Ag5300

Thermal considerations

Version 1.1

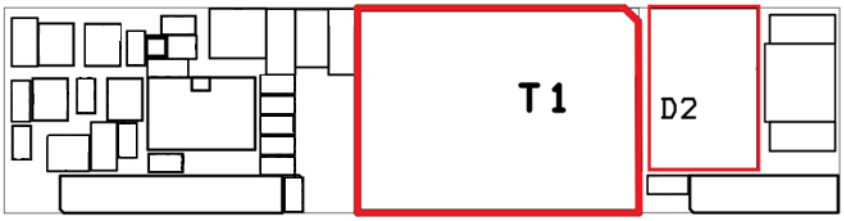
The following document details the thermal performance of the Ag5300 for use with designing thermal management of the Ag5300 when integrating into designs.

The Ag5300 module is a power component and as a result will generate heat. The amount of heat generated by the module will depend on the load it is required to drive and the input voltage supplied by the PSE. To obtain maximum power it is important that any enclosure used has sufficient ventilation and forced airflow over the Ag5300.

The Ag5300 and Ag5324 are capable of handling 30W peak power for short durations, but the module will shut down as a result of the thermal protection if the additional heat generated is not removed from the device.

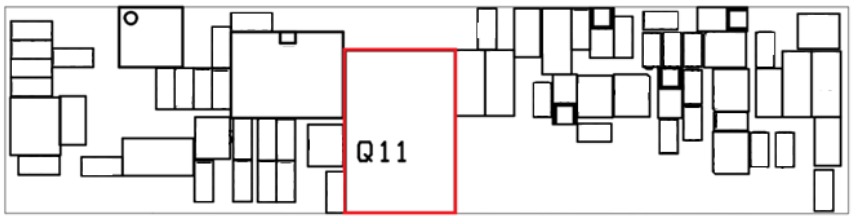
Indicated in the pictures below are the hottest components on both the top and bottom sides of the Ag5300

AG5300 2R SST



The hottest component on the front side of the board is D2, followed by the transformer

AG5300 2R SSB



The hottest component on the back side of the board is Q11.

Depending on the model of the Ag5300 the hottest component will vary, on the Ag5324 the hottest component will be Q11. However with the 12 Volt Ag5300, the hottest is be D2.

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The following tests were performed in an Associated Environmental Systems SD-302 chamber with gentle circulating air, with the Ag5300 inserted into a board via sockets.

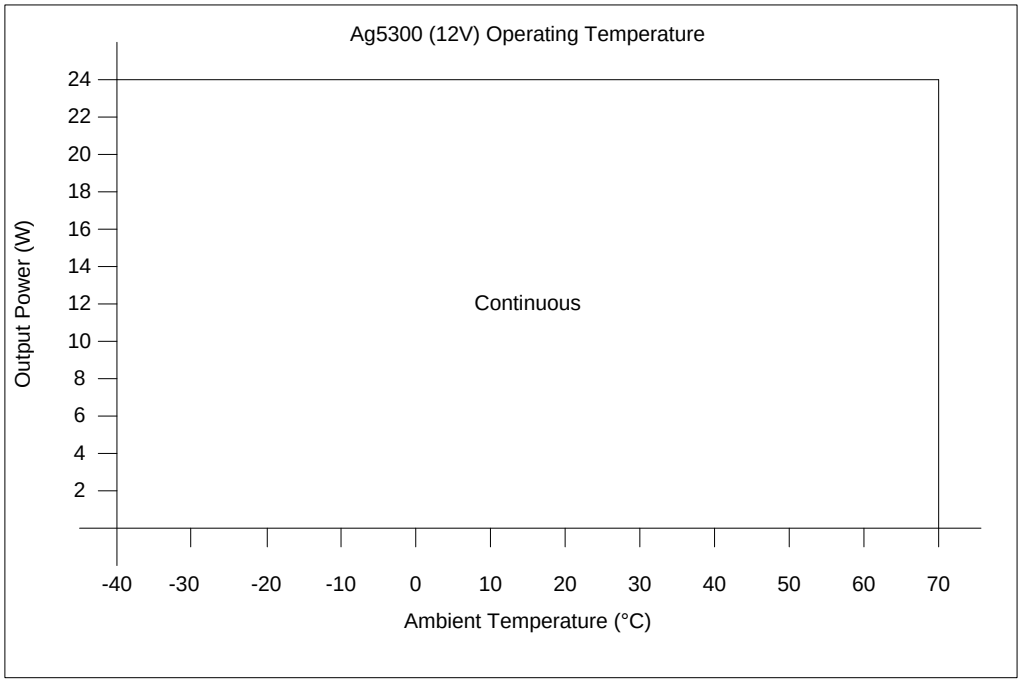
Chamber temperature (˚C)	D2 (˚C)	Q11 (˚C)
21.46	53.93	34.72
29.17	62.65	44.03
39.61	72.96	55.48
49.73	83.81	66.03
59.01	92.28	75.37
70.59	105.44	87.26

Ag5300 providing 24W

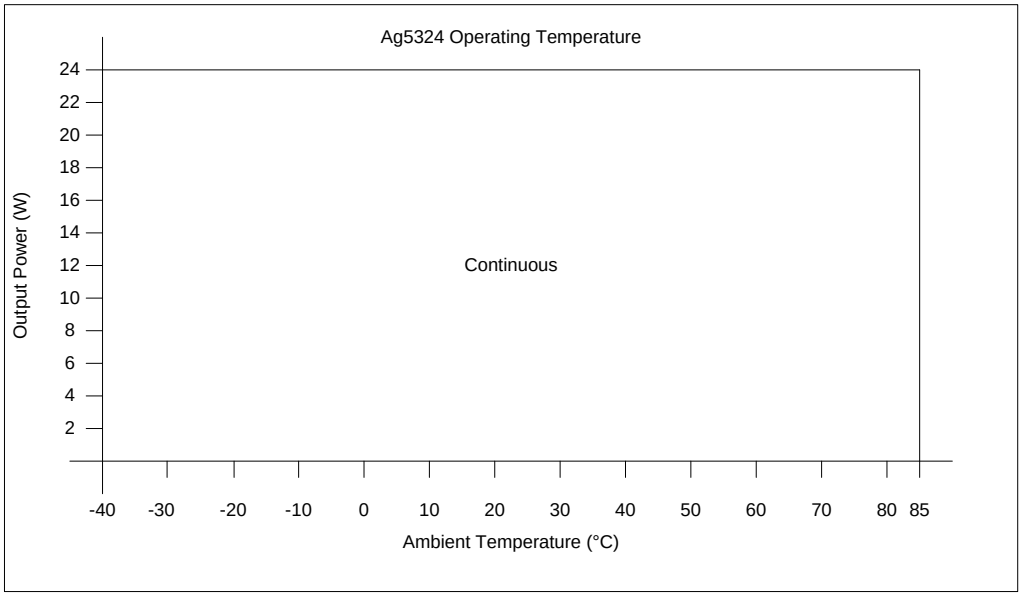
Chamber temperature (˚C)	D2 (˚C)	Q11 (˚C)	T1 (˚C)
20.49	47.65	55.61	41.48
30.04	57.6	65.93	51.11
39.63	67.35	76.02	60.76
49.52	77.29	86.57	70.56
59.55	87.08	96.72	80.54
69.46	96.82	106.84	90.4
85.01	109.31	118.24	103.4

Ag5324 providing 24W

From this data the Ag5300 has a rated continuous output of up to 24W up to an environmental temperature of 70˚C, while Ag5324 is rated at a continuous output of up to 24W up to an environmental temperature of 85˚C.

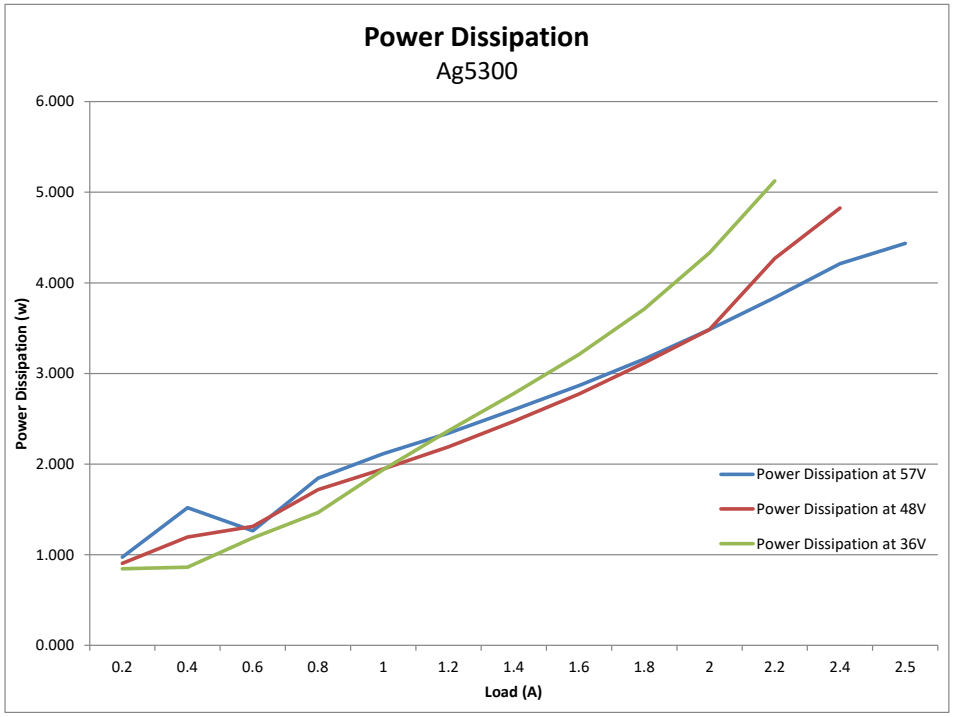


Ag5300 Operating Profile

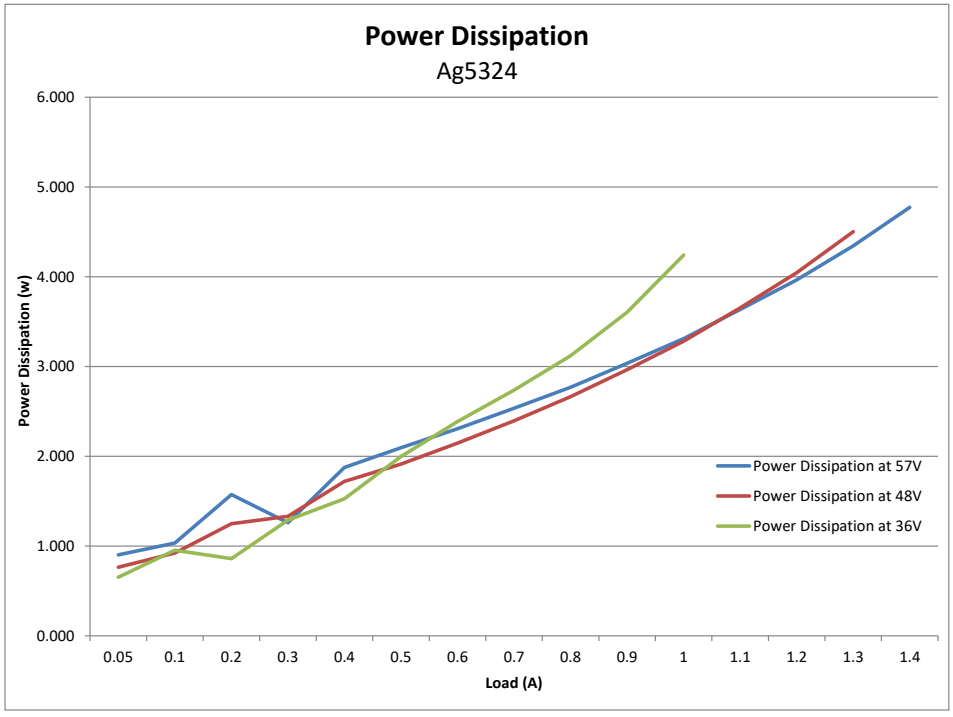


Ag5324 Operating Profile

Any enclosure that the Ag5300 is to be housed in should be designed to dissipate the total energy of the system. In addition, to the power consumed by the output of the Ag5300, up to 5.2W will be added due to the power dissipation across the Ag5300.



Ag5300 power dissipation vs load



Ag5324 power dissipation vs load

Note: data calculated using the efficiency curves of the module.