# STMod+ with Motion and Optical Sensors

## MB1540

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## Legend

General comment such as function title, configuration, ...

Text to be added to silkscreen.

Warning text.

Notes to generate the board layout.

## Open Platform License Agreement


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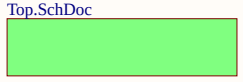
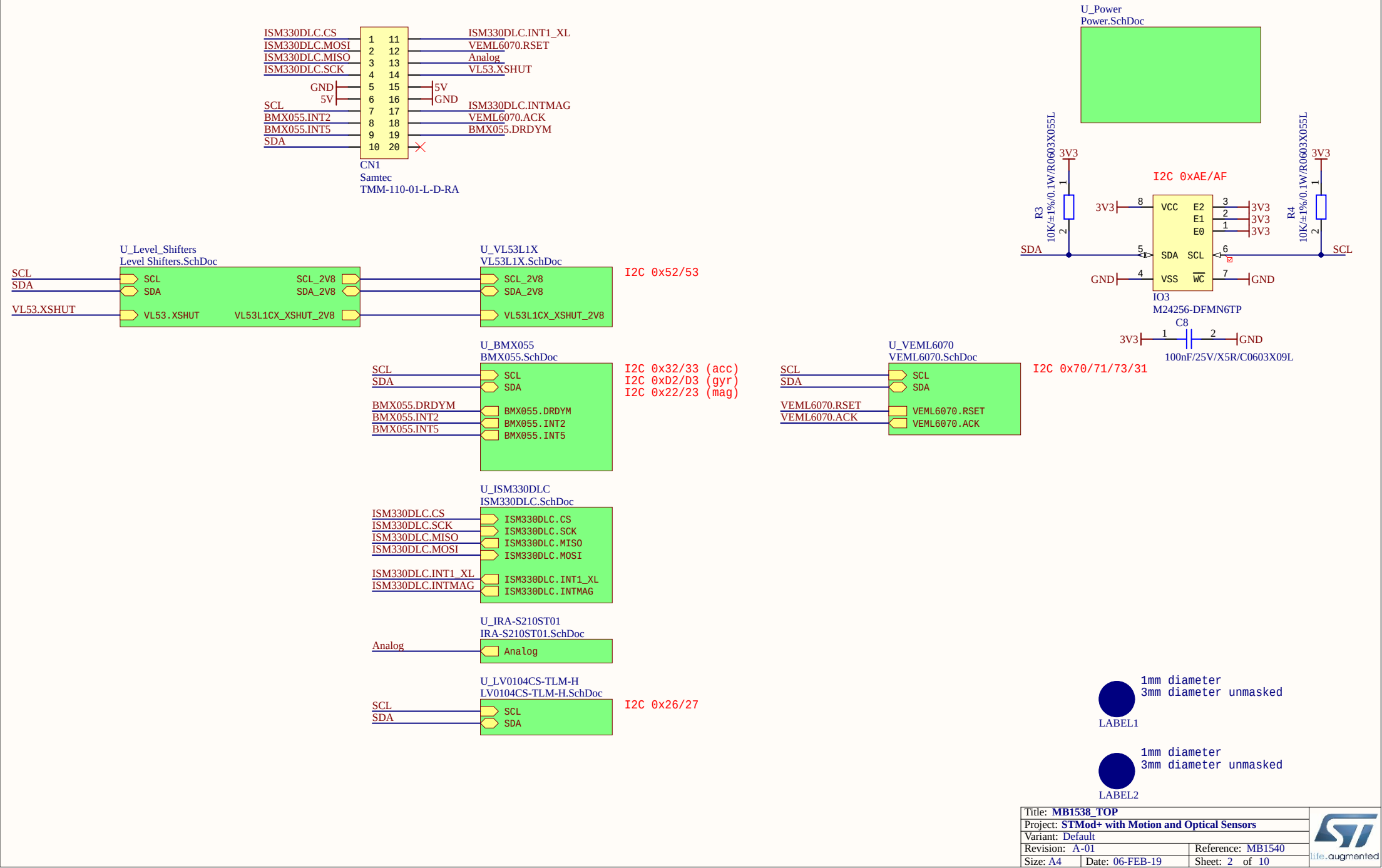
The complete Open Platform License Agreement can be found on www.st.com/opla.


U_Top
Top.SchDoc



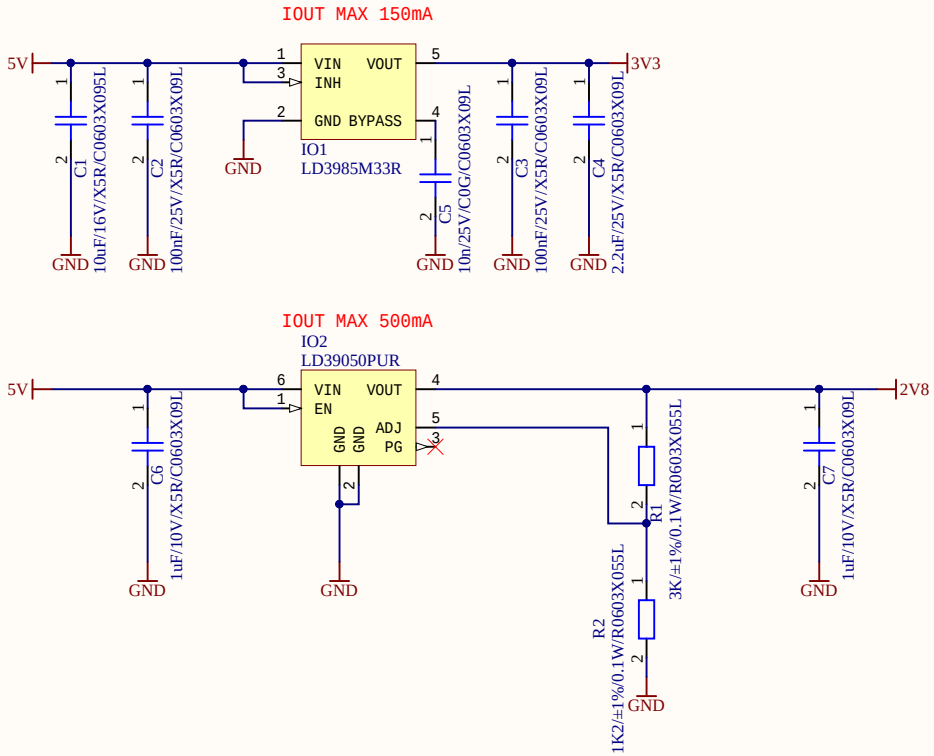
| | | | |
|---|---|---|---|
| Title: **Project overview** | | | |
| Project: **STMod+ with Motion and Optical Sensors** | | | |
| Variant: Default | | | |
| Revision: A-01 | | Reference: MB1540 | |
| Size: A4 | Date: 06-FEB-19 | Sheet: 1 of 10 | |

life.augmented



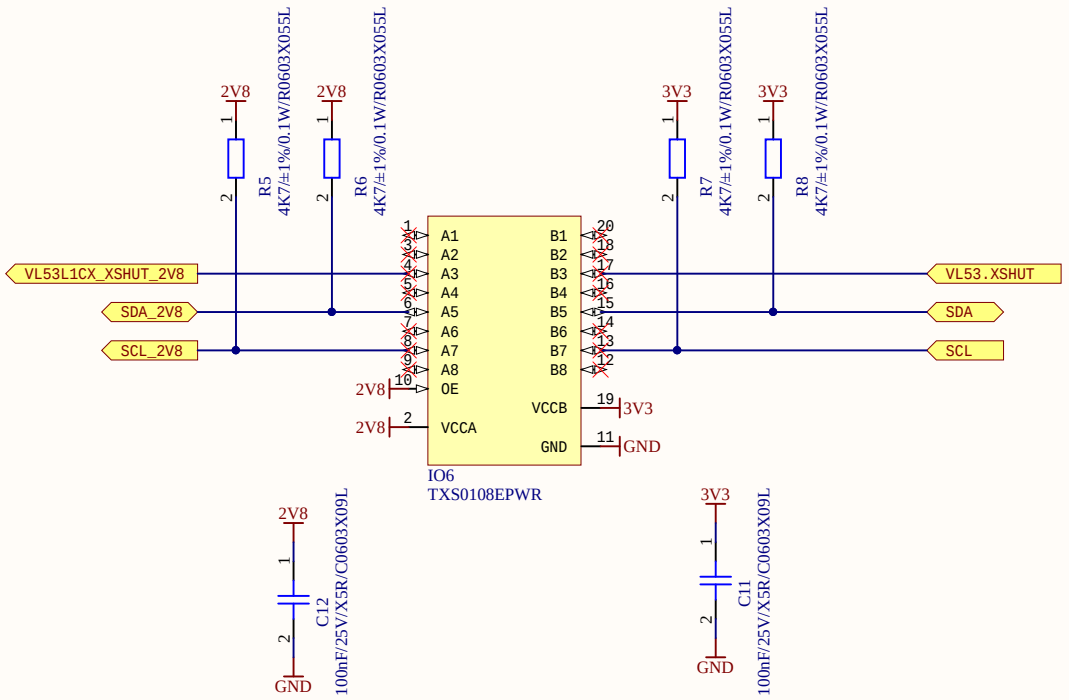

| | | |
|---|---|---|
| Title: **MB1538_TOP** | | |
| Project: **STMod+ with Motion and Optical Sensors** | | |
| Variant: Default | | |
| Revision: A-01 | | Reference: MB1540 |
| Size: A4 | Date: 06-FEB-19 | Sheet: 2 of 10 |

life.augmented



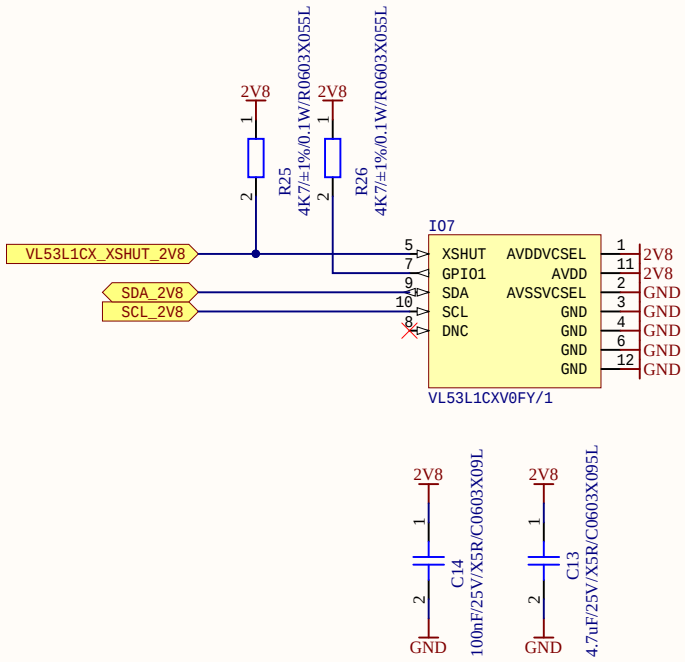

| | | | |
|---|---|---|---|
| Title: **Power Supply Module** | | | |
| Project: **STMod+ with Motion and Optical Sensors** | | | |
| Variant: Default | | | |
| Revision: A-01 | | Reference: MB1540 | |
| Size: A4 | Date: 06-FEB-19 | Sheet: 3 of 10 | |

life.augmented



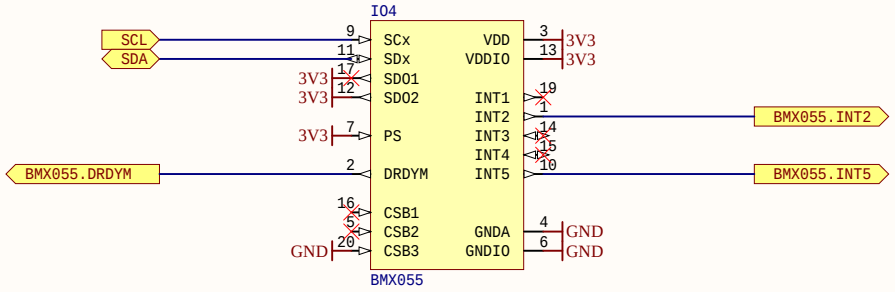

| | | | |
|---|---|---|---|
| Title: **Level Shifters** | | | |
| Project: **STMod+ with Motion and Optical Sensors** | | | |
| Variant: Default | | | |
| Revision: A-01 | | Reference: MB1540 | |
| Size: A4 | Date: 06-FEB-19 | Sheet: 4 of 10 | |

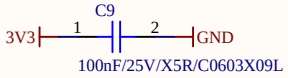
life.augmented

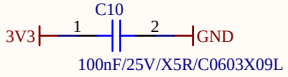



| | | | |
|---|---|---|---|
| Title: **VL53L1X** | | | |
| Project: **STMod+ with Motion and Optical Sensors** | | | |
| Variant: Default | | | |
| Revision: A-01 | | Reference: MB1540 | |
| Size: A4 | Date: 06-FEB-19 | Sheet: 5 of 10 | |

life.augmented

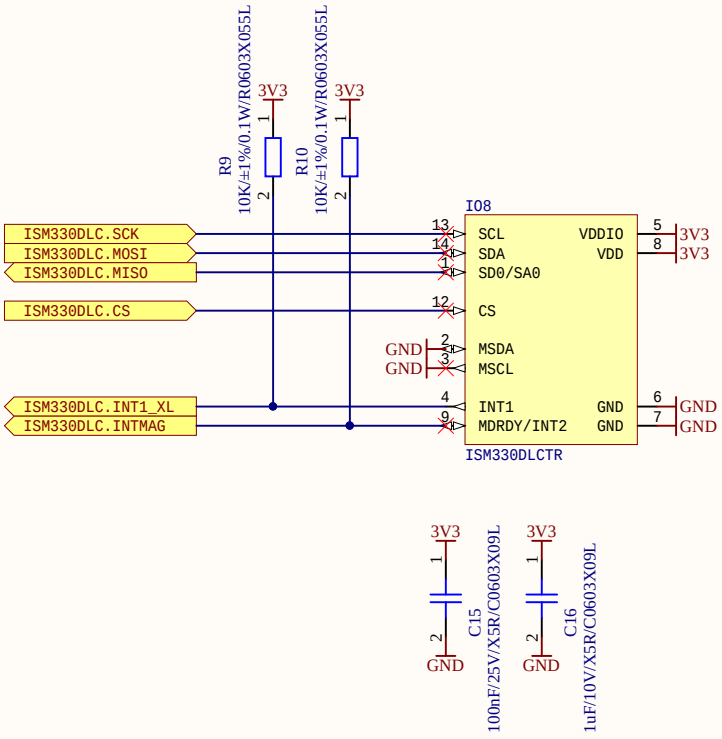


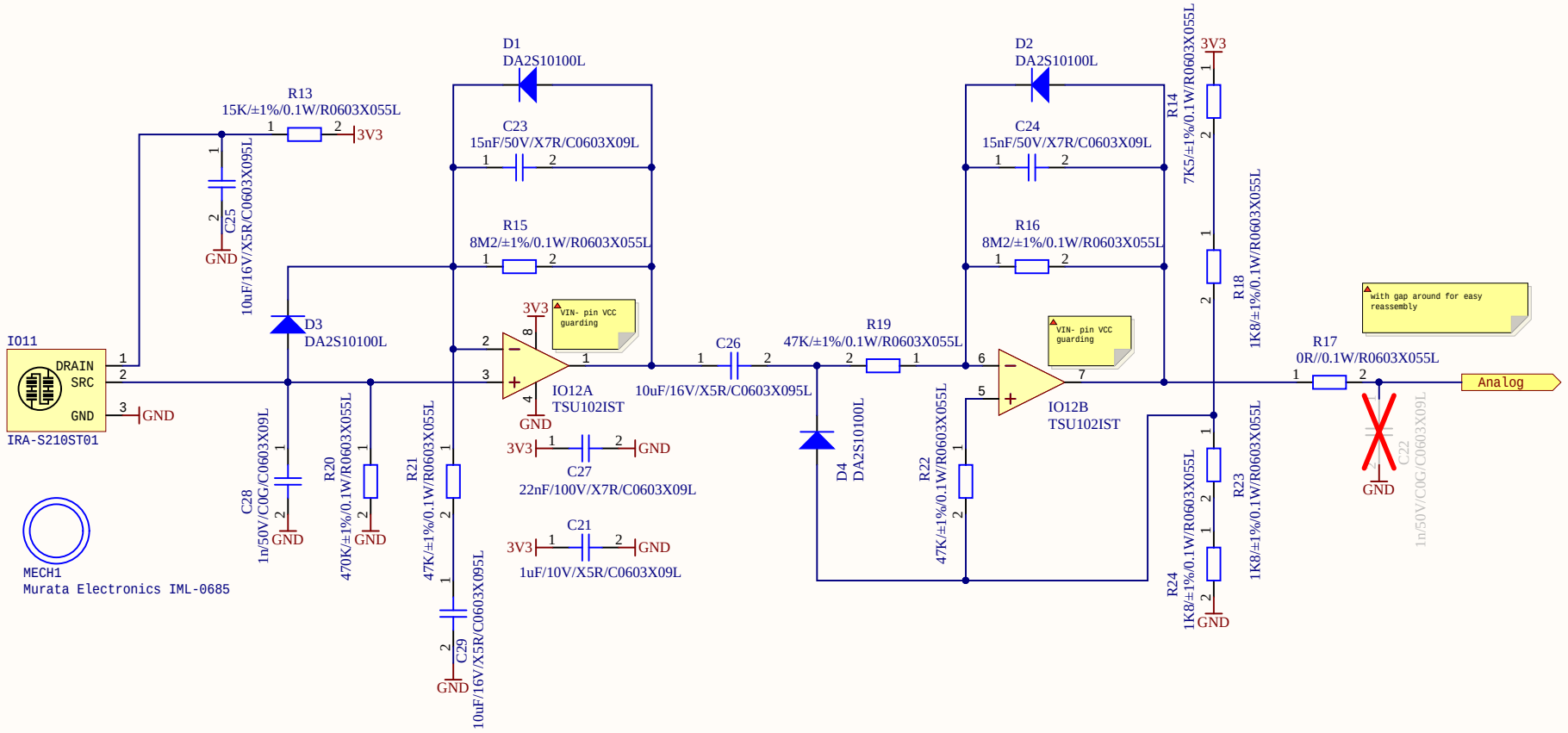

| | | |
|---|---|---|
| Title: **BMX055** | | |
| Project: **STMod+ with Motion and Optical Sensors** | | |
| Variant: Default | | |
| Revision: A-01 | | Reference: MB1540 |
| Size: A4 | Date: 06-FEB-19 | Sheet: 6 of 10 |

life.augmented



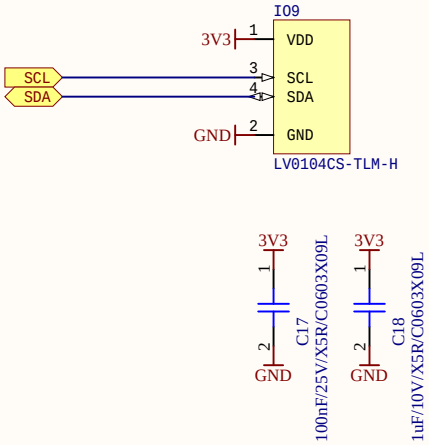

| | | | |
|---|---|---|---|
| Title: **ISM330DLC** | | | |
| Project: **STMod+ with Motion and Optical Sensors** | | | |
| Variant: Default | | | |
| Revision: A-01 | | Reference: MB1540 | |
| Size: A4 | Date: 06-FEB-19 | Sheet: 7 of 10 | |

life.augmented



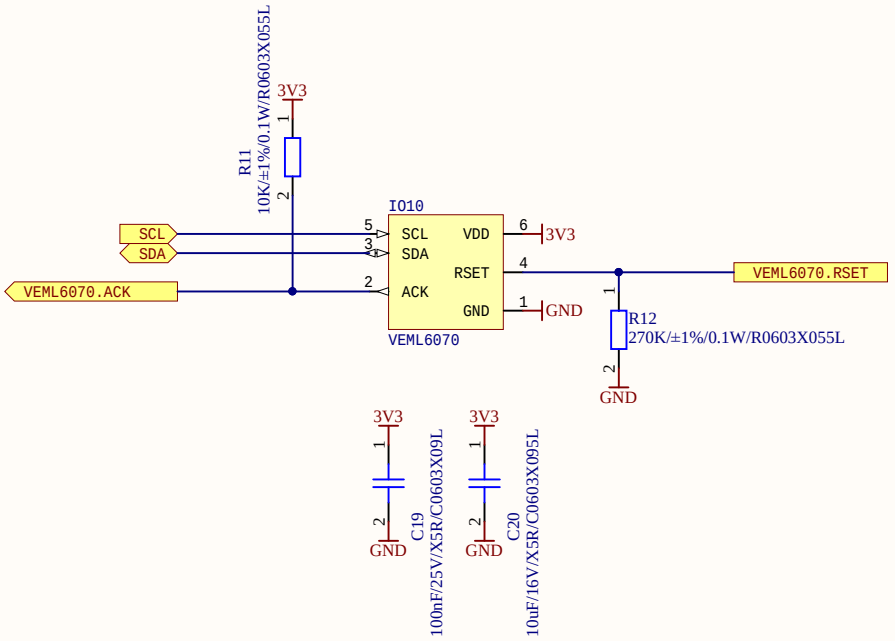

| | | |
|---|---|---|
| Title: **IRA-S210ST01** | | |
| Project: **STMod+ with Motion and Optical Sensors** | | |
| Variant: Default | | |
| Revision: A-01 | | Reference: MB1540 |
| Size: A4 | Date: 06-FEB-19 | Sheet: 8 of 10 |

life.augmented




| | | |
|---|---|---|
| Title: **LV0104CS-TLM-H** | | |
| Project: **STMod+ with Motion and Optical Sensors** | | |
| Variant: Default | | |
| Revision: A-01 | | Reference: MB1540 |
| Size: A4 | Date: 06-FEB-19 | Sheet: 9 of 10 |

life.augmented




| | | |
|---|---|---|
| Title: **VEML6070** | | |
| Project: **STMod+ with Motion and Optical Sensors** | | |
| Variant: Default | | |
| Revision: A-01 | | Reference: MB1540 |
| Size: A4 | Date: 06-FEB-19 | Sheet: 10 of 10 |

life.augmented

# Design Rules Verification Report

Filename : D:\Users\coppervia\AltiumProjects\Projects\STM\MB1540\MB1540.PcbDoc

Warnings 0
Rule Violations 0

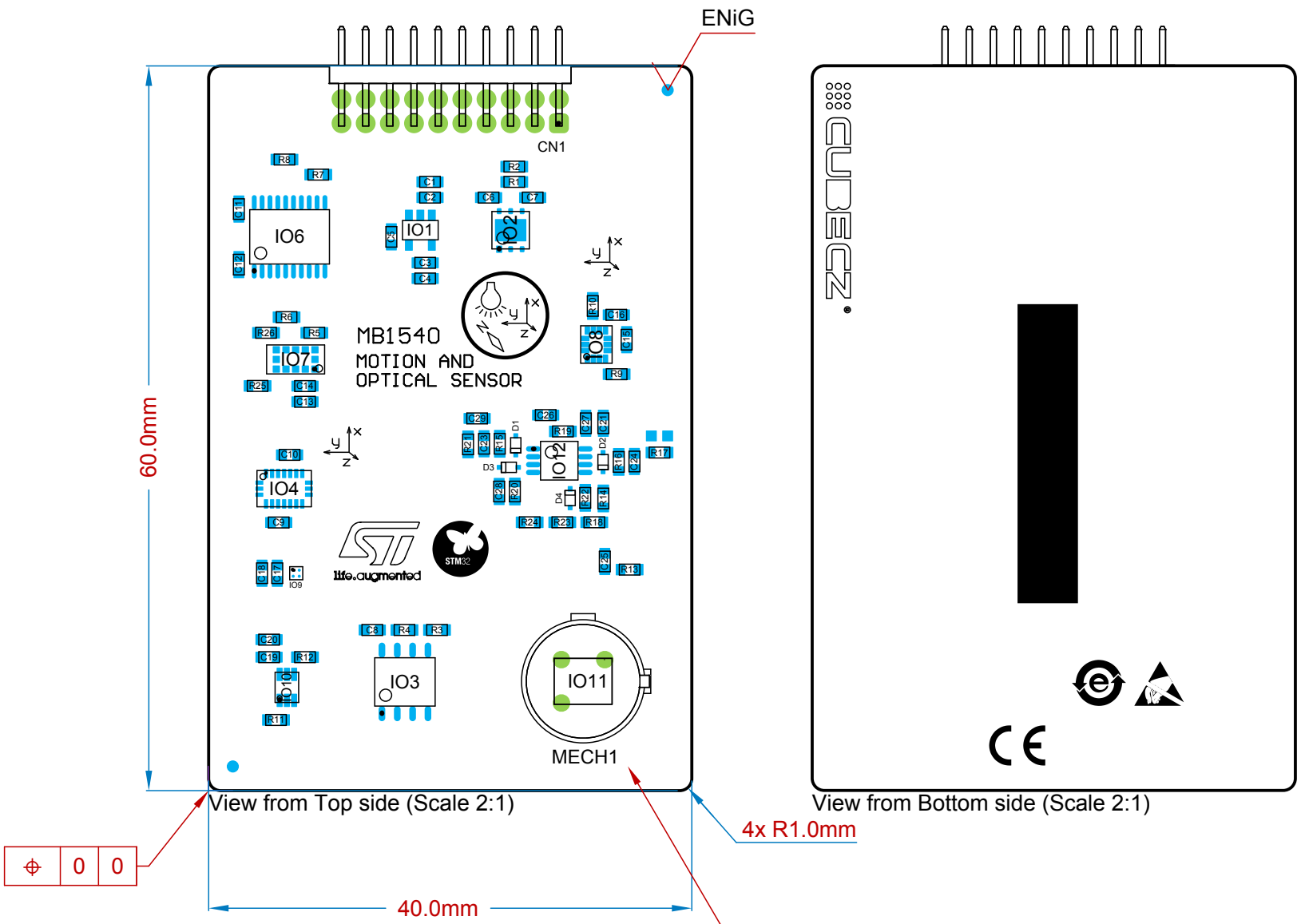
| Warnings | |
|---|---|
| Total | 0 |

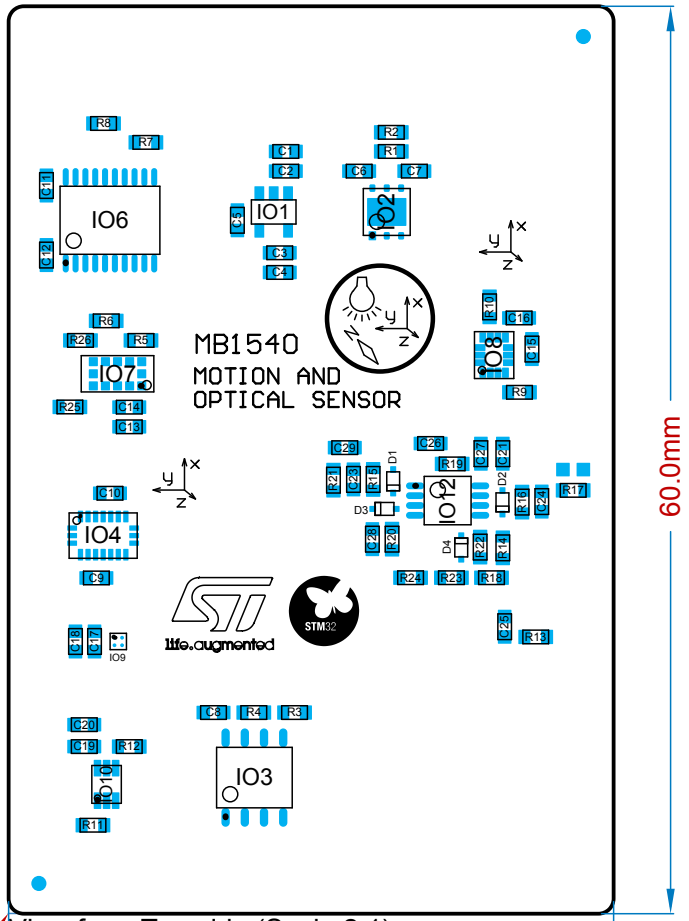
| Rule Violations | |
|---|---|
| Clearance Constraint (Gap=0.25mm) (All),(All) | 0 |
| Clearance Constraint (Gap=0.15mm) (InComponent('IO8')),(All) | 0 |
| Clearance Constraint (Gap=0.2mm) (InComponent('IO10') or InComponent('IO12')),(All) | 0 |
| Short-Circuit Constraint (Allowed=No) (All),(All) | 0 |
| Un-Routed Net Constraint ( (All) ) | 0 |
| Modified Polygon (Allow modified: No), (Allow shelved: No) | 0 |
| Width Constraint (Min=0.25mm) (Max=1mm) (Preferred=0.25mm) (All) | 0 |
| Routing Layers(All) | 0 |
| Routing Via (MinHoleWidth=0.3mm) (MaxHoleWidth=0.3mm) (PreferredHoleWidth=0.3mm) (MinWidth=0.8mm) | 0 |
| Differential Pairs Uncoupled Length using the Gap Constraints (Min=0.254mm) (Max=0.254mm) (Prefered=0.254mm) | 0 |
| Power Plane Connect Rule(Relief Connect )(Expansion=0.508mm) (Conductor Width=0.21mm) (Air Gap=0.21mm) | 0 |
| Acute Angle Constraint (Minimum=60.000) (All) | 0 |
| Hole Size Constraint (Min=0.025mm) (Max=10mm) (All) | 0 |
| Pads and Vias to follow the Drill pairs settings | 0 |
| Hole To Hole Clearance (Gap=0.254mm) (All),(All) | 0 |
| Minimum Solder Mask Sliver (Gap=0.1mm) (IsPad),(IsVia) | 0 |
| Silk To Solder Mask (Clearance=0.2mm) (IsPad),(All) | 0 |
| Silk to Silk (Clearance=0.2mm) (All),(All) | 0 |
| Net Antennae (Tolerance=0mm) (All) | 0 |
| Room U_Top (Bounding Region = (263mm, 51.5mm, 470.075mm, 253.175mm) (InComponentClass('U_Top')) | 0 |
| Room U_ISM330DLC (Bounding Region = (0mm, 0mm, 455.425mm, 299.65mm) (InComponentClass('U_ISM330DLC')) | 0 |
| Room U_VEML6070 (Bounding Region = (0mm, 0mm, 515.95mm, 324mm) (InComponentClass('U_VEML6070')) | 0 |
| Room U_LV0104CS-TLM-H (Bounding Region = (0mm, 0mm, 533.475mm, 395.225mm) | 0 |
| Room U_Level_Shifters (Bounding Region = (0mm, 0mm, 482.075mm, 282.5mm) | 0 |
| Room U_VL53L1X (Bounding Region = (226.1mm, 9.225mm, 530.15mm, 246.85mm) | 0 |
| Room U_Power (Bounding Region = (277.495mm, 83.625mm, 459.075mm, 237.975mm) | 0 |
| Room U_BMX055 (Bounding Region = (0mm, 0mm, 658.35mm, 357.9mm) (InComponentClass('U_BMX055')) | 0 |
| Room U_IRA-S210ST01 (Bounding Region = (248.125mm, 28.45mm, 487.575mm, 261.75mm) | 0 |
| Component Clearance Constraint ( Horizontal Gap = 0.2mm, Vertical Gap = 0.2mm ) (All),(All) | 0 |
| Component Clearance Constraint ( Horizontal Gap = -2mm, Vertical Gap = -2mm ) (InComponent('MECH1')),(All) | 0 |
| Height Constraint (Min=0mm) (Max=25.4mm) (Prefered=12.7mm) (All) | 0 |
| Total | 0 |

# Electrical Rules Check Report

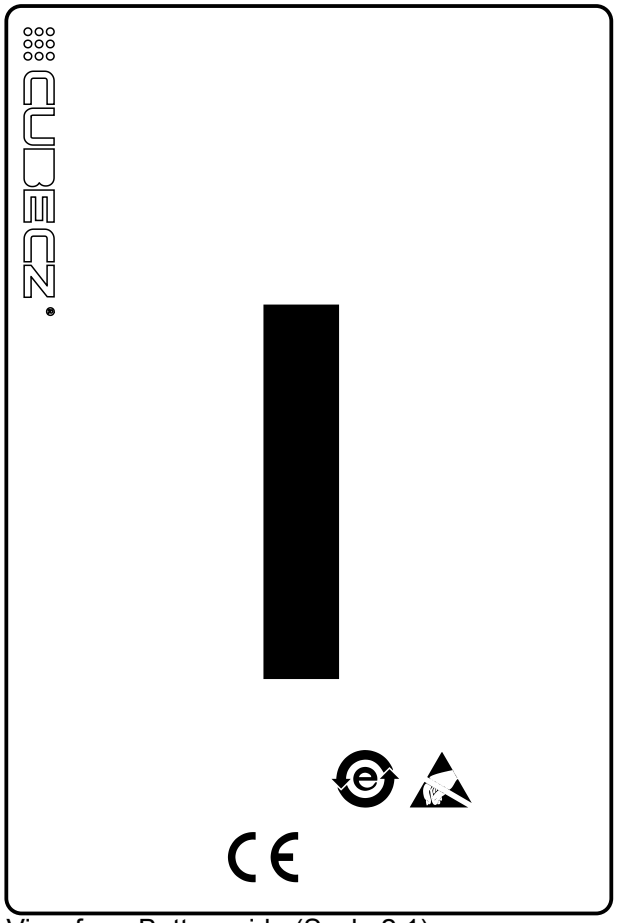
| Class | Document | Message |
|---|---|---|
| | | Successful Compile for MB1540.PrjPcb |
| | | |

No differences were detected.

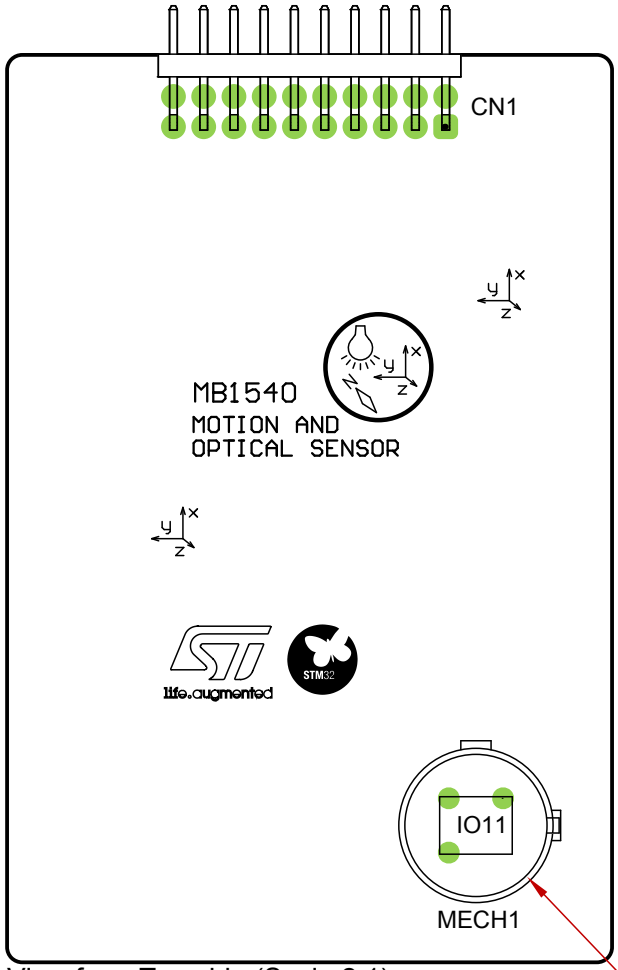

ENiG
CN1
IO6
IO1
IO2
IO7
IO8
IO4
IO12
IO3
IO11
MB1540
MOTION AND
OPTICAL SENSOR
MECH1
60.0mm
40.0mm
4x R1.0mm
0
0
View from Top side (Scale 2:1)
View from Bottom side (Scale 2:1)
when IO11 assembled, cover it with
MECH1 Sensor Accessory Lens
Murata Electronics North America
IML-0685




View from Top side (Scale 2:1)

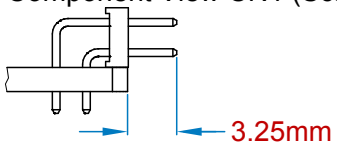


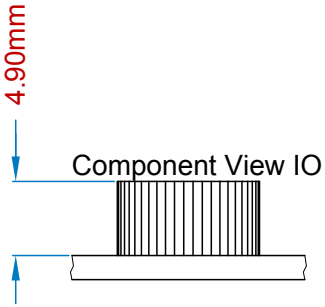

View from Bottom side (Scale 2:1)




View from Top side (Scale 2:1)

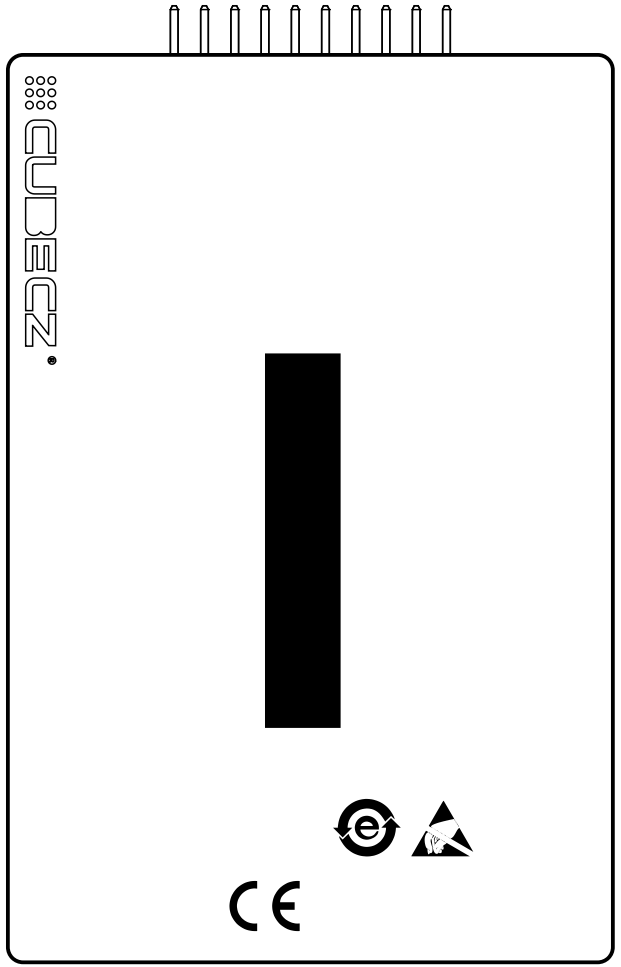
Component View CN1 (Scale 2:1)



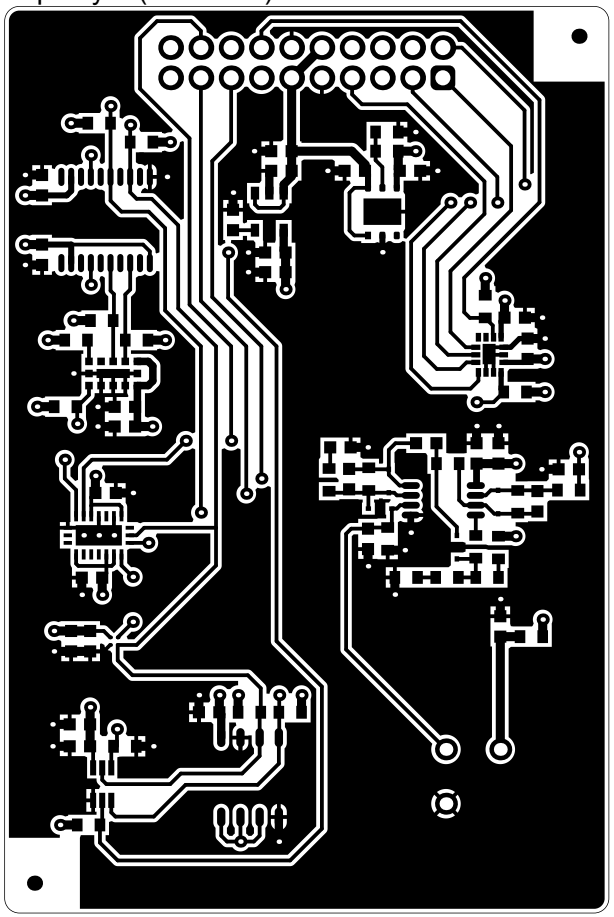

Component View IO11(Scale 2:1)

when IO11 assembled, cover it with
MECH1 Sensor Accessory Lens
Murata Electronics North America
IML-0685

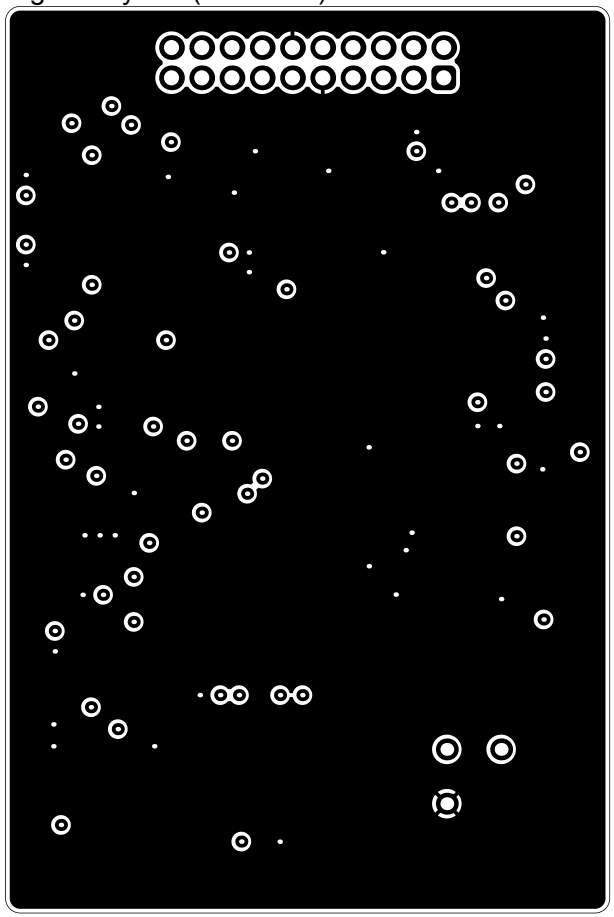


View from Bottom side (Scale 2:1)

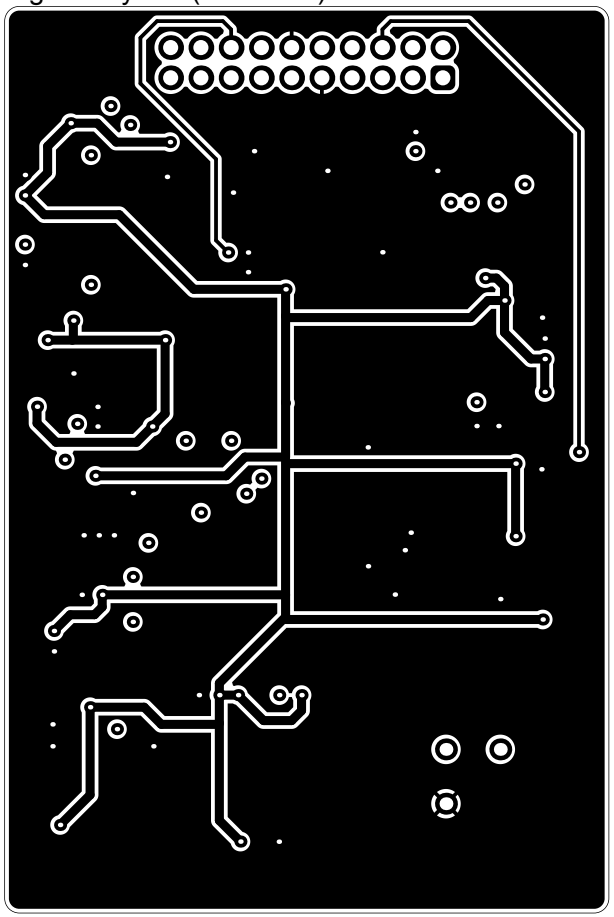
Top Layer (Scale 2:1)



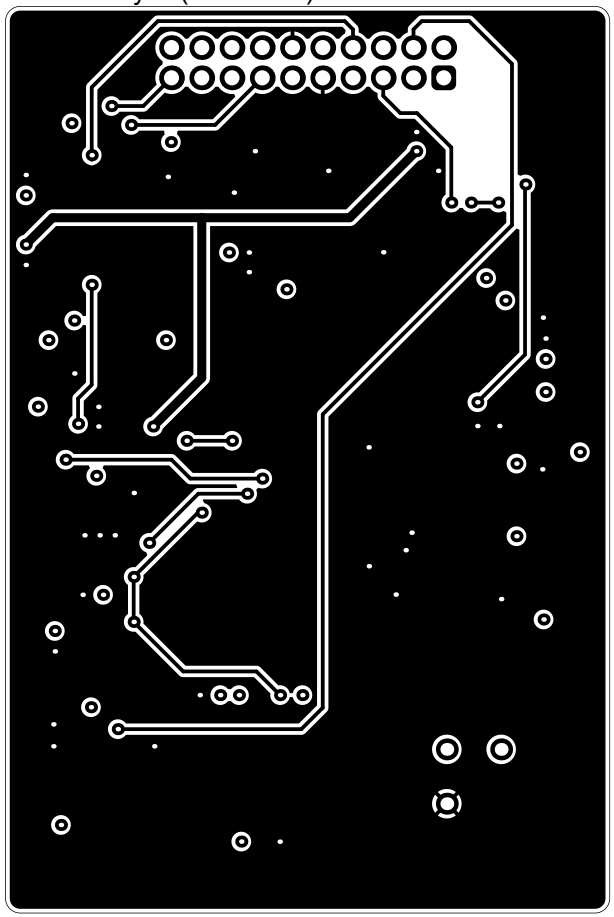
Signal Layer 1 (Scale 2:1)



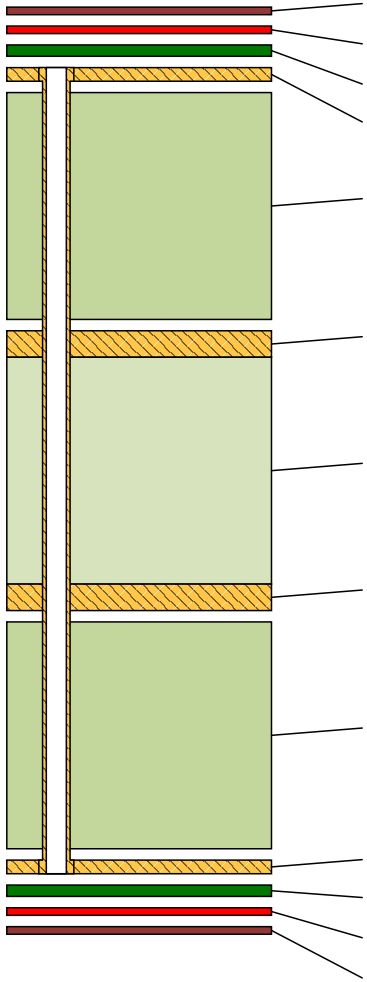
Signal Layer 2 (Scale 2:1)



Bottom Layer (Scale 2:1)



Layer Stack Legend



| Material | Layer | Thickness | Dielectric Material | Type | Gerber |
|---|---|---|---|---|---|
| | Top Paste | | | Paste Mask | GTP |
| | Top Overlay | | | Legend | GTO |
| Surface Material | Top Solder | 0.015mm | Solder Resist | Solder Mask | GTS |
| Copper | Top Layer | 0.018mm | | Signal | GTL |
| *Prepreg* | | *0.387mm* | *FR-4* | *Dielectric* | |
| Copper | Signal Layer 1 | 0.035mm | | Signal | G1 |
| *Core* | | *0.713mm* | | *Dielectric* | |
| Copper | Signal Layer 2 | 0.035mm | | Signal | G2 |
| *Prepreg* | | *0.387mm* | | *Dielectric* | |
| Copper | Bottom Layer | 0.018mm | | Signal | GBL |
| Surface Material | Bottom Solder | 0.015mm | Solder Resist | Solder Mask | GBS |
| | Bottom Overlay | | | Legend | GBO |
| | Bottom Paste | | | Paste Mask | GBP |

Total thickness: 1.623mm

Drill Table

| Symbol | Count | Hole Size | Plated | Hole Tolerance |
|---|---|---|---|---|
| ◇ | 86 | 0.30mm | Plated | None |
| ○ | 3 | 0.85mm | Plated | None |
| □ | 20 | 1.00mm | Plated | None |
| | 109 Total | | | |