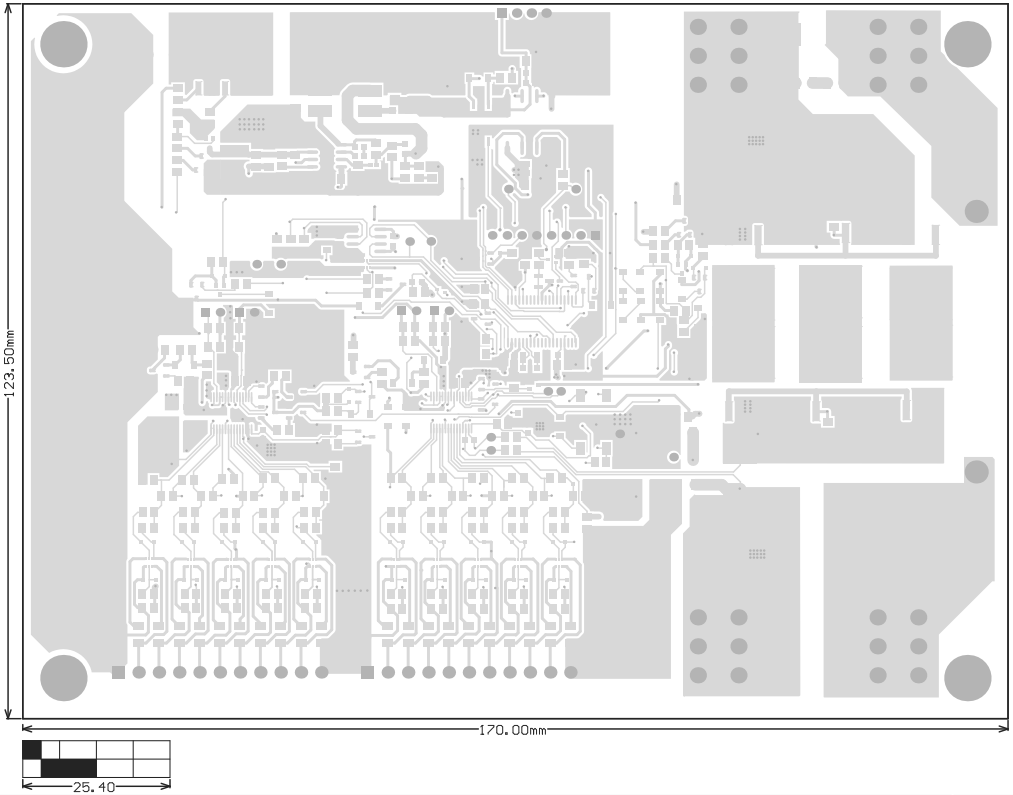


DESIGN INFORMATION	
MIN. TRACK WIDTH:	8 MIL
MIN. CLEARANCE:	0.2 mm
MIN. VIA PAD SIZE:	24 MIL

MINIMUM ANNULAR RING 0.05mm (2MIL) EXTERNAL
PER IPC-D-275 CLASS 2 LEVEL C
REGISTRATION TOLERANCES: METAL +/- 5 MIL, HOLES +/- 3 MIL
HOLE SIZE TOLERANCE (UNLESS OTHERWISE SPECIFIED): +/- 3 MIL

MATERIAL:
[ ] FR-408 [X] FR-4 High Tg [ ] OTHER
THICKNESS: [X] 62 MIL (1.6mm) +/-10% [ ] OTHER
TOLERANCE: [X] ANSI IPC-6012 TYPE 3 CLASS 2
[ ] OTHER +/-
BOW & TWIST: [X] ANSI IPC-6012 TYPE 3 CLASS 2
[ ] OTHER +/-

DRILLING:
REFERENCE: [X] AS SHOWN [X] NC_DRILL FILES
PTH MIN COPPER THICKNESS: [X] 1MIL [ ] OTHER

BOARD FINISH:
SILKSCREEN: [X] TOP [X] BOTTOM
SILKSCREEN COLOR: [X] WHITE [ ] OTHER
SOLDER RESIST COLOR: [X] GREEN [ ] OTHER
[X] MATTE [ ] SEMI-GLOSS
SURFACE FINISH: [X] IMMERSION GOLD (ENIG) [ ] ENEPIG
[ ] IMM. TIN/SILVER OR EQUIV [ ] OTHER
ARRAY/PANEL: [ ] CUT AND TRIM PER M1 BOARD OUTLINE
[ ] N.C. ROUTE [X] V. SCORE
CERTIFICATION: MATERIALS AND WORKMANSHIP FOR ALL PCBS TO MEET OR EXCEED THE REQUIREMENTS OF:
[X] ANSI IPC-A-600F CLASS -> [ ] 1 [X] 2 [ ] 3
[X] RoHS [ ] OTHER PER ORDER
ALL BOARDS MUST MEET OR EXCEED UL94-V0 REQUIREMENTS.
PCB MUST BEAR THE UL94V-0 UL REGISTERED MATERIAL ID NUMBER

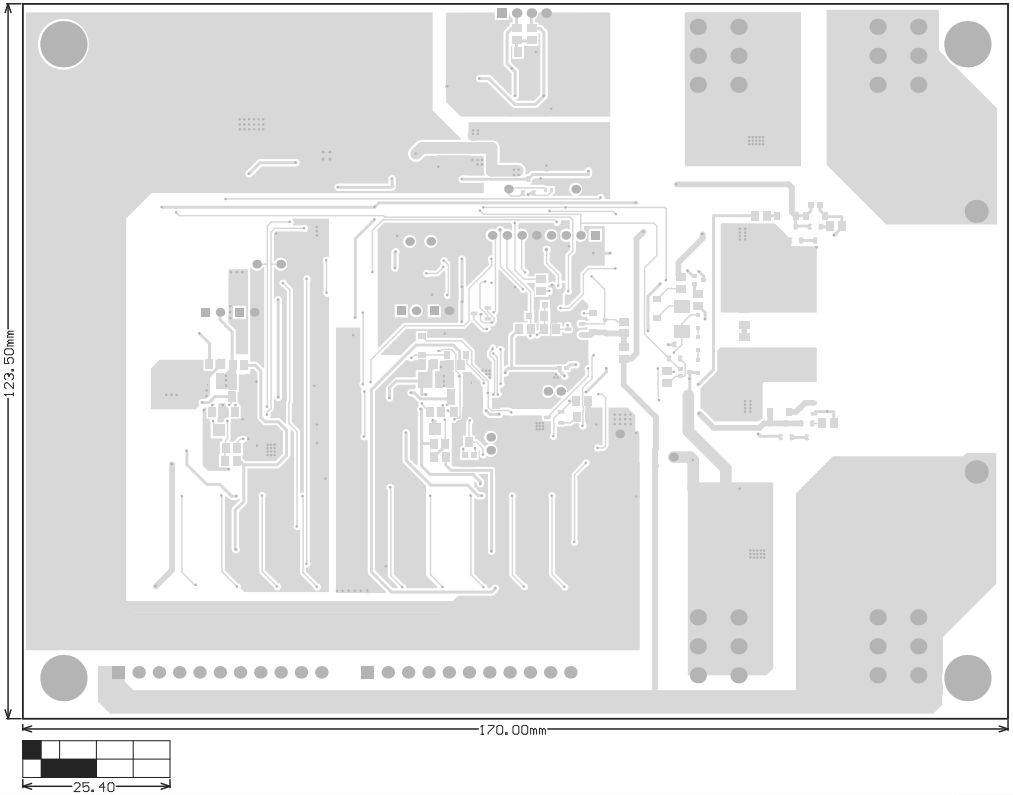
ADDITIONAL REQUIREMENTS:
MICROSECTION: [ ] YES
BARE BOARD ELEC. TEST: [ ] NONE [X] REQUIRED [ ] PER ORDER

TEXAS INSTRUMENTS

PROJECT TITLE: 20S Battery Module Reference Design
DESIGNED FOR: Public Release
FILE NAME: 20S_Reference_Design_TID_01093_E3.PcbDoc

ALL ARTWORK VIEWED FROM TOP SIDE	BOARD #: TIDA-01093	REV: E3	SVN REV: Not In VersionControl
LAYER NAME = M20 Board Dimensions	TID #: 01093		
PLOT NAME = Top Layer	GENERATED : 2016/7/11 16:10:36		TEXAS INSTRUMENTS

ENGINEER: Steven Yao	LAYOUT BY: Steven Yao
SCALE: 1.00	ALTIUM DESIGNER VERSION: 14.3.14.34663



DESIGN INFORMATION	
MIN. TRACK WIDTH:	8 MIL
MIN. CLEARANCE:	0.2 mm
MIN. VIA PAD SIZE:	24 MIL

MINIMUM ANNULAR RING 0.05mm (2MIL) EXTERNAL
PER IPC-D-275 CLASS 2 LEVEL C
REGISTRATION TOLERANCES: METAL +/- 5 MIL, HOLES +/- 3 MIL
HOLE SIZE TOLERANCE (UNLESS OTHERWISE SPECIFIED): +/- 3 MIL

MATERIAL:
[ ] FR-408 [X] FR-4 High Tg [ ] OTHER _____
THICKNESS: [X] 62 MIL (1.6mm) +/-10% [ ] OTHER _____
TOLERANCE: [X] ANSI IPC-6012 TYPE 3 CLASS 2
[ ] OTHER +/- _____
BOW & TWIST: [X] ANSI IPC-6012 TYPE 3 CLASS 2
[ ] OTHER +/- _____

DRILLING:
REFERENCE: [X] AS SHOWN [X] NC_DRILL FILES
PTH MIN COPPER THICKNESS: [X] 1MIL [ ] OTHER _____

BOARD FINISH:
SILKSCREEN: [X] TOP [X] BOTTOM
SILKSCREEN COLOR: [X] WHITE [ ] OTHER _____
SOLDER RESIST COLOR: [X] GREEN [ ] OTHER _____
[X] MATTE [ ] SEMI-GLOSS

SURFACE FINISH: [X] IMMERSION GOLD (ENIG) [ ] ENEPIG
[ ] IMM. TIN/SILVER OR EQUIV [ ] OTHER _____

ARRAY/PANEL: [ ] CUT AND TRIM PER M1 BOARD OUTLINE
[ ] N.C. ROUTE [X] V. SCORE

CERTIFICATION: MATERIALS AND WORKMANSHIP FOR ALL PCBS TO MEET OR EXCEED THE REQUIREMENTS OF:
[X] ANSI IPC-A-600F CLASS -> [ ] 1 [X] 2 [ ] 3
[X] RoHS [ ] OTHER PER ORDER

ALL BOARDS MUST MEET OR EXCEED UL94-V0 REQUIREMENTS.
PCB MUST BEAR THE UL94V-0 UL REGISTERED MATERIAL ID NUMBER

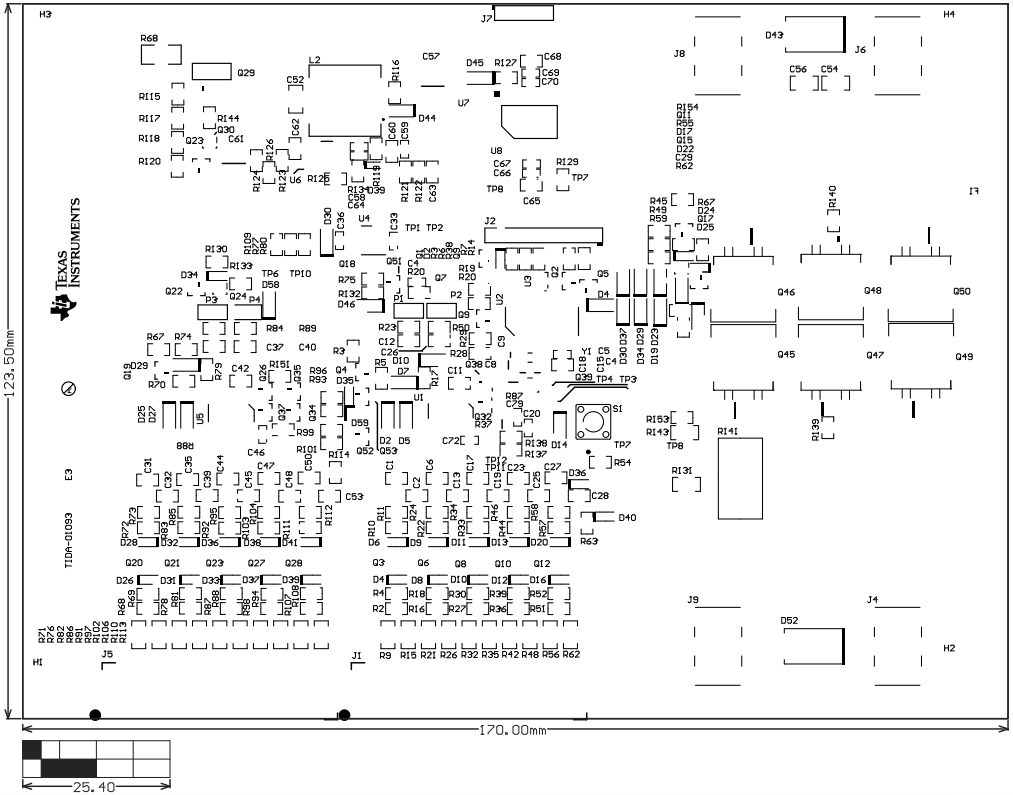
ADDITIONAL REQUIREMENTS:
MICROSECTION: [ ] YES
BARE BOARD ELEC. TEST: [ ] NONE [X] REQUIRED [ ] PER ORDER

TEXAS INSTRUMENTS

PROJECT TITLE:	20S Battery Module Reference Design
DESIGNED FOR:	Public Release
FILE NAME:	20S_Reference_Design_TID_01093_E3.PcbDoc

ALL ARTWORK VIEWED FROM TOP SIDE	BOARD #: TIDA-01093	REV: E3	SVN REV: Not In VersionControl
LAYER NAME = [illegible]	TID #: 01093		
PLOT NAME = Bottom Layer	GENERATED : 2016/7/11 16:10:38		TEXAS INSTRUMENTS

ENGINEER: Steven Yao	LAYOUT BY: Steven Yao
SCALE: 1.00	ALTIUM DESIGNER VERSION: 14.3.14.34663

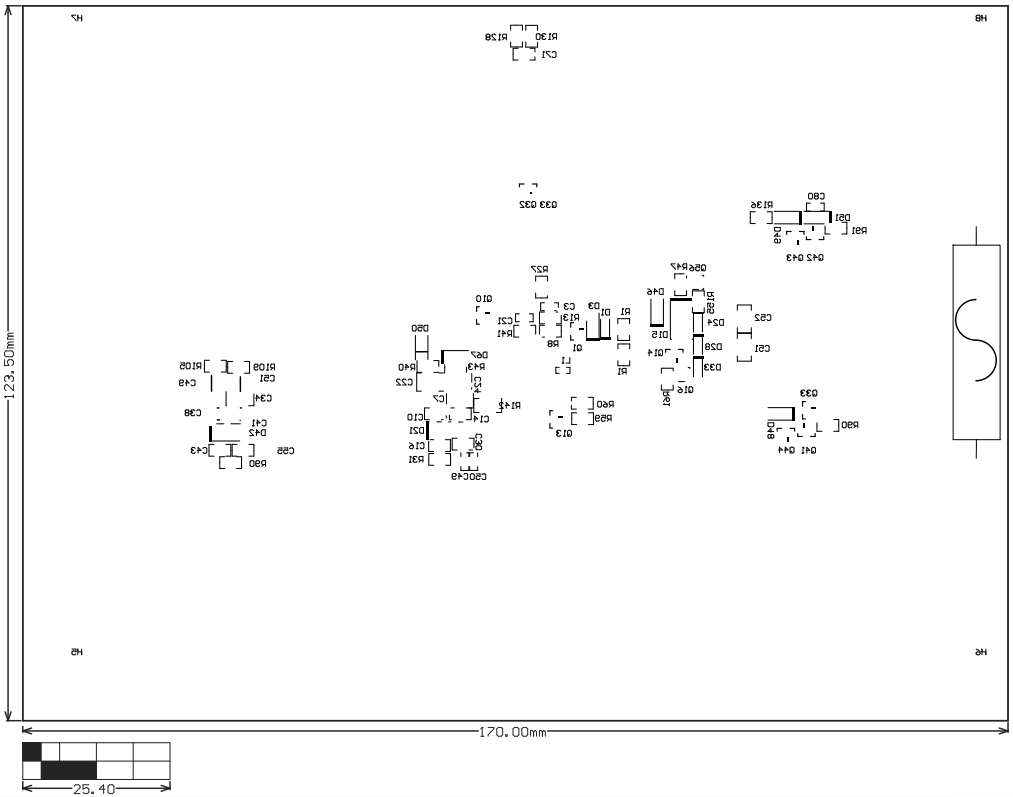


DESIGN INFORMATION	
MIN. TRACK WIDTH:	8 MIL
MIN. CLEARANCE:	0.2 mm
MIN. VIA PAD SIZE:	24 MIL
MINIMUM ANNULAR RING 0.05mm (2MIL) EXTERNAL PER IPC-D-275 CLASS 2 LEVEL C	
REGISTRATION TOLERANCES: METAL +/- 5 MIL, HOLES +/- 3 MIL	
HOLE SIZE TOLERANCE (UNLESS OTHERWISE SPECIFIED): +/- 3 MIL	
MATERIAL:	
[ ] FR-408 [X] FR-4 High Tg [ ] OTHER	
THICKNESS: [X] 62 MIL (1.6mm) +/-10% [ ] OTHER	
TOLERANCE: [X] ANSI IPC-6012 TYPE 3 CLASS 2	
[ ] OTHER +/-	
BOW & TWIST: [X] ANSI IPC-6012 TYPE 3 CLASS 2	
[ ] OTHER +/-	
DRILLING:	
REFERENCE: [X] AS SHOWN [X] NC_DRILL FILES	
PTH MIN COPPER THICKNESS: [X] 1MIL [ ] OTHER	
BOARD FINISH:	
SILKSCREEN: [X] TOP [X] BOTTOM	
SILKSCREEN COLOR: [X] WHITE [ ] OTHER	
SOLDER RESIST COLOR: [X] GREEN [ ] OTHER	
[X] MATTE [ ] SEMI-GLOSS	
SURFACE FINISH: [X] IMMERSION GOLD (ENIG) [ ] ENEPIG	
[ ] IMM. TIN/SILVER OR EQUIV [ ] OTHER	
ARRAY/PANEL: [ ] CUT AND TRIM PER M1 BOARD OUTLINE	
[ ] N.C. ROUTE [X] V. SCORE	
CERTIFICATION: MATERIALS AND WORKMANSHIP FOR ALL PCBS TO MEET OR EXCEED THE REQUIREMENTS OF:	
[X] ANSI IPC-A-600F CLASS -> [ ] 1 [X] 2 [ ] 3	
[X] RoHS [ ] OTHER PER ORDER	
ALL BOARDS MUST MEET OR EXCEED UL94-V0 REQUIREMENTS. PCB MUST BEAR THE UL94V-0 UL REGISTERED MATERIAL ID NUMBER	
ADDITIONAL REQUIREMENTS:	
MICROSECTION: [ ] YES	
BARE BOARD ELEC. TEST: [ ] NONE [X] REQUIRED [ ] PER ORDER	

ALL ARTWORK VIEWED FROM TOP SIDE	BOARD #: TIDA-01093	REV: E3	SVN REV: Not In VersionControl
LAYER NAME = [illegible]	TID #: 01093		
PLOT NAME = Top Silkscreen Overlay	GENERATED : 2016/7/11 16:10:41		TEXAS INSTRUMENTS

TEXAS INSTRUMENTS

PROJECT TITLE:	20S Battery Module Reference Design
DESIGNED FOR:	Public Release
FILE NAME:	20S_Reference_Design_TID_01093_E3.PcbDoc
ENGINEER: Steven Yao	LAYOUT BY: Steven Yao
SCALE: 1.00	ALTIUM DESIGNER VERSION: 14.3.14.34663



DESIGN INFORMATION	
MIN. TRACK WIDTH:	8 MIL
MIN. CLEARANCE:	0.2 mm
MIN. VIA PAD SIZE:	24 MIL
MINIMUM ANNULAR RING 0.05mm (2MIL) EXTERNAL PER IPC-D-275 CLASS 2 LEVEL C	
REGISTRATION TOLERANCES: METAL +/- 5 MIL, HOLES +/- 3 MIL	
HOLE SIZE TOLERANCE (UNLESS OTHERWISE SPECIFIED): +/- 3 MIL	

MATERIAL:
- [ ] FR-408 [X] FR-4 High Tg [ ] OTHER
- THICKNESS: [X] 62 MIL (1.6mm) +/-10% [ ] OTHER
- TOLERANCE: [X] ANSI IPC-6012 TYPE 3 CLASS 2; [ ] OTHER +/-
- BOW & TWIST: [X] ANSI IPC-6012 TYPE 3 CLASS 2; [ ] OTHER +/-

DRILLING:
- REFERENCE: [X] AS SHOWN [X] NC_DRILL FILES
- PTH MIN COPPER THICKNESS: [X] 1MIL [ ] OTHER

BOARD FINISH:
- SILKSCREEN: [X] TOP [X] BOTTOM
- SILKSCREEN COLOR: [X] WHITE [ ] OTHER
- SOLDER RESIST COLOR: [X] GREEN [ ] OTHER; [X] MATTE [ ] SEMI-GLOSS
- SURFACE FINISH: [X] IMMERSION GOLD (ENIG) [ ] ENEPIG; [ ] IMM. TIN/SILVER OR EQUIV [ ] OTHER
- ARRAY/PANEL: [ ] CUT AND TRIM PER M1 BOARD OUTLINE; [ ] N.C. ROUTE [X] V. SCORE
- CERTIFICATION: MATERIALS AND WORKMANSHIP FOR ALL PCBS TO MEET OR EXCEED THE REQUIREMENTS OF:
  - [X] ANSI IPC-A-600F CLASS -> [ ] 1 [X] 2 [ ] 3
  - [X] RoHS [ ] OTHER PER ORDER

ALL BOARDS MUST MEET OR EXCEED UL94-V0 REQUIREMENTS.
PCB MUST BEAR THE UL94V-0 UL REGISTERED MATERIAL ID NUMBER

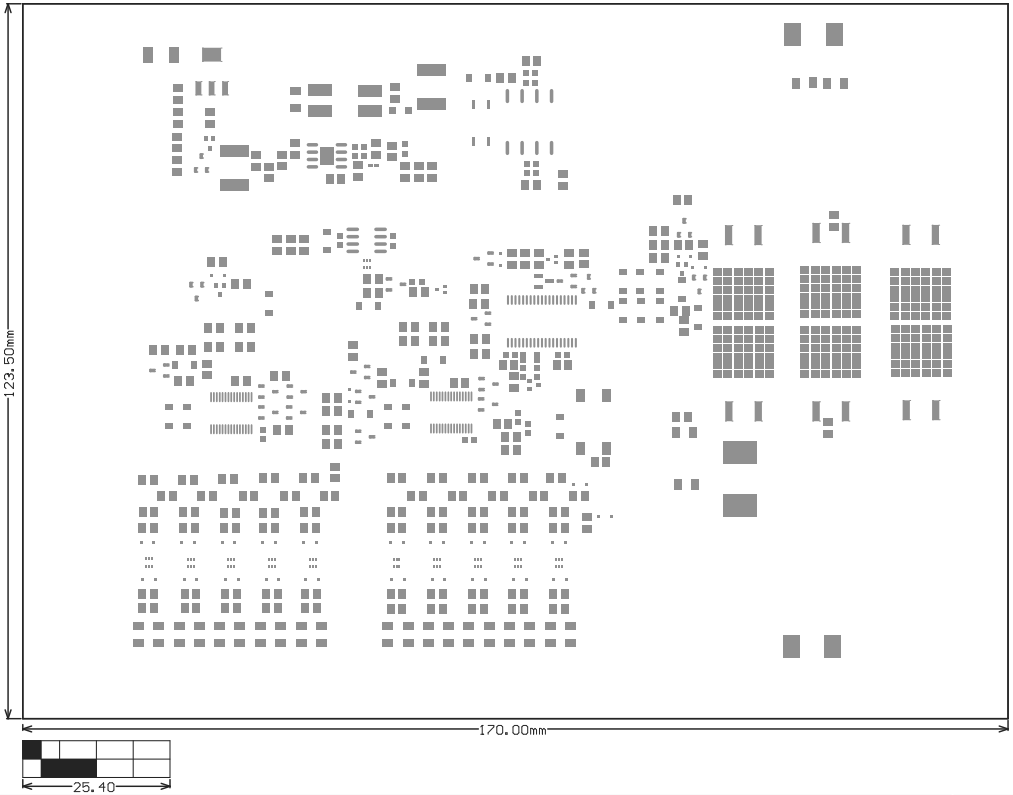
ADDITIONAL REQUIREMENTS:
- MICROSECTION: [ ] YES
- BARE BOARD ELEC. TEST: [ ] NONE [X] REQUIRED [ ] PER ORDER

TEXAS INSTRUMENTS

PROJECT TITLE:	20S Battery Module Reference Design
DESIGNED FOR:	Public Release
FILE NAME:	20S_Reference_Design_TID_01093_E3.PcbDoc

ALL ARTWORK VIEWED FROM TOP SIDE	BOARD #: TIDA-01093	REV: E3	SVN REV: Not In VersionControl
LAYER NAME = [illegible]ions	TID #: 01093		
PLOT NAME = Bottom Silkscreen Overlay	GENERATED : 2016/7/11 16:10:43		TEXAS INSTRUMENTS

ENGINEER: Steven Yao	LAYOUT BY: Steven Yao
SCALE: 1.00	ALTIUM DESIGNER VERSION: 14.3.14.34663



DESIGN INFORMATION	
MIN. TRACK WIDTH:	8 MIL
MIN. CLEARANCE:	0.2 mm
MIN. VIA PAD SIZE:	24 MIL

MINIMUM ANNULAR RING 0.05mm (2MIL) EXTERNAL
PER IPC-D-275 CLASS 2 LEVEL C
REGISTRATION TOLERANCES: METAL +/- 5 MIL, HOLES +/- 3 MIL
HOLE SIZE TOLERANCE (UNLESS OTHERWISE SPECIFIED): +/- 3 MIL

MATERIAL:
[ ] FR-408 [X] FR-4 High Tg [ ] OTHER _____
THICKNESS: [X] 62 MIL (1.6mm) +/-10% [ ] OTHER _____
TOLERANCE: [X] ANSI IPC-6012 TYPE 3 CLASS 2
[ ] OTHER +/- _____
BOW & TWIST: [X] ANSI IPC-6012 TYPE 3 CLASS 2
[ ] OTHER +/- _____

DRILLING:
REFERENCE: [X] AS SHOWN [X] NC_DRILL FILES
PTH MIN COPPER THICKNESS: [X] 1MIL [ ] OTHER _____

BOARD FINISH:
SILKSCREEN: [X] TOP [X] BOTTOM
SILKSCREEN COLOR: [X] WHITE [ ] OTHER _____
SOLDER RESIST COLOR: [X] GREEN [ ] OTHER _____
[X] MATTE [ ] SEMI-GLOSS

SURFACE FINISH: [X] IMMERSION GOLD (ENIG) [ ] ENEPIG
[ ] IMM. TIN/SILVER OR EQUIV [ ] OTHER _____

ARRAY/PANEL: [ ] CUT AND TRIM PER M1 BOARD OUTLINE
[ ] N.C. ROUTE [X] V. SCORE

CERTIFICATION: MATERIALS AND WORKMANSHIP FOR ALL PCBS TO MEET OR EXCEED THE REQUIREMENTS OF:
[X] ANSI IPC-A-600F CLASS -> [ ] 1 [X] 2 [ ] 3
[X] RoHS [ ] OTHER PER ORDER

ALL BOARDS MUST MEET OR EXCEED UL94-V0 REQUIREMENTS.
PCB MUST BEAR THE UL94V-0 UL REGISTERED MATERIAL ID NUMBER

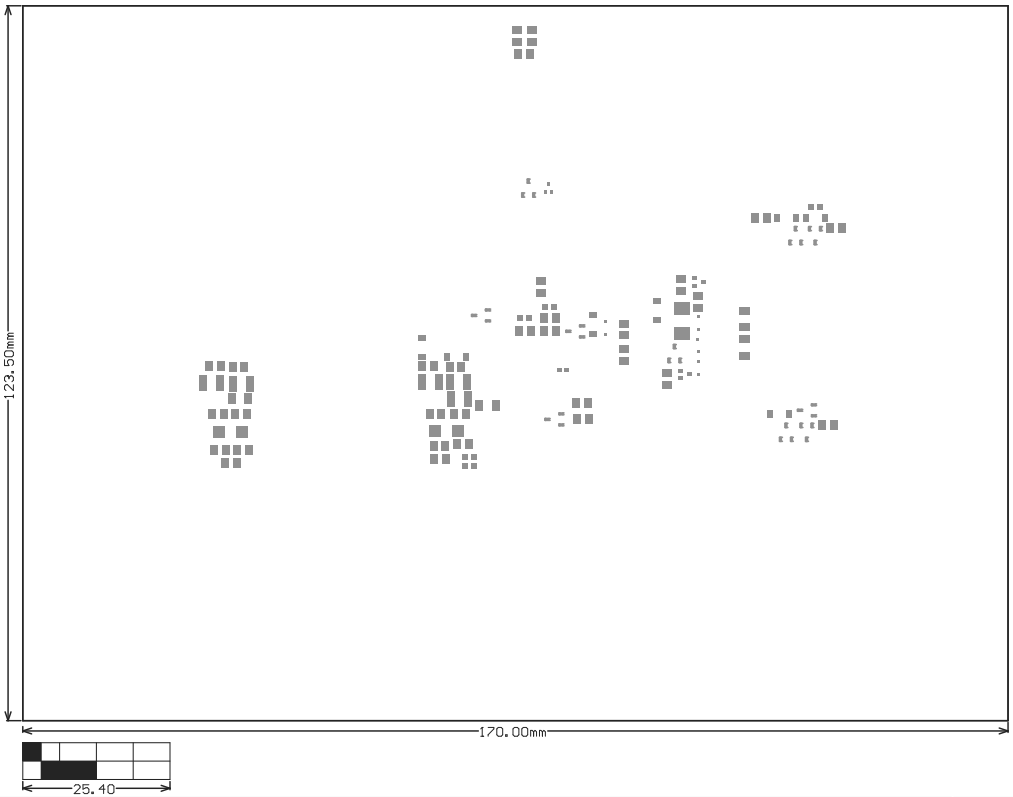
ADDITIONAL REQUIREMENTS:
MICROSECTION: [ ] YES
BARE BOARD ELEC. TEST: [ ] NONE [X] REQUIRED [ ] PER ORDER

TEXAS INSTRUMENTS

PROJECT TITLE: 20S Battery Module Reference Design
DESIGNED FOR: Public Release
FILE NAME: 20S_Reference_Design_TID_01093_E3.PcbDoc

ALL ARTWORK VIEWED FROM TOP SIDE	BOARD #: TIDA-01093	REV: E3	SVN REV: Not In VersionControl
LAYER NAME = [illegible]	TID #: 01093		
PLOT NAME = Top Paste Mask Print	GENERATED : 2016/7/11 16:10:46		TEXAS INSTRUMENTS

ENGINEER: Steven Yao	LAYOUT BY: Steven Yao
SCALE: 1.00	ALTIUM DESIGNER VERSION: 14.3.14.34663



DESIGN INFORMATION	
MIN. TRACK WIDTH:	8 MIL
MIN. CLEARANCE:	0.2 mm
MIN. VIA PAD SIZE:	24 MIL

MINIMUM ANNULAR RING 0.05mm (2MIL) EXTERNAL
PER IPC-D-275 CLASS 2 LEVEL C
REGISTRATION TOLERANCES: METAL +/- 5 MIL, HOLES +/- 3 MIL
HOLE SIZE TOLERANCE (UNLESS OTHERWISE SPECIFIED): +/- 3 MIL

MATERIAL:
[ ] FR-408 [X] FR-4 High Tg [ ] OTHER _____
THICKNESS: [X] 62 MIL (1.6mm) +/-10% [ ] OTHER _____
TOLERANCE: [X] ANSI IPC-6012 TYPE 3 CLASS 2
[ ] OTHER +/- _____
BOW & TWIST: [X] ANSI IPC-6012 TYPE 3 CLASS 2
[ ] OTHER +/- _____

DRILLING:
REFERENCE: [X] AS SHOWN [X] NC_DRILL FILES
PTH MIN COPPER THICKNESS: [X] 1MIL [ ] OTHER _____

BOARD FINISH:
SILKSCREEN: [X] TOP [X] BOTTOM
SILKSCREEN COLOR: [X] WHITE [ ] OTHER _____
SOLDER RESIST COLOR: [X] GREEN [ ] OTHER _____
[X] MATTE [ ] SEMI-GLOSS

SURFACE FINISH: [X] IMMERSION GOLD (ENIG) [ ] ENEPIG
[ ] IMM. TIN/SILVER OR EQUIV [ ] OTHER _____

ARRAY/PANEL: [ ] CUT AND TRIM PER M1 BOARD OUTLINE
[ ] N.C. ROUTE [X] V. SCORE

CERTIFICATION: MATERIALS AND WORKMANSHIP FOR ALL PCBS TO MEET OR EXCEED THE REQUIREMENTS OF:
[X] ANSI IPC-A-600F CLASS -> [ ] 1 [X] 2 [ ] 3
[X] RoHS [ ] OTHER PER ORDER

ALL BOARDS MUST MEET OR EXCEED UL94-V0 REQUIREMENTS.
PCB MUST BEAR THE UL94V-0 UL REGISTERED MATERIAL ID NUMBER

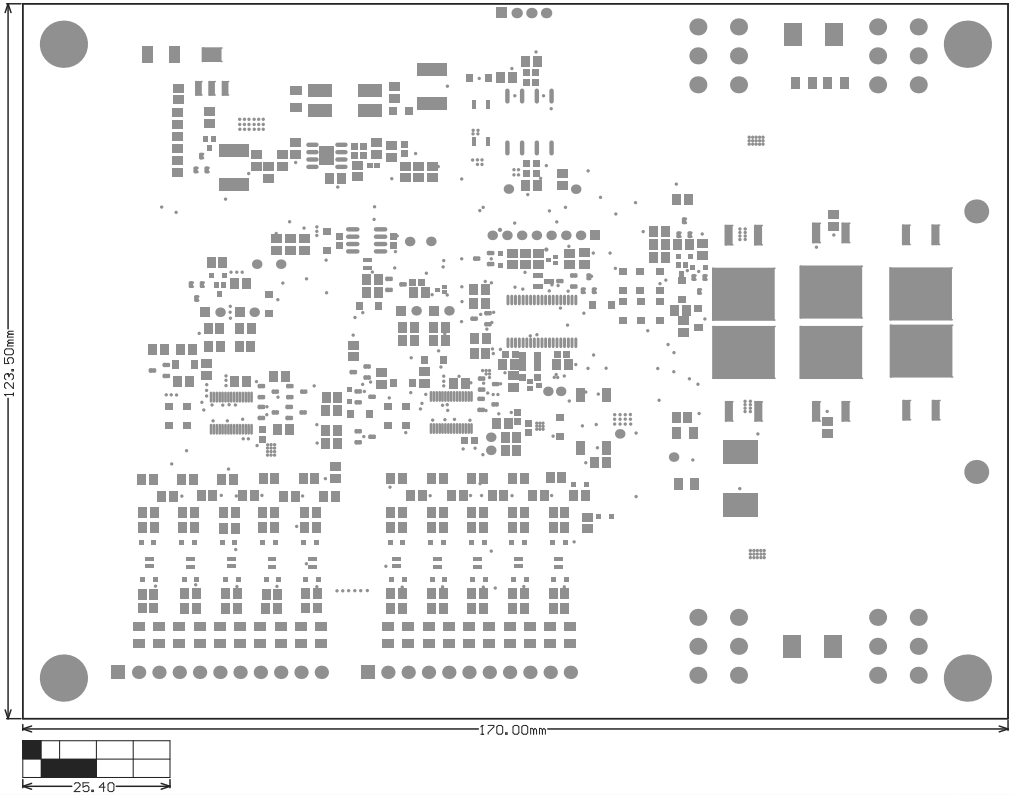
ADDITIONAL REQUIREMENTS:
MICROSECTION: [ ] YES
BARE BOARD ELEC. TEST: [ ] NONE [X] REQUIRED [ ] PER ORDER

TEXAS INSTRUMENTS

PROJECT TITLE:	20S Battery Module Reference Design
DESIGNED FOR:	Public Release
FILE NAME:	20S_Reference_Design_TID_01093_E3.PcbDoc

ALL ARTWORK VIEWED FROM TOP SIDE	BOARD #: TIDA-01093	REV: E3	SVN REV: Not In VersionControl
LAYER NAME = [illegible]	TID #: 01093		
PLOT NAME = Bottom Paste Mask Print	GENERATED : 2016/7/11 16:10:48		TEXAS INSTRUMENTS

ENGINEER: Steven Yao	LAYOUT BY: Steven Yao
SCALE: 1.00	ALTIUM DESIGNER VERSION: 14.3.14.34663



DESIGN INFORMATION	
MIN. TRACK WIDTH:	8 MIL
MIN. CLEARANCE:	0.2 mm
MIN. VIA PAD SIZE:	24 MIL

MINIMUM ANNULAR RING 0.05mm (2MIL) EXTERNAL
PER IPC-D-275 CLASS 2 LEVEL C
REGISTRATION TOLERANCES: METAL +/- 5 MIL, HOLES +/- 3 MIL
HOLE SIZE TOLERANCE (UNLESS OTHERWISE SPECIFIED): +/- 3 MIL

MATERIAL:
[ ] FR-408 [X] FR-4 High Tg [ ] OTHER
THICKNESS: [X] 62 MIL (1.6mm) +/-10% [ ] OTHER
TOLERANCE: [X] ANSI IPC-6012 TYPE 3 CLASS 2
[ ] OTHER +/-
BOW & TWIST: [X] ANSI IPC-6012 TYPE 3 CLASS 2
[ ] OTHER +/-

DRILLING:
REFERENCE: [X] AS SHOWN [X] NC_DRILL FILES
PTH MIN COPPER THICKNESS: [X] 1MIL [ ] OTHER

BOARD FINISH:
SILKSCREEN: [X] TOP [X] BOTTOM
SILKSCREEN COLOR: [X] WHITE [ ] OTHER
SOLDER RESIST COLOR: [X] GREEN [ ] OTHER
[X] MATTE [ ] SEMI-GLOSS

SURFACE FINISH: [X] IMMERSION GOLD (ENIG) [ ] ENEPIG
[ ] IMM. TIN/SILVER OR EQUIV [ ] OTHER

ARRAY/PANEL: [ ] CUT AND TRIM PER M1 BOARD OUTLINE
[ ] N.C. ROUTE [X] V. SCORE

CERTIFICATION: MATERIALS AND WORKMANSHIP FOR ALL PCBS TO MEET OR EXCEED THE REQUIREMENTS OF:
[X] ANSI IPC-A-600F CLASS -> [ ] 1 [X] 2 [ ] 3
[X] RoHS [ ] OTHER PER ORDER

ALL BOARDS MUST MEET OR EXCEED UL94-V0 REQUIREMENTS.
PCB MUST BEAR THE UL94V-0 UL REGISTERED MATERIAL ID NUMBER

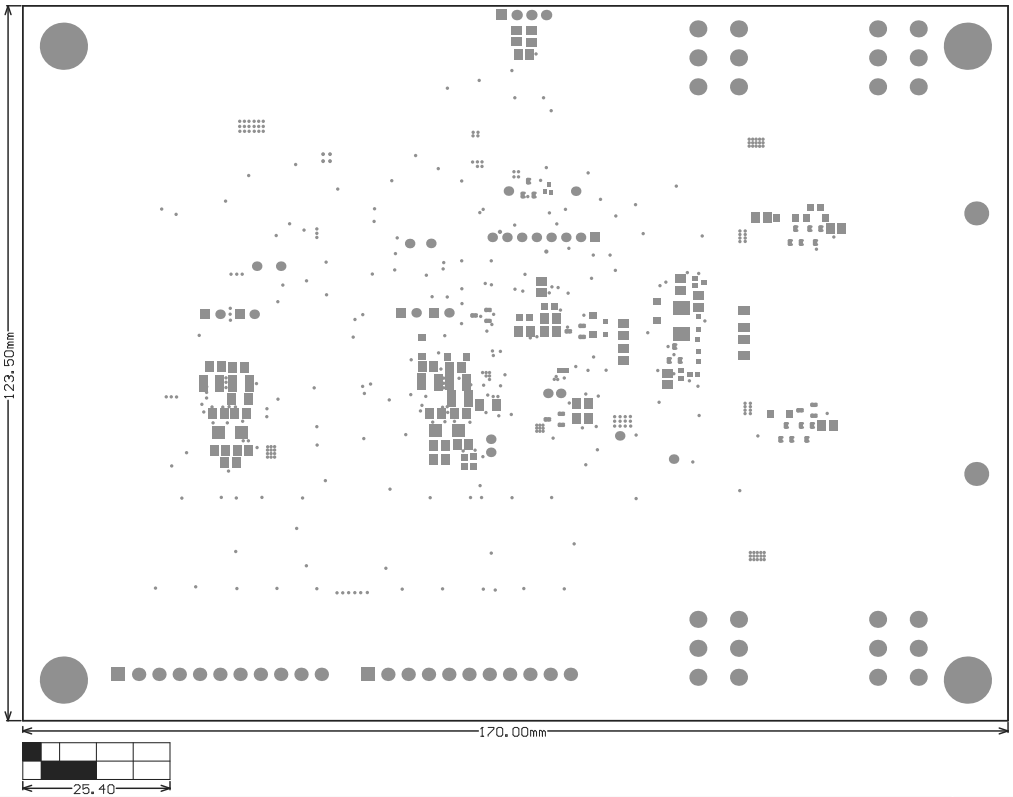
ADDITIONAL REQUIREMENTS:
MICROSECTION: [ ] YES
BARE BOARD ELEC. TEST: [ ] NONE [X] REQUIRED [ ] PER ORDER

TEXAS INSTRUMENTS

PROJECT TITLE:	20S Battery Module Reference Design
DESIGNED FOR:	Public Release
FILE NAME:	20S_Reference_Design_TID_01093_E3.PcbDoc

ALL ARTWORK VIEWED FROM TOP SIDE	BOARD #: TIDA-01093	REV: E3	SVN REV: Not In VersionControl
LAYER NAME = [illegible]	TID #: 01093		
PLOT NAME = Top Solder Mask Print	GENERATED : 2016/7/11 16:10:50		TEXAS INSTRUMENTS

ENGINEER: Steven Yao	LAYOUT BY: Steven Yao
SCALE: 1.00	ALTIUM DESIGNER VERSION: 14.3.14.34663



DESIGN INFORMATION	
MIN. TRACK WIDTH:	8 MIL
MIN. CLEARANCE:	0.2 mm
MIN. VIA PAD SIZE:	24 MIL

MINIMUM ANNULAR RING 0.05mm (2MIL) EXTERNAL
PER IPC-D-275 CLASS 2 LEVEL C
REGISTRATION TOLERANCES: METAL +/- 5 MIL, HOLES +/- 3 MIL
HOLE SIZE TOLERANCE (UNLESS OTHERWISE SPECIFIED): +/- 3 MIL

MATERIAL:
[ ] FR-408 [X] FR-4 High Tg [ ] OTHER _____
THICKNESS: [X] 62 MIL (1.6mm) +/-10% [ ] OTHER _____
TOLERANCE: [X] ANSI IPC-6012 TYPE 3 CLASS 2
[ ] OTHER +/- _____
BOW & TWIST: [X] ANSI IPC-6012 TYPE 3 CLASS 2
[ ] OTHER +/- _____

DRILLING:
REFERENCE: [X] AS SHOWN [X] NC_DRILL FILES
PTH MIN COPPER THICKNESS: [X] 1MIL [ ] OTHER _____

BOARD FINISH:
SILKSCREEN: [X] TOP [X] BOTTOM
SILKSCREEN COLOR: [X] WHITE [ ] OTHER _____
SOLDER RESIST COLOR: [X] GREEN [ ] OTHER _____
[X] MATTE [ ] SEMI-GLOSS

SURFACE FINISH: [X] IMMERSION GOLD (ENIG) [ ] ENEPIG
[ ] IMM. TIN/SILVER OR EQUIV [ ] OTHER _____

ARRAY/PANEL: [ ] CUT AND TRIM PER M1 BOARD OUTLINE
[ ] N.C. ROUTE [X] V. SCORE

CERTIFICATION: MATERIALS AND WORKMANSHIP FOR ALL PCBS TO MEET OR EXCEED THE REQUIREMENTS OF:
[X] ANSI IPC-A-600F CLASS -> [ ] 1 [X] 2 [ ] 3
[X] RoHS [ ] OTHER PER ORDER

ALL BOARDS MUST MEET OR EXCEED UL94-V0 REQUIREMENTS.
PCB MUST BEAR THE UL94V-0 UL REGISTERED MATERIAL ID NUMBER

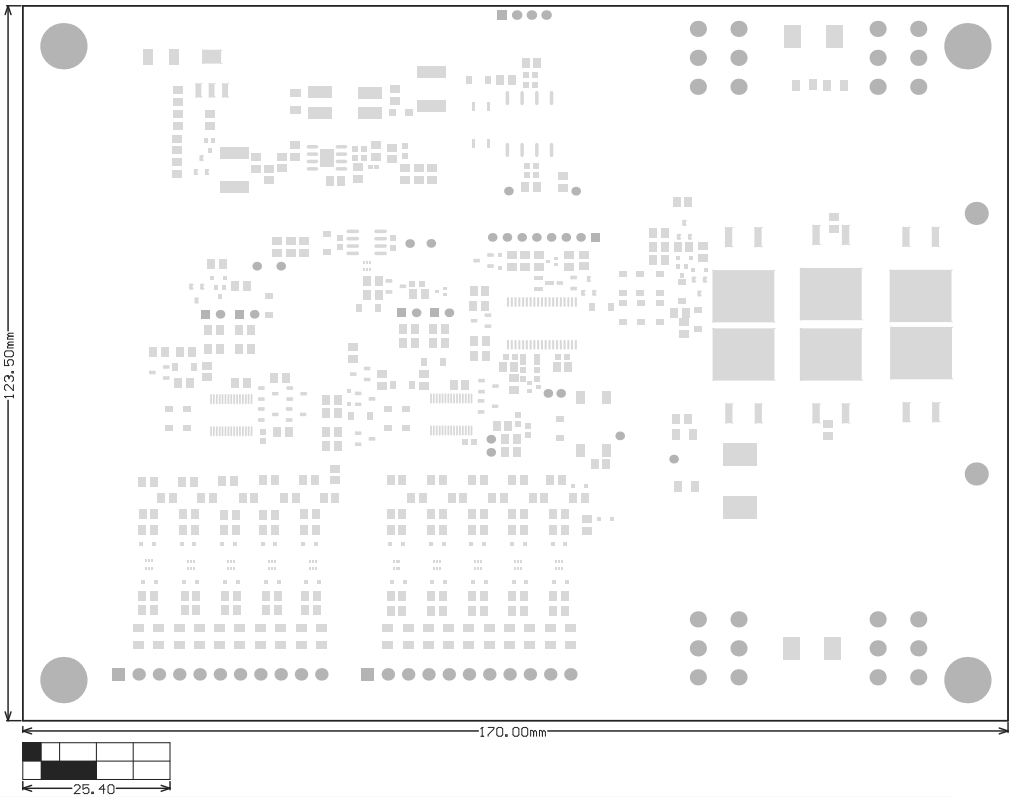
ADDITIONAL REQUIREMENTS:
MICROSECTION: [ ] YES
BARE BOARD ELEC. TEST: [ ] NONE [X] REQUIRED [ ] PER ORDER

TEXAS INSTRUMENTS

PROJECT TITLE:	20S Battery Module Reference Design
DESIGNED FOR:	Public Release
FILE NAME:	20S_Reference_Design_TID_01093_E3.PcbDoc

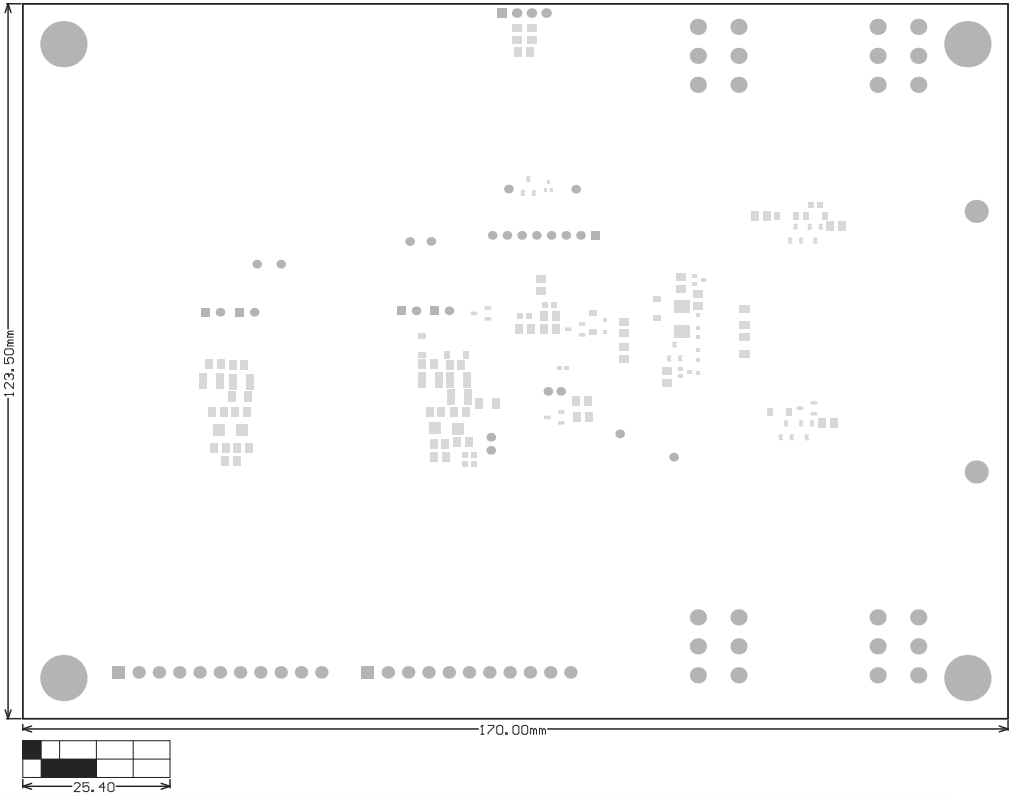
ALL ARTWORK VIEWED FROM TOP SIDE	BOARD #: TIDA-01093	REV: E3	SVN REV: Not In VersionControl
LAYER NAME = M2 Board Dimensions	TID #: 01093		
PLOT NAME = Bottom Solder Mask Print	GENERATED : 2016/7/11 16:10:53		TEXAS INSTRUMENTS

ENGINEER: Steven Yao	LAYOUT BY: Steven Yao
SCALE: 1.00	ALTIUM DESIGNER VERSION: 14.3.14.34663



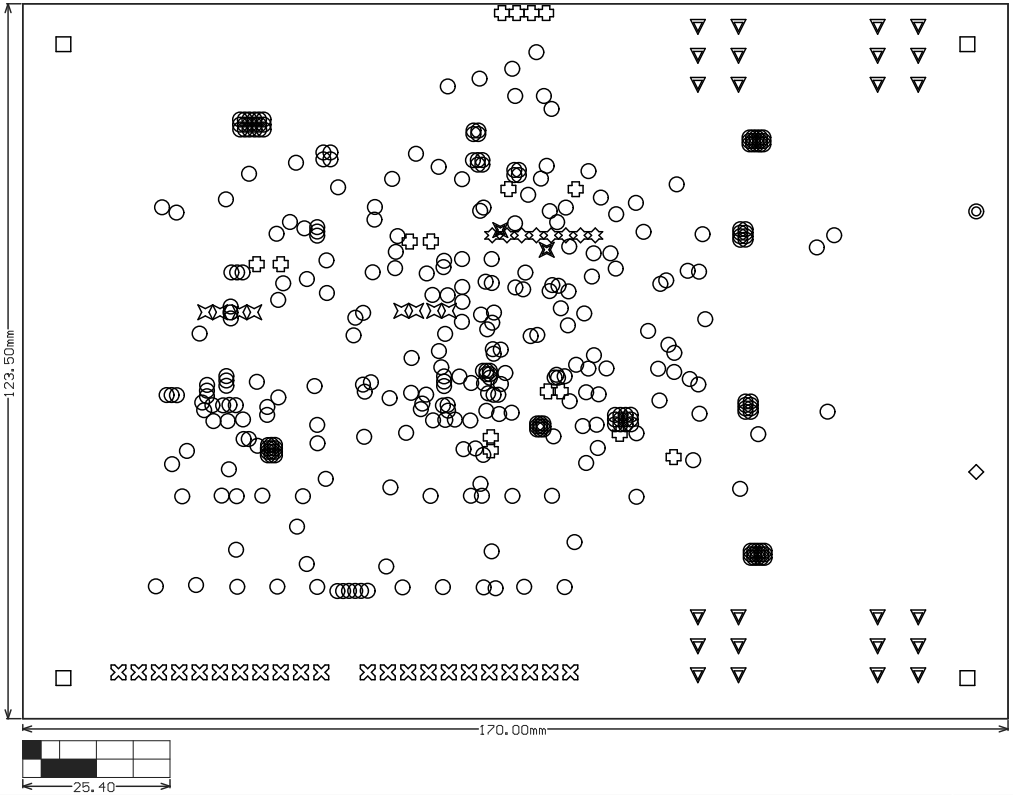
ALL ARTWORK VIEWED FROM TOP SIDE	BOARD #: TIDA-01093	REV: E3	SVN REV: Not In VersionControl
LAYER NAME = M2 Board Outlines	TID #: 01093		
PLOT NAME = Top Pad Master	GENERATED : 2016/7/11 16:10:55		TEXAS INSTRUMENTS

DESIGN INFORMATION
MIN. TRACK WIDTH: 8 MIL MIN. CLEARANCE: 0.2 mm MIN. VIA PAD SIZE: 24 MIL MINIMUM ANNULAR RING 0.05mm (2MIL) EXTERNAL PER IPC-D-275 CLASS 2 LEVEL C REGISTRATION TOLERANCES: METAL +/- 5 MIL, HOLES +/- 3 MIL HOLE SIZE TOLERANCE (UNLESS OTHERWISE SPECIFIED): +/- 3 MIL
MATERIAL: [ ] FR-408 [X] FR-4 High Tg [ ] OTHER _____ THICKNESS: [X] 62 MIL (1.6mm) +/-10% [ ] OTHER _____ TOLERANCE: [X] ANSI IPC-6012 TYPE 3 CLASS 2 [ ] OTHER +/- _____ BOW & TWIST: [X] ANSI IPC-6012 TYPE 3 CLASS 2 [ ] OTHER +/- _____ DRILLING: REFERENCE: [X] AS SHOWN [X] NC_DRILL FILES PTH MIN COPPER THICKNESS: [X] 1MIL [ ] OTHER _____ BOARD FINISH: SILKSCREEN: [X] TOP [X] BOTTOM SILKSCREEN COLOR: [X] WHITE [ ] OTHER _____ SOLDER RESIST COLOR: [X] GREEN [ ] OTHER _____ [X] MATTE [ ] SEMI-GLOSS SURFACE FINISH: [X] IMMERSION GOLD (ENIG) [ ] ENEPIG [ ] IMM. TIN/SILVER OR EQUIV [ ] OTHER _____ ARRAY/PANEL: [ ] CUT AND TRIM PER M1 BOARD OUTLINE [ ] N.C. ROUTE [X] V. SCORE CERTIFICATION: MATERIALS AND WORKMANSHIP FOR ALL PCBS TO MEET OR EXCEED THE REQUIREMENTS OF: [X] ANSI IPC-A-600F CLASS -> [ ] 1 [X] 2 [ ] 3 [X] RoHS [ ] OTHER PER ORDER ALL BOARDS MUST MEET OR EXCEED UL94-V0 REQUIREMENTS. PCB MUST BEAR THE UL94V-0 UL REGISTERED MATERIAL ID NUMBER ADDITIONAL REQUIREMENTS: MICROSECTION: [ ] YES BARE BOARD ELEC. TEST: [ ] NONE [X] REQUIRED [ ] PER ORDER



ALL ARTWORK VIEWED FROM TOP SIDE	BOARD #: TIDA-01093	REV: E3	SVN REV: Not In VersionControl
LAYER NAME = M2 Board Outline	TID #: 01093		
PLOT NAME = Bottom Pad Master	GENERATED : 2016/7/11 16:10:57		TEXAS INSTRUMENTS

DESIGN INFORMATION
MIN. TRACK WIDTH: 8 MIL MIN. CLEARANCE: 0.2 mm MIN. VIA PAD SIZE: 24 MIL MINIMUM ANNULAR RING 0.05mm (2MIL) EXTERNAL PER IPC-D-275 CLASS 2 LEVEL C REGISTRATION TOLERANCES: METAL +/- 5 MIL, HOLES +/- 3 MIL HOLE SIZE TOLERANCE (UNLESS OTHERWISE SPECIFIED): +/- 3 MIL
MATERIAL: [ ] FR-408 [X] FR-4 High Tg [ ] OTHER _____ THICKNESS: [X] 62 MIL (1.6mm) +/-10% [ ] OTHER _____ TOLERANCE: [X] ANSI IPC-6012 TYPE 3 CLASS 2 [ ] OTHER +/- _____ BOW & TWIST: [X] ANSI IPC-6012 TYPE 3 CLASS 2 [ ] OTHER +/- _____ DRILLING: REFERENCE: [X] AS SHOWN [X] NC_DRILL FILES PTH MIN COPPER THICKNESS: [X] 1MIL [ ] OTHER _____ BOARD FINISH: SILKSCREEN: [X] TOP [X] BOTTOM SILKSCREEN COLOR: [X] WHITE [ ] OTHER _____ SOLDER RESIST COLOR: [X] GREEN [ ] OTHER _____ [X] MATTE [ ] SEMI-GLOSS SURFACE FINISH: [X] IMMERSION GOLD (ENIG) [ ] ENEPIG [ ] IMM. TIN/SILVER OR EQUIV [ ] OTHER _____ ARRAY/PANEL: [ ] CUT AND TRIM PER M1 BOARD OUTLINE [ ] N.C. ROUTE [X] V. SCORE CERTIFICATION: MATERIALS AND WORKMANSHIP FOR ALL PCBS TO MEET OR EXCEED THE REQUIREMENTS OF: [X] ANSI IPC-A-600F CLASS -> [ ] 1 [X] 2 [ ] 3 [X] RoHS [ ] OTHER PER ORDER ALL BOARDS MUST MEET OR EXCEED UL94-V0 REQUIREMENTS. PCB MUST BEAR THE UL94V-0 UL REGISTERED MATERIAL ID NUMBER ADDITIONAL REQUIREMENTS: MICROSECTION: [ ] YES BARE BOARD ELEC. TEST: [ ] NONE [X] REQUIRED [ ] PER ORDER



Symbol	Quantity	Finished Hole Size	Plated	Hole Type
○	359	10.00mil (0.254mm)	PTH	Round
✖	2	12.00mil (0.305mm)	PTH	Round
✡	8	33.46mil (0.850mm)	PTH	Round
✖	8	35.43mil (0.900mm)	PTH	Round
✪	16	39.37mil (1.000mm)	PTH	Round
⊠	22	52.00mil (1.321mm)	PTH	Round
◇	1	59.06mil (1.500mm)	PTH	Round
●	1	66.93mil (1.700mm)	PTH	Round
▼	24	76.00mil (1.930mm)	PTH	Round
□	4	125.98mil (3.200mm)	PTH	Round
	445 Total			

DESIGN INFORMATION

MIN. TRACK WIDTH: 8 MIL
MIN. CLEARANCE: 0.2 mm
MIN. VIA PAD SIZE: 24 MIL
MINIMUM ANNULAR RING 0.05mm (2MIL) EXTERNAL
PER IPC-D-275 CLASS 2 LEVEL C
REGISTRATION TOLERANCES: METAL +/- 5 MIL, HOLES +/- 3 MIL
HOLE SIZE TOLERANCE (UNLESS OTHERWISE SPECIFIED): +/- 3 MIL

MATERIAL:
[ ] FR-408 [X] FR-4 High Tg [ ] OTHER
THICKNESS: [X] 62 MIL (1.6mm) +/-10% [ ] OTHER
TOLERANCE: [X] ANSI IPC-6012 TYPE 3 CLASS 2
[ ] OTHER +/-
BOW & TWIST: [X] ANSI IPC-6012 TYPE 3 CLASS 2
[ ] OTHER +/-

DRILLING:
REFERENCE: [X] AS SHOWN [X] NC_DRILL FILES
PTH MIN COPPER THICKNESS: [X] 1MIL [ ] OTHER

BOARD FINISH:
SILKSCREEN: [X] TOP [X] BOTTOM
SILKSCREEN COLOR: [X] WHITE [ ] OTHER
SOLDER RESIST COLOR: [X] GREEN [ ] OTHER
[X] MATTE [ ] SEMI-GLOSS
SURFACE FINISH: [X] IMMERSION GOLD (ENIG) [ ] ENEPIG
[ ] IMM. TIN/SILVER OR EQUIV [ ] OTHER

ARRAY/PANEL: [ ] CUT AND TRIM PER M1 BOARD OUTLINE
[ ] N.C. ROUTE [X] V. SCORE
CERTIFICATION: MATERIALS AND WORKMANSHIP FOR ALL PCBS TO MEET OR EXCEED THE REQUIREMENTS OF:
[X] ANSI IPC-A-600F CLASS -> [ ] 1 [X] 2 [ ] 3
[X] RoHS [ ] OTHER PER ORDER
ALL BOARDS MUST MEET OR EXCEED UL94-V0 REQUIREMENTS.
PCB MUST BEAR THE UL94V-0 UL REGISTERED MATERIAL ID NUMBER

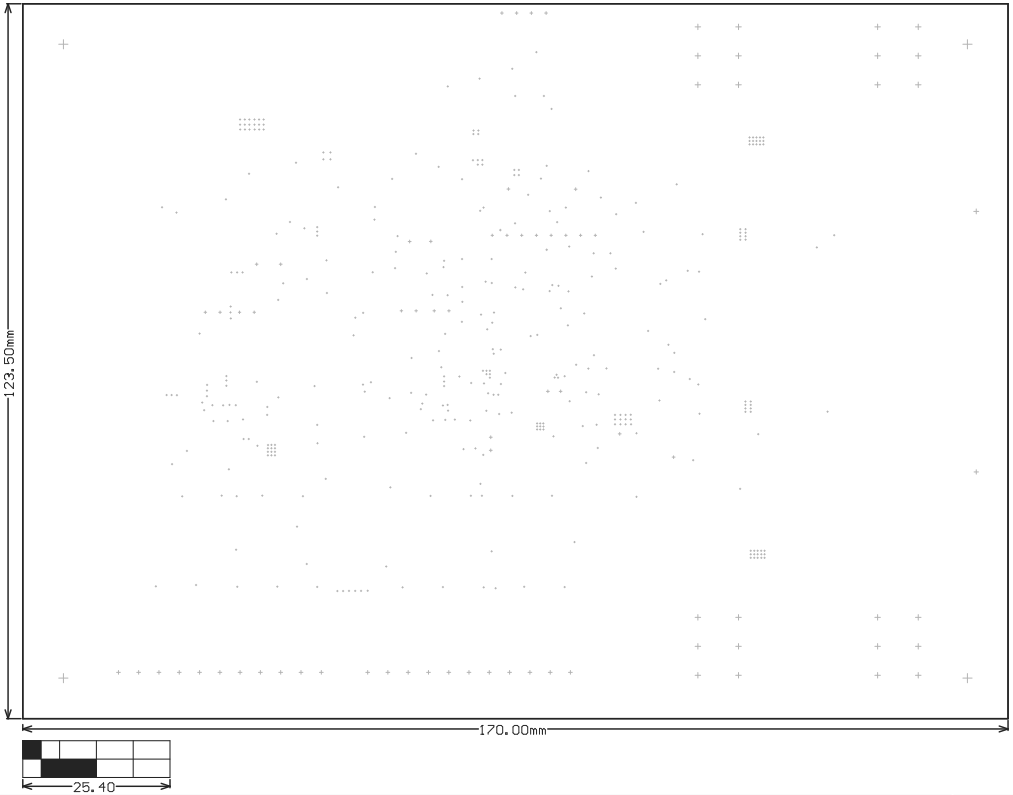
ADDITIONAL REQUIREMENTS:
MICROSECTION: [ ] YES
BARE BOARD ELEC. TEST: [ ] NONE [X] REQUIRED [ ] PER ORDER

TEXAS INSTRUMENTS

PROJECT TITLE: 20S Battery Module Reference Design
DESIGNED FOR: Public Release
FILE NAME: 20S_Reference_Design_TID_01093_E3.PcbDoc

ALL ARTWORK VIEWED FROM TOP SIDE	BOARD #: TIDA-01093	REV: E3	SVN REV: Not In VersionControl
LAYER NAME = [illegible]	TID #: 01093		
PLOT NAME = Drill Drawing For (Bottom Layer): 2016/7/11 16:10:59	GENERATED	TEXAS INSTRUMENTS	

ENGINEER:	LAYOUT BY:
Steven Yao	Steven Yao
SCALE: 1.00	ALTIUM DESIGNER VERSION: 14.3.14.34663



DESIGN INFORMATION	
MIN. TRACK WIDTH:	8 MIL
MIN. CLEARANCE:	0.2 mm
MIN. VIA PAD SIZE:	24 MIL

MINIMUM ANNULAR RING 0.05mm (2MIL) EXTERNAL
PER IPC-D-275 CLASS 2 LEVEL C
REGISTRATION TOLERANCES: METAL +/- 5 MIL, HOLES +/- 3 MIL
HOLE SIZE TOLERANCE (UNLESS OTHERWISE SPECIFIED): +/- 3 MIL

MATERIAL:
[ ] FR-408 [X] FR-4 High Tg [ ] OTHER
THICKNESS: [X] 62 MIL (1.6mm) +/-10% [ ] OTHER
TOLERANCE: [X] ANSI IPC-6012 TYPE 3 CLASS 2
[ ] OTHER +/-
BOW & TWIST: [X] ANSI IPC-6012 TYPE 3 CLASS 2
[ ] OTHER +/-

DRILLING:
REFERENCE: [X] AS SHOWN [X] NC_DRILL FILES
PTH MIN COPPER THICKNESS: [X] 1MIL [ ] OTHER

BOARD FINISH:
SILKSCREEN: [X] TOP [X] BOTTOM
SILKSCREEN COLOR: [X] WHITE [ ] OTHER
SOLDER RESIST COLOR: [X] GREEN [ ] OTHER
[X] MATTE [ ] SEMI-GLOSS

SURFACE FINISH: [X] IMMERSION GOLD (ENIG) [ ] ENEPIG
[ ] IMM. TIN/SILVER OR EQUIV [ ] OTHER

ARRAY/PANEL: [ ] CUT AND TRIM PER M1 BOARD OUTLINE
[ ] N.C. ROUTE [X] V. SCORE

CERTIFICATION: MATERIALS AND WORKMANSHIP FOR ALL PCBS TO MEET OR EXCEED THE REQUIREMENTS OF:
[X] ANSI IPC-A-600F CLASS -> [ ] 1 [X] 2 [ ] 3
[X] RoHS [ ] OTHER PER ORDER

ALL BOARDS MUST MEET OR EXCEED UL94-V0 REQUIREMENTS.
PCB MUST BEAR THE UL94V-0 UL REGISTERED MATERIAL ID NUMBER

ADDITIONAL REQUIREMENTS:
MICROSECTION: [ ] YES
BARE BOARD ELEC. TEST: [ ] NONE [X] REQUIRED [ ] PER ORDER

TEXAS INSTRUMENTS

PROJECT TITLE: 20S Battery Module Reference Design

DESIGNED FOR: Public Release

FILE NAME: 20S_Reference_Design_TID_01093_E3.PcbDoc

ALL ARTWORK VIEWED FROM TOP SIDE	BOARD #: TIDA-01093	REV: E3	SVN REV: Not In VersionControl
LAYER NAME = [illegible]	TID #: 01093		
PLOT NAME = Drill Guide For (Bottom Layer [illegible])	: 2016/7/11 16:11:02		TEXAS INSTRUMENTS

ENGINEER:	LAYOUT BY:
Steven Yao	Steven Yao
SCALE: 1.00	ALTIUM DESIGNER VERSION: 14.3.14.34663

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