GRAPHMET350 Thermal Analysis on Heatsink Application

Thermal Analysis performed using Plassotech 3G.Author

1. Results of GRAPHMET350 versus Aluminum at different power levels and airflows (represented by convective heat transfer coefficient h) examined.
2. Two power levels examined, 30W and 50W.
3. Ambient Temperature fixed at 25°C.
4. Convective heat transfer coefficients from 10 W/m^2C to 30 W/m^2C.
5. Maximum temperature differential between Al and GRAPHMET350 determined.

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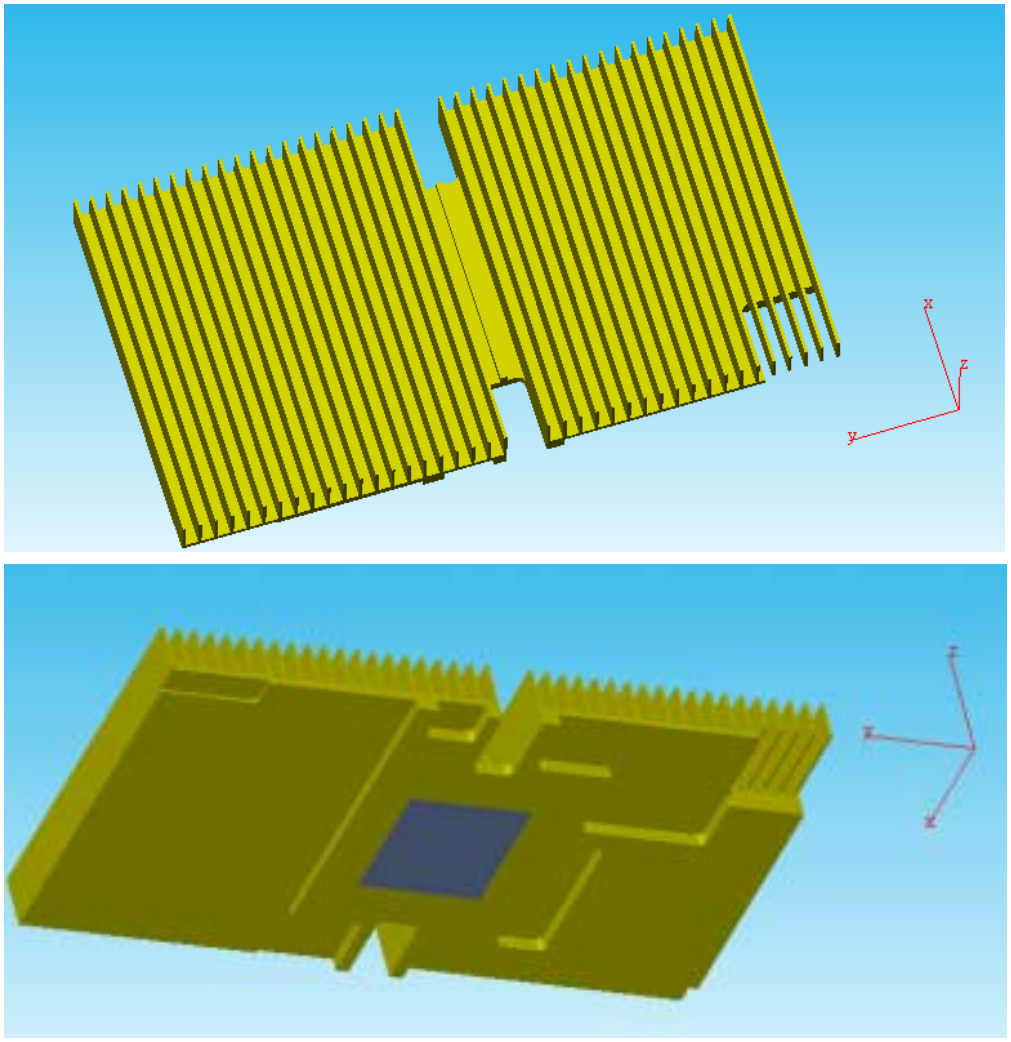
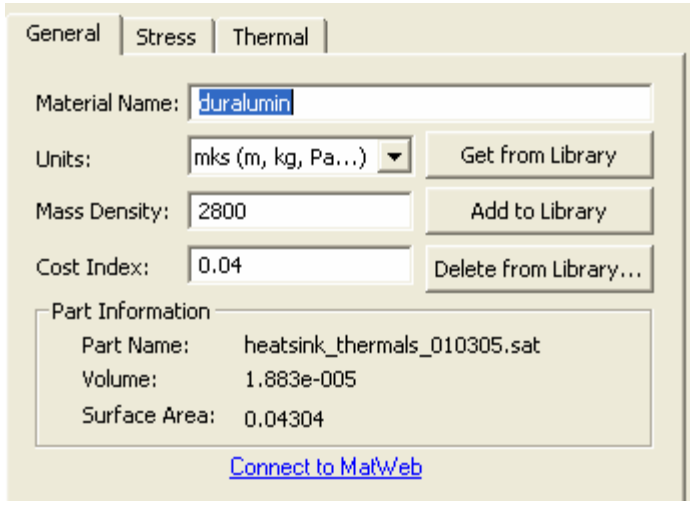
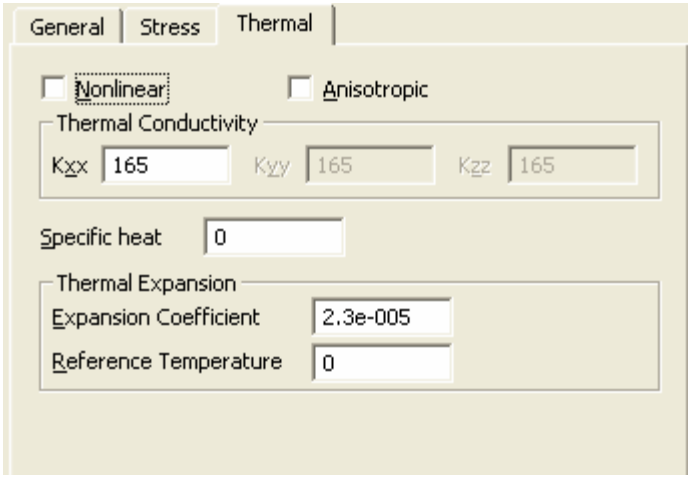
GRAPHMET350 Thermal Analysis on Heatsink Application



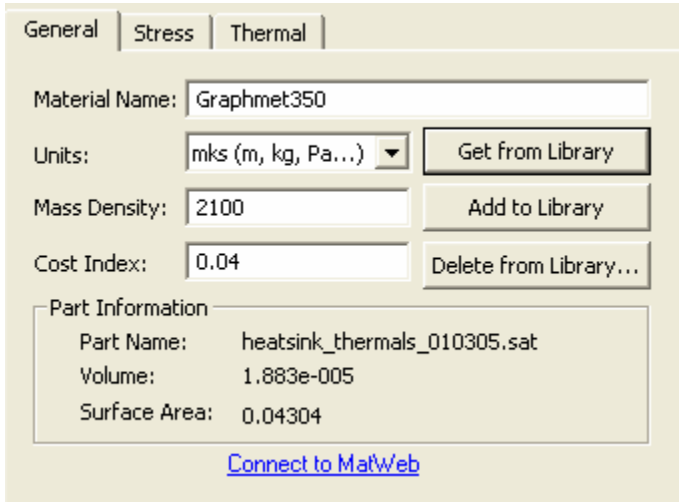
Heatsink Geometry

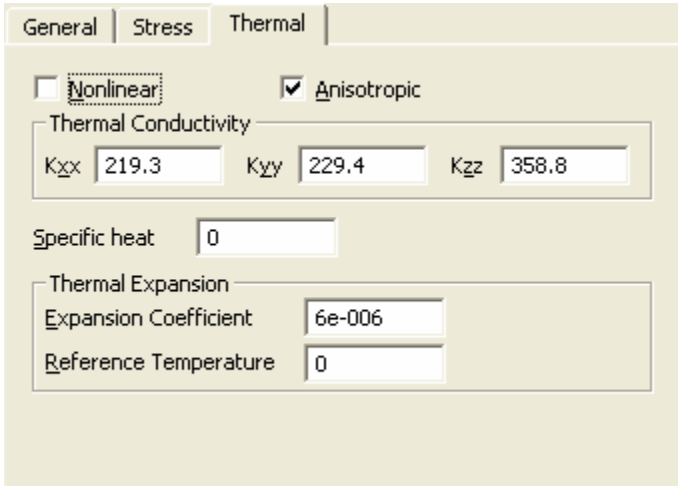
GRAPHMET350 Thermal Analysis on Heatsink Application





Material Properties Aluminum





Material Properties GRAPHMET 350

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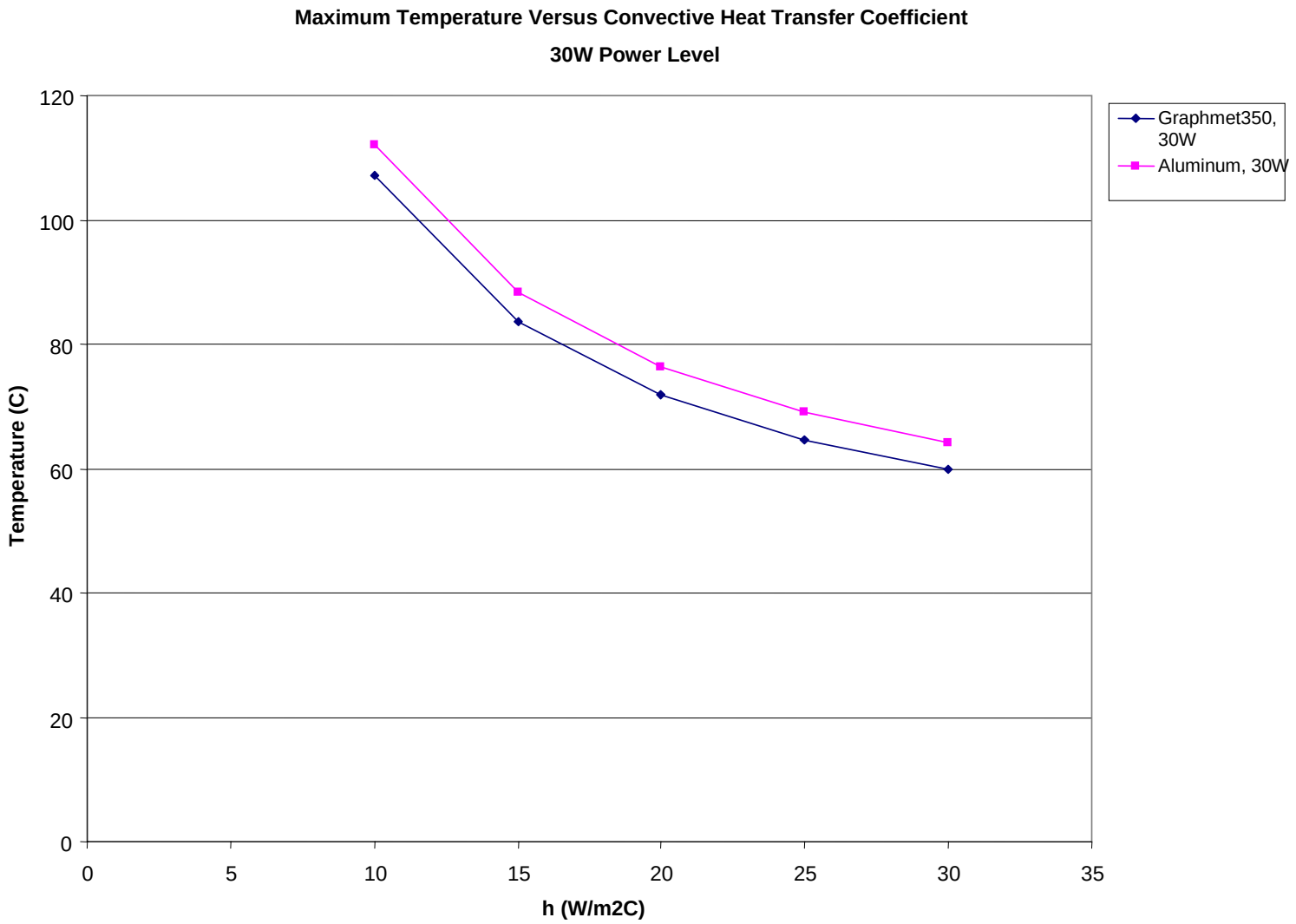
GRAPHMET350 Thermal Analysis on Heatsink Application



Results, 30W Power Level

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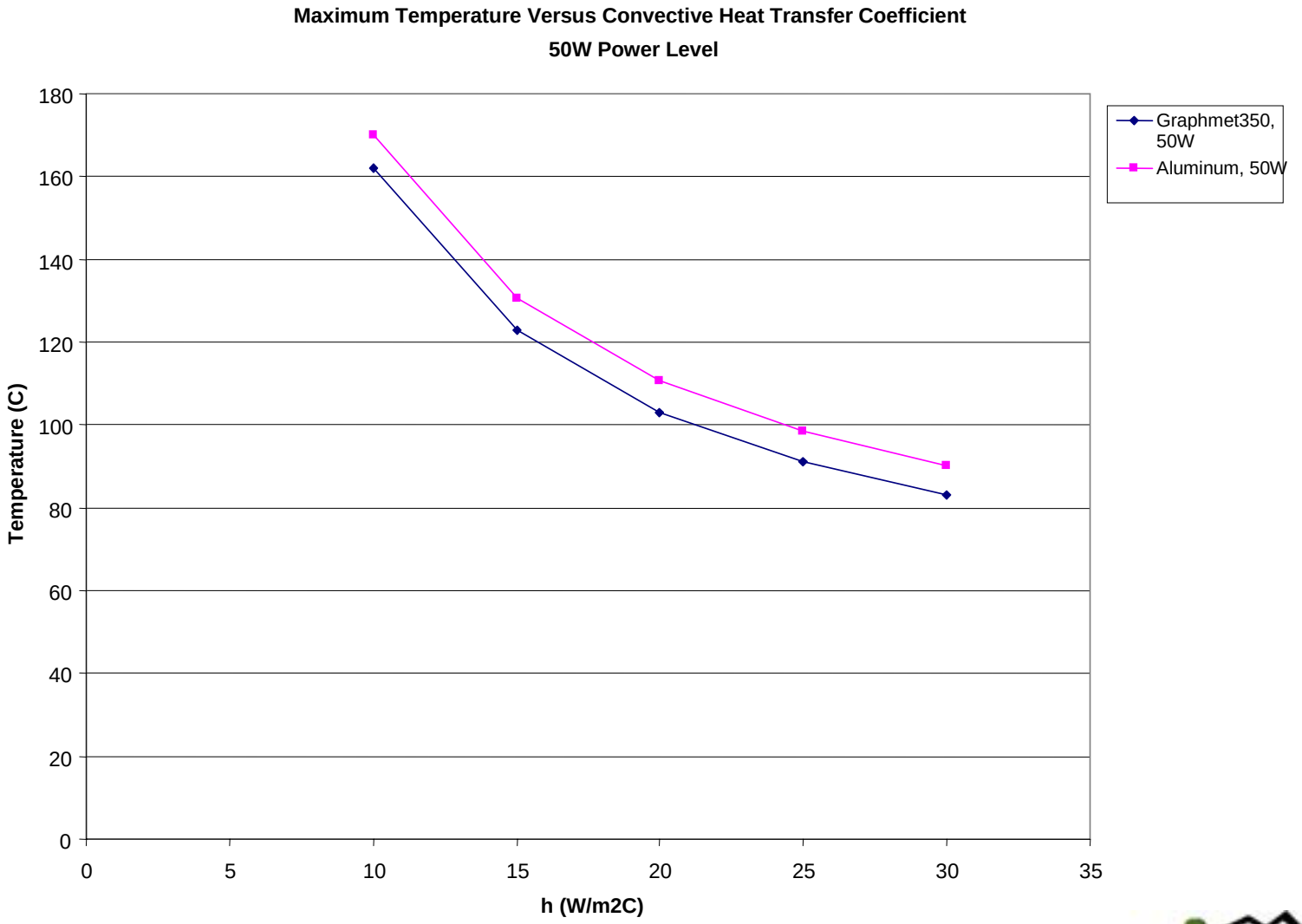
GRAPHMET350 Thermal Analysis on Heatsink Application



Results, 50W Power Level

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GRAPHMET350 Thermal Analysis on Heatsink Application

	Graphmet350, 30W	Aluminum, 30W		Graphmet350, 50W	Aluminum, 50W	
h	Max Temp	Max Temp	DT	Max Temp	Max Temp	DT
10	107.26	112.06	4.8	162.1	170.11	8.01
15	83.67	88.35	4.68	122.79	130.58	7.79
20	71.81	76.37	4.56	103.02	110.62	7.6
25	64.65	69.1	4.45	91.08	98.5	7.42
30	59.83	64.19	4.36	83.05	90.31	7.26

Results, 30W Power Level

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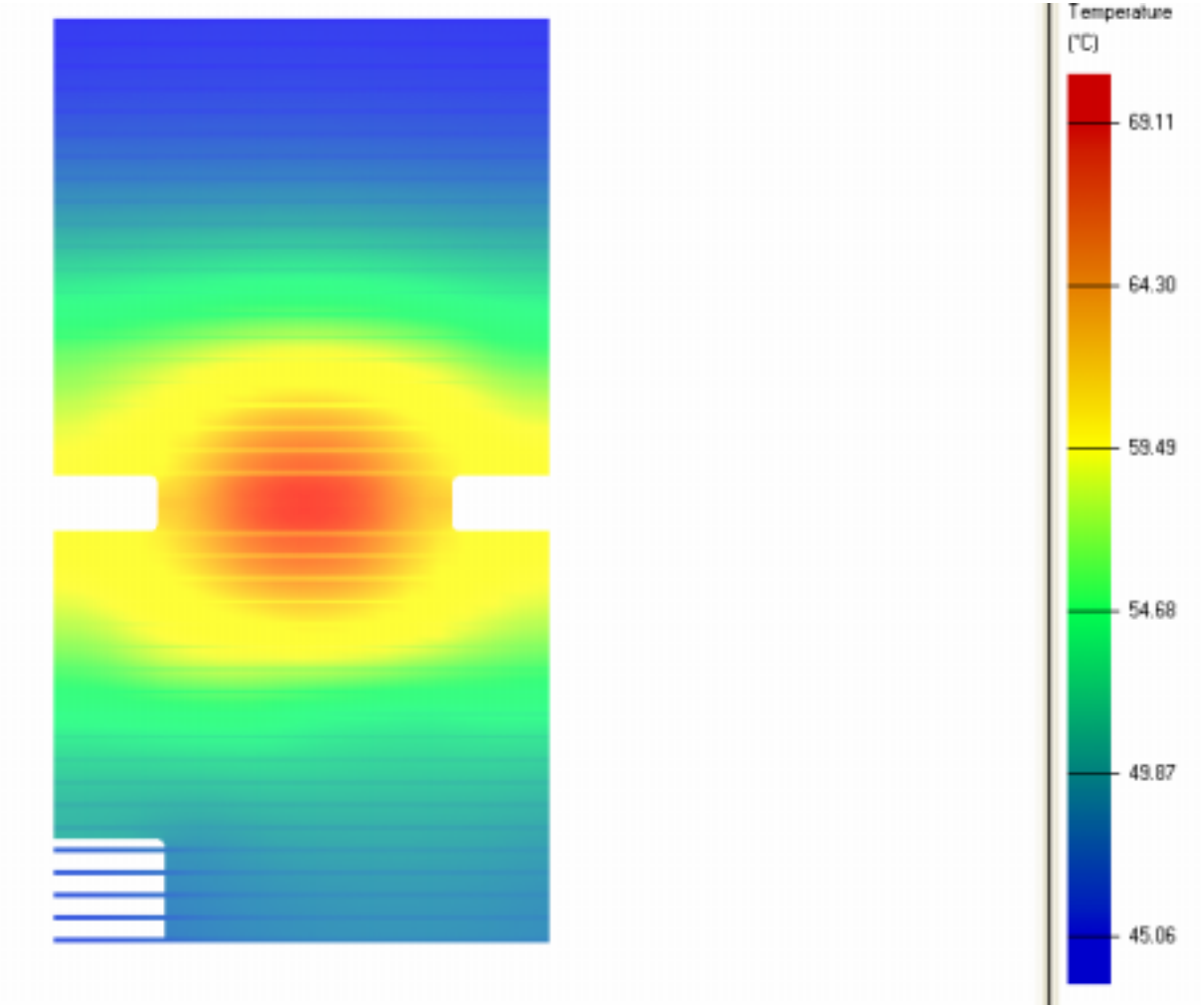
GRAPHMET350 Thermal Analysis on Heatsink Application



Representative Results, 30W Power Level, h=25

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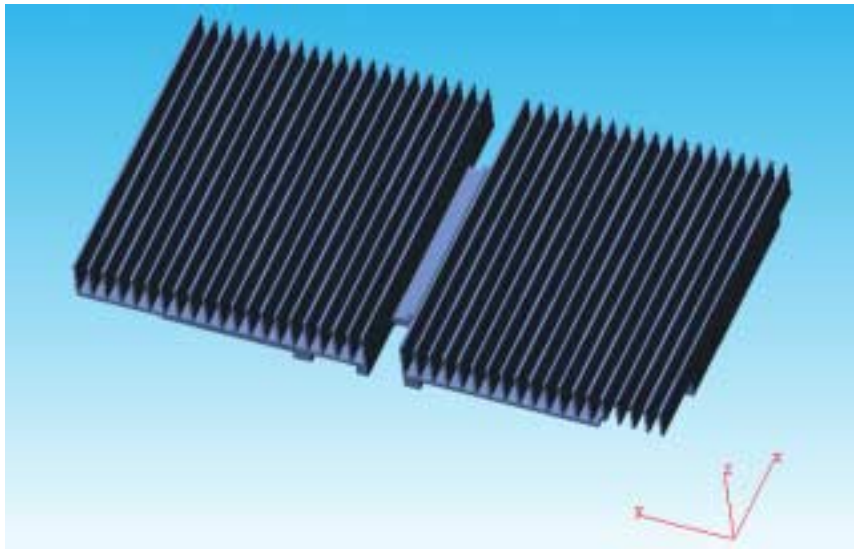
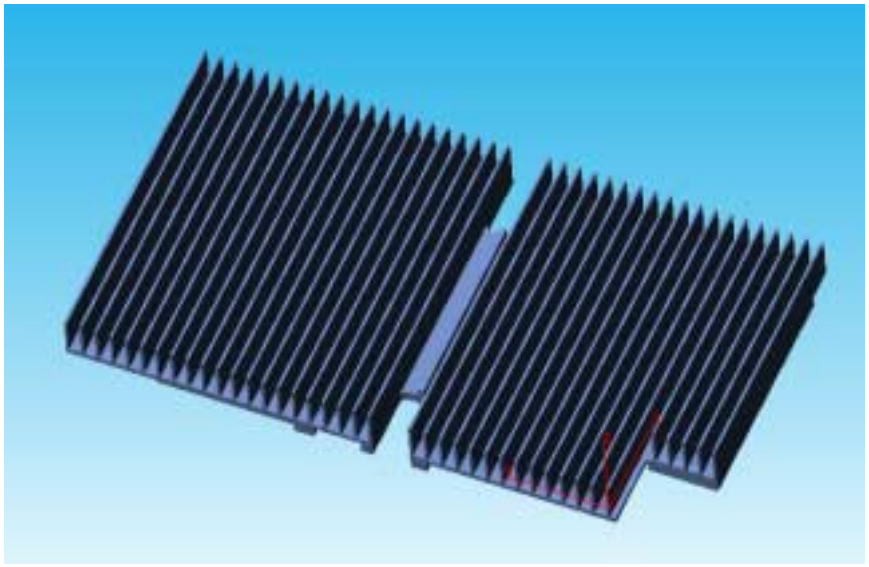
GRAPHMET350 Thermal Analysis on Heatsink Application



Original Geometry



Revised Geometry

Heatsink Geometry Change, Remove overhanging fins

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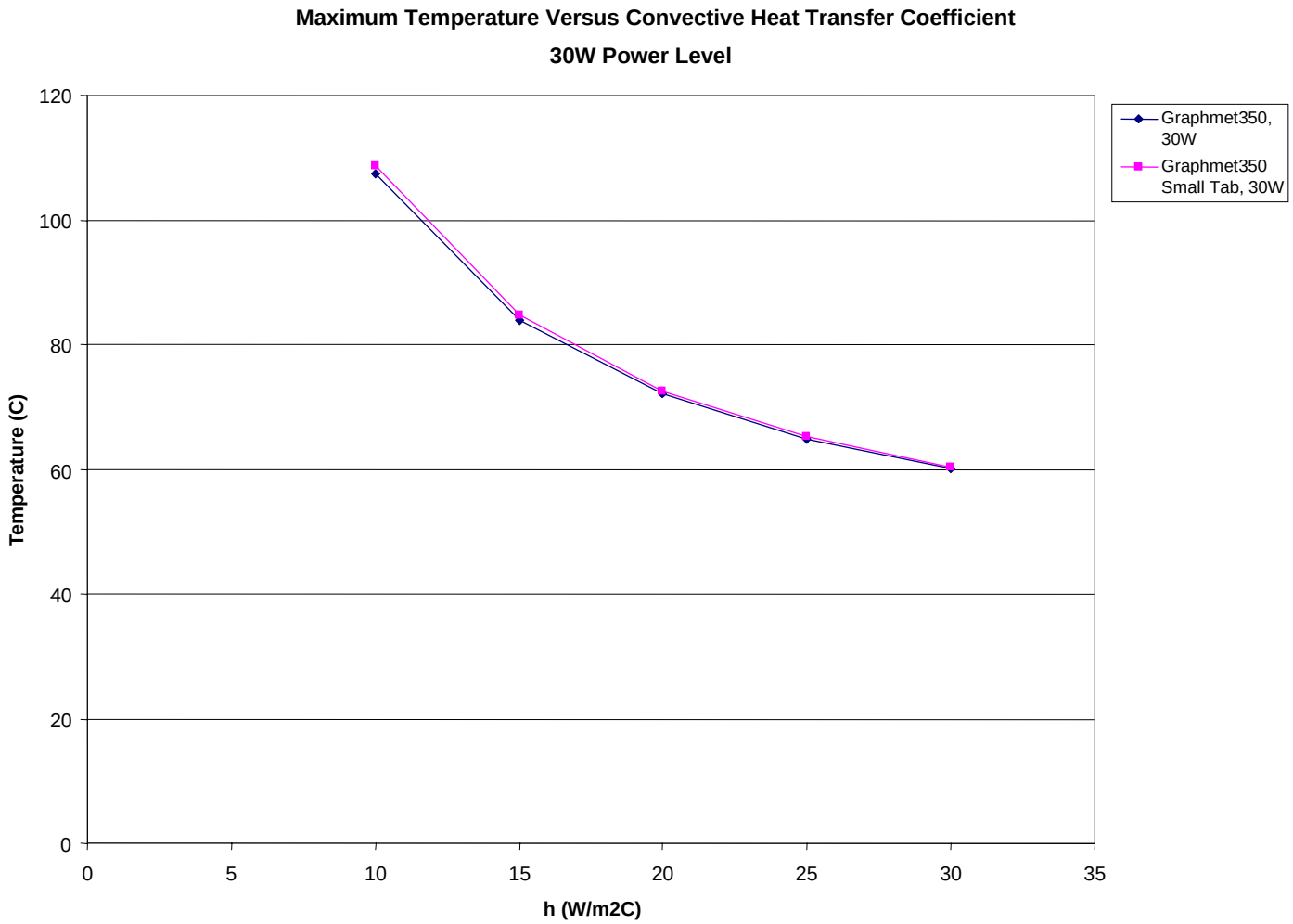
GRAPHMET350 Thermal Analysis on Heatsink Application



Heatsink Geometry Change, Removed overhanging fins

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GRAPHMET350 Thermal Analysis on Heatsink Application

	Graphmet350, 30W	Graphmet350 Small Tab, 30W	
h	Max Temp	Max Temp	DT
10	107.48	108.66	1.18
15	83.89	84.63	0.74
20	72.03	72.55	0.52
25	64.85	65.24	0.39
30	60.03	60.34	0.31

Heatsink Geometry Change, Removed overhanging fins

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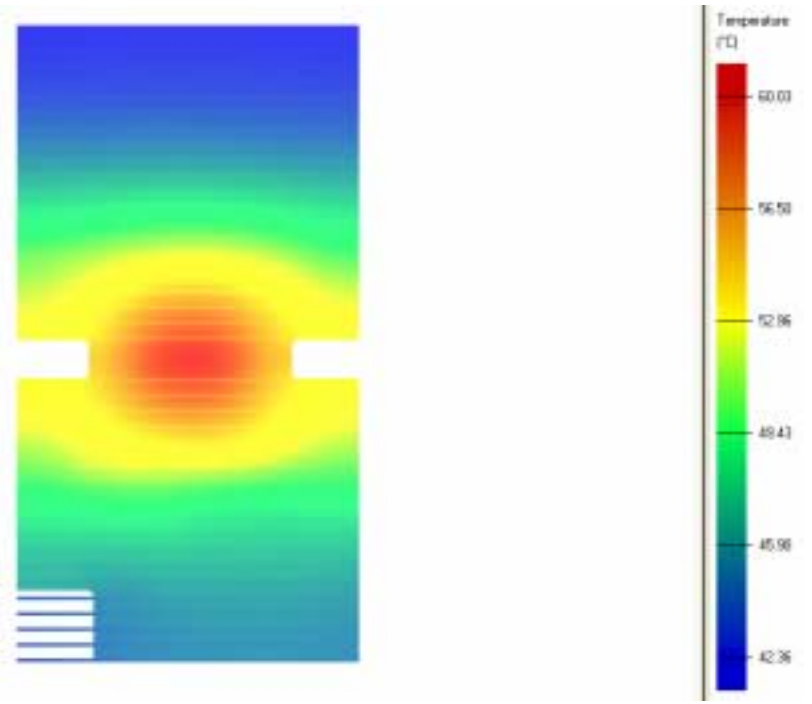
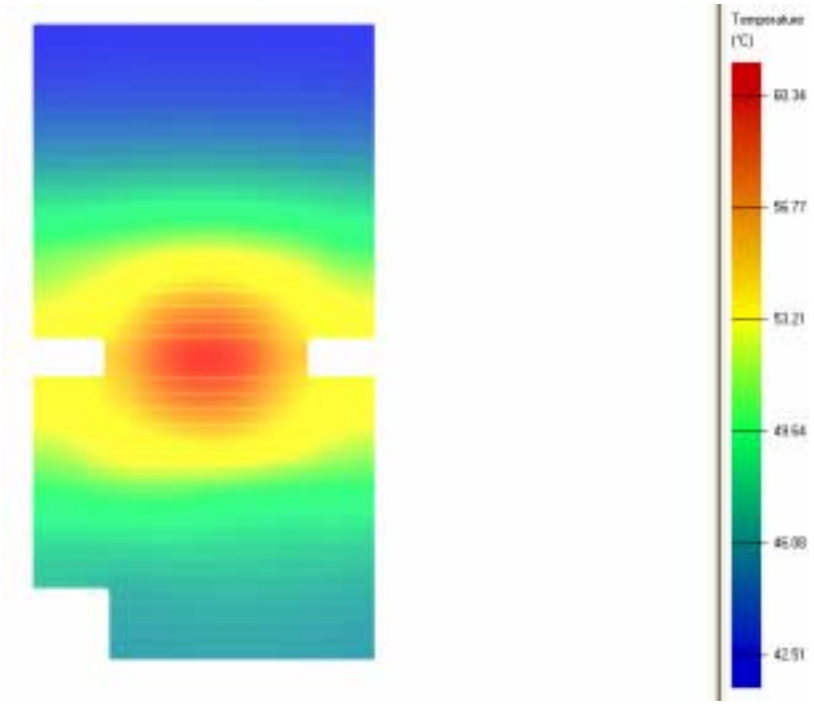
GRAPHMET350 Thermal Analysis on Heatsink Application



Original Geometry



Revised Geometry

Representative Results, 30W Power Level, h=25

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GRAPHMET350 Thermal Analysis on Heatsink Application

Thermal Analysis Results

1. GRAPHMET350 performs better than Aluminum with regards to maximum temperature measured. Approximately 4.5°C difference for 30W power and 7.5°C difference for 50W power levels.
2. Mass of aluminum heatsink approximately 52.7grams. Mass of GRAPHET350 heatsink approximately 39.5 grams (25% reduction in weight). Excluding clip.
3. Removing overhanging fins effects temperature results between 0.3°C – 1.2°C. Reduces risk of fin damage when using GRAPHMET350

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