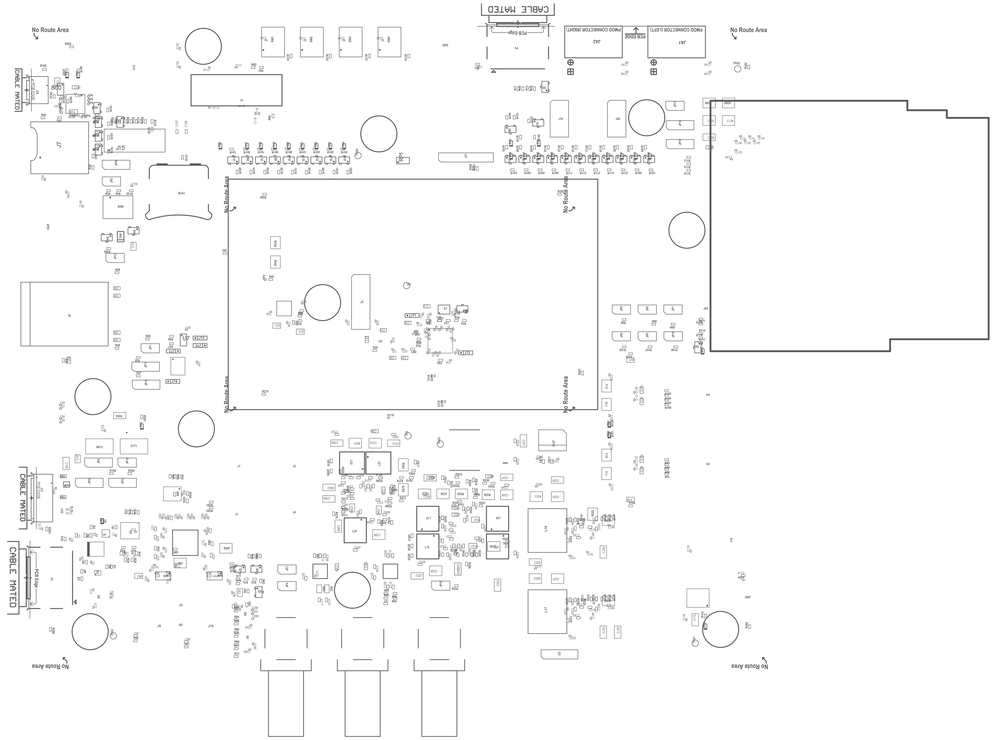

Multi-Layer

Drill Guide GG1




Keep-Out Layer
GKO

Top Assembly GM1



Bottom Assembly GM2

No Route Key

No Route Key

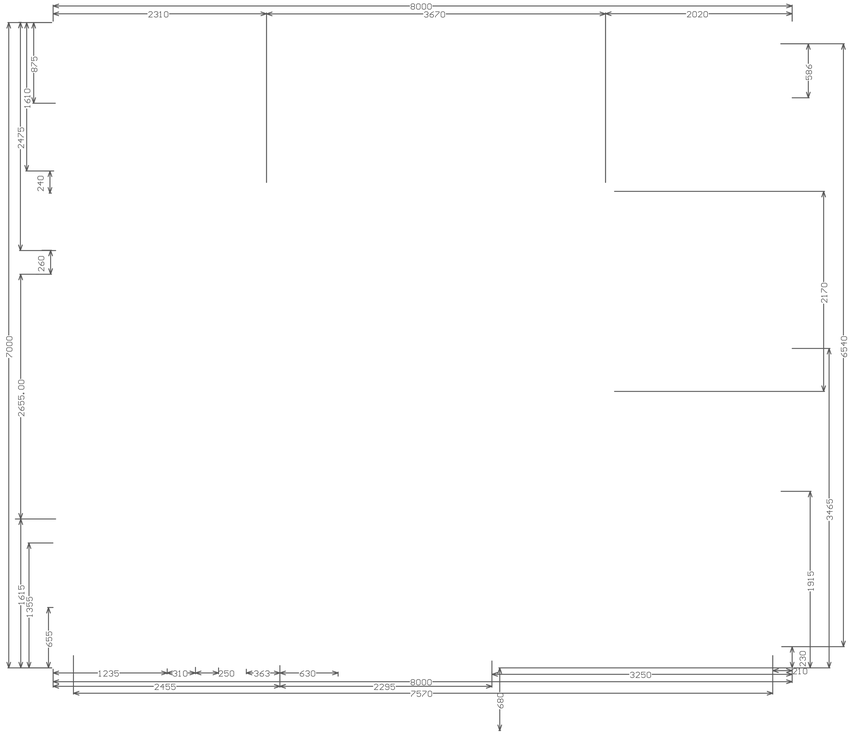
No Route Key

No Route Key

No Route Key

Empty Group Off

Dimensions GM3



AVNET®

PCB BOARD NAME	PBA-US3CAR.PcbDoc	PCB Thickness	63mils
Document Number	UltraZed-EV Carrier Card	Date / Time	5/7/2018 3:57:46 PM
Board Rev	1	Project Engineer	RHW
PCB Designer	N/A		

IMPEDANCE REQUIREMENTS

Please refer to attached "12-LAYER_062_TPSSPPPPSSPB_IMP.PDF" document

LAYER USAGE

Fabrication GM6

INTENTIONAL NETLIST SHORTS

1. ALL SIGNALS DDR*
2. All Signals NT*

BUILD INFO

PAD COUNT —3794
HOLE COUNT —3117
VIA COUNT —2665
COMPONENTS —886
NET COUNT —789

Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0.50mil	3.3	
3	Layer 1	Copper	1.40mil		
4	Dielectric 1		4.00mil	4.2	
5	Layer 2P (G)	Copper	0.70mil		
6	Dielectric 2		4.00mil	4.2	
7	Layer 3	Copper	0.70mil		
8	Dielectric 3		8.00mil	4.3	
9	Layer 4	Copper	0.70mil		
10	Dielectric 4		4.00mil	4.3	
11	Layer 5P (G)	Copper	0.70mil		
12	Dielectric 5		4.00mil	4.2	
13	Layer 6P (P)	Copper	0.70mil		
14	Dielectric 6		4.00mil	4.3	
15	Layer 7P (P)	Copper	0.70mil		
16	Dielectric 11		4.00mil	4.2	
17	Layer 8P (G)	Copper	0.70mil		
18	Dielectric 8		4.00mil	4.2	
19	Layer 9	Copper	0.70mil		
20	Dielectric 9		8.00mil	4.3	
21	Layer 10	Copper	0.70mil		
22	Dielectric 10		4.00mil	4.3	
23	Layer 11P (G)	Copper	0.70mil		
24	Dielectric 10		4.00mil	4.2	
25	Layer 12	Copper	1.40mil		
26	Bottom Solder	Solder Resist	0.50mil	3.3	
27	Bottom Overlay				

DESIGN INFORMATION FILE NAME: PBA-US3CAR.PcbDoc FILE TYPE: GERBER SET

SURFACE MOUNT: [ ] 1 SIDE [X] 2 SIDES Number of Layers : 12 ARTWORK: [X] CAD

CIRCUIT TYPE: [ ] SS [X] DS [X] PTH MULTILAYER

LAYER CONSTRUCTION PER: LAMINATION SEQUENCE [X] AS SHOWN

MATERIAL PER IPC-4101

COPPER CLAD, HIGH TEMPERATURE FR4 CLASS EPOXY GLASS RATED UL94V-0
MUST SURVIVE A LEAD-FREE ASSEMBLY MAX REFLOW OF 260 DEG C (6 PASSES)
Td RATING: > 340 DEG C , Z AXIS CTE < 3.5% , Tg > 170 DEG C (MIN)

THICKNESS: [X] +/-10% [ ] OTHER _____

TOLERANCE: [X] IN A/W ANSI IPC-6012 Type 3 Class 2 [ ] OTHER +/- _____

BOW & TWIST: [X] IN A/W ANSI IPC-6012 Type 3 Class 2 [ ] AS SHOWN

COPPER THICKNESS (FINISHED)

OUTER:	[ ] 18um (1/2oz)	[X] 35um (1oz)	[ ] 70um (2oz)
INNER SIGNAL:	[X] 18um (1/2oz)	[ ] 35um (1oz)	[ ] 70um (2oz)
INNER PWR:	[ ] 18um (1/2oz)	[X] 35um (1oz)	[ ] 70um (2oz)

VIAS: [X] THRU [ ] BLIND [ ] BURIED

STRUCTURE [X] AS SHOWN IN LAYER TABLE [X] FINISHED BOARD THICKNESS = 0.063 +/- 0.007

DRILLING VIEWED FROM: [X] COMPONENT SIDE [ ] SOLDER SIDE

REFERENCE: [X] AS SHOWN [ ] PATTERN MASTER LIST [X] NC_ DRILL FILES

ALL HOLE SIZES ARE AFTER PLATING

NPTH [ ] TENTED [ ] PADS REMOVED [ ] REMOVE PADS
[ ] 2nd DRILL [ ] BOTH [X] AS SHOWN [ ] NONE

PTH MINIMUM COPPER THICKNESS: [X] 20um [ ] OTHER _____

LEGEND / SCREEN PRINT COLOUR (RoHS COMPLIANT INK): [X] WHITE [ ] YELLOW

CLIP SILK SCREEN ON PADS, PLATED THROUGH HOLES, AND NON-TENTED VIAS

SOLDER MASK [X] LPI (RoHS Compliant) [X] SMOBC PER IPC-SM-840C, CLASS T

COLOR: [ ] GREEN [ ] BLUE [ ] RED [X] BLACK [ ] VIAS TENTED ON TOP SIDE

[X] GLOSS [ ] MATTE **ALL TEST POINTS SHALL BE FREE OF SOLDERMASK**

BOARD FINISH [X] 2-8 Micro Inches IMMERSION GOLD [ ] Pb Free HASL (HOT AIR SOLDER LEVEL)
[ ] IMMERSION SILVER

EDGE FINGERS [ ] HARD GOLD PLATE FINISH
(150-250 MICRO INCHES NICKEL, MINIMUM OF 30 MICRO INCHES OF HARD GOLD)

PROFILING
[X] CUT AND TRIM ACCORDING TO LAYER MECHANICAL 7 (BOARD OUTLINE)
[ ] REFER PCB BLANK DWG No. _____
[ ] USE PROFILE/ ROUTE TAPE SUPPLIED (REFER PATTERN MASTER LIST)
[ ] SQUARE CUT [X] N.C. ROUTE [ ] V. SCORE

TESTING/QUALITY CONTROL
[X] ELECTRICAL TEST
[X] IMPEDANCE REPORT
[X] MICROSECTION [X] TDR TEST COUPON

MATERIALS AND WORKMANSHIP FOR ALL PRINTED WIRING BOARDS TO MEET OR EXCEED THE REQUIREMENTS OF:
IPC-6011 AND IPC-6012 [X] CLASS [ ] 1 [X] 2 [ ] 3

[X] SOLDERABILITY-(CATEGORY 2 OF J-STD-003)

MANUFACTURER PRODUCT ID MARKINGS

DO NOT PLACE ANY FOIL ITEMS IN KEEPOUT AREA(S)

PN: [ ] LEGEND [ ] FOIL REVISION: [ ] LEGEND [ ] FOIL
ID/LOGO: [X] LEGEND [ ] FOIL DATE CODE: [X] LEGEND [ ] FOIL
MANUFACTURER'S ACCREDITATION (i.e. ISO9001): [X] LEGEND [ ] FOIL TEST STAMP: [X] LEGEND [ ] FOIL

DATE CODE FORMAT-WWYY WHERE WW=WEEK AND YY=YEAR

ASSEMBLY FINISHED ASSEMBLY MUST BE INSPECTED PER IPC-A-610

VENDOR MODIFICATIONS

COPPER THEVING —VENDOR MAY ADD COPPER THEVING AS NEEDED TO IMPROVE MANUFACTURABILITY, THEVING TO BE 0.030 ROUND PADS AT 0.050 SPACING. THEVING WILL HAVE A MINIMUM OF 0.100 CLEARANCE FROM SPACING. THEVING WILL HAVE A MINIMUM OF 0.100 CLEARANCE FROM EXISTING COPPER AND SHOULD NOT BE PLACED UNDER SURFACE MOUNT DEVICES.

CONTROLLED IMPEDANCE —VENDOR MAY MODIFY DIELECTRIC THICKNESS BY 10% WITHOUT WRITTEN CONSENT. ANY GREATER THAN 10% REQUIRES WRITTEN CONSENT FROM AVNET ENGINEERING

NON-FUNCTIONAL PADS —VENDOR SHALL REMOVE NON-FUNCTIONAL PADS

TEAR DROPS —VENDOR MAY USE TEAR DROPS TO IMPROVE ANNULAR RINGS AS LONG AS DRC RULES ARE FOLLOWED

TIE-BARS —TIE BARS ON THERMAL PADS SHOULD BE 15 MILS MINIMUM WIDTH

ADDITIONAL REQUIREMENTS

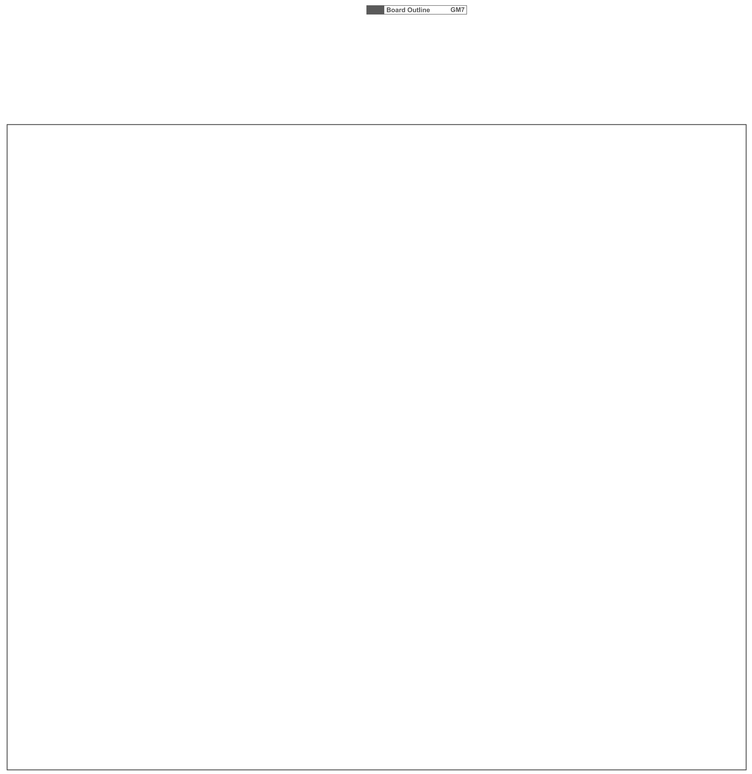
ROHS CERTIFICATION —PCBAs MUST BE RoHS COMPLIANT (VENDOR SHALL PROVIDE CERTIFICATION).

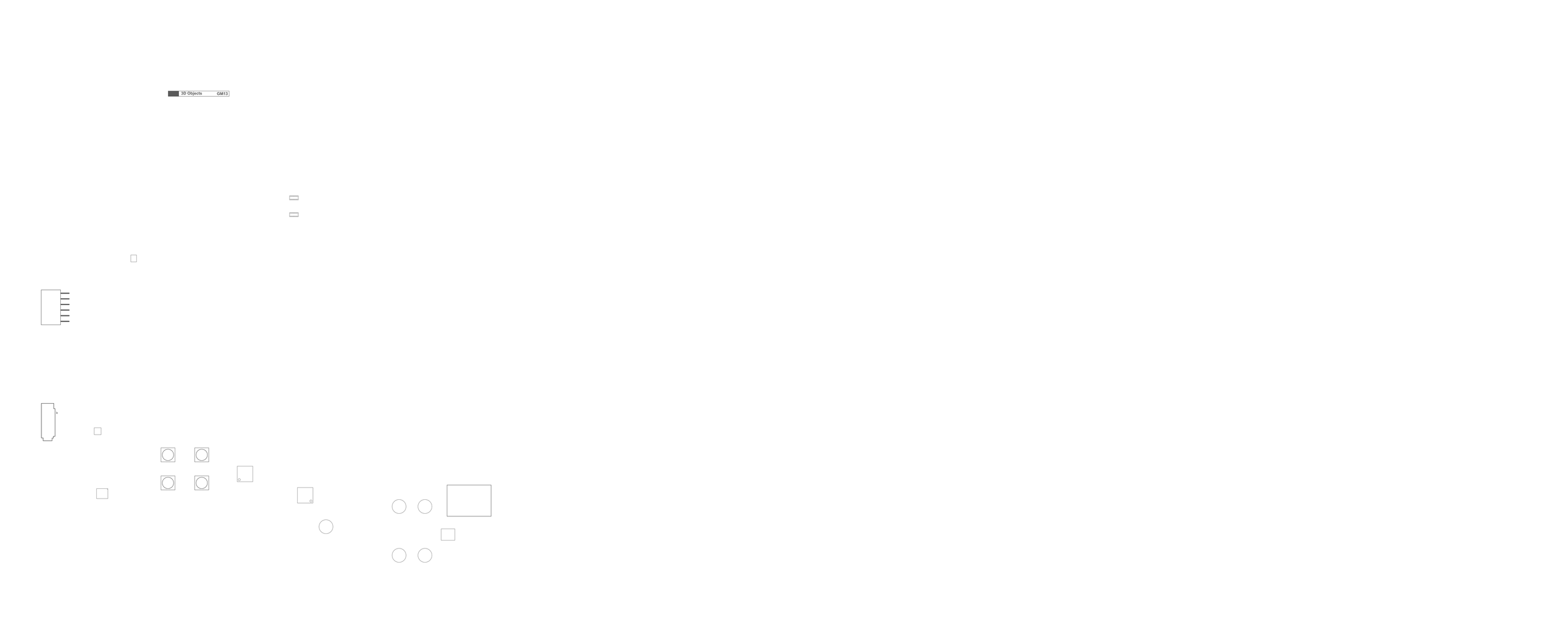
CLEANING —ALL CLEANING PROCESSES MUST BE LEAD FREE AND FOLLOW RoHS PROCEDURES.

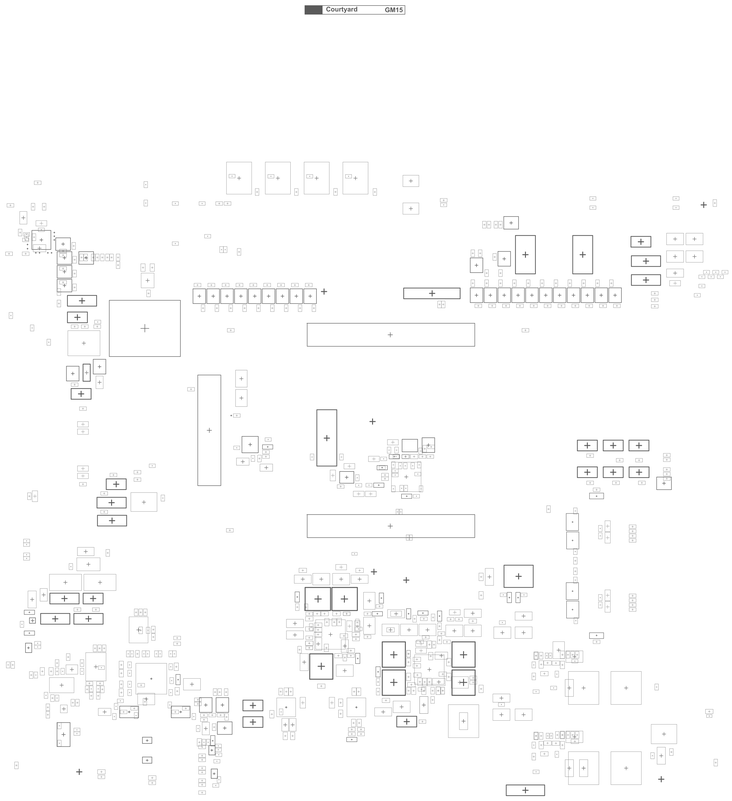
SOLDERING —ALL SOLDERING PROCESSES MUST BE LEAD FREE AND FOLLOW RoHS PROCEDURES.

SERIALIZE —PCBAs MUST BE SERIALIZED.

OVERALL QUALITY —FINISHED BOARDS SHALL NOT HAVE NICKS, SCRATCHES, VOIDS, EXPOSED COPPER, POOR PLATING, MISDRILLED HOLES, AND MUST BE FREE OF ANY RESIDUES.


Board Outline GM7

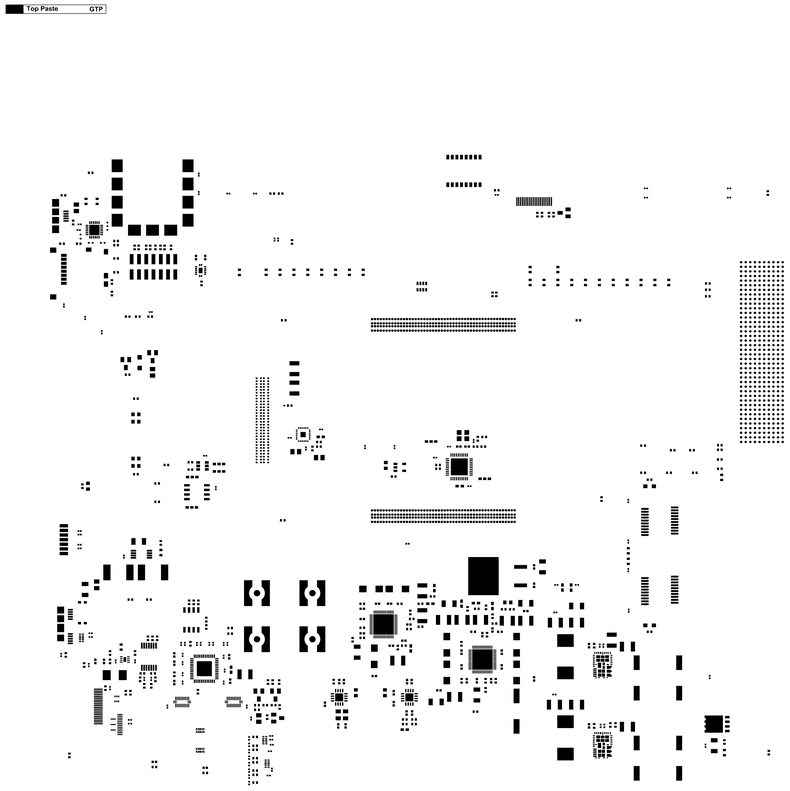

3D Objects
GM13

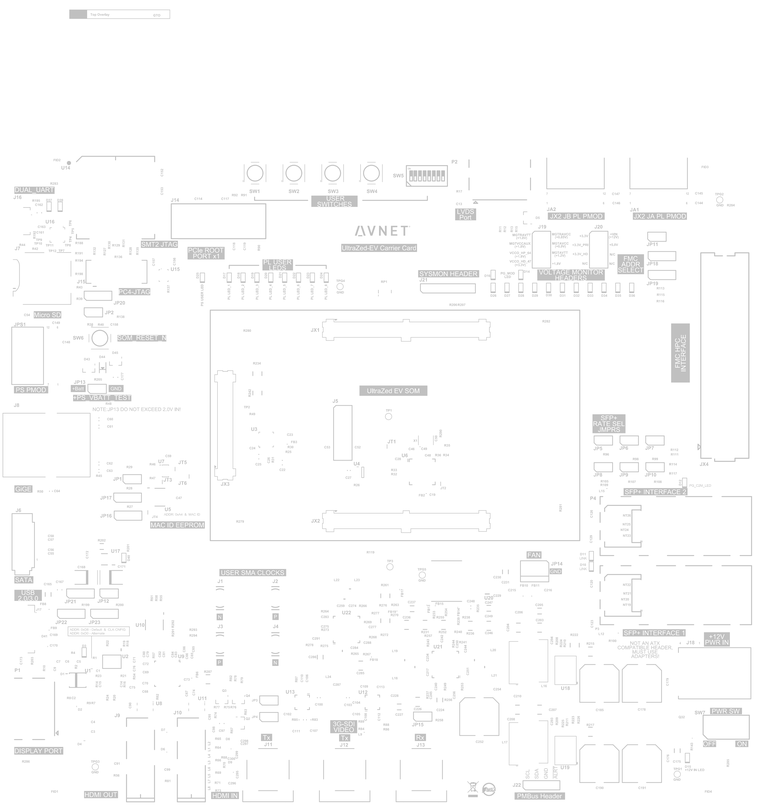

Courtyard
GM15



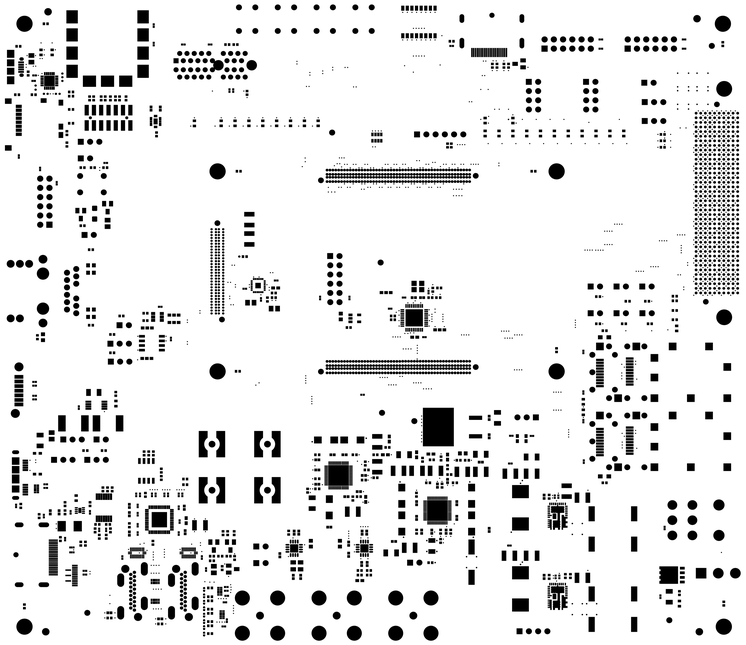
Symbol	Count	Hole Size	Plated	Hole Type	Drill Layer Pair	Via/Pad	Pad Shape	Template	Hole Length	Routed Path Length
⌘	2	19.69mil (0.500mm)	PTH	Slot	Layer 1 - Layer 12	Pad	Rounded	r180_90h50_140r100m187_97	55.12mil (1.400mm)	35.43mil (0.900mm)
J	2	23.62mil (0.600mm)	PTH	Slot	Layer 1 - Layer 12	Pad	Rounded	r160_90h60_130r100	51.18mil (1.300mm)	27.56mil (0.700mm)
^	2	25.59mil (0.650mm)	PTH	Slot	Layer 1 - Layer 12	Pad	Rounded	r110_85h65_85r100	33.47mil (0.850mm)	7.87mil (0.200mm)
O	2	33.47mil (0.850mm)	PTH	Round	Layer 1 - Layer 12	Pad	Rectangle	s200h85	-	-
B	2	40.00mil (1.016mm)	NPTH	Round	Layer 1 - Layer 12	Pad	Rounded	c71hn102	-	-
□	2	50.00mil (1.270mm)	NPTH	Round	Layer 1 - Layer 12	Pad	Rounded	c127hn127m140	-	-
⌾	2	53.15mil (1.350mm)	PTH	Round	Layer 1 - Layer 12	Pad	Rounded	c235h135	-	-
L	2	55.12mil (1.400mm)	NPTH	Round	Layer 1 - Layer 12	Pad	Rounded	c140hn140m140	-	-
A	2	62.00mil (1.575mm)	PTH	Round	Layer 1 - Layer 12	Pad	Rounded	c229h157	-	-
`	2	92.52mil (2.350mm)	NPTH	Round	Layer 1 - Layer 12	Pad	Rounded	c90hn235m188	-	-
○	2	106.00mil (2.692mm)	PTH	Round	Layer 1 - Layer 12	Pad	Rounded	c381h269m406	-	-
0	2	118.00mil (2.997mm)	NPTH	Round	Layer 1 - Layer 12	Pad	Rounded	c295hn300	-	-
⌘	2	128.00mil (3.251mm)	NPTH	Round	Layer 1 - Layer 12	Pad	Rounded	c325hn325	-	-
H	3	51.18mil (1.300mm)	PTH	Round	Layer 1 - Layer 12	Pad	Rounded	c195h130m-1	-	-
U	4	23.62mil (0.600mm)	PTH	Slot	Layer 1 - Layer 12	Pad	Rounded	r120_230h60_170r100m125_235	66.93mil (1.700mm)	43.31mil (1.100mm)
Q	4	23.62mil (0.600mm)	PTH	Slot	Layer 1 - Layer 12	Pad	Rounded	(Mixed)	86.61mil (2.200mm)	62.99mil (1.600mm)
d	4	61.02mil (1.550mm)	NPTH	Round	Layer 1 - Layer 12	Pad	Rounded	c155hn155m155p155	-	-
⧫	4	66.93mil (1.700mm)	NPTH	Round	Layer 1 - Layer 12	Pad	Rounded	c170hn170m195	-	-
✪	5	50.00mil (1.270mm)	PTH	Round	Layer 1 - Layer 12	Pad	Rounded	c203h127	-	-
✡	6	57.28mil (1.455mm)	NPTH	Round	Layer 1 - Layer 12	Pad	Rounded	c146hn146	-	-
I	8	35.43mil (0.900mm)	PTH	Slot	Layer 1 - Layer 12	Pad	Rounded	r140_320h90_270r100m165_345	106.30mil (2.700mm)	70.87mil (1.800mm)
F	8	125.00mil (3.175mm)	PTH	Round	Layer 1 - Layer 12	Pad	Rounded	c432h318	-	-
p	9	73.00mil (1.854mm)	PTH	Round	Layer 1 - Layer 12	Pad	Rounded	(Mixed)	-	-
▽	12	35.00mil (0.889mm)	PTH	Round	Layer 1 - Layer 12	Pad	Rounded	c152h89	-	-
J	12	114.17mil (2.900mm)	PTH	Round	Layer 1 - Layer 12	Pad	Rounded	c392h290m-1	-	-
e	18	37.40mil (0.950mm)	PTH	Round	Layer 1 - Layer 12	Pad	Rounded	c150h95	-	-
f	20	39.37mil (1.000mm)	PTH	Round	Layer 1 - Layer 12	Pad	Rounded	c150h100	-	-
c	20	41.34mil (1.050mm)	PTH	Round	Layer 1 - Layer 12	Pad	Rectangle	s200h105	-	-
W	32	11.81mil (0.300mm)	PTH	Round	Layer 1 - Layer 12	Pad	Rounded	(Mixed)	-	-
-	36	27.56mil (0.700mm)	PTH	Round	Layer 1 - Layer 12	Pad	(Mixed)	(Mixed)	-	-
G	38	21.65mil (0.550mm)	PTH	Round	Layer 1 - Layer 12	Pad	Rounded	c80h55m85	-	-
N	51	7.87mil (0.200mm)	PTH	Round	Layer 1 - Layer 12	(Mixed)	Rounded	(Mixed)	-	-
R	68	10.00mil (0.254mm)	PTH	Round	Layer 1 - Layer 12	Pad	Rounded	c51h25	-	-
C	136	40.00mil (1.016mm)	PTH	Round	Layer 1 - Layer 12	Pad	(Mixed)	(Mixed)	-	-
⊠	2615	8.00mil (0.203mm)	PTH	Round	Layer 1 - Layer 12	Via	Rounded	(Mixed)	-	-
	3139 Total									

Slot definitions : **Routed Path Length** = Calculated from tool start centre position to tool end centre position.
Hole Length = Routed Path Length + Tool Size = Slot length as defined in the PCB layout

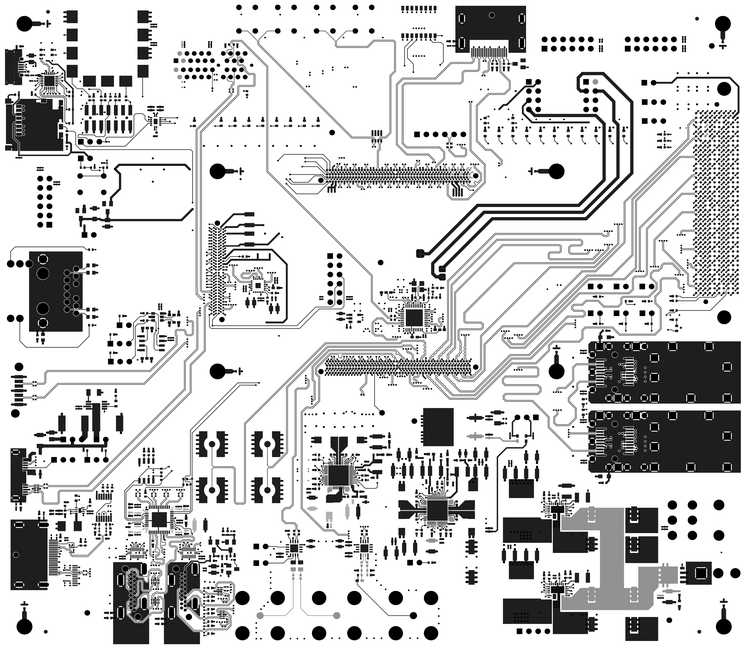

Top Paste
GTP


Top Overlay
DUAL UART
SW1
SW2
SW3
SW4
SW5
USER DIP SWITCHES
P2
VADJ Test
XAJ3B PL PMOD
XAJ1A PL PMOD
SWD 2-1 JTAG
Code ROOT Project 01
AVNET
UltraZed-EV Carrier Card
USER LEDs
SYSMON HEADER
XADC HEADER
PMOD ADDR SELECT
PC4 JTAG
VADJ SEL
PS PMODs
SOM RESET JX
PS_PMOD
PS POWER LEDS
NOTE: JP13 DO NOT EXCEED 2.0V 8W
UltraZed EV SOM
FMC HPC CONNECTOR INTERFACE
SFP+ RATE SEL JUMPERS
SFP+ INTERFACE
GIGE
MAC ID EEPROM
SATA
SYSTEM POWER
USER SMA CLOCKS
FAN
SFP28 INTERFACE
NOT AN ATX CONNECTOR HEADER. MUST USE ADAPTER
ATX PWR ENABLE
PWR SW
DISPLAY PORT
TX
RX
VIDEO IN
HDMI OUT
HDMI IN
PMBus header

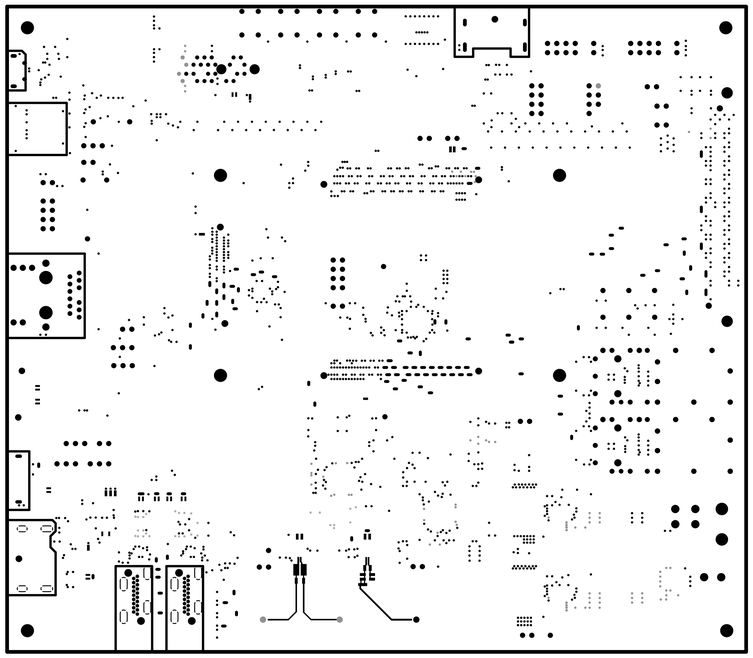
Top Solder GTS



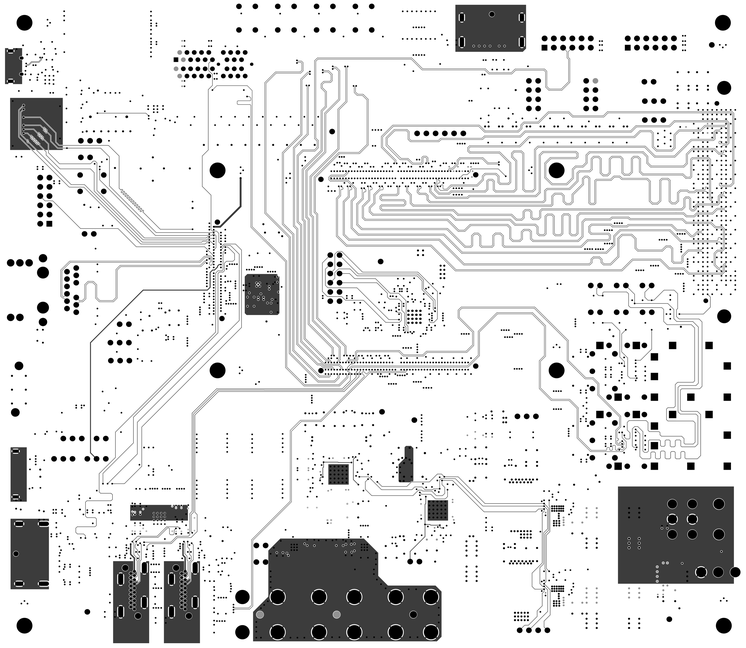
Layer 1 GTL

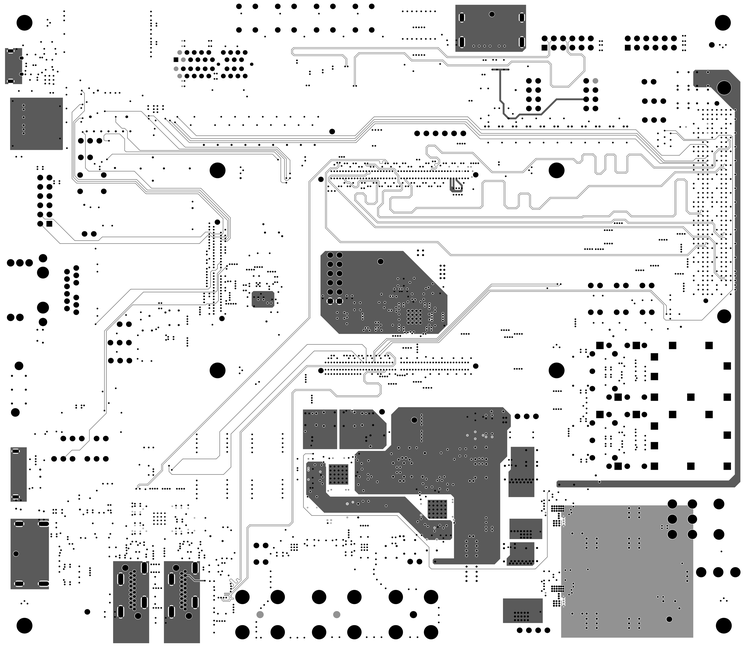


Layer 2P (G) GP2

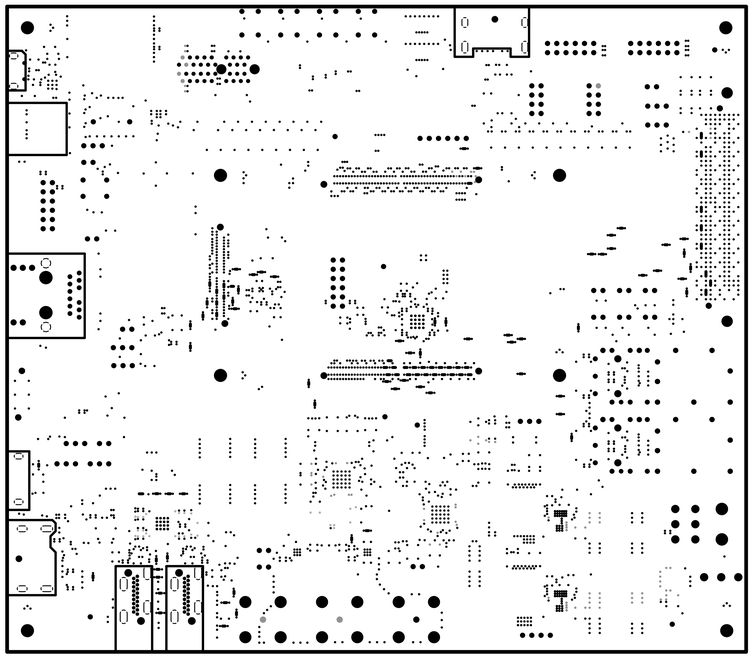


Layer 3 G1

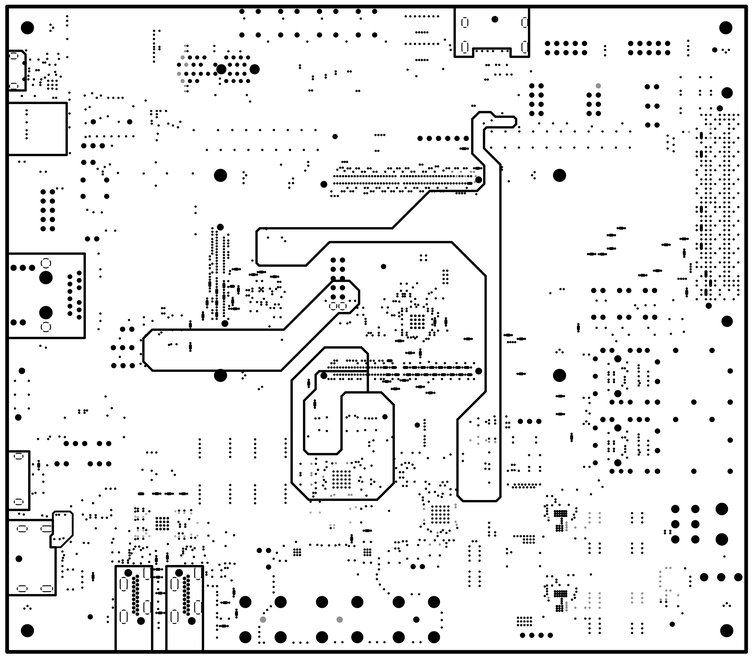


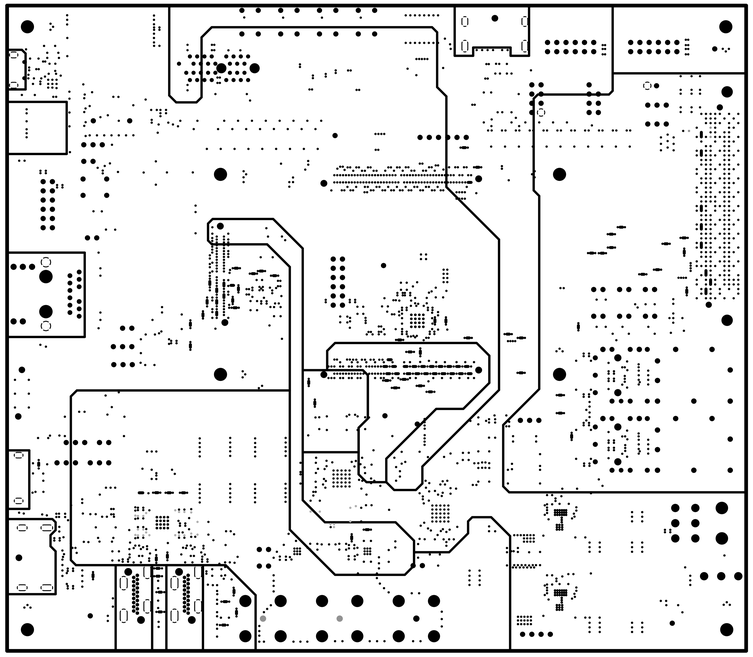


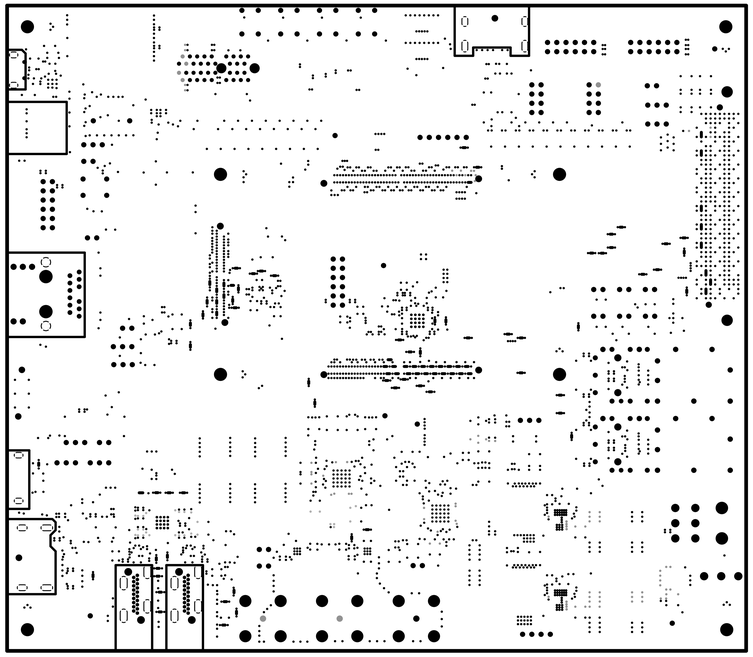
Layer SP (G) G2



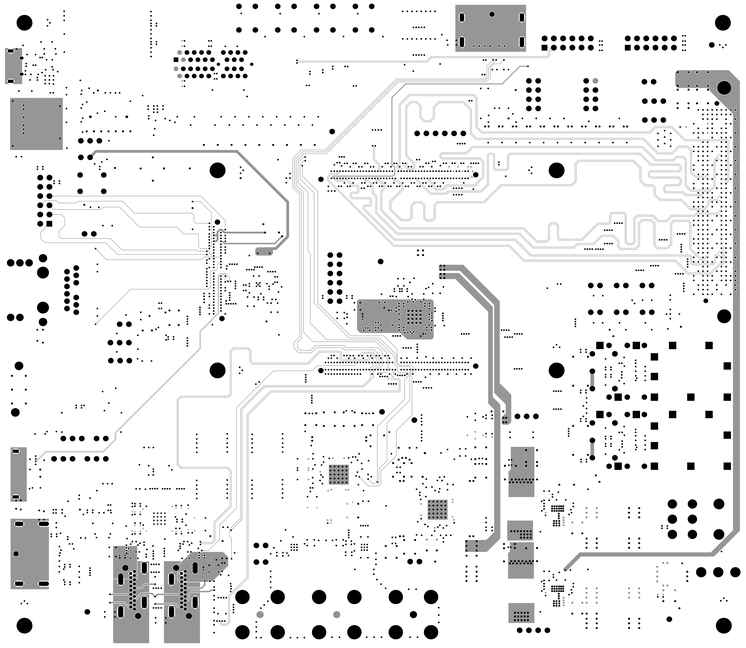
Layer 6P (P) GP3

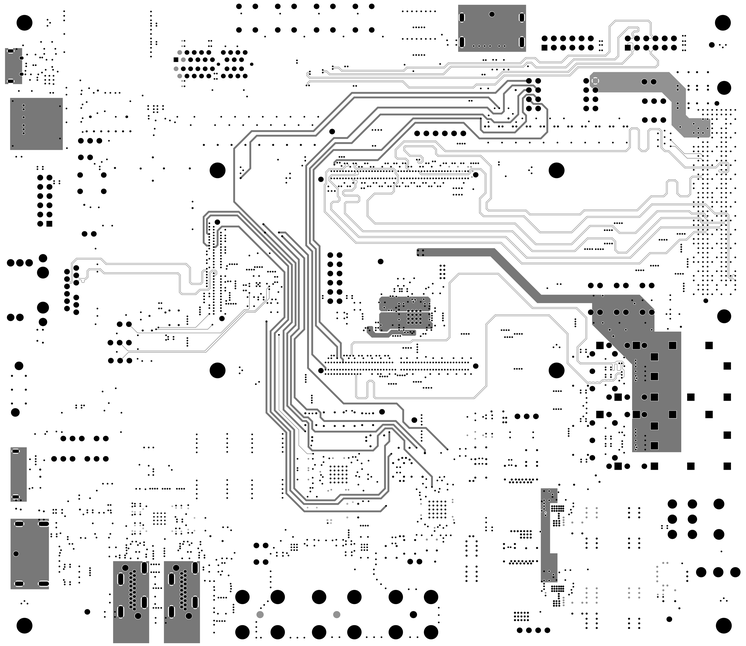




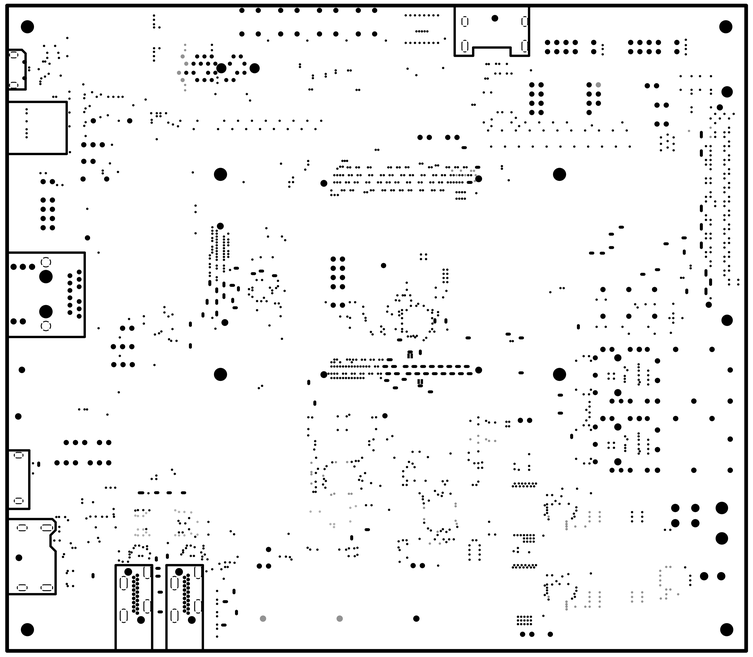


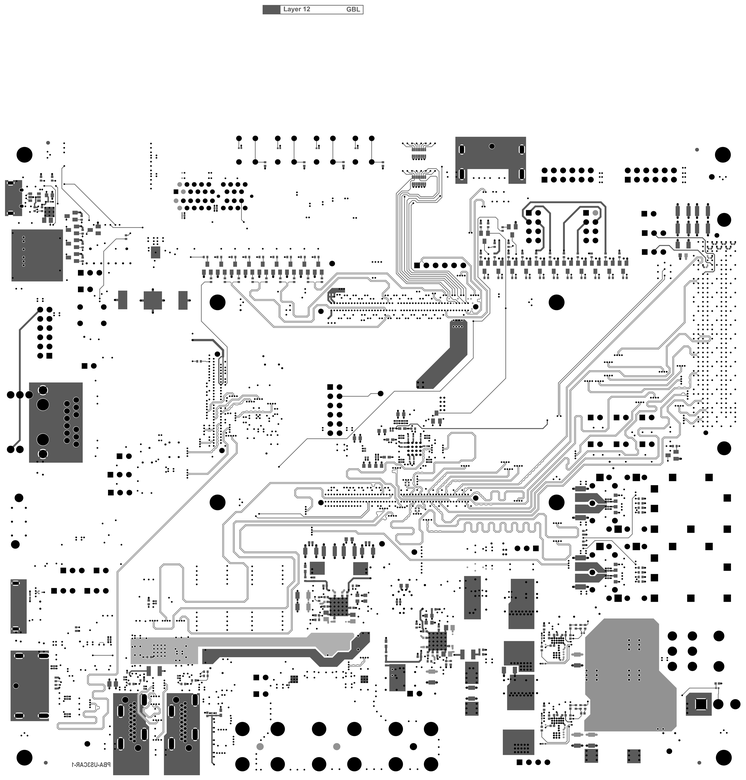
Layer 9 G3

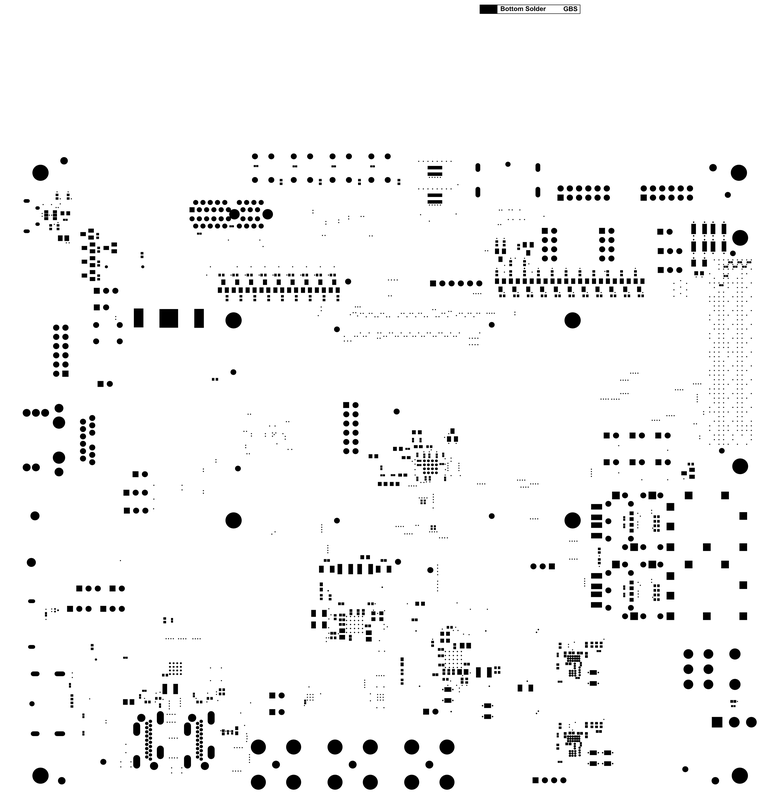




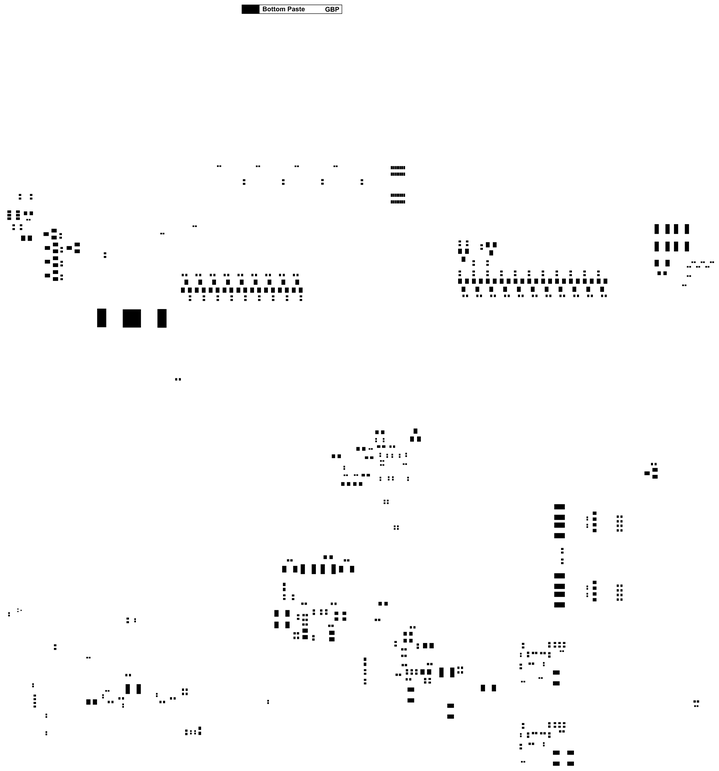
Layer 11P (G) GP4




Layer 12 GBL
RBA-UB3DAR-1


Bottom Solder GBS

Bottom Overlay GBO


Bottom Paste GBP

