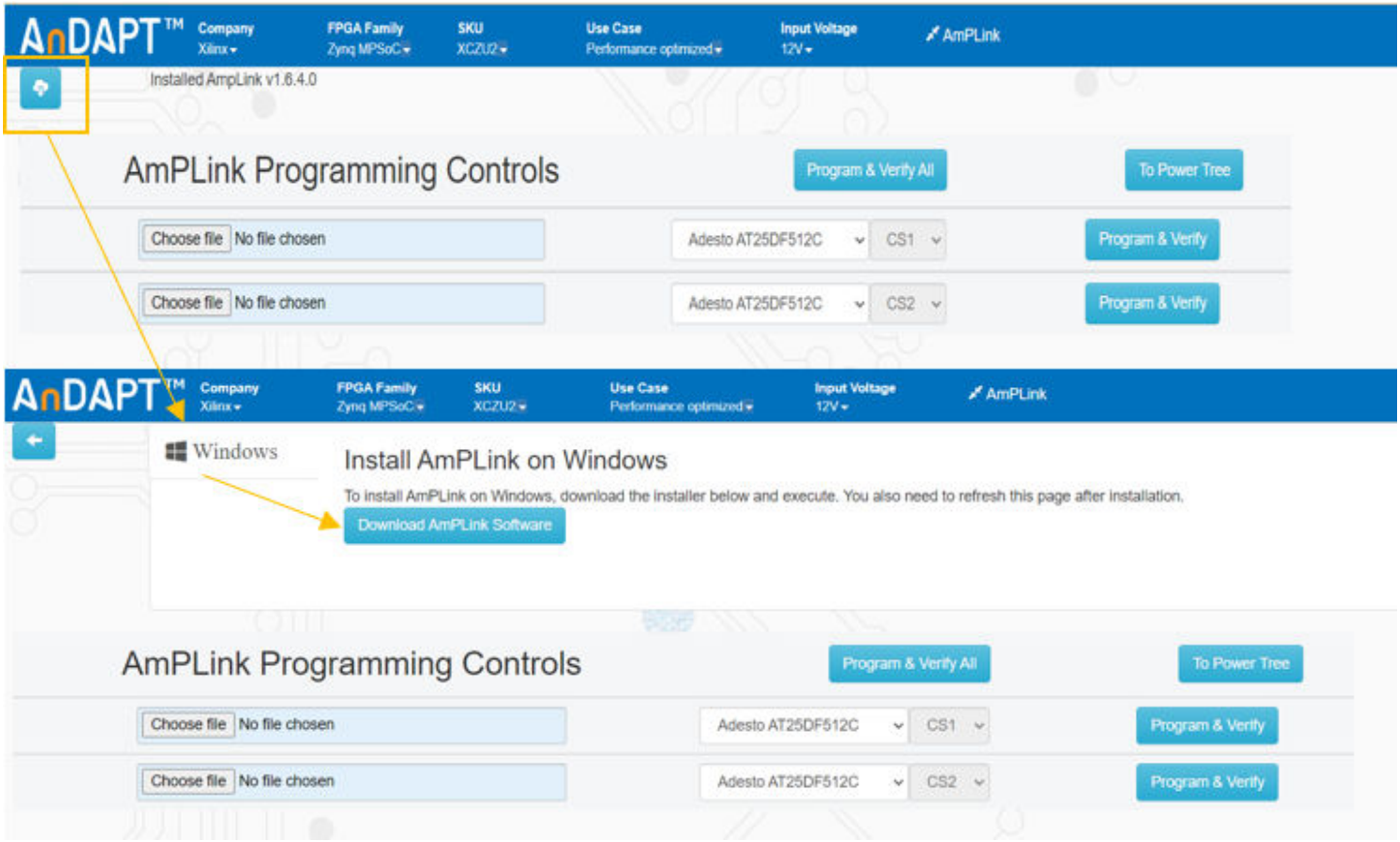


Figure 10.

Bill of Materials

Item No.	*QTY*	*PART NUMBER*	*PART #*	*MFG*	*DESCRIPTION*
1	51	VFBHDIO_VCCO1,TMON_1, TMON1, SDA_1, SCL_1, PWM1, PGOOD_1, LDOB1, LDOA1, ISRC_1, GPIO00_1, FAULT1, DNC_1, DISB#D1, SDA_2, SCL_2, LDOB2, LDOA2, ISRC_2, GPIO00_2, ENPMIC_2, DNC_2, BST1_1, BST1_2, GPIO02_2, BST3_1, GPIO03_2, BST3_2, BST4_1, BST4_2, GPIO10_2, GPIO14DONE_1, GPIO14DONE_2, GPIO20_1, GPIO22_1, GPIO25_1, GPIO25_2, GPIO31_2, GPIO32_2, GPIO33_2, GPIO34_2, VDD4V5_1, VDD4V5_2, VFBVMGTAVCC, VFBVCC_PSPLL, VFBVCC_PSIO, VFBVCCO_PSDDR, VFBVCCINT_VCU, VFBVCCAUX, VFBHPIO_VCCO, VFBHDIO_VCCO	5000	KEYSTONE	TEST POINT PC MINI .040"D RED
2	2	C37,C927	EEF-LS0D221R	PANASONIC	CAP ALUM POLY 220UF 20% 2V SMD
3	16	C369,C371,C374,C382,C685, C686,C733,C734,C740,C913, C915,C932,C933,C967,C968, C969	885012107014	WURTH	CAP CER 10UF 16V X5R 0805
4	37	C370,C372,C373,C375,C376, C377,C378,C379,C380,C381, C383,C384,C385,C386,C387, C390,C421,C692,C695,C696, C711,C720,C721,C863,C865, C920,C924,C930,C931,C939, C948,C953,C960,C961,C966, C972,C973	885012206095	WURTH	CAP CER 0.1UF 50V X7R 0603
5	3	C388,C389,C928	CC0603GRNPO9BN270	YAGEO	CAP CER 27PF 50V C0G/NP0 0603
6	18	C513,C514,C515,C516,C520, C713,C714,C716,C875,C914, C925,C926,C936,C951,C955, C956,C957,C958	C2012X5R1V226M125AC	TDK	CAP CER 22UF 35V X5R 0805
7	1	C522	865080553014	WURTH	CAP ALUM 220UF 20% 35V SMD
8	19	R338,R339,C558,R718,R747, R855,R895,R899,R1054, R1055,R1061,R1066,R1069, R1070,R1091,R1117,R1119, R1128,R1129	DNI		
8.1	1	R1070	CRCW06032K70FKEAHP	VISHAY	0603 SMD RES ±1% 0.25W

Item No.	QTY	PART NUMBER	PART #	MFG	DESCRIPTION
9	1	C668	885012206053	WURTH	CAP CER 100PF 25V X7R 0603
10	8	C690,C691,C697,C698,C934,C935, C937,C938	885012106006	WURTH	MLCC - SMD/SMT 0603 10UF 6.3VOLTS X5R 20%
11	6	C712,C718,C952,C954,C1038,C1039	885012106022	WURTH	CAP CER 1UF 25V X5R 0603
12	47	C965,C1040,C1041,C1042,C1043, C1044,C1045,C1046,C1047,C1048, C1049,C1050,C1051,C1052,C1053, C1054,C1055,C1056,C1057,C1058, C1059,C1060,C1061,C1062,C1063, C1064,C1065,C1066,C1067,C1068, C1069,C1071,C1072,C1073,C1074, C1075,C1076,C1077,C1078,C1079, C1080,C1081,C1082,C1083,C1084, C1085,C1086	885012107006	WURTH	CAP CER 47UF 6.3V X5R 0805
13	2	D210,D794	150060RS75000	WURTH	LED RED CLEAR 0603 SMD
14	9	D212,D214,D215,D231,D795,D796,D7 97,D798,D799	150060GS75000	WURTH	LED GREEN CLEAR 0603 SMD
15	7	D725,D783,D784,D786,D788,D791, D792	DB2W40300L	PANASONIC	DIODE SCHOTTKY 40V 3A MINI2
16	7	D726,D727,D785,D787,D789,D790, D793	RB521S30T5G	ON SEMICONDUCTOR	DIODE SCHOTTKY 30V 200MA SOD523
17	2	D760,D777	BAS116GWX	NEXPERIA	DIODE GEN PURP 75V 215MA SOD123
18	22	GND5,GND6,PVIN_+12V,GND15, GND16,GND17,GND18,GND19, GND20,GND21,GND22, VMGTAVCCAUX,VMGTAVCC, VCC_PSPLL,VCC_PSIO, VCCO_PSDDR,VCCINT_VCU, VCCINT,VCCAUX,HPIO_VCCO, HDIO_VCCO,GNDC	CT2224	CAL TEST	CONN BANANA JACK THRD
19	1	J348	10118194-0001LF	AMPHENOL	CONN USB MICRO B RECPT SMT R/A
20	18	J712,J736,J740,J744,J751,J779,J780,J 781,J783,J784,J785,J787,J788,J789,J7 90,J793,J794,J795	PZC02SAAN	SULLINS	CONN HEADER VERT 2POS 2.54MM
21	1	J737	RSM-130-02-S-D	SAMTEC	CONN RCPT 60POS 0.05 GOLD SMD
22	1	L402	744301025	WURTH	FIXED IND 250NH 38A 0.32 MOHM

Item No.	QTY	PART NUMBER	PART #	MFG	DESCRIPTION
23	5	L409,L411,L421,L423	74438357010	WURTH	FIXED IND 1UH 7.4A 13.5 MOHM SMD
		L422	74437324220	WURTH	POWER INDUCTORS - SMD WE-LHMI 22UH 1A
23.1	2	L424, L425	74438357100	WURTH	SMD WE-MAPI 10UH 2.7A
24	1	Q1	FDN327N	ON SEMICONDUCTOR	MOSFET N-CH 20V 2A SUPERSOT3
25	1	R3	ERJ-6ENF9530V	PANASONIC	RES SMD 953 OHM 1% 1/8W 0805
26	10	R1094,R1095,R1096,R1097,R1098,R1099,R1100,R1116,R1118	CRCW060349R9FKEAC	VISHAY	RES SMD 49.9 OHM 1% 1/16W 0603
26.1	1	R22	CRCW06037K32FKEAC	VISHAY	RES SMD 1/10W 7.32Kohms 1%
27	8	R30,R1101,R1102,R1103,R1104,R1105,R1106,R1107	RC0603FR-0734RL	YAGEO	RES SMD 34 OHM 1% 1/10W 0603
28	6	R45,R1109,R1110,R1111,R1112,R1115	RC0603FR-070RL	YAGEO	RES SMD 0 OHM JUMPER 1/10W 0603
29	11	R251,R252,R253,R359,R366,R1122,R1123,R1124,R1125,R1126,R1127	10K	VISHAY	RES 1/10W 7.32KOHMS 1%
30	3	R325,R326,R730	RC0603FR-0710RL	YAGEO	RES SMD 10 OHM 1% 1/10W 0603
31	7	R329,R330,R331,R343,R367,R1113,R1114	RC0603FR-071KL	YAGEO	RES SMD 1K OHM 1% 1/10W 0603
32	1	R332	RC0603FR-07220RL	YAGEO	RES SMD 220 OHM 1% 1/10W 0603
33	18	R333,R335,R340,R341,R342,R344,R352,R363,R368,R859,R1035,R1036,R1037,R1120,R1121,R1131,R1132,R1134	RC0603FR-0710KL	YAGEO	RES SMD 10K OHM 1% 1/10W 0603
34	3	R336,R337,R364	RC0603FR-0768RL	YAGEO	RES SMD 68 OHM 1% 1/10W 0603
35	2	R849,R850	RC0603FR-07100RL	YAGEO	RES SMD 100 OHM 1% 1/10W 0603
36	32	R860,R863,R865,R866,R1022,R1023,R1024,R1025,R1026,R1027,R1028,R1029,R1030,R1031,R1032,R1033,R1046,R1047,R1049,R1052,R1053,R1056,R1064,R1073,R1074,R1077,	RC0603FR-070RL	YAGEO	RES SMD 0 OHM JUMPER 1/10W 0603

Item No.	QTY	PART NUMBER	PART #	MFG	DESCRIPTION
		R1078,R1079,R1080,R1092,R1093, R1130			
37	6	R861,R864,R1057,R1071,R1072,R1083	ERJ-6ENF9530V	PANASONIC	RES SMD 953 OHM 1% 1/8W 0805
38	6	R875,R879,R885,R1050,R1086,R1088	RC0603FR-076K8L	YAGEO	RES SMD 6.8K OHM 1% 1/10W 0603
39	2	R877,R880	RC0603FR-0734RL	YAGEO	RES SMD 34 OHM 1% 1/10W 0603
40	2	R984,R992	RC0603FR-0747KL	YAGEO	RES SMD 47K OHM 1% 1/10W 0603
41	20	TP1,TP2,TP3,TP4,TP5,TP6,TP7,TP8, TP9,TP10,TP11,TP12,TP13,TP14, TP15,TP16,TP17,TP18,TP19,TP20	5016	KEYSTONE	PC TEST POINT COMPACT SMT
42	1	USB-ON	150060GS75000	WURTH	LED GREEN CLEAR 0603 SMD
43	2	U1,U413	AMP8DB6QF65-1	ANDAPT	ON DEMAND 6A PMIC 5X5 PLATFORM B
44	1	U201	FT4232HL-Reel	FTDI	IC USB HS QUAD UART/SYNC 64-LQFP
45	1	U202	MCP1725-3302E/SN	MICROCHIP	IC REG LINEAR 3.3V 500MA 8SOIC
46	1	U203	TS3USB30EDGSR	TI	USB SWITCH ICS HIGH-SPD USB 2.0 1:2 MUX/DEMUX SW
47	1	U204	SN74LVC2G07DBVR	TI	IC BUF NON-INVERT 5.5V SOT23-6
48	1	U205	93LC46BT-I/OT	MICROCHIP	IC EEPROM 1KBIT SPI 2MHZ SOT23-6
49	1	U402	SIC645ALR-T1-GE3	VISHAY	60A VRPOWERSMART POWER STAGE(SPS
50	2	U411,U412	AT25DF512C-SSHN-T	ADESTO	IC FLASH 512KBIT SPI 8SOIC
51	1	X1	830070868	WURTH	CRYSTAL 12.0000MHZ 18PF SMD

Table 3.

Additional Resources

- AmP Platform B Datasheet

Revision History

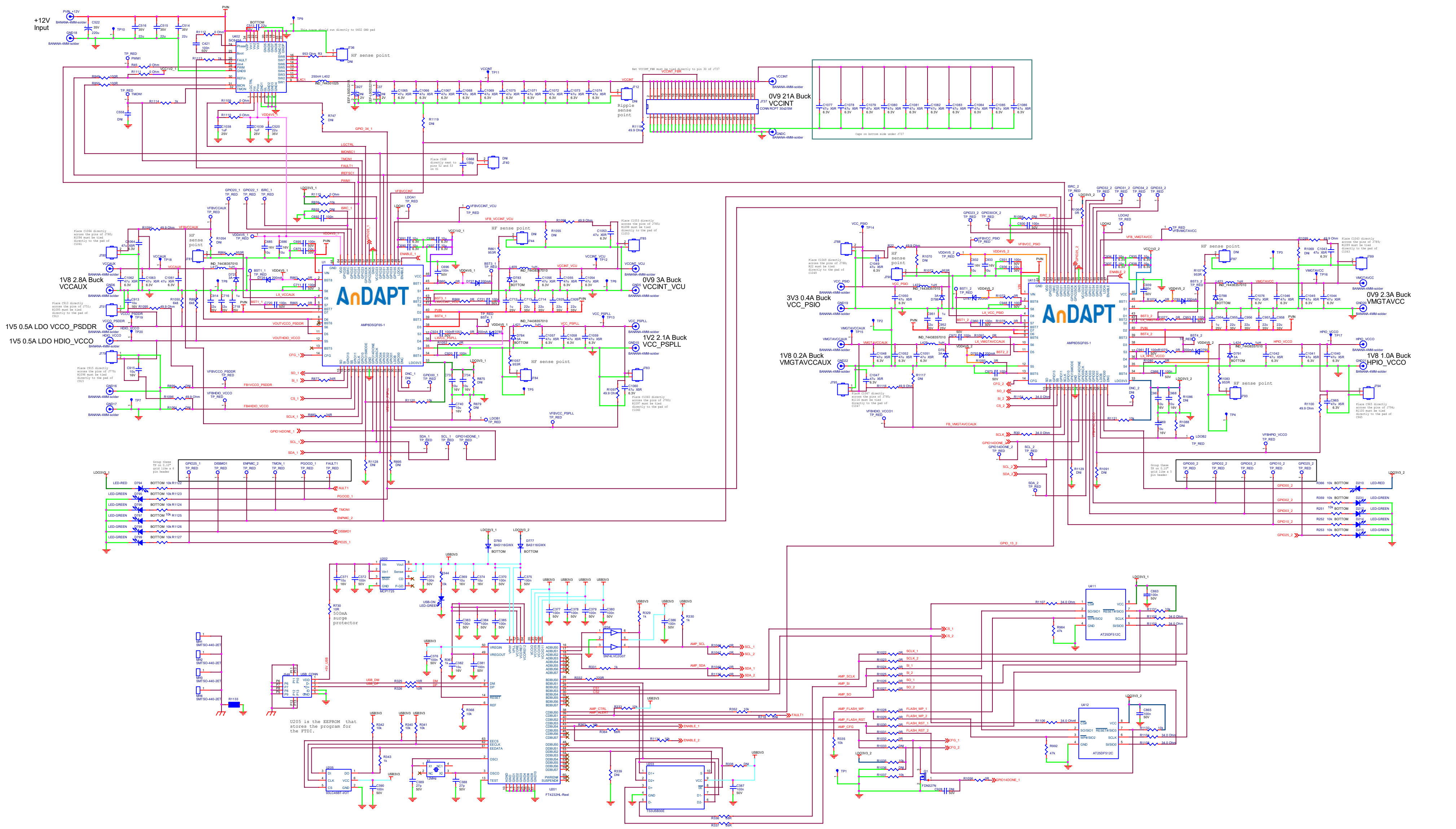
Date	Revision
10/13/2022	Initial Release

AnDAPT

On-Demand Power Management

https://www.andapt.com

Trademarks



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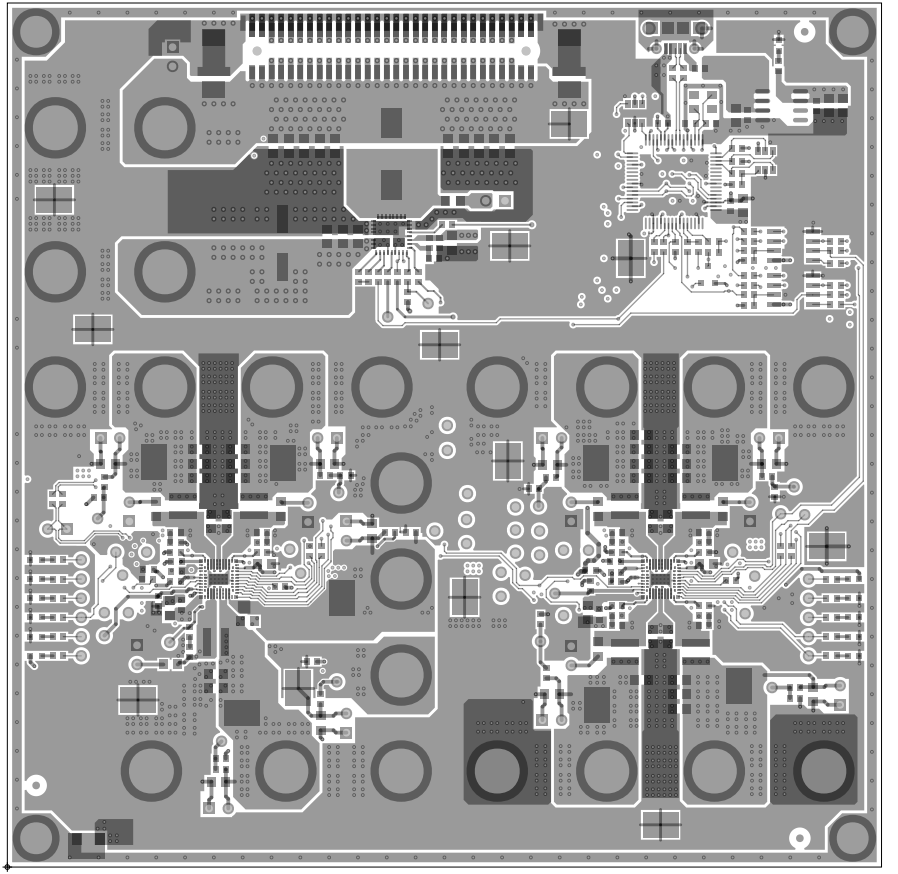
Size E	Document Number <Doc>		Rev 16
Date: Thursday, October 21, 2021	Sheet 1	of 2	



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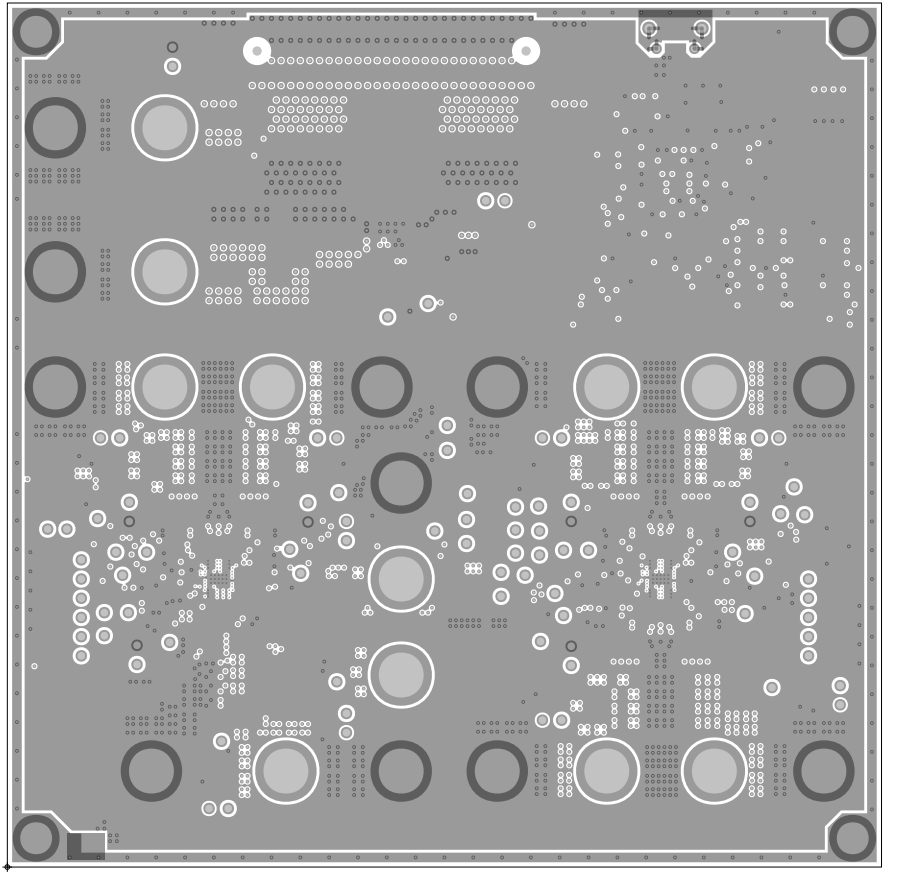
	CHECKER: INITIAL		
	DATE: 21OCT21	PROJECT NUMBER: LB10-001	REV. 01
	JOB#:		



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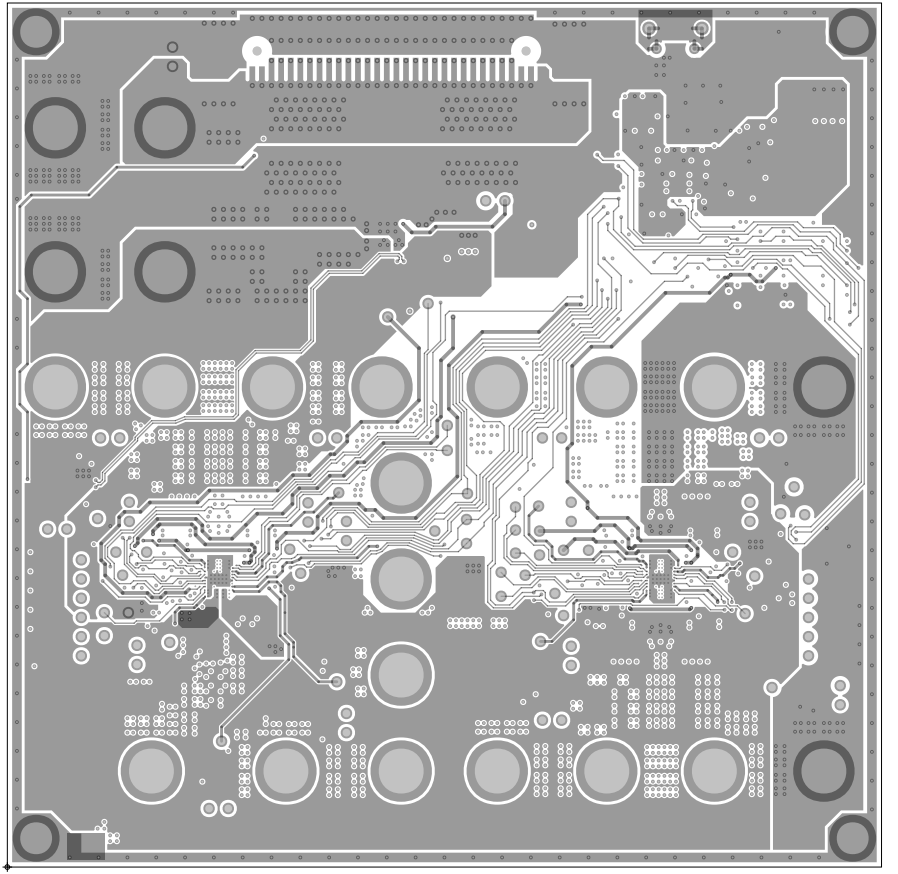
	CHECKER: INITIAL		
	DATE: 21OCT21	PROJECT NUMBER: LB10-001	REV. 01
	JOB#:		



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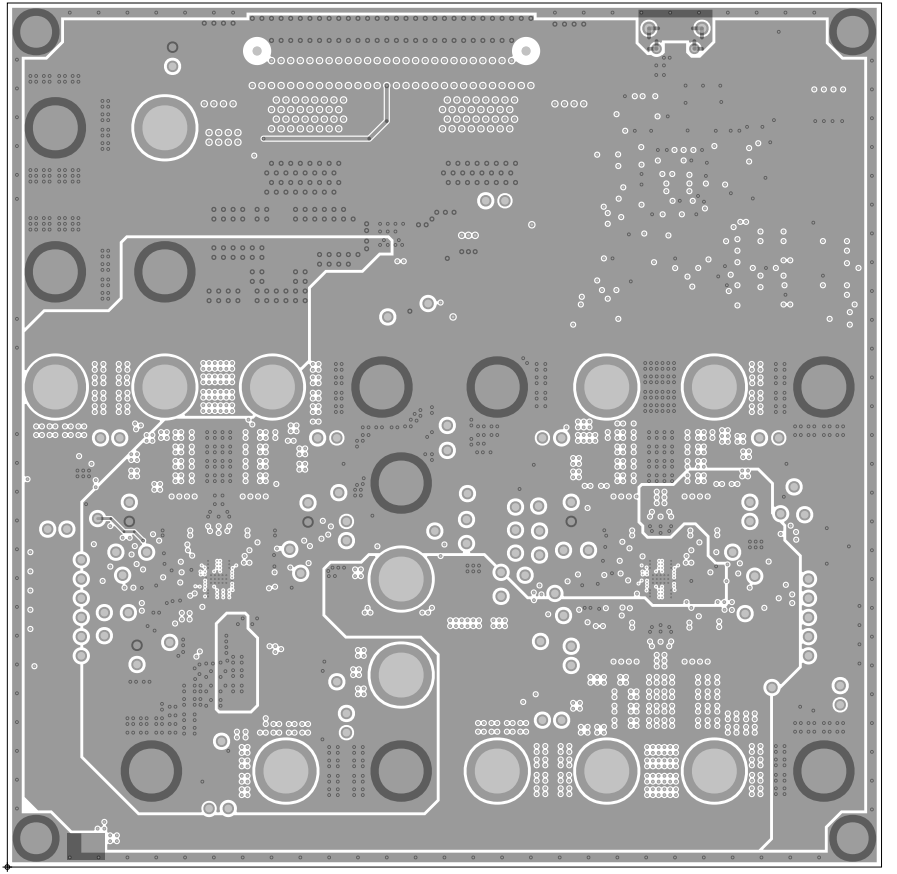
		PROJECT NUMBER: LB10-001	REV. 01



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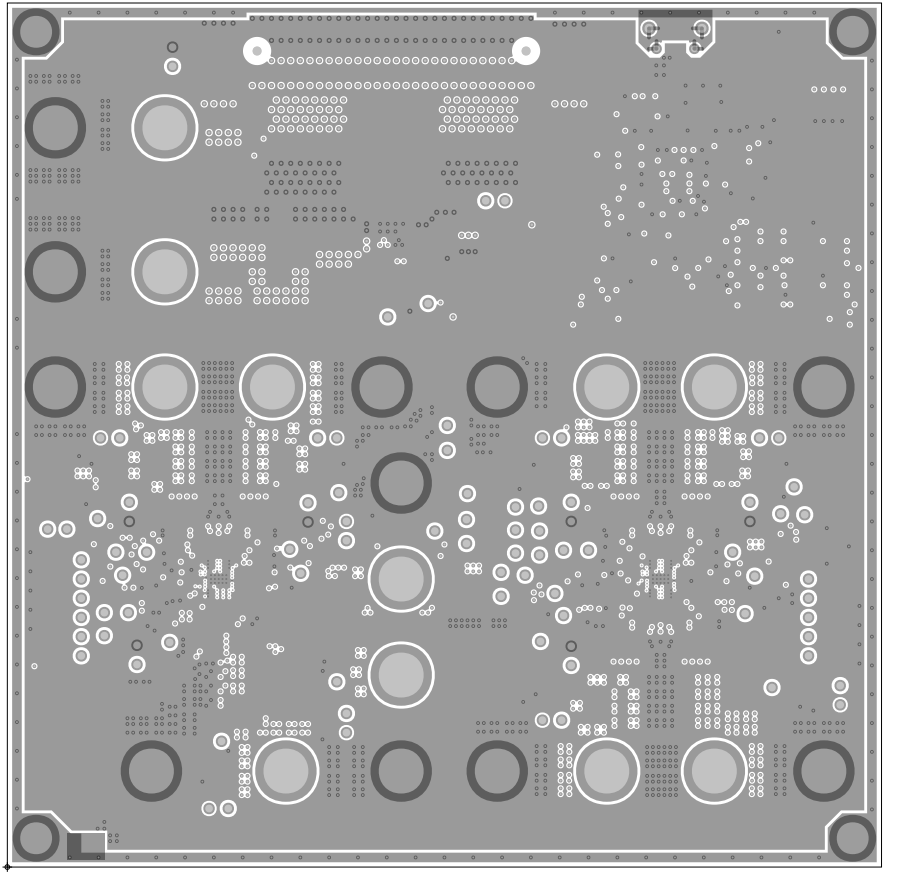
	CHECKER: INITIAL		
	DATE: 21OCT21	PROJECT NUMBER: LB10-001	REV. 01
	JOB#:		



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	DATE: 21OCT21	PROJECT NUMBER: LB10-001	REV. 01
	JOB#:		

ART FILM - BOTTOM

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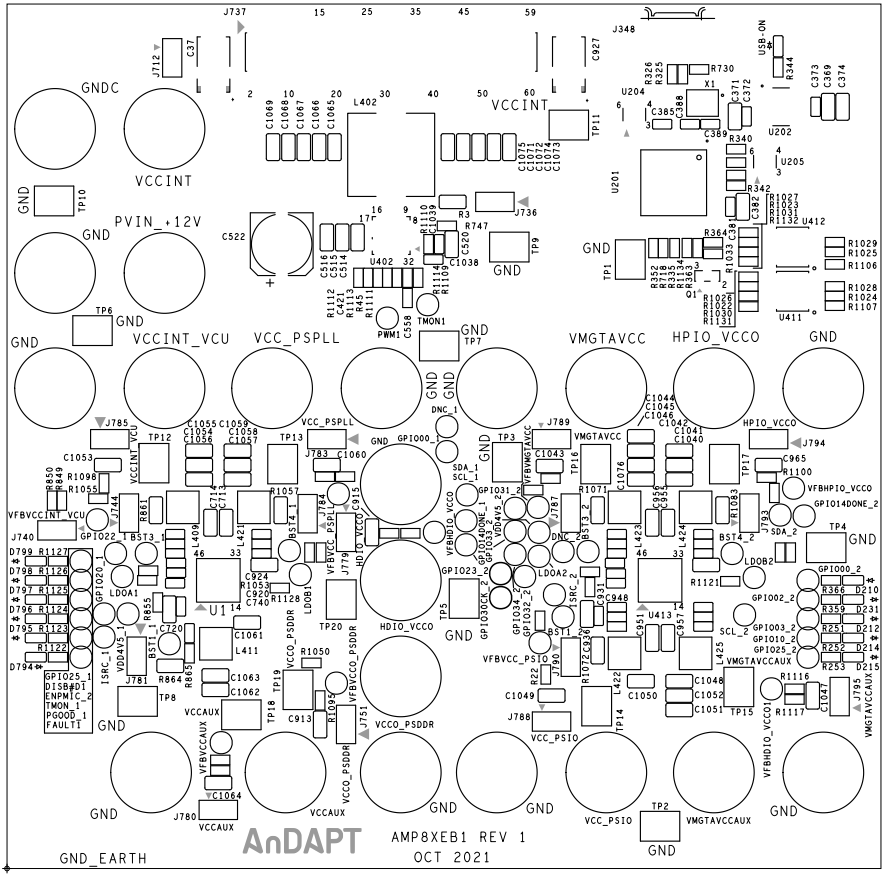
DATE: 210CT21			
CHECKER: INITIAL	PROJECT NAME: AMP8XEB1		
DESIGNER: TD			
SECONDARY-SIDE LAYER:06			

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

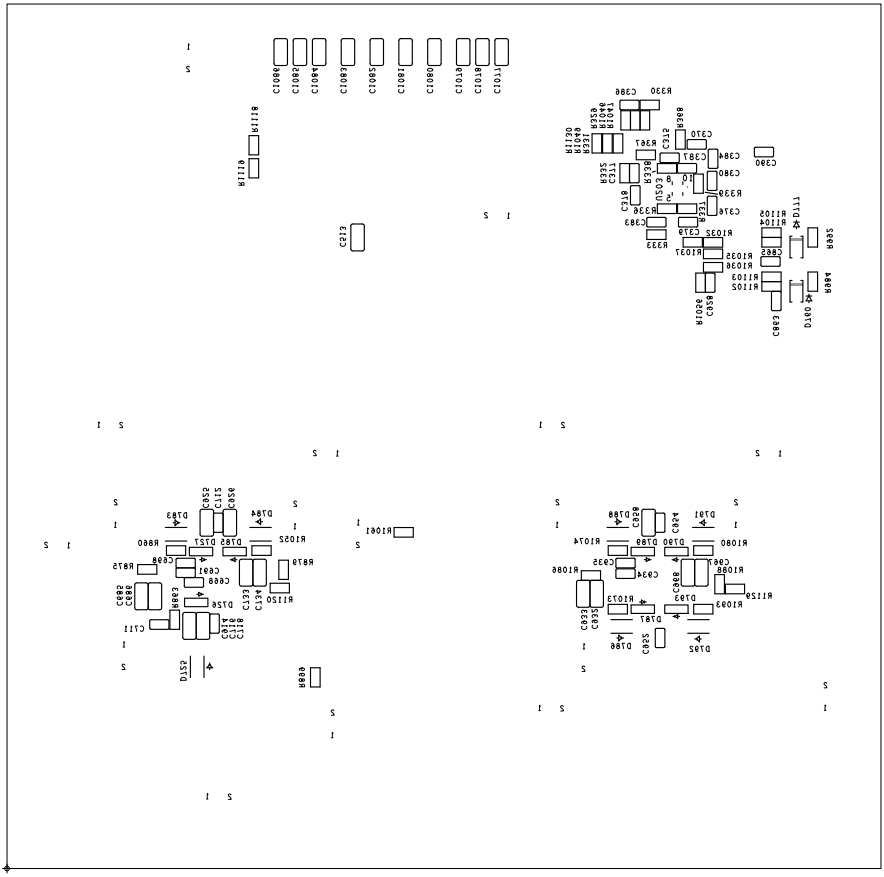
TOLERANCES

DECIMAL ANGLE
X ±.1 ± 5
XX ±.01 MACH FINISH
XXX ±.005 √

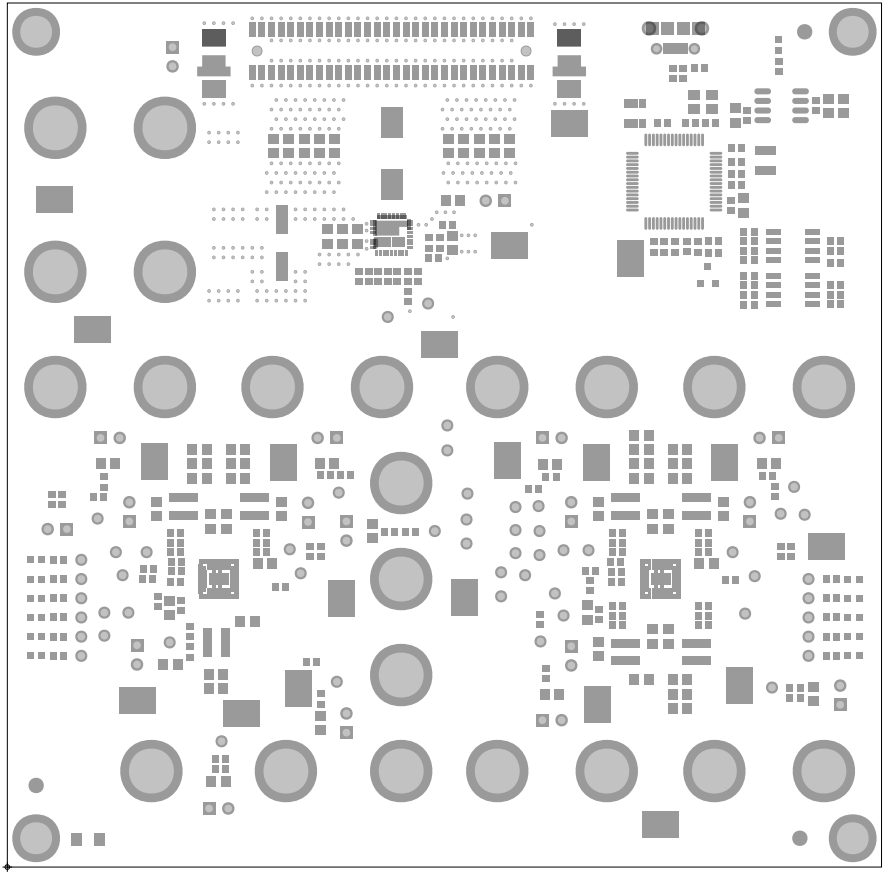
ART FILM - BOTTOM



SILKSCREEN TOP



SILKSCREEN BOTTOM

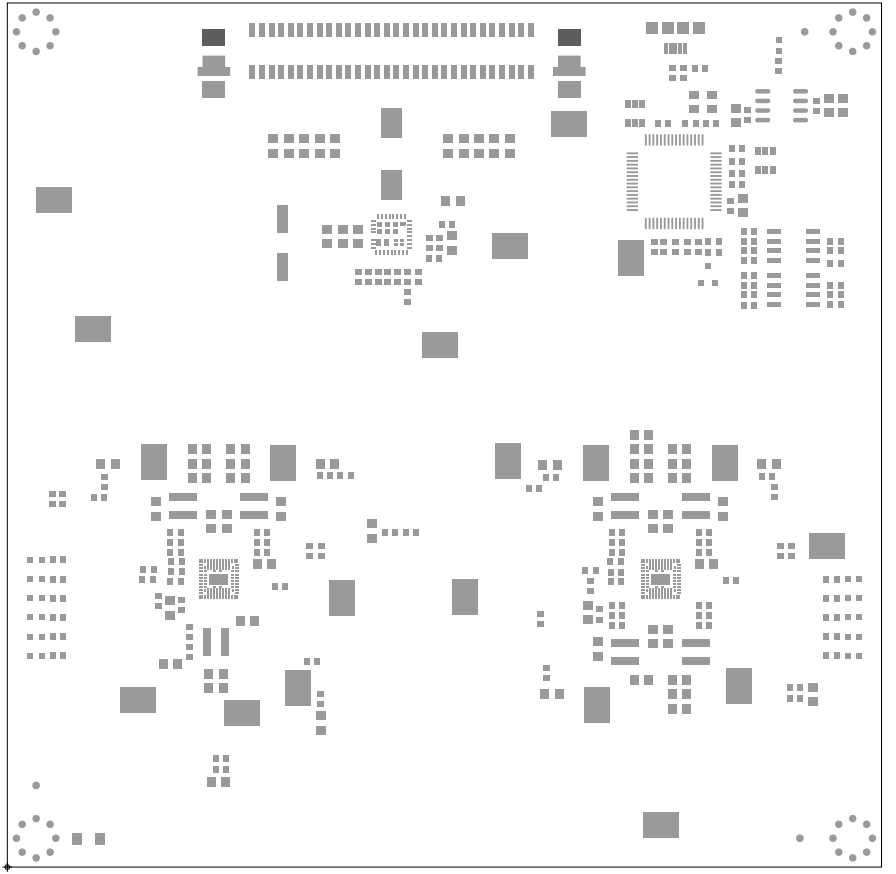


	SOLDERMASK PRIMARY-SIDE	COMPANY NAME: AnDAPT	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES DECIMAL X±.1 XX±.01 XXX±.005 ANGLE ±.5 MACH FINISH ✓
	DESIGNER: TD	PROJECT NAME: AMP8XEB1	
	CHECKER: INITIAL		
	DATE: 21OCT21	PROJECT NUMBER: LB10-001	REV. 01
	JOB#:		

ART FILM - SMASK_BOTTOM

SOLDERMASK SECONDARY-SIDE	COMPANY NAME: AnDAPT	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
DESIGNER: TD	PROJECT NAME: AMP8XEB1	TOLERANCES
CHECKER: INITIAL		DECIMAL ANGLE
DATE: 210CT21	PROJECT NUMBER: LB10-001	REV. X ±.1 ± 5
JOB#:		01 XX ±.01 MACH FINISH
		XXX ±.005 √

ART FILM - SMASK_BOTTOM

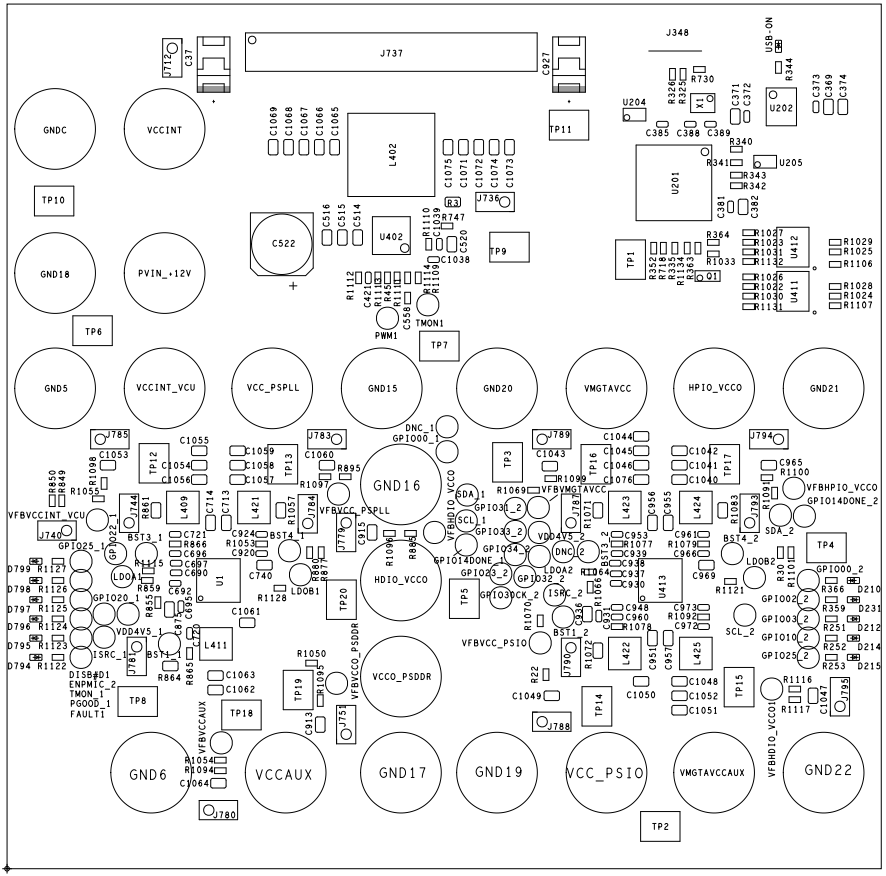


	PASTEMASK PRIMARY-SIDE	COMPANY NAME: AnDAPT		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES DECIMAL X ±.1 XX ±.01 XXX ±.005 ANGLE ±5 MACH FINISH ✓
	DESIGNER: TD CHECKER: INITIAL DATE: 21OCT21 JOB#:	PROJECT NAME: AMP8XEB1		
		PROJECT NUMBER: LB10-001	REV. 01	

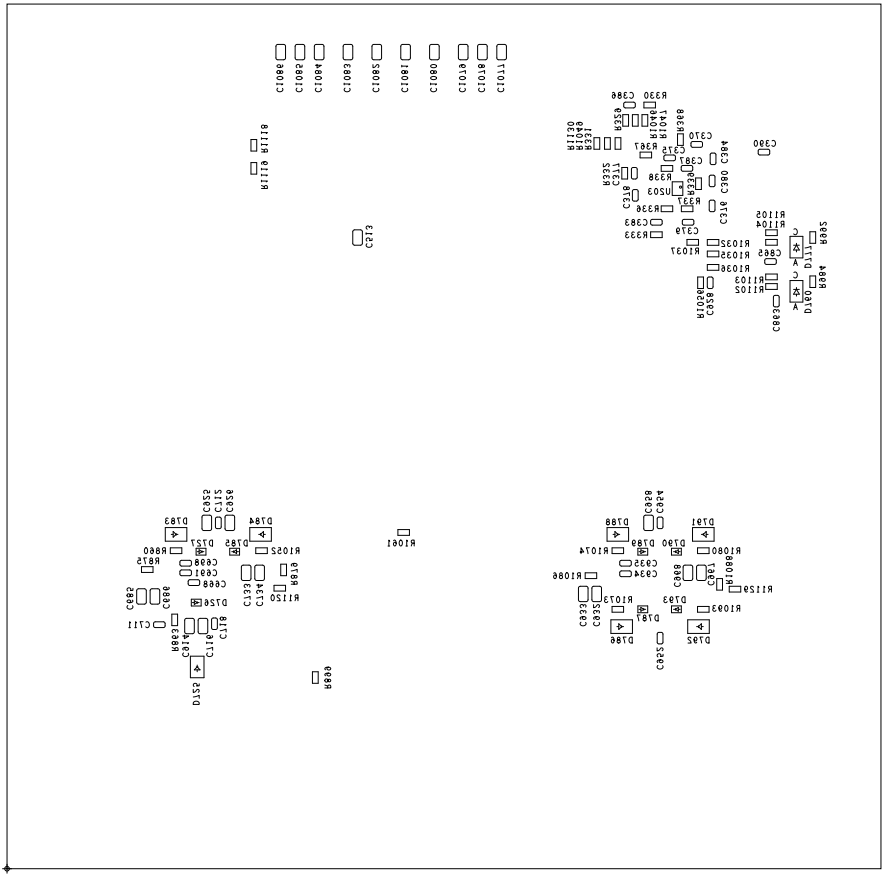
ART FILM - PASTE_BOTTOM

PASTEMASK SECONDARY-SIDE	COMPANY NAME: AnDAPT		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
DESIGNER: TD	PROJECT NAME: AMP8XEB1		
CHECKER: INITIAL			TOLERANCES DECIMAL ANGLE X ±.1 ±.5 XX ±.01 MACH FINISH XXX ±.005 √
DATE: 210CT21	PROJECT NUMBER: LB10-001	REV. 01	
JOB#:			

ART FILM - PASTE_BOTTOM

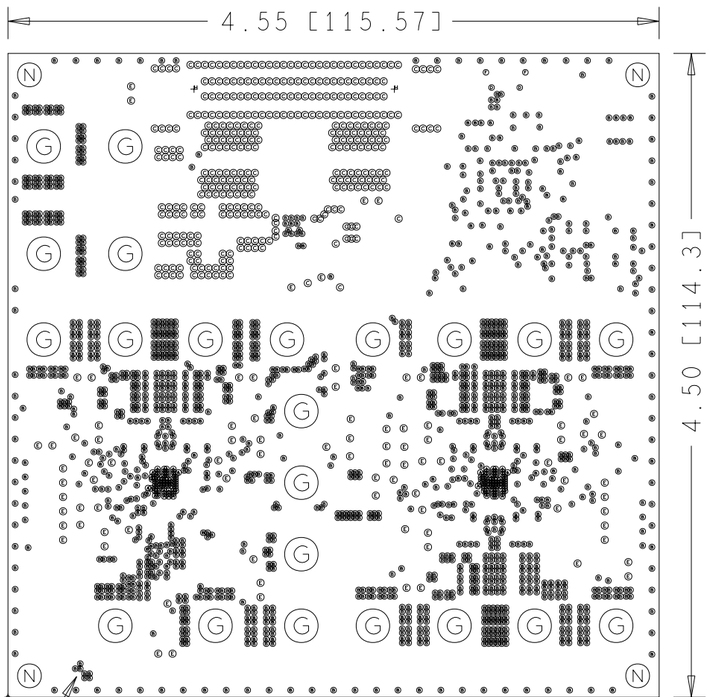


ASSEMBLY TOP



ASSEMBLY BOTTOM

DRILL CHART: TOP to BOTTOM				
ALL UNITS ARE IN MILS				
FIGURE	FINISHED_SIZE	TOLERANCE_DRILL	PLATED	QTY
⊕	5.0	+3.0/-5.0	PLATED	130
⊕	10.0	+3.0/-10.0	PLATED	1668
⊕	13.0	+3.0/-12.0	PLATED	350
⊕	35.433	+3.0/-3.0	PLATED	2
⊕	40.0	+3.0/-3.0	PLATED	89
⊕	47.244	+3.0/-3.0	PLATED	2
Ⓝ	166.0	+3.0/-3.0	PLATED	4
Ⓖ	234.0	+3.0/-3.0	PLATED	22
+	46.85	+2.0/-2.0	NON-PLATED	2

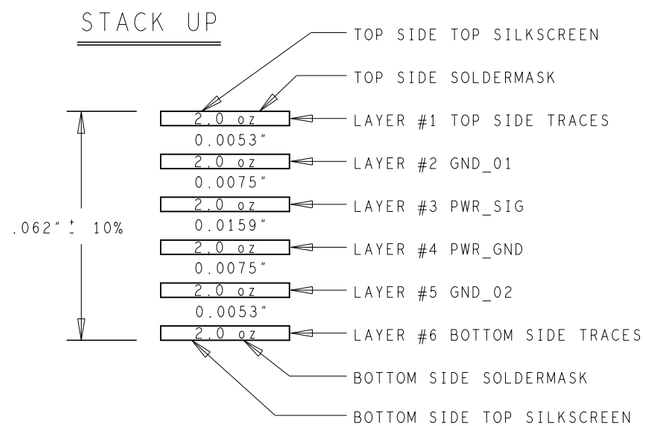


REVISIONS			
REV	DESCRIPTION	DATE	APPROVED

FAB NOTES:UNLESS OTHERWISE SPECIFIED.

1. PRIMARY DIMENSIONS ARE MILLIMETERS, SECONDARY ARE INCHES.
2. ALL DIMENSIONS ARE BASIC.
3. THIS DRAWING SHALL BE USED WITH GERBER FILES, OF THE SAME PART NUMBER AND REVISION, FOR COMPLETE PRODUCTION.
4. UNLESS OTHERWISE NOTED BOARD DIMENSIONS SHALL BE +/- .010"
5. VIEWED FROM LAYER 1 SIDE.
6. BOARD SHALL BE FABRICATED PER IPC-A-600 CLASS II.
7. MATERIAL: ISOLA 370HR OR EQUIVALENT.
   BOARDS SHALL BE RoHS COMPLIANT, HIGH TG (170 DEGREES C MINIMUM).
   such as ISOLA 370HR OR EQUIVALENT, DIELECTRIC STRENGTH OF THE MATERIAL SHALL BE 750V/MIL MIN.
8. PLATING: ALL PLATED THRU HOLES SHALL BE PLATED WITH A MINIMUM OF
   .001" COPPER. HOLE DIMENSIONS APPLY AFTER PLATING.
9. VIA IN PAD HOLES MAY BE FILLED WITH CONDUCTIVE MATERIAL
   AND SHALL BE PLATED TO PROVIDE A SMOOTH SURFACE ON COMPONENT PADS.
10. UNLESS SPECIFIED OTHERWISE HOLE TOLERANCE SHALL BE +/- .003".
11. BOARD SURFACE FINISH SHALL BE ENIG IPC-4552 ELECTROLESS NICKEL (120-240 uINCHES)
    PLUS IMMERSION GOLD (3-5 uINCHES).
12. 1 PART OR 2 PART GREEN EPOXY SOLDERMASK TO BE APPLIED OVER BARE COPPER TO BOTH SIDES.
13. PCB FABRICATION NOTES THAT THE SOLDER MASK NOT BE ENLARGED OR MODIFIED BY THE PCB MANUFACTURER.
14. SOLDER MASK: TO BE ACCORDANCE WITH IPC-SM-840C CLASS T.
    TYPE: LIQUID PHOTOIMAGEABLE.
    BRAND: CIBA-GEIGY PROBIMER 52. 65M. ENTHONE ENPLATE DSR-3241 OR EQUIVALENT.
    FINISH: MATTE FINISH PREFERRED.
    COLOR: GREEN.
15. SILKSCREEN BOTH SIDES USING 1 PART OR 2 PART WHITE EPOXY INK.
16. BOARD MUST BE MARKED WITH MANUFACTURER'S UL IDENTIFIER.
17. BOARDS SHALL BE ELECTRICALLY TESTED USING THE NETLIST PROVIDED.
18. LAYER STACKUP 6 LAYERS. SEE STACK-UP DETAIL.
19. TOTAL THICKNESS 0.062" +/-10%.
20. THIS BOARD DOES NOT HAVE CONTROLLED IMPEDANCES.
21. NOT TO FILL TEST POINT HOLES WITH EPOXY.
    THEY HAVE A TENDENCY TO DO THIS FOR ALL HOLES / VIAS WHICH CAUSES PROBLEMS.

STACK UP



	FAB DRAWING	COMPANY NAME: AnDAPT		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES DECIMAL ANGLE X ± .1 ± 5 XX ± .01 MACH FINISH XXX ± .005
	DESIGNER: TD CHECKER: INITIAL DATE: 21OCT21 JOB#:	PROJECT NAME: AMP8XEB1		
		FAB NUMBER: NUMBER	REV. 01	SHEET: 1 OF 2