V1 10N STATIC LOAD

Study Report

Analyzed File	V1 v7
Version	Autodesk Fusion 360 (2.0.3803)
Creation Date	2018-03-18, 21:24:13
Author	

⊟ Simulation Model 1:1

⊟ Study 2 - (10N) Static Stress

⊟ Study Properties

Study Type	Static Stress
Last Modification Date	2018-03-18, 03:36:25

⊟ Settings

⊟ General

Contact Tolerance	0.1 mm
Remove Rigid Body Modes	No

⊟ Mesh

Average Element Size (% of model size)	
Solids	10
Scale Mesh Size Per Part	No
Average Element Size (absolute value)	-
Element Order	Parabolic
Create Curved Mesh Elements	No
Max. Turn Angle on Curves (Deg.)	60
Max. Adjacent Mesh Size Ratio	1.5
Max. Aspect Ratio	10
Minimum Element Size (% of average size)	20

⊟ Adaptive Mesh Refinement

Number of Refinement Steps	0
Results Convergence Tolerance (%)	20
Portion of Elements to Refine (%)	10
Results for Baseline Accuracy	Von Mises Stress

⊟ Materials

Component	Material	Safety Factor
Headset v1:1	PLA (3D Printed)	Yield Strength
Odroid XU4 v1:1	SolidWorks Materials|Silicon|67	Yield Strength

⊟ PLA (3D Printed)

Density	3.75E-07 kg / mm^3
Young's Modulus	3400 MPa
Poisson's Ratio	0.38
Yield Strength	13 MPa
Ultimate Tensile Strength	15 MPa
Thermal Conductivity	1.6E-04 W / (mm C)
Thermal Expansion Coefficient	8.57E-05 / C
Specific Heat	1500 J / (kg C)

⊟ SolidWorks Materials|Silicon|67

Density	2.33E-06 kg / mm^3
Young's Modulus	112400 MPa
Poisson's Ratio	0.28
Yield Strength	120 MPa
Ultimate Tensile Strength	0 MPa
Thermal Conductivity	0.124 W / (mm C)
Thermal Expansion Coefficient	0 / C
Specific Heat	0 J / (kg C)

⊟ Contacts

⊟ Bonded

Name

[S] Bonded1 [Headset v1:1||Odroid XU4 v1:1]
[S] Bonded2 [Headset v1:1||Odroid XU4 v1:1]
[S] Bonded3 [Headset v1:1||Odroid XU4 v1:1]
[S] Bonded4 [Headset v1:1||Odroid XU4 v1:1]

Mesh

Type	Nodes	Elements
Solids	26539	13446

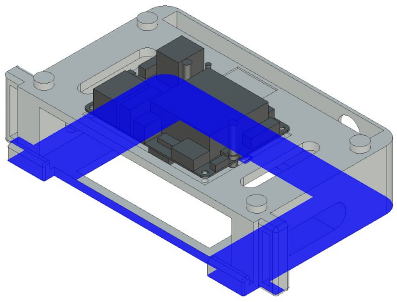
Load Case1

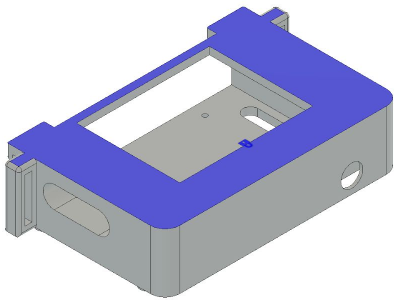
Constraints

Fixed1

Type	Fixed
Ux	Yes
Uy	Yes
Uz	Yes

Selected Entities



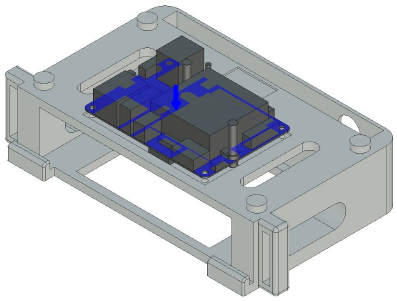


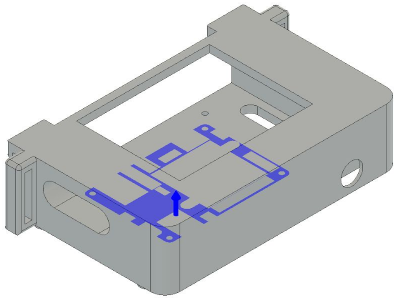
Loads

Force1

Type	Force
Magnitude	10 N
X Value	0 N
Y Value	-10 N
Z Value	0 N
Force Per Entity	No

Selected Entities





Results

Result Summary

Name	Minimum	Maximum
Safety Factor		
Per Body	14.18	15
Stress		
Von Mises	3.185E-08 MPa	5.672 MPa
1st Principal	-3.388 MPa	8.577 MPa
3rd Principal	-8.746 MPa	2.723 MPa
Normal XX	-6.991 MPa	7.859 MPa
Normal YY	-5.202 MPa	4.748 MPa
Normal ZZ	-3.958 MPa	4.132 MPa
Shear XY	-1.469 MPa	2.761 MPa
Shear YZ	-0.8246 MPa	1.35 MPa
Shear ZX	-1.432 MPa	2.564 MPa
Displacement		
Total	0 mm	0.07224 mm
X	-0.01772 mm	0.002996 mm
Y	-0.072 mm	0.0111 mm
Z	-0.001432 mm	0.01703 mm
Reaction Force		
Total	0 N	0.3615 N
X	-0.08152 N	0.09734 N

Y	-0.1931 N	0.2786 N
Z	-0.08125 N	0.23 N
Strain		
Equivalent	9.918E-12	3.89E-04
1st Principal	-4.115E-06	2.837E-04
3rd Principal	-4.213E-04	4.239E-08
Normal XX	-2.533E-04	1.765E-04
Normal YY	-1.717E-04	1.887E-04
Normal ZZ	-1.397E-04	1.37E-04
Shear XY	-2.066E-04	2.1E-04
Shear YZ	-2.308E-04	2.035E-04
Shear ZX	-1.684E-04	2.062E-04
Contact Pressure		
Total	0 MPa	5.393 MPa
X	-1.514 MPa	1.201 MPa
Y	-4.01 MPa	5.202 MPa
Z	-1.35 MPa	0.7603 MPa

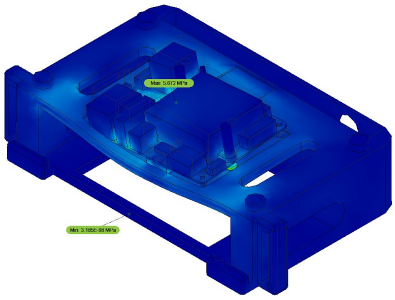
⊟ Reaction Forces

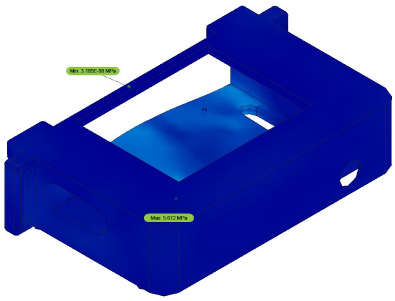
Constraint Name	Reaction Force		Reaction Moment	
	Magnitude	Component (X,Y,Z)	Magnitude	Component (X,Y,Z)
Fixed1	10.05 N	1.024E-05 N	210 N mm	-192.4 N mm
		10.05 N		-0.002096 N mm
		7.78E-06 N		-84.37 N mm

⊟ Stress

⊟ Von Mises

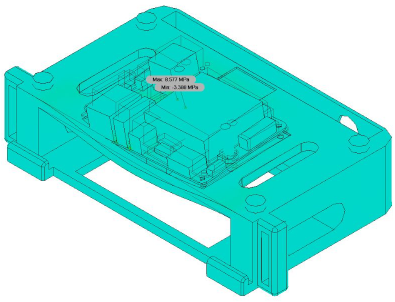
[MPa] 0  5.672

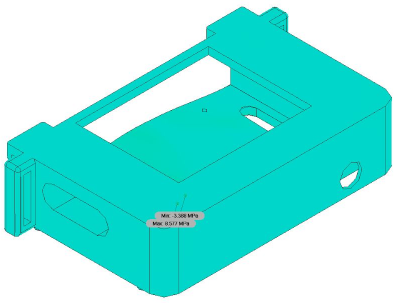




⊟ **1st Principal**

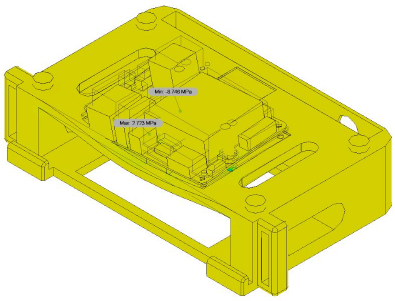
[MPa] -3.388 8.577

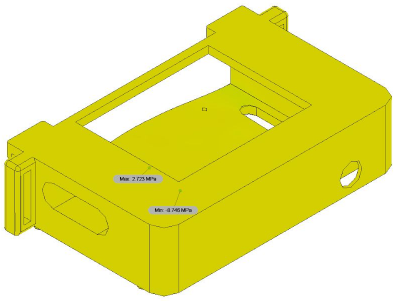




⊟ 3rd Principal

[MPa] -8.746 2.723

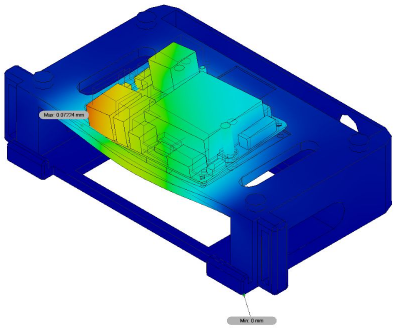


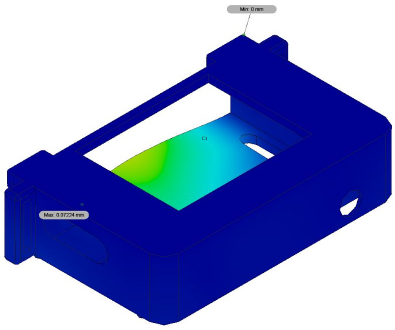


⊟ Displacement

⊟ Total

[mm] 0 0.07224

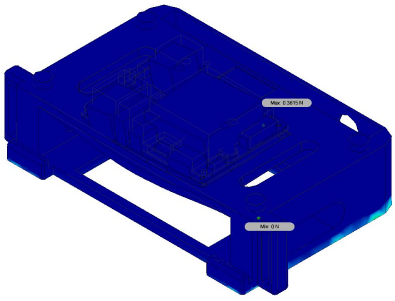


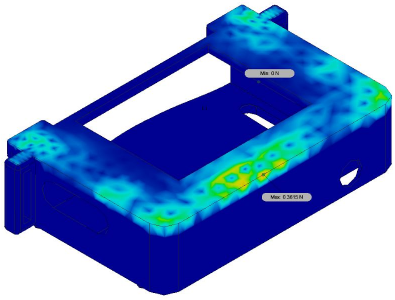


⊟ Reaction Force

⊟ Total

[N] 0 0.3615

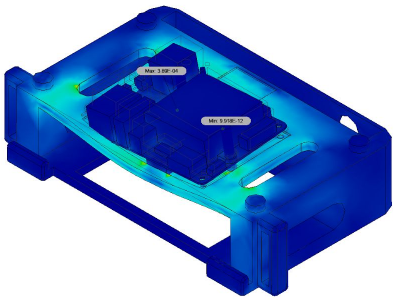


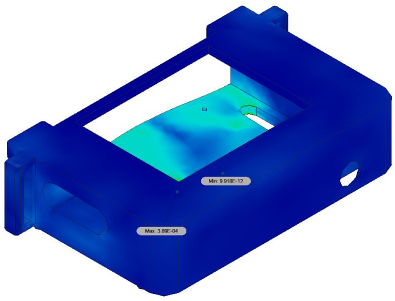


⊟ Strain

⊟ Equivalent

0 3.89E-04





⊟ Contact Pressure

⊟ **Total**

[MPa] 0 5.393