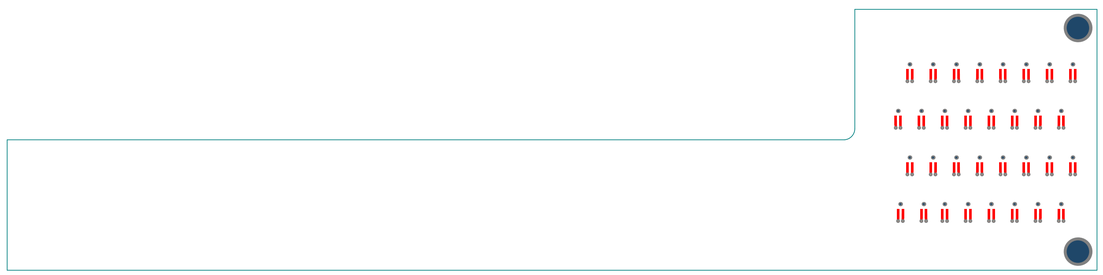
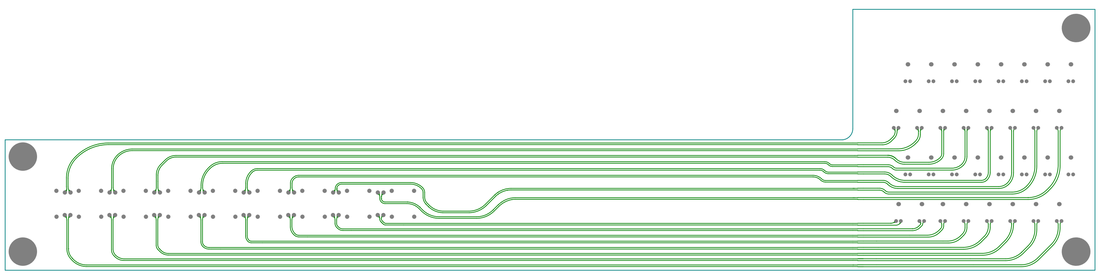


SLAC NATIONAL ACCELERATOR LABORATORY — U.S. DEPARTMENT OF ENERGY		Layer_1 Top	SHT 1 OF 14
		ATLAS OPTO Board ERM Long	
ENGR: A. Young	DATE: 04–14–2020		
CHKR: A. Young	DATE: 02–17–2022		
DSGN: A. Young/C.Yee	DATE: 02–17–2022	PC– 256–101–10	REVISION 02 B

2/17/2022 2:48:01 PM ERM_OPTO_Long

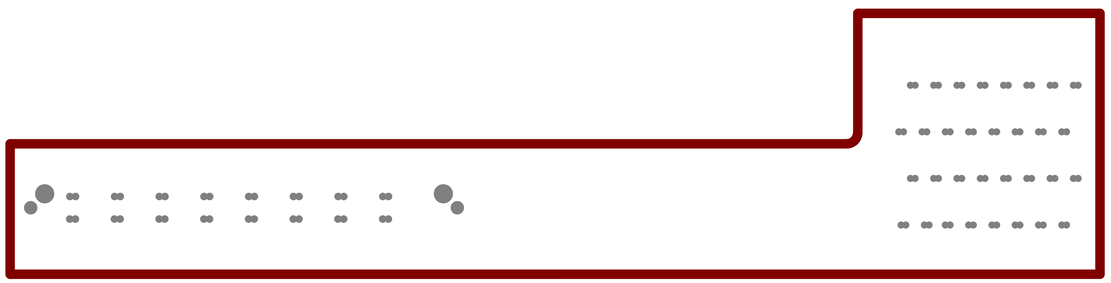
SLAC NATIONAL ACCELERATOR LABORATORY — U.S. DEPARTMENT OF ENERGY		Layer_2 GND Plane 1	SHT 2 OF 14
		ATLAS OPTO Board ERM Long	
ENGR: A. Young	DATE: 04–14–2020		
CHKR: A. Young	DATE: 02–17–2022		
DSGN: A. Young/C.Yee	DATE: 02–17–2022	PC– 256–101–10	REVISION 02 B

2/17/2022 2:48:01 PM ERM_OPTO_Long



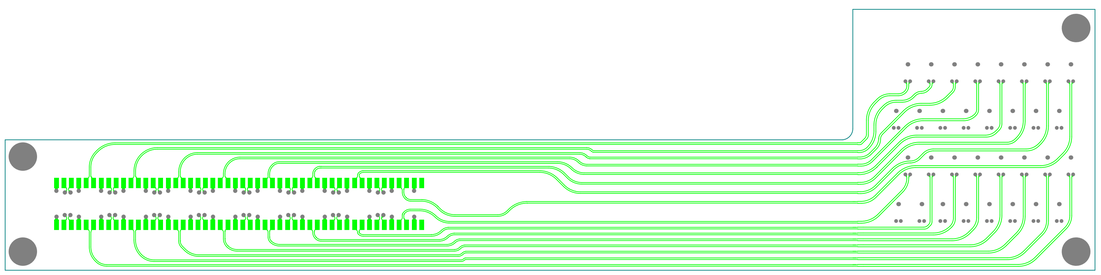
SLAC NATIONAL ACCELERATOR LABORATORY — U.S. DEPARTMENT OF ENERGY	Layer_3 Inner Signal 1	SHT 3 OF 14	
	ATLAS OPTO Board ERM Long		
ENGR: A. Young	DATE: 04–14–2020	PC– 256–101–10	REVISION 02 B
CHKR: A. Young	DATE: 02–17–2022		
DSGN: A. Young/C.Yee	DATE: 02–17–2022		

2/17/2022 2:48:01 PM ERM_OPTO_Long



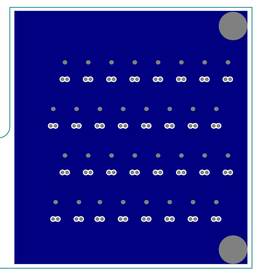
SLAC NATIONAL ACCELERATOR LABORATORY — U.S. DEPARTMENT OF ENERGY		Layer_4 GND Plane 2	SHT 4 OF 14
		ATLAS OPTO Board ERM Long	
ENGR: A. Young	DATE: 04–14–2020		
CHKR: A. Young	DATE: 02–17–2022		
DSGN: A. Young/C.Yee	DATE: 02–17–2022	PC– 256–101–10	REVISION 02 B

2/17/2022 2:48:01 PM ERM_OPTO_Long



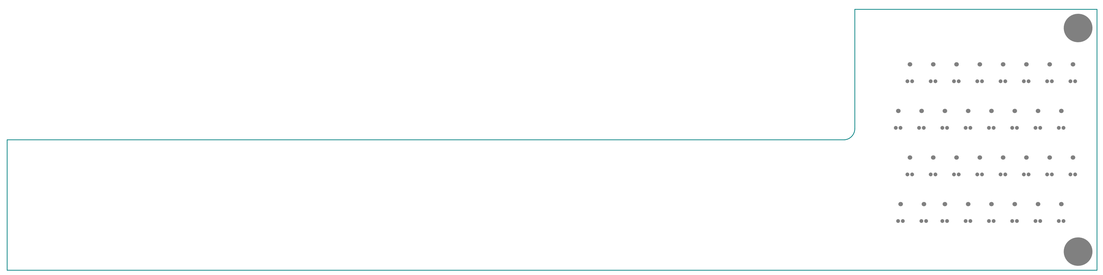
SLAC NATIONAL ACCELERATOR LABORATORY — U.S. DEPARTMENT OF ENERGY	Layer_5 Inner Signal 2	SHT 5 OF 14	
	ATLAS OPTO Board ERM Long		
ENGR: A. Young	DATE: 04–14–2020	PC– 256–101–10	REVISION 02 / B
CHKR: A. Young	DATE: 02–17–2022		
DSGN: A. Young/C.Yee	DATE: 02–17–2022		

2/17/2022 2:48:02 PM ERM_OPTO_Long



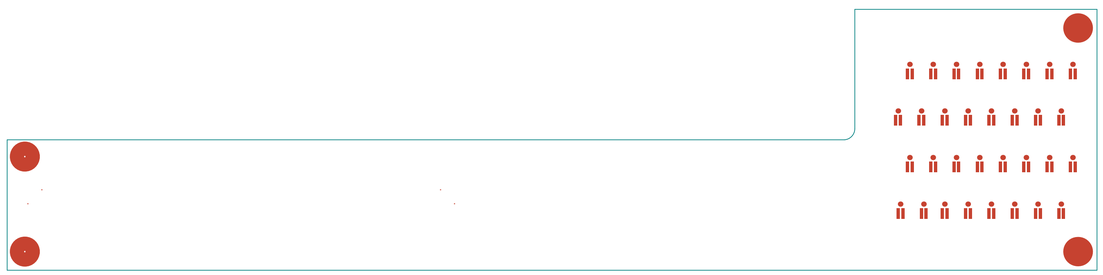
SLAC NATIONAL ACCELERATOR LABORATORY — U.S. DEPARTMENT OF ENERGY		Layer_6 GND Plane 3	SHT 6 OF 14
		ATLAS OPTO Board ERM Long	
ENGR: A. Young	DATE: 04–14–2020		
CHKR: A. Young	DATE: 02–17–2022		
DSGN: A. Young/C.Yee	DATE: 02–17–2022	PC– 256–101–10	REVISION 02 B

2/17/2022 2:48:02 PM ERM_OPTO_Long



SLAC NATIONAL ACCELERATOR LABORATORY — U.S. DEPARTMENT OF ENERGY	Layer_7 Bottom	SHT 7 OF 14	
	ATLAS OPTO Board ERM Long		
ENGR: A. Young	DATE: 04–14–2020	PC– 256–101–10	REVISION 02 B
CHKR: A. Young	DATE: 02–17–2022		
DSGN: A. Young/C.Yee	DATE: 02–17–2022		

2/17/2022 2:48:02 PM ERM_OPTO_Long



SLAC NATIONAL ACCELERATOR LABORATORY — U.S. DEPARTMENT OF ENERGY

ENGR: A. Young	DATE: 04-14-2020
CHKR: A. Young	DATE: 02-17-2022
DSGN: A. Young/C.Yee	DATE: 02-17-2022

Solder Mask Top

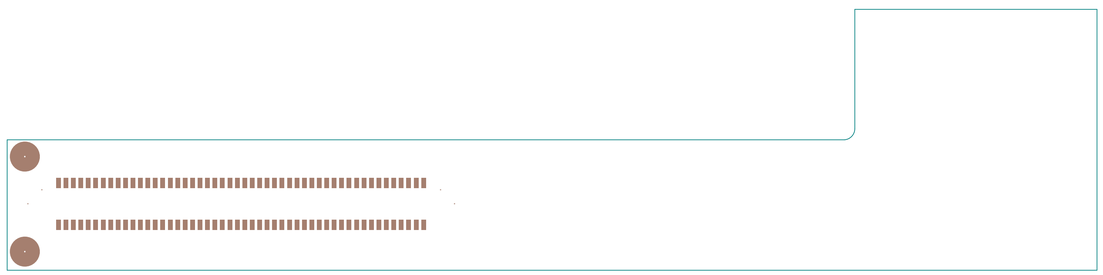
SHT 8 OF 14

ATLAS
OPTO Board
ERM Long

PC- 256-101-10

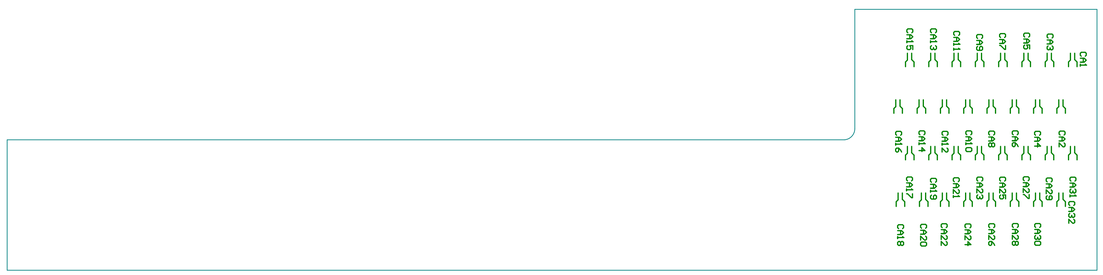
REVISION 02 B

2/17/2022 2:48:02 PM ERM_OPTO_Long



SLAC NATIONAL ACCELERATOR LABORATORY — U.S. DEPARTMENT OF ENERGY	Solder Mask Bottom	SHT 9 OF 14	
	ATLAS OPTO Board ERM Long		
ENGR: A. Young — DATE: 04–14–2020	PC– 256–101–10	REVISION 02	B
CHKR: A. Young — DATE: 02–17–2022			
DSGN: A. Young/C.Yee — DATE: 02–17–2022			

2/17/2022 2:48:02 PM ERM_OPTO_Long



SLAC NATIONAL ACCELERATOR LABORATORY — U.S. DEPARTMENT OF ENERGY

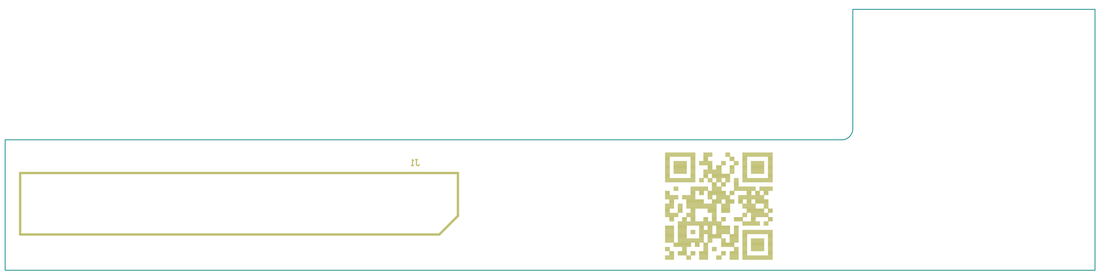
ENGR: A. Young	DATE: 04–14–2020
CHKR: A. Young	DATE: 02–17–2022
DSGN: A. Young/C.Yee	DATE: 02–17–2022

Silkscreen Top — SHT 10 OF 14

ATLAS
OPTO Board
ERM Long

PC– 256–101–10 — REVISION 02 — B

2/17/2022 2:48:02 PM ERM_OPTO_Long



SLAC NATIONAL ACCELERATOR LABORATORY

U.S. DEPARTMENT OF ENERGY

ENGR: A. Young	DATE: 04–14–2020
CHKR: A. Young	DATE: 02–17–2022
DSGN: A. Young/C.Yee	DATE: 02–17–2022

Silkscreen Bottom

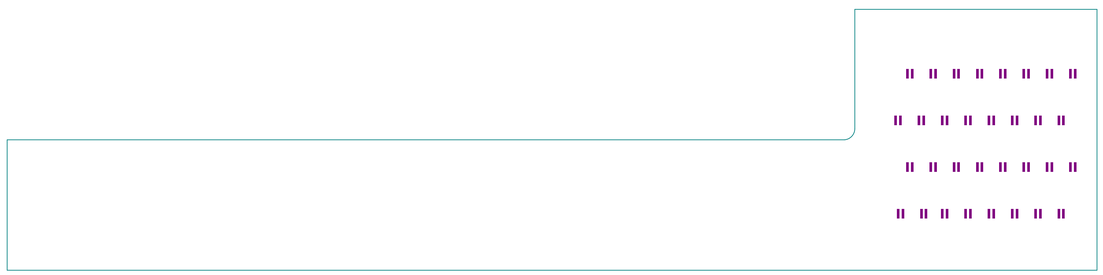
SHT 11 OF 14

ATLAS
OPTO Board
ERM Long

PC– 256–101–10

REVISION 02 B

2/17/2022 2:48:02 PM ERM_OPTO_Long



SLAC NATIONAL ACCELERATOR LABORATORY — U.S. DEPARTMENT OF ENERGY	Solder Paste Top	SHT 12 OF 14
	ATLAS OPTO Board ERM Long	
ENGR: A. Young — DATE: 04–14–2020		
CHKR: A. Young — DATE: 02–17–2022		
DSGN: A. Young/C.Yee — DATE: 02–17–2022	PC– 256–101–10	REVISION 02 — B

2/17/2022 2:48:02 PM ERM_OPTO_Long

SLAC U.S. DEPARTMENT OF ENERGY

NATIONAL ACCELERATOR LABORATORY

ENGR: A. Young	DATE: 04-14-2020
CHKR: A. Young	DATE: 02-17-2022
DSGN: A. Young/C.Yee	DATE: 02-17-2022

Solder Paste Bottom

SHT 13 OF 14

ATLAS
OPTO Board
ERM Long

PC-256-101-10

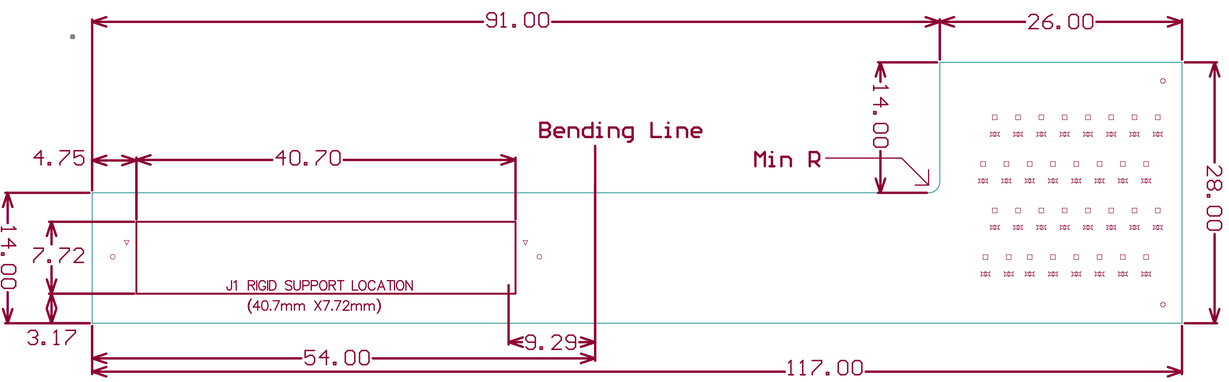
REVISION 02

B

2/17/2022 2:48:02 PM ERM_OPTO_Long

Layer	Name	Material	Thickness	Constant	Flex Region	Rigid Region
	Top Overlay					
	Top Solder	Solder Resist	0.40mil	3.5		
	Flex Region Top Overlay 1					
	Flex Region Top Coverlay 1	FC-002	0.47mil	3.9		
1	Layer_1 Top		0.70mil			
	Dielectric 1	I-TERA MT40	6.60mil	3.45		
2	Layer_2 GND Plane 1		1.40mil			
	Dielectric 2	Composite dielectric	2.76mil	3.48		
	Dielectric 2a	FR0110	4.20mil	3.9		
3	Layer_3 Inner Signal 1		0.50mil			
	Dielectric 3	Composite dielectric	3.00mil	3		
	Dielectric 3a	Composite dielectric	0.90mil	3		
4	Layer_4 GND Plane 2		0.50mil			
	Dielectric 4	RF775-RA	3.00mil	3		
5	Layer_5 Inner Signal 2		0.50mil			
	Dielectric 5	Composite dielectric	1.60mil	3.48		
	Dielectric 5a	Composite dielectric	2.76mil	3.48		
6	Layer_6 GND Plane 3		1.40mil			
	Dielectric 6	I-TERA MT40	6.60mil	3.45		
7	Layer_7 Bottom		0.70mil			
	Bottom Overlay					
	Flex Region Bottom Coverlay 1	FC-100	0.05mil	3.4		
	Flex Rigion Bottom					

Symbol	Count	Hole Size	Plated	Hole Type	Drill Layer Pair	Pad Shape	
⌑	64	6.00mil (0.152mm)	PTH	Round	Layer_1 Top - Layer_7 Bottom	Rounded	
□	98	8.00mil (0.203mm)	PTH	Round	(Mixed)	Rounded	
○	2	32.68mil (0.830mm)	NPTH	Round	Layer_1 Top - Layer_7 Bottom	Rounded	This should be on flex area (Layer_3 – Layer_5)
▽	2	57.09mil (1.450mm)	NPTH	Round	Layer_1 Top - Layer_7 Bottom	Rounded	This should be on flex area (Layer_3 – Layer_5)
⌖	2	90.00mil (2.286mm)	PTH	Round	Layer_3 Inner Signal 1 - Layer_5 Inner Signal 2	Rounded	
⌖	2	95.00mil (2.413mm)	PTH	Round	Layer_1 Top - Layer_7 Bottom	Rounded	
	170 Total						



NOTES: (UNLESS OTHERWISE SPECIFIED)

1. BOARD LAYERS = 7
2. MATERIAL: Isola TerraGreen, Flex and Rigid.
3. OVERALL FINISHED THICKNESS: 0.146 +/–0.005"
4. PLATE THROUGH ALL HOLES
5. HOLE SIZES IN DRILL CHART ARE FINISHED DIAMETERS, SHALL HAVE A TOLERANCE OF +/– .003".
6. FINISH: ENIG
7. SOLDERMASK: LPI, COLOR=GREEN ON BOTH SIDE.
8. SILKSCREEN: WHITE NON–CONDUCTIVE EPOXY INK
9. BOARD MUST MEET IPC–A–600 CLASS 2, LESS THAN 1.5% BOW AND TWIST, AND UL STANDARDS
10. 100% ELECTRICAL TEST OF ALL NETS.
11. MARK BOARD SHOWING MANUFACTURER ID AND DATE CODE
12. TRIM BOARD ALONG TRIM LINE AND BREAK ALL SHARP EDGES.
13. ADD RIGID SUPPORT FOR J1 ON TOP SIDE OF THE FLEX SECTION.
14. ALL DIFFERENTIAL PAIR ARE CONTROLLED IMPEDANCE AT 100 OHMS +/–10% ON LAYER 3 AND 5, FLEX REGION (3/3/3), REGID REGION (5.5/5/5.5).
15. THE 4 NON–PLATED HOLES ARE ON THE FLEX AREA.

SLAC NATIONAL ACCELERATOR LABORATORY — U.S. DEPARTMENT OF ENERGY

ENGR: A. Young	DATE: 04–14–2020
CHKR: A. Young	DATE: 02–17–2022
DSGN: A. Young/C.Yee	DATE: 02–17–2022

Fab & Drill Drawing — SHT 14 OF 14

ATLAS
OPTO Board
ERM Long

PC– 256–101–10 — REVISION 02 B

2/17/2022 2:48:02 PM ERM_OPTO_Long